PLANNING BOARD

Tuesday, January 28, 2025 at 4:30 PM
Room 24 (Ground Level of City Hall) and Zoom

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

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AGENDA:

1

WORKSHOP - 4:30 PM

i. Major Site Plan; 165 Washington Avenue; Redfern Properties, Applicant. The Planning Board will hold a hybrid workshop to consider a proposal to develop a new seven-story, mixed-use development with ground-level commercial space, a total of 326 residential units, exterior public amenity spaces, and other associated improvements at 165 Washington Avenue. The subject property totals approximately 1.45 acres, and is zoned B-2b Community Business. A project and plan summary are available for viewing on the city's CSS Portal (https://css.portlandmaine.gov/) by referencing Plan Number PL-003143-2024.

ii. Institutional Overlay Zone; 716 Stevens Avenue; University of New England, Applicant. The Planning Board will hold a hybrid workshop to consider a new institutional overlay zone and zoning map amendment for the University of New England's Portland Campus, rezoning the property entirely to B-2 Community Business. The subject property totals approximately 75 acres, and is located within the R-3 and R-5 Residential zones, the I-L and I-H Industrial zones, and the B-2 Community 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 ZN-003059-2024.

PUBLIC HEARING - 6:00 PM

1. ROLL CALL AND DECLARATION OF QUORUM

2. COMMUNICATION AND REPORTS

3. REPORT OF ATTENDANCE AT THE MEETING HELD ON JANUARY 14, 2025

Workshop
125 Thompson's Point: Barker, Chann, Murphy, Silk, Smith and Stanley present. Mazer absent

Public Hearing
19 Willis Street/33 Montreal Street: Barker, Chann, Murphy, Silk, Smith, and Stanley present. Mazer absent.
331 Veranda Street: Barker, Chann, Murphy, Silk, Smith, and Stanley present. Mazer absent.
197 Oxford Street: Barker, Chann, Murphy, Smith, and Stanley present. Silk recused, and Mazer absent.

4. REPORTS OF DECISIONS AT THE MEETING HELD ON JANUARY 14, 2025

i.

i. Remand of Level III Site Plan and Subdivision; 19 Willis Street/33 Montreal Street: 37 Montreal, LLC, Applicant. Barker motioned, and Smith seconded a motion to adopt the draft findings of fact and conclusions, and to find that the project met the height requirement for the R-6 zone and Munjoy Hill Neighborhood Conservation Overlay District (MHNCOD). Vote 6-0 (Mazer absent). Barker motioned, and Smith seconded a motion to adopt the draft findings of fact and conclusions, and to find that the project met the setback requirements for the R-6 zone and the MHNCOD. Vote 6-0 (Mazer absent). Barker motioned, and Smith seconded a motion to adopt the draft findings of fact and conclusions, and to find that the project is compatible with the major character-defining features of the surrounding neighborhood in accordance with Sec. 14-526(d)(5)(b) of the Land Use Code. Vote 6-0 (Mazer absent). Barker motioned, and Smith seconded a motion to affirm the approval of the project and confirm that the totality of the three motions adopting additional findings of fact are intended to supplement the original

approval that was granted by the Planning Board on December 14, 2021, and as amended on December 12, 2023. Vote 6-0 (Mazer absent). Barker motioned, and Chann seconded a motion to authorize Board Vice-Chair Silk to sign the findings of fact and conclusions of law as drafted and amended. Vote 6-0 (Mazer absent).

ii. Major Site Plan and Site Location of Development; 331 Veranda Street; Martin's Point Healthcare, Applicant. Barker motioned and Smith seconded a motion to waive the B-5 Urban Commercial Build-to-Zone and Percentage requirement as listed in Table 7-C within the Land Use Code, and as authorized under Sec. 7.6.5.B in the Land Use Code. Vote 6-0 (Mazer absent). Barker motioned, and Murphy seconded a motion to waive Technical Manual Sec. 5.2.3 to allow a direct discharge of treated stormwater into a tidal body of water. Vote 6-0 (Mazer absent). Barker motioned, and Murphy seconded a motion to approve the major site plan application. Vote 6-0 (Mazer absent). Barker motioned, and Murphy seconded a motion to approve the Site Location of Development amendment. Vote 6-0 (Mazer absent). Barker motioned, and Murphy seconded a motion to adopt the amended draft approval letter as the Board's decision, and to authorize the Board Chair to sign the amended draft approval letter. Vote 6-0 (Mazer absent).

iii. Phased Major Site Plan and Conditional Use; 197 Oxford Street; Reveler Development and Avesta Housing Corporation d/b/a Avesta Oxford Street, LP, Co-Applicants. Chann motioned and Smith seconded a motion to waive Technical Manual Sec. 1.10.3, to reduce the two-way drive aisle width from 24 feet to 21 feet. Vote 5-0 (Silk recused, Mazer absent). Chann motioned, and Smith seconded a motion to waive Site Plan Standard Sec. 14.6.2.B.3, which requires the preservation of 30% of trees 10" DBH or greater within required setback areas, to authorize the removal of trees within the rear setback at 197 Oxford Street. Vote 4-1 (Chann opposed, Silk recused, Mazer absent). Chann motioned, and Smith seconded a motion to waive Technical Manual Sec. 1.14, requiring EV charging infrastructure for newly proposed parking at 197 Oxford Street. Vote 5-0 (Silk recused, Mazer absent). Chann motioned, and Smith seconded a motion to approve the conditional use application. Vote 5-0 (Silk recused, Mazer absent). Chann motioned, and Smith seconded a motion to approve the major site plan application. Vote 5-0 (Silk recused, Mazer absent). Chann motioned, and Smith seconded a motion to adopt the draft approval letter as the Board's decision, and to authorize the Board Chair to sign the letter as drafted. Vote 5-0 (Silk recused, Mazer absent).

5. NEW BUSINESS

i. Major Site Plan; 1001 Westbrook Street (Jetport Parking Expansion); City of Portland, Applicant. The Planning Board will continue its hybrid public hearing, tabled at the Board's November 26, 2024 meeting, to consider a proposal to expand surface parking at the Portland International Jetport. The project would involve the construction of 5.5 acres of new surface parking area, distributed across two separate lots, with a total capacity for 684 vehicles. This project is subject to both Site Location of Development (SLOD) review, as well as Natural Resource Protection Act (NRPA) review with Maine DEP. The subject property 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-002853-2024.

To:	Chair Brandon Mazer & Members of the Planning Board
From:	Taylor Colbeth
Date:	January 24, 2025
Re:	165 Washington Avenue
Project ID:	PL-003143-2024
CBL:	010 D001
Meeting Date:	January 28, 2025

I. INTRODUCTION

Redfern Properties LLC and Acorn Engineering have submitted a Major Site Plan application for the construction of a seven-story, mixed-use development containing 326 dwelling units, including 82 inclusionary zoning units on site, 1,800 square feet of ground-level retail space, and 11 parking spaces at 165 Washington Avenue, within the B-2b Community Business 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 13.6.

The Planning and Urban Development Department mailed 191 notices advertising this meeting to property owners within 500 feet of the site. A legal advertisement ran in the January 16, 2025 and January 17, 2025 editions of the Portland Press Herald.

Applicant: Redfern Properties LLC
Applicant Representatives: Acorn Engineering



Figure 1. An aerial view of the existing site

II. REQUIRED REVIEWS

Review	*Applicable Standards*
Site Plan	Section 13.6
Inclusionary Zoning	Section 17.2.3

Project Data	
Existing Zoning	B2-b Community Business
Property Size	63,375 SF
Existing Use	Vacant Building (Former Burner Supply warehouse) Surface Parking
Proposed Use	Multi-family Residential with Retail

III. EXISTING CONDITIONS AND SURROUNDING AREA



Figure 2. Street View of the Existing Conditions

The subject property is located within the East End neighborhood and is bounded by Washington Avenue, Mt. Joy Community Orchard, and residential dwellings on the northeast and southeast property boundaries. The lot is zoned B-2b Neighborhood Business, comprising approximately 65,375 square feet (1.501 acres). The site is currently occupied by a vacant warehouse and surface parking lot, formerly occupied by the Northern Burner Supply Company. The property is largely flat along the property frontage on Washington Avenue, with a steep slope from northeast to southeast along the rear property line.

The area surrounding the subject property is a mixture of residential and commercial uses, along with community open spaces, including the abutting Mt. Joy Community Orchard. The property also abuts Munjoy Heights, which consists of 29, four-story residential condominiums, and Bayview Heights, a four-story senior housing development. Washington Avenue is a priority corridor for the City and is

comprised of a variety of residential and non-residential uses including breweries, retail establishments, and restaurants.

The property is well served by public transportation, with Greater Portland METRO routes 7, 9A, 9B, and the Breez, operating along Washington Avenue. The property is also in close proximity to I-295, with on and off ramps located approximately a quarter-mile from the site.

IV. PROPOSED DEVELOPMENT

The proposed development involves the construction of a seven-story mixed-use building with 326 residential units, an 1,800 square foot retail space located on the ground floor, two residential courtyards, and 11 structured parking spaces. The building steps down to three stories along the property's Washington Avenue frontage, and four stories above the structured parking, at the south end of the development site. The retail and residential spaces would have separate entrances, with both having a primary entrance along Washington Avenue.

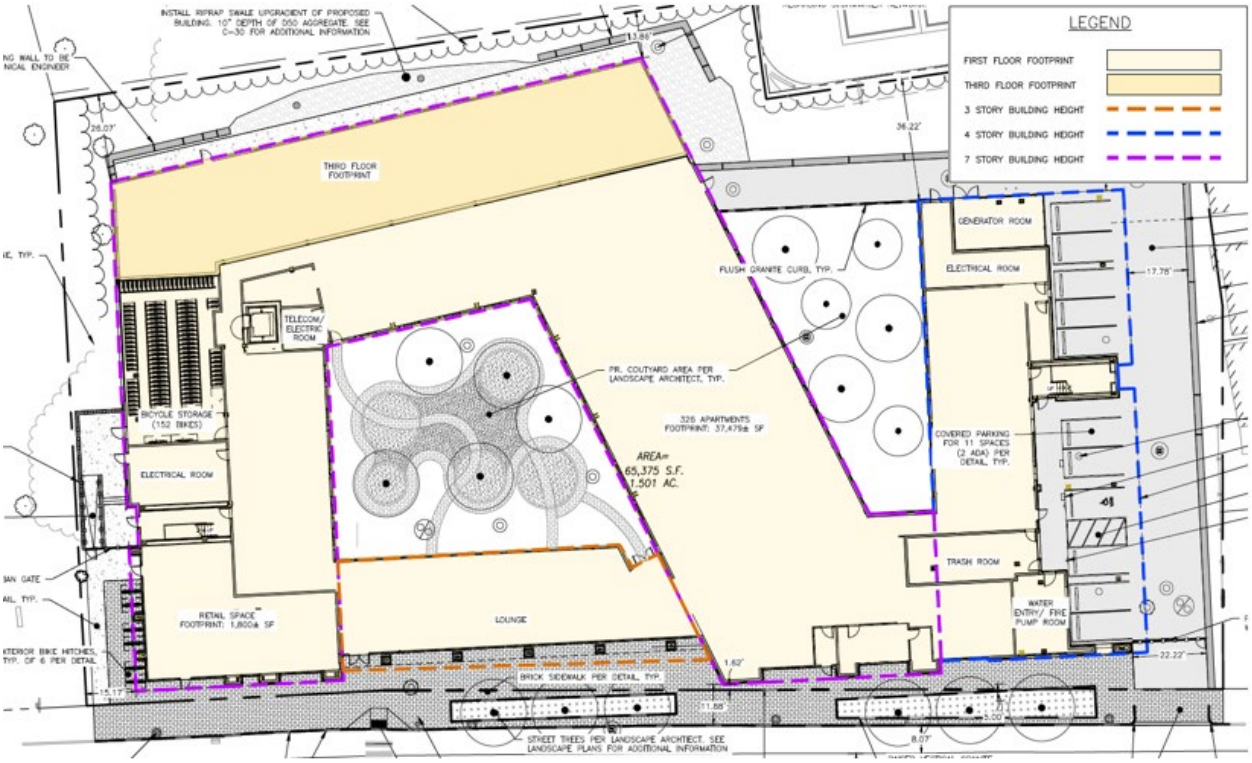


Figure 3. Building Footprint of Varying Stories

The ground floor of the building would feature a retail space, lounge, lobby, a 152-space bicycle storage room, residential units, and utility rooms. The project would include 11 off-street parking spaces, that would be located beneath a cantilevered portion of the building, and accessed via a new driveway at the southern end of the property. The second floor would feature a fitness room, lounge, residential units, and utility rooms. The remaining floors will consist entirely of residential units and utility rooms.

V. RIGHT, TITLE, & INTEREST

The applicant has demonstrated sufficient right, title and interest to the parcel involved in this application. The subject lot was conveyed with associated rights on June 1, 2023. Conveyance of this

parcel is recorded in the Cumberland County Registry of Deeds Book 31303, Page 272. Full Right, Title and Interest documentation is included as Attachment D.

VI. FINANCIAL & TECHNICAL CAPACITY

The applicant has provided a written statement detailing their track record of completing development projects within the City of Portland. The applicant has provided a letter detailing their track record of successful developments throughout Portland to demonstrate financial capacity. The applicant will be required to provide a letter from their financial institution prior to a Public Hearing. Acorn Engineering is an experienced engineering firm that specializes in providing urban development, civil/site design, environmental services, municipal consulting, and construction administration, and has demonstrated experience completing projects of similar scale throughout Portland. Full financial and technical capacity documentation is included as Attachments G and H.

VII. ZONING ANALYSIS

The subject property is located within the B-2b Neighborhood Business zone. The purpose of the B-2b zone is to provide neighborhood and community retail, business, and service establishments that are built close to the street while encouraging mixed-use development in areas of moderate to high-density housing in urban neighborhoods along arterials.

Standard	Required	Proposed
Lot area (min)	None	65,375
Street frontage	None	343 ft
Build-to zone	0-10 ft	1.62 ft
Build-to Percentage	100%	100%
Building length as a percentage of street frontage (min)	60%	86.8%
Blank wall area (max)	20 ft	12 ft
Front yard maximum	10 ft	9.77 ft
Rear setback	None	13.86 ft
Yard right	None	27.17 ft
Yard left	None	15.17 ft
Structure height (max)	75 ft	67.85 ft
Maximum lot coverage	None	56.46%
Open space	None	35.96%
Impervious surface ratio (max)	None	64.04%

Inclusionary Zoning

As outlined in Section 17.2.3 of the City of Portland's Land Use Code, this application is subject to Inclusionary Zoning standards and is required to provide at least 25% (82) units as workforce housing. The applicant has indicated they plan to provide the required 82 inclusionary zoning units on-site to meet the City's requirement.

VIII. SITE PLAN STANDARDS (Section 13.6)

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 13.6. Staff comments are below.

1. Transportation Standards (Section 13.6.1)

A. Impact on surrounding street systems

The applicant has provided a traffic movement permit (TMP) completed by a licensed traffic engineer from Barton & Longuidice. The project proposes closing two existing curb cuts along Washington Avenue, and providing only one point of vehicular access to the site.

The City is the delegated lead agency for the TMP and a traffic scoping meeting was held on January 9, 2025, with the City's traffic reviewer and the applicant team. During the meeting, Oxford Street was acknowledged as a high crash location, but no action is required due to limited opportunities for mitigation improvements. There was a focus on pedestrian conditions, particularly the review of sidewalks such that it meets current city standards to Walnut Street. The applicant is required to submit a full Section 7 Traffic Study, including what was prepared as part of the TMP Application. There was also discussion of parking regulation adjustments along Washing Avenue being considered by the City as part of this project. Full traffic scoping meeting minutes will be provided at a later date.

Staff Discussion

- Staff have requested that the applicant provide more information on the proposed vehicular gate to ensure that queuing vehicles and simultaneous ingress/egress to the site will not disrupt traffic along Washington Avenue or pedestrian activity movements along the sidewalk.

B. Access and circulation

All pedestrian access will be directly from the sidewalk on Washington Avenue. With the proposed closure of two curb cuts, the applicant is proposing to redevelop the sidewalk along the property's frontage on Washington Avenue. As part of this redevelopment, the applicant is proposing to widen the sidewalk to improve the pedestrian experience. The applicant is also proposing two raised granite tree beds along Washington Avenue. The applicant has requested two waivers associated with the proposed parking:

Waiver Requests:

1. A waiver for *Technical Manual* Section 1.5.1(C) for reduction of driveway spacing from 100-feet to 11.43 from the nearest abutting driveway.
2. A waiver for *Technical Manual* Table 1-16A for reduction in drive aisle width for 90-degree parking from 24-feet to 22.22 feet, a 1.4 foot reduction.

Staff Discussion

- The applicant has depicted a trash room on their site plan that would be accessed from the parking area. Staff have requested additional details on solid waste removal from the site, including turning templates for truck circulation entering and exiting the garage and information on the timing and frequency of trash pick-ups.
- Staff have also requested that turning templates be provided for personal vehicles entering and exiting the parking area.
- DPW has requested that the applicant provide a rectangular rapid flashing beacon (RRFB) for the pedestrian crossing across Washington Avenue.

- Staff have requested that the applicant provide additional information on the gate operation to assess the potential for waiting entry vehicles to block the sidewalk and impact mobility and safety on Washington Avenue.

C. Public transit access

The proposed project is located along a bus route and is located 150-feet from the nearest bus stop. However, the bus stops near the project do not provide a transit shelter. Per Standard 13.6.1(C), if a development consists of 20 or more dwelling units, the applicant shall provide a transit shelter adjacent to or within the public right-of-way along its frontage, or at a nearby high-volume transit stop without a transit shelter, when the following criteria are met:

- The development is proposed along an existing public transit route on a principal or minor arterial roadway, as shown in the Federal Street Classification Map.
- The nearest existing transit shelter is more than ¼ mile from the site, measured along right-of-way.

Staff Discussion

- Staff are coordinating with METRO to confirm their support for the installation of a bus shelter along this corridor and to verify the proposed location. Once confirmed, the applicant will be required to revise their plans to comply with this standard.

D. Parking

In accordance with Section 18.2.1 of the Land Use Code, no off-street vehicle parking is required. Per Table 18-A the multi-family dwellings may provide a maximum of 2 parking spaces per dwelling unit. The applicant is proposing 11 parking spaces (two of which are ADA) within structured parking located on the south side of the proposed development. A total of 20% of the proposed parking spaces will include Level II EV chargers or higher and 50% of the parking spaces will be will be EV ready.

Per Table 18-A multi-family dwelling are required to provide a minimum of 1 bicycle space per 2 dwelling units. The applicant is proposing a bicycle storage room with 152 spaces along with six exterior bike hitches, totaling in 164 bicycle parking spaces, which exceeds the minimum requirement of 163.

The applicant will be responsible for snow removal and has indicated that snow storage will not be located in an area that interferes with pedestrian walkways or stormwater management systems.

Staff Discussion

- Staff have discussed the option of swapping the sides of the building designated for retail and parking. This change would eliminate the need for a driveway spacing waiver and position the retial space closer to other commercial uses along Washington Avenue. While not a requirement, this option was raised for consideration.

E. Transportation demand management (TDM)

The applicant has provided a TDM Plan that complies with the transportation studies and plans as contained in the *Technical Manual*. The submitted TDM Plan outlines strategies to meet parking and trip reduction rates of up to 10% for residents and staff. Ridesharing and public

transit will be coordinated and promoted amongst staff and residents. All new staff and resident orientation will provide information on these options, along with information related to discount programs for the public transit options available. In addition to a public transit discount program, the applicant plans to offer other incentives including effective parking "cash out" to give residents the choice to pay for a parking space off site, working with the City to incentivize bike sharing programs, and offering the best internet access currently available in this location to encourage telecommunicating as a trip reduction strategy. This TDM Plan will be monitored and adjusted as necessary by the designated TDM Coordinator.

Staff consider this standard to be met.

2. Environmental Quality Standards (Section 14.6.2)

A. Preservation of significant natural features

Per Standard 13.6.2(A), all new developments shall preserve and protect significant natural features by incorporating principles of Low-Impact Development (LID) in accordance with the LID standards of the Technical Manual.

Staff Discussion

- Staff have requested the applicant review LID requirements in Section 3 of the Technical Manual and provide a completed LID scoring worksheet as part of the next submission.

B. Site landscaping and buffers

The applicant is proposing the removal of 37 trees on-site, including two street trees along Washington Avenue. This is to be supplemented with 31 new trees, including six street trees, and various perennials to supplement the removed vegetation. Per Standard 13.6.2(B), one street tree is required for every 25-35 linear feet of frontage along a city right-of-way. Based on the 343-feet of street frontage of the proposed project, a total of 10 street trees are required. The applicant is also required to provide a minimum of one shade tree per 5,000 square feet of lot area per Standard 13.6.2(B). The applicant is required to plant 13 shade trees and has satisfied this requirement by proposing 31 deciduous trees be planted as a part of the proposed project. Site Plan Standard Sec. 13.6.2.B.4 requires that non-vehicular hardscape have a minimum Solar Reflective Index (SRI) of 33 at time of installation, and an SRI score of no less than 28 after a period of three years. The applicant has indicated that this standard will be met.

The applicant has provided a landscaping plan and tree removal plan included as Attachments 24 and 25.

Staff Discussion

Updates Requested

- Staff have requested the applicant explore the possibility of adding additional street trees along Washington Avenue. If the applicant is unable to provide additional street trees, the applicant shall meet the street tree requirement through an alternative as outlined in Section 4.1.3 of the Technical Manual.

C. Water quality/storm water management/erosion control

The project is required to comply with MaineDEP Chapter 500 and City of Portland Technical Manual Sections 5 and 6 regulations for stormwater management and erosion control.

- Basic Standards – The project is providing for erosion and sedimentation control measures. As noted by the City of Portland reviewers, the Applicant should review the City's recently updated Technical Manual Section 6, and account for the latest regulations for erosion and sedimentation controls.
- General/Redevelopment Standards – The project is proposing to provide for stormwater treatment using underdrained subsurface sand filters. The Applicant has done a review of the site based on redevelopment standards. The intent for treatment within the City of Portland standard is for treatment to be provided for 50% of the non-roof redeveloped area. In addition, treatment should also be considered for new impervious area. Comparing the pre- and post- development figures, it appears that most of the treatment is being provided for redeveloped rooftop area. While it appears that an adequate total area is treated, the Applicant should provide a description of how the project meets the City's requirements on the types of areas that are treated, or provide justification for why alternate areas are treated.
- Flooding Standards – The project will be reducing stormwater flows as required by the Flooding Standards.

Staff Discussion

- A subsurface sandfilter has been proposed to be located in the center of the building within a plaza area. The stormwater report includes an inspection and maintenance plan which identifies specific maintenance items for the proposed system. It is unclear from the site plan and elevations provided how access will be provided for equipment to maintain the proposed system. Staff have requested confirmation that maintenance access can occur be accommodated through the available access points.
- With the subsurface sandfilter location within the plaza area, the outlet stormdrain pipe will be extended beneath a portion of the building. Staff have requested the applicant confirm that there will not be any conflict with the foundation depths at this location.

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

A. Consistency with City Master Plans

The proposed project is consistent with the designated zoning, which has been found to be in conformance with the City's comprehensive plan and therefore this standard is considered met.

Public Safety and Fire Prevention:

The proposed project has been designed to provide adequate emergency vehicle access to the site provided directly from Washington Avenue and from the drive aisle along the southeast side of the site. The proposed building will have a sprinkler system per City code.

The project would provide new site lighting and has been designed to promote natural surveillance and access control. The side yard will also feature a fence with a pedestrian gate that will help to delineate public and private spaces. Staff consider this standard to be met.

B. Public Utilities

The proposed project does not anticipate overburdening the sewer (project proposes to upsize sewer from 8-inches to 15-inches), storm, and water utility mains within Washington Avenue. The existing overhead wires along the project frontage will be placed underground. A proposed submersible transformer that is serviced by three-phase primary conduits from a utility pole on Washington Avenue will serve the proposed project. A secondary conduit will extend from the transformer to the building.

The applicant is proposing an easement to be granted to Central Maine Power (CMP) for the locations of the primary transformer vaults that straddle the private property line and the city right-of-way. The developers are working with a general contractor to determine if temporary construction easements will be necessary during the construction period and will provide supplemental information when available.

Staff Discussion

- Staff have requested the applicant add notation to the plans emphasizing the coordination required around the installation of below-grade electrical structures prior to the redevelopment of the sidewalk and curbing, and construction of tree planters, to ensure that these structures are low enough to accommodate these improvements. The applicant should also confirm there will be adequate depth beneath the tree planter areas for the proposed installation of the proposed duct banks and other utilities.
- Staff have also requested Ability to Serve letters be provided once they are received from the respective companies.

4. Site Design Standards (Section 13.6.4)

A. Massing, ventilation, and wind impact

The applicant has provided an Architectural Design Narrative completed by HOLST Architecture. The building mass has been designed to optimize natural ventilation and daylight for residents by providing two exterior courtyards and a rooftop deck located on the fourth floor, along with a step back on the fifth floor towards the south of the proposed building. The step back also helps to protect the views for the neighboring property. Staff consider this standard to be met.

B. Shadows

The proposed building is setback 15-feet from the abutting community orchard to the north of the subject property to mitigate shadow impact for the majority of the year.

Staff Discussion

- Staff have requested the applicant submit a shadow study that uses the most recent renderings and elevations of the proposed project.

C. Snow and ice loading

The proposed building does not have any sloped roofs or awnings; this prevents the shedding of snow or ice onto adjacent properties or public ways. Staff consider this standard to be met.

D. View corridors

This application is not within a protected view corridor, therefore this standard is not applicable.

E. Historic resources

The proposed project does not lie within a designated historic district nor have known archeological resources on the site.

F. Exterior lighting

The proposed project includes exterior lighting at the building entrances, along with new street lighting along Washington Avenue that, as proposed, comply with the City's Technical Manual. The applicant has also provided a photometric plan and cut sheets prepared by Reflex Lighting. A full photometric plan has been included as Attachment N. Staff consider this standard to be met.

G. Noise and vibration

The proposed HVAC system will meet the applicable State and Federal emission requirements and will be screened and directed away from abutters. Staff consider this standard to be met.

H. Signage and wayfinding

The applicant has noted that building signage will be limited to key areas and constructed as pedestrian scale but has not included a signage plan or details in their submitted materials.

Staff Discussion

- Staff have requested more details on the proposed signage for pedestrian and structured parking entrances.

I. Zoning-related design standards

The building massing of the building has been designed to optimize natural ventilation and daylight through the inclusion of two exterior courtyards and rooftop amenity deck of the stepped back portion of the building along Washington Avenue. The building also steps down to the South to protect views for the neighboring property and steps back 15' from the adjacent community orchard to the North, mitigating impacts of shadows cast. There are substantial building overhangs and canopies located at the building entrances along Washington Avenue to offer weather protection for pedestrians. The applicant is proposing brick and fiber cement panel for the cladding materials, with most of the brick visible from Washington Avenue and fiber cement panel on the rear (east) of the building and in the residential courtyards. Granite stone veneer is proposed along the base of the building to minimize wear and tear on the façade and large, glazed openings with decorative metallic highlights are used at the street edge.

The City has provided a design review memo. Staff have requested the applicant submit architectural renderings to illustrate the user experience along the street, adjacent properties, and other vantage perspectives to show the overall building scale. Staff have also requested that the applicant specify façade materials and window specifications within the architectural elevations or provide supplemental documents. The proposed project is not within a historic

district or associated with a historic landmark, therefore will not require Historic Preservation review.

A full design review is included as Attachment S2.

IX. NEIGHBORHOOD MEETING & PUBLIC COMMENT

The applicant has held two neighborhood meetings. The first was held on December 19, 2024, at 5:30 PM. The in-person meeting was held at the East End Community Center. 20 members of the public were in attendance. Public comment centered on:

- Parking concerns
- Building design and massing
- Proximity to the Roux Institute

A full sign-in sheet and meeting minutes are included as attachments W and X.

The second neighborhood meeting was held on January 8, 2025, at 5:30 PM. The in-person meeting was held at the East End Community Center. Six members of the public were in attendance.
Public comment centered on:

- Parking concerns
- Building design and massing
- Proximity to the Roux Institute

A full sign-in sheet and meeting minutes are included as Attachments AA and BB.

ATTACHMENTS

Public Comment

PC1. Jon Howard (Rec'd 12-15-2025)

Report Attachments

S1. 1st Round Staff Comments
S2. Design Review Memo – 1.15.2024

Applicants Submittal

A. Cover Letter
B. Major Site Plan Application
C. Zoning Analysis Table
D. Right, Title, Interest
E. Easements
F. Waivers Table
G. Financial Capacity
H. Technical Capacity
I. Conformity with Land Use Ordinance
J. Stormwater Report
K. Erosion and Sedimentation Control Report
L. Fire Department Letter

M. Wastewater Capacity
N. Lighting
O. Architectural Design Narrative
P. Utility Cover
Q. Construction Management Report
R. Solid Waste Disposal
S. Parking Analysis
T. 1 Traffic Movement Permit
T. 2 Transportation Demand Management Plan
U. Neighborhood Meeting Certification Letter
V. Neighborhood Letter
W. Sign-In Sheet
X. Neighborhood Meeting Minutes
Y. Second Neighborhood Meeting Verification Letter
Z. Second Neighborhood Letter
AA. Second Sign-In Sheet
BB. Second Neighborhood Meeting Minutes

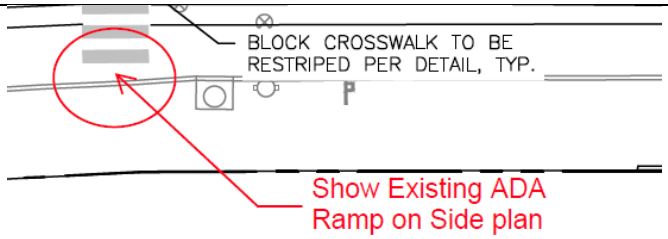
Plans
1. Cover Sheet & Legend
2. General Notes
3. Survey
4. Construction Management Plan
5. Site Plan
6. Utility Plan
7. Grading & Drainage Plans
8. Site Details - 1
9. Site Details - 2
10. Utility Details - 1
11. Utility Details - 2
12. Utility Details - 3
13. Utility Details - 4
14. Drainage Details - 1
15. Drainage Details - 2
16. Erosion & Sedimentation Control Details & Notes
17. R-Tank Courtyard System Layout
18. R-Tank Parking Lot System Layout
19. R-Tank System Details - 1
20. R-Tank System Details - 2
21. R-Tank System Details - 3
22. R-Tank System Cover Detail
23. R-Tank System Specification
24. Landscape Plan
25. Landscape Tree Removal Plan
26. First Floor Plan
27. Second Floor Plan

28. Third Floor Plan
29. Fourth Floor Plan
30. Fifth Floor Plan
31. Roof Plan
32. Exterior Elevations - 1
33. Exterior Elevations - 2

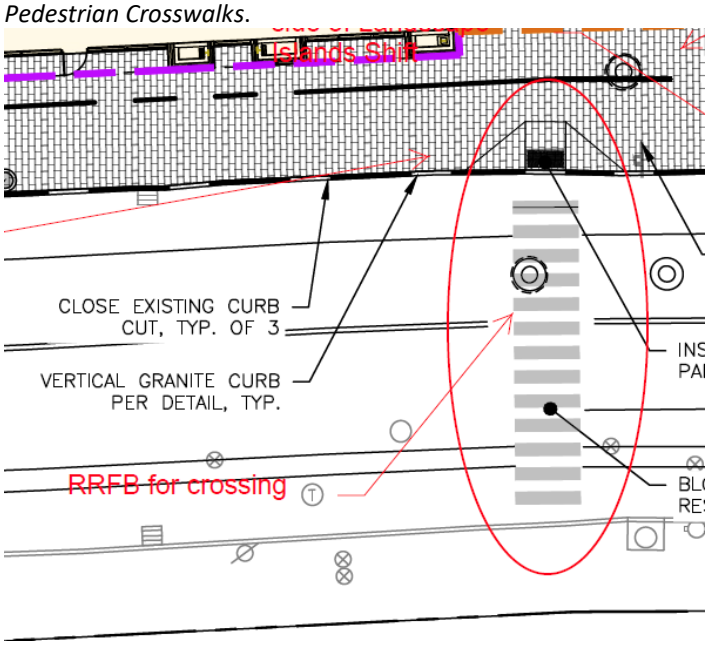
General Comments

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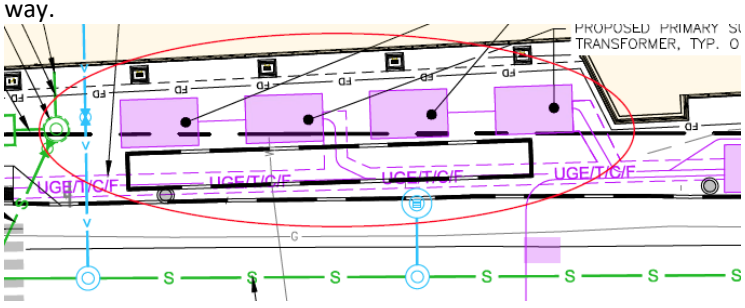
Site Plan Review Standards (Sec. 13.6)		
Transportation Standards (Sec. 13.6.1)		
Standard	***Discussion***	***Finding***
Impact on Surrounding Street Systems	**Overview:** The applicant has provided a traffic movement permit completed by a licensed traffic engineer from Barton & Longuidice. The project proposes closing two curb cuts along Washington Avenue, providing only one point of vehicular access and egress to the site through the structured parking entrance. **Updates Requested** • The applicant should provide information on the use/management of the on-site parking spaces. This should include providing gate operation details as part of assessing the potential for waiting entry vehicles to block the sidewalk and impact mobility and safety on Washington Avenue. • The site plan shall be revised to show the limits of proposed utility trenching/pavement removal. Given the extensive utility work proposed within Washington Avenue, full street width curb to curb replacement of Washington or half street width curb to centerline will be necessary. • More information to come from our traffic reviewer's TMP scoping meeting with the applicant's traffic engineer.	More Information Required
Access and Circulation	**Overview:** All pedestrian access will be directly from the sidewalk on Washington Avenue. With the proposed closure of two curb cuts, the applicant is proposing to redevelop the sidewalk along the property's frontage on Washington Avenue. As part of this redevelopment, the applicant is proposing to widen the sidewalk to improve the pedestrian experience. The applicant is also proposing two raised granite tree beds along Washington Ave. **Updates Requested** • The site plan and landscape plan shall be revised to match. The landscaped island per architect's site plan are 2-feet tall, but the details included in the plan set are the tree well with a 3-5-inch reveal. In addition, the applicant shall confirm that the location and size of the planters will not impact pedestrian operations and ADA accessibility along Washington Avenue. • The applicant has depicted a trash room on their site plan that enters into the structured parking. Applicant shall provide details on solid waste removal from the site and turning templates shall be provided for truck circulation entering and exiting the garage. The applicant shall also provide information on the timing and frequency of trash pick-ups. • In addition, the applicant shall provide turning templates for personal vehicles entering and exiting the garage. • The applicant shall provide details on how deliveries to the development will be managed. • The applicant shall update the site plan to show the existing ADA ramp on the west side of Washington Avenue.	More Information Required



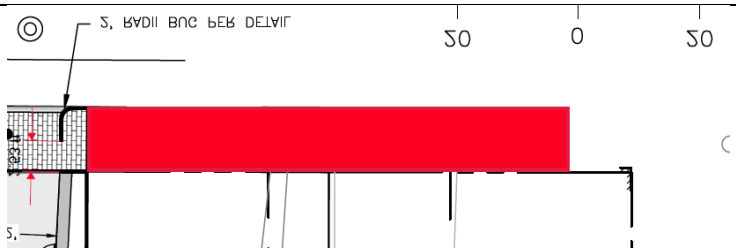
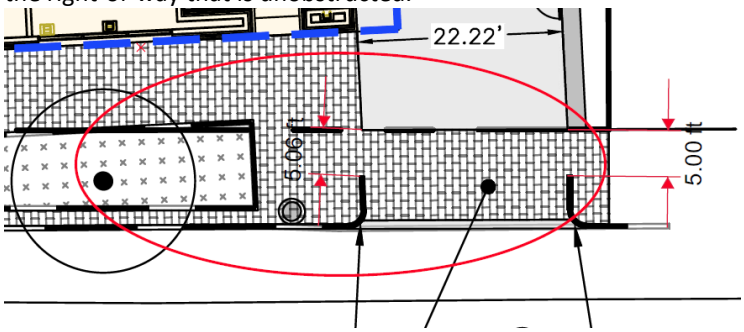
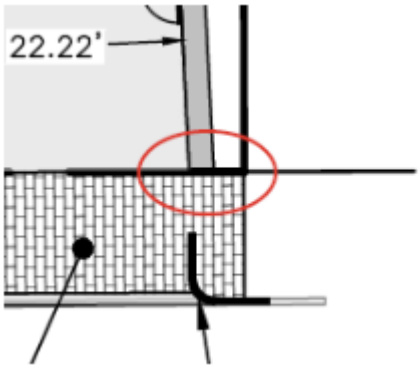
- The applicant shall provide RRFB for the Washington crossing, and verify that the lighting of the Washington Avenue midblock is compliant with the recently updated Maine DOT *Lighting Design Guideline for Pedestrian Crosswalks*.



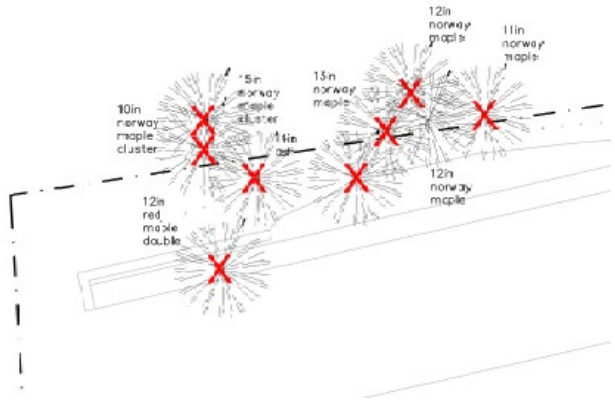
- The locations of the transformers and landscaping planters should be swapped to create a consistent pedestrian corridor within the right-of-way.



- The proposed improvements and existing conditions in the City right-of-way shall be dimensioned on the plan view sheets. For example, street, lanes, sidewalk, esplanade, driveways, and other improvements shall include measurements detailing typical widths, and widths where the typical width varies.
- The sidewalk replacement limit shall extend to the recently replaced ramp at Cove Street and Washington Avenue intersection.

	 • The sidewalk transition across the driveway apron and landscape planters need to be revised to have a clear pedestrian corridor within the right-of-way that is unobstructed.  • No aspect (including footings) of the proposed retaining wall shall be constructed within street right-of-way. 	
Public Transit Access	**Overview:** The proposed project is located along a bus route and is located 150-feet from the nearest bus stop. However, the bus stops near the project do not provide a transit shelter. Per Standard 13.6.1(C), if a development consists of 20 or more dwelling units, the applicant shall provide a transit shelter adjacent or within the public right-of-way along its frontage, or at a nearby high-volume transit stop without a transit shelter, when the following criteria are met: a. The development is proposed along an existing public transit route on a principal or minor arterial roadway, as shown in the Federal Street Classification Map. b. The nearest existing transit shelter is more than ¼ mile from the site, measured along right-of-way. **Updates Requested** • The applicant shall review Standard 13.6.1(C) and revise plans to meet this standard.	Not Met
Parking	**Overview:** The applicant is proposing 11 parking spaces (two of which are ADA) within structured parking located on the south side of the proposed	

	development. A total of 20% of the proposed parking spaces will be Level II EV charging or higher and 50% will be will be EV ready. The applicant has requested two waivers associated with this structured parking: 1) A reduction of driveway spacing from 100-feet to 11.43-feet from the nearest abutting driveway. 2) A reduction in drive aisle width for 90-degree parking from 24-feet to 22.22-feet. The applicant is also proposing a bicycle storage room with 152 spaces along with six exterior bike hitches, totaling in 164 bicycle parking spaces. The applicant will be responsible for snow removal and has dictated that snow storage will not be located in an area that interferes with pedestrian walkways or stormwater management systems.	More Information Required
	Updates Requested: • Has the applicant considered swapping the sides of the building that the retail and parking are on? This would remove the need for a driveway spacing waiver and locate the retail space in an area that is closer to other commercial uses. • The applicant should provide information on the use/management of the on-site parking spaces. This shall include providing gate operation details as part of assessing the potential for waiting entry vehicles to block the sidewalk and impact mobility and safety on Washington Avenue.	
Transportation Demand Management	**Overview:** The applicant has provided a TDM Plan that complies with the transportation studies and plans as contained in the *Technical Manual*.	Met
	Updates Requested • None	
Environmental Quality Standards (Sec. 13.6.2)		
Standard	***Discussion***	***Finding***
Preservation of Significant Natural Features	**Overview:** Per Standard 13.6.2(A), all new developments shall preserve and protect significant natural features by incorporating principles of Low-Impact Development (LID) in accordance with the LID standards of the *Technical Manual*.	More Information Required
	Updates Requested • The applicant shall review LID requirements in Section 3 of the *Technical Manual* and provide a completed LID scoring worksheet as part of the next submission.	
Site Landscaping and Buffers	**Overview:** The applicant is proposing the removal of the 37 trees on-site, including two street trees along Washington Avenue. This is to be supplemented with 31 new trees, including six street trees, and various perennials to supplement the removed vegetation. Per Standard 13.6.2(B), one street tree is required for every 25-35 linear feet of frontage along a city right-of-way. Based on the 343-feet of street frontage of the proposed project, a total of 10 street trees are required. The applicant is also required to provide a minimum of one shade tree per 5,000 square feet of lot area per Standard 13.6.2(B). The applicant is required to plant 13 shade trees and has satisfied this requirement by proposing 31 deciduous trees be planted as a part of the proposed project.	More Information Required
	Updates Requested	

	• The applicant is proposing the removal of trees that extend beyond the retaining wall and property line on the north side of the property. The applicant shall demonstrate why and/or provide information on why these trees are proposed to be removed and if there are opportunities to preserve these existing trees.  • If the applicant is unable to provide additional street trees, the applicant shall meet the street tree requirement through an alternative as outlined in Section 4.1.3 of the *Technical Manual*. • The applicant shall provide confirmation that proposed courtyard trees receive enough solar exposure to be viable in that area.	
Water Quality, Stormwater Management and Erosion Control	**Overview:** The project is required to comply with MaineDEP Chapter 500 and City of Portland Technical Manual Sections 5 and 6 regulations for stormwater management and erosion control. • Basic Standards – The project is providing for erosion and sedimentation control measures. As noted by the City of Portland reviewers, the Applicant should review the City's recently updated Technical Manual Section 6, and account for the latest regulations for erosion and sedimentation controls. • General/Redevelopment Standards – The project is proposing to provide for stormwater treatment using underdrained subsurface sand filters. The Applicant has done a review of the site based on redevelopment standards. The intent for treatment within the City of Portland standard is for treatment to be provided for 50% of the non-roof redeveloped area. In addition, treatment should also be considered for new impervious area. Comparing the pre- and post-development figures, it appears that most of the treatment is being provided for redeveloped rooftop area. While it appears that an adequate total area is treated, the Applicant should provide a description of how the project meets the City's requirements on the types of areas that are treated, or provide justification for why alternate areas are treated. • Flooding Standards – The project will be reducing stormwater flows as required by the Flooding Standards. **Updates Requested** • The applicant shall review MaineDEP Chapter 500 and the *Technical Manual* Section 5 and 6. Stormwater management plans and erosion control report and plans shall be updated accordingly.	More Information required.

	• A subsurface sandfilter has been proposed to be located in the center of the building within a plaza area. The stormwater report includes an inspection and maintenance plan which identifies specific maintenance items for the proposed system. It is not clear from the site plan and elevations provided how access will be provided for equipment to maintain the proposed system. Please provide additional confirmation that maintenance access can occur with the access points that will be available. • With the subsurface sandfilter location within the plaza area, the outlet stormdrain pipe will be extended beneath a portion of the building. The Applicant should confirm that there will not be any conflict with the foundation depths at this location. • Plans have been provided to show the proposed layout of the subsurface sand filter within the courtyard space. The R-Tank plans should be coordinated with the site and grading plans which show a different layout. • The private grease trap and storm sewer manhole should be moved from the right-of-way onto private property.	

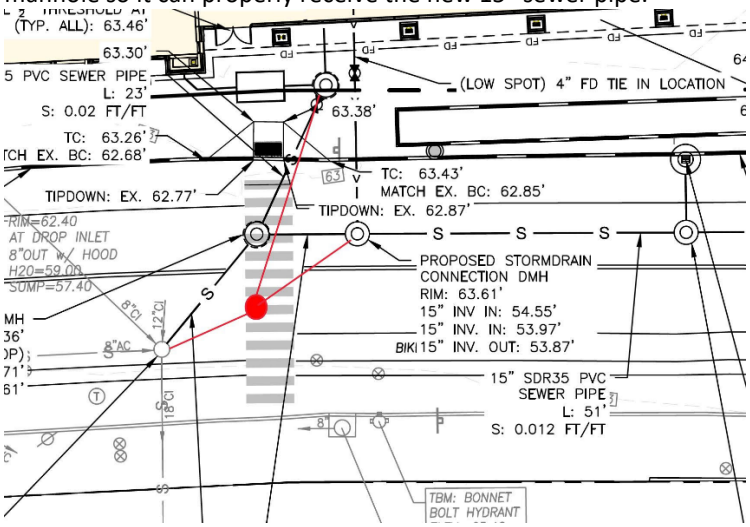
Public Infrastructure and Community Safety Standards (Sec. 13.6.3)

Standard	***Discussion***	***Finding***
Consistency with City Master Plans	**Overview:** The proposed project has been designed to be consistent with Portland's Plan 2030 as a high-density, mixed-use development along a priority corridor. **Updates Requested** • None	Met
Public Safety and Fire Prevention	**Overview:** The proposed project has been designed to provide adequate emergency vehicle access to the site provided directly on Washington Avenue and from the drive isle along the southeast side of the site. The proposed building will have a sprinkler system per City code. The proposed project will provide new site lighting and has been designed to promote natural surveillance and access control. The side yard will also feature a fence with a pedestrian gate that will help to delineate public and private spaces. **Updates Requested** • None	Met
Public Utilities	**Overview:** The proposed project does not anticipate overburdening the sewer (project proposes to upsize sewer from 8-inches to 15-inches), storm, and water utility mains within Washington Avenue. The existing overhead wires along the project frontage will be placed underground. A proposed submersible transformer that is serviced by three-phase primary conduits from a utility pole on Washington Avenue will serve the proposed project. A secondary conduit will extend from the transformer to the building. The applicant is proposing an easement to be granted to Central Maine Power for the locations of the primary transformer vaults that straddle the private property line and the city right-of-way. The developers are working with a general contractor to determine if temporary construction easements will be	More Information Required

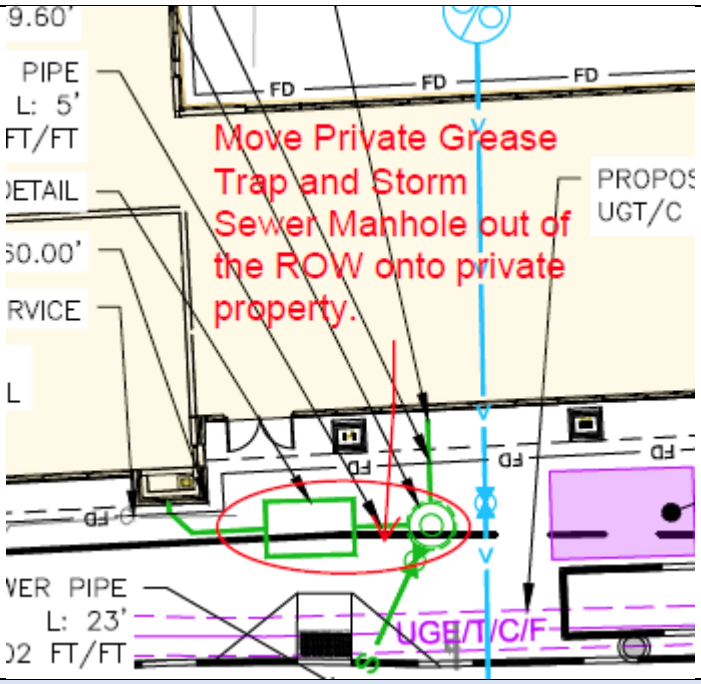
necessary during the construction period and will provide supplemental information when available.

Updates Requested

- The applicant shall provide Ability to Serve letters once they are received from the respective companies.
- An extensive system of below-grade electrical structures is proposed within the sidewalk. City reviewers recommend that the Applicant add notation to the plans emphasizing the coordination required around installation of these structures prior to the redevelopment of the sidewalk and curbing, and construction of the tree planters, to ensure that the structures are low enough to accommodate these improvements. In addition, the applicant should confirm that there will be adequate depth beneath the tree planter areas for the installation of the proposed duct banks and other utilities.
- The applicant shall provide a profile for the proposed Washington Avenue improvements.
- "SEWER" covers for the proposed storm drainage manholes at connection points into the Washington Avenue combined sewer shall be utilized.
- The City of Portland Precast manhole detail shall be updated to match the most current *Technical Manual* detail. The detail shown on sheet C-44 depicts steps which are no longer City standard.
- DPW would like the applicant to review a potential alignment shift to the way the proposed 15" sewer enters into the City's existing SMH at the Gould Street intersection. The concern is that the currently proposed pipe angle may cause structural issues with the structure when it is cored into. The alignment shift shown below would shift the proposed 15" connection further away from the existing 12" connection which is scheduled to be plugged as part of the project. Please also note that channel modifications will likely be required in the existing manhole so it can properly receive the new 15" sewer pipe.



- The private grease trap and storm sewer manhole should be moved from the right-of-way onto private property.



Site Design Standards (Sec. 13.6.4)

Standard	*Discussion*	*Finding*
Massing, Ventilation, Wind, and Heat Impacts	**Overview:** The applicant has provided an Architectural Design Narrative completed by HOLST Architecture. The building mass has been designed to optimize natural ventilation and daylight for residents by providing two exterior courtyards and a rooftop deck located on the fourth floor, along with a step back on the fifth floor towards the south of the proposed building. The step back also helps to protect the views for the neighboring property. **Updates Requested** • None	Met
Shadow	**Overview:** The proposed building is setback 15-feet from the abutting community orchard to the north of the subject property to mitigate shadow impact for the majority of the year. It is our understanding that the applicant has completed a shadow study as part of a different application. **Updates Requested** • The applicant shall submit a shadow study that uses the most recent renderings and elevations of the proposed project.	More Information Required
Snow and Ice Loading	**Overview:** The proposed building does not have any sloped roofs or awnings; this prevents the shedding of snow or ice onto adjacent properties or public ways. **Updates Requested** • None	Met
View Corridors	**Overview:** The proposed development is outside of the Downtown Vision View Corridor Protection Plan. The massing of the proposed building has also been broken up in a way so as to mitigate view impacts on surrounding properties. **Updates Requested** • None	Met
Historic Resources	**Overview:** The proposed project does not lie within a designated historic district nor have known archeological resources on the site.	Met

	Updates Requested • None	
Exterior Lighting	**Overview:** The proposed project includes exterior lighting at egress and street lighting on Washington Avenue that will be in compliance with the City's *Technical Manual*. The applicant has also provided a photometric plan and cut sheets prepared by Reflex Lighting.	Met
	Updates Requested • None	
Noise and Vibration	**Overview:** The proposed HVAC system will meet the applicable State and Federal emission requirements and will be screened and directed away from abutters.	Met
	Updates Requested • None	
Signage and Wayfinding	**Overview:** The applicant has noted that building signage will be limited to key areas and constructed as pedestrian scale but has not included a signage plan or details in their submitted materials.	More Information Required
	Updates Requested • The applicant shall provide more details on the proposed signage for the proposed project for entrances and structured parking.	
Design Standards	**Overview:** The City has provided a design review memo. The proposed project is not within a historic district or associated with a historic landmark, therefore will not require Historic Preservation review.	More Information Required
	Updates Requested • See Design Review Memo.	

Zoning Use Review (Article 6)

Use Standards (Sec. 6.2)

Proposed Use	*Permitted, Conditional or Accessory Use*	*Zone*	*Use Std*
Multifamily Dwellings	***Permitted***	***B-2b***	***6.4.12***
Retail	***Permitted***	***B-2b***	***6.4.37***

Zoning Dimensional Review (Article 7)

Dimensional Standards (Sec. 7.3)

Standard	*Requirement 1*	*Proposed*	*Finding*
Lot area (min)	***None***	***65,375***	Met
Street frontage	***None***	***343 ft***	Met
Build-to zone	***0-10 ft***	***1.62 ft***	Met
Build-to Percentage	***100%***	***100%***	Met
Building length as a percentage of street frontage (min)	***60%***	***86.8%***	Met
Blank wall area (max)	***20 ft***	***12 ft***	Met
Front yard maximum	***10 ft***	***9.77 ft***	Met
Rear setback	***None***	***13.86 ft***	Met
Yard right	***None***	***27.17 ft***	Met
Yard left	***None***	***15.17 ft***	Met
Structure height (max)	***75 ft***	***67.85 ft***	Met
Maximum lot coverage	***None***	***56.46%***	Met
Open space	***None***	***35.96%***	Met
Impervious surface ratio (max)	***None***	***64.04%***	Met

Design Review
Planning and Urban Development Department

City of portland

Subject:	165 Washington Avenue
Zone:	B-2b
Date of Review:	Friday, December 20, 2024
Reviewer(s):	Sean King (Urban Designer), Taylor Colbeth (Planner), Zach Powell (Senior Planner),
Project ID:	PL-003143-2024

I. INTRODUCTION

The development project at 165 Washington Avenue is subject to the site design review standards, Land Use Code section 13.6.4.I Design standards.

The proposed at 165 Washington Avenue is located in the B-2b Community Business zone, and is subject to the design standards of the City of Portland *Design Manual* – ***(d) B-2b Commercial Business Zone, Appendix 2*** and ***(i) Two-family, special needs independent living units, multiple-family, lodging houses, bed and breakfasts and emergency shelters.***

II. REQUEST FOR ADDITIONAL SUBMISSION MATERIALS

Staff requests that the Applicant provide the following plan and detail materials:

1. Architectural renderings to illustrate the user experience along the street, adjacent properties and other vantage perspectives to show the overall building scale.
2. Specify exterior façade materials and window specifications within the architectural elevations or provide supplemental documents.

III. DESIGN REVIEW COMMENTS: **bold** text denotes recent updates met, red text denotes standards not met and require resubmission.

(d) B-2b STANDARDS

a. Urban street wall: In the B-1and **B-2b** zone it shall be required that buildings shall be located to create and preserve an urban street wall

Staff comment: The proposed development creates and reinforces the street wall pattern along Washington Avenue, aligning with the existing buildings in the surrounding neighborhood that are situated at or near the front property line. Staff supports the architectural massing to create building modules with articulation and fenestration patterns that express the variation of front setbacks along the street.

b. *Mixed Uses: In B-1b zone buildings shall be multi-stories with mixed uses.*

Staff comment: Not applicable in B-2b, however the ground-floor retail provides further street activation along the Washington Avenue corridor that Staff supports.

c. *Building entrances: In the B-1 and **B-2b** zone building entrances shall be oriented toward, located adjacent to, and directly accessible from, a sidewalk in a public right-of-way.*

Staff comment: Staff finds that the primary buildings entrances along Washington Ave are oriented towards the street, articulated with a canopy overhead and accessible from the public sidewalk. Staff recommends that the building entry at the Center Bar Level 01 for the Coworking / Lounge relocate to a more centralized bay with greater sight lines from the public street.



Figure 1: Staff diagram for primary building entry

In addition, the Applicant is requested to adjust the fencing to include appropriately sized landings at the top and bottom of ramps and stairs to allow for accessible entries from the public sidewalk.

d. *Windows: In the B-1, B-2, **B-2b** zones windows shall be required along the street frontage of a building. Windows shall be transparent (with visible transmittance (VT) of .7 or greater) and installed at a height to allow views into the building by passerby.*

Staff comment: The proposed development includes storefront scaled windows at the ground-level that allow for views into the building by passersby. Staff requests that the Applicant submit window specifications that indicate the window transparency to meet .7 or greater for Staff review.

e. *Façade character: In the B-1, B-2, **B-2b** zones, active and public portions of the buildings (e.g. doors, windows, entries retail displays) shall be oriented to and, where possible, be located adjacent to the public sidewalk to create an active presence along the sidewalk.*

Staff comment: The proposed development achieves an active presence along the ground level of the building with articulated building entries, storefront windows and rhythm of fenestrations that are organized throughout the street-facing façade.

f. *Building design: B-1, B-2 and **B-2b** commercial buildings shall be designed to be compatible with their residential and commercial neighbors.*

Staff comment: Staff finds that the proposed building design is compatible with the surrounding residential and commercial neighbors through the arrangement of exterior façade materials that correspond to each building module and transition of building heights to reduce the overall building scale.

g. *Building materials: Façade materials of buildings located in the B-1, B-2 and **B-2b** zones shall be compatible with those materials of surrounding residential and commercial use.*

Staff comment: Staff requests more information on the proposed exterior façade materials and window specifications and will review resubmitted materials.

h. *Building scale: In the B-1 zone building scape must relate and be compatible with surrounding residential structures.*

Staff comment: Not applicable, the proposed development is located in zone B-2b.

i. *Landscaping and buffers: In the B-1, B-2 and **B-2b** zones buildings and associated parking areas must be screened to buffer abutting properties. A densely planted landscape buffer and/or fencing will be required to protect neighboring properties from the impacts associated with the development, including lighting, parking, traffic, noise, odor, smoke, or other incompatible uses. Where buildings are setback from the street, a landscaped area must be planted along the front yard street line.*

Staff comment: The proposed development includes covered parking along the south building elevation. Staff requests additional information , including, but not limited to materials and fence protection for walls above 30" height for the proposed retaining wall by others to function as screening for abutting properties.

(d) B-2b GUIDELINES

Please refer to Appendix 2 of this manual, The B-1, B-2, B-2b Design Guidelines, for applicable design guidelines for the B-1 and B-2 zones.

B-2b DESIGN GUIDELINES (Appendix 2 of the Design Manual)

1. *Building location and form*

Buildings shall be located near the street so as to create an urban street wall.

Staff comment: Staff finds that the proposed building creates an urban street wall and mitigates the building scale to include variation in building heights and recessed building elements along the street.

2. *Building function*

An urban street and business district requires a substantial intensity and variety of uses.
Staff comment: Staff finds that the proposed development includes substantial intensity and variety of uses appropriate for the area through the retail, shared coworker and lobby spaces at the ground level.

3. *Orientation of buildings and their entrances to the street*

Major building entries shall be designed and located to provide the primary building access oriented to the public street and sidewalk.

Staff comment: Staff finds that the majority of entries are orientated toward the street, prominent and obvious in appearance. Staff recommends that the building entry at the Center Bar Level 01 for the Coworking / Lounge relocate to a more centralized bay with greater sight lines from the public street.

4. Windows

Windows shall be located in all building facades visible from the public way, especially on building facades along the major public street.

Staff comment: Staff finds that the arrangement of windows facing the street is clearly symmetrical and detailed to create a balanced façade. Staff recommends that the applicant explore a symmetrical arrangement of windows at the upper floor of the three-story building module (Center Bar) facing the street that aligns with the lower level fenestration pattern. In addition, the Applicant is requested to revise floor plans or window placement so that windows are fully occupied within each dwelling unit, with windows partitioned between two units not recommended.

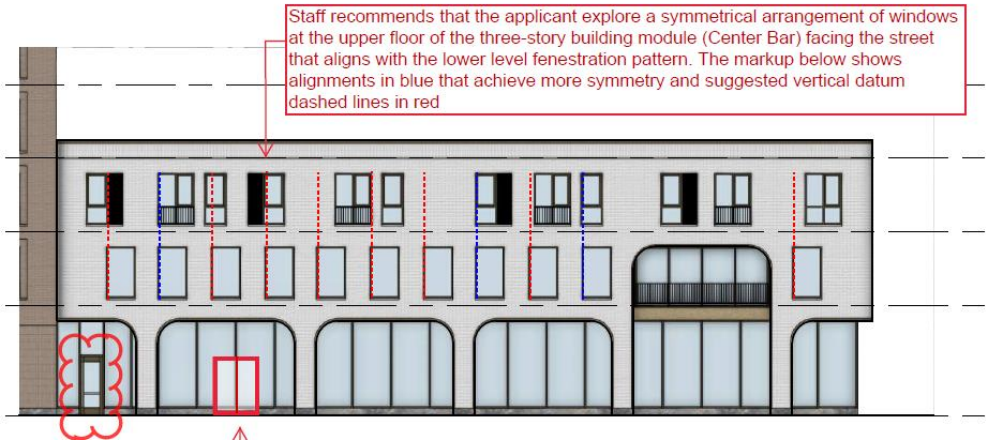


Figure 2: Staff diagram for fenestration pattern

5. Building character, detail, scale and graphic qualities

Building design will include various architectural and graphic amenities to provide a strong presence along a street and relate a building to its community.
Staff comment: Staff finds that the building design creates a variety of architectural detailing though articulated canopies overhead, materiality to express building function and reduce building scale. Staff requests that the applicant submit additional information for Staff review of exterior façade materials and architectural lighting.

6. Signage and Building Entrances

Building entrances and building signage in the B-1, and B-2b zones will be designed and constructed at the pedestrian scale.

Staff comment: Staff finds that the majority of building entrances are designed at the pedestrian scale.

7. Development relationship to street

Building facades and site amenities shall form a cohesive wall of enclosure along a street.

Staff comment: The proposed building deviates from the front property in several location along the street facing façade. However, Staff finds the building setbacks assist to appropriately segment the length of the building to enhance the pedestrian scale. Staff recommends that the applicant consider additional streetscape elements (e.g. outdoor seating, bicycle parking, and bus shelter incorporated or accommodated into the building design) to allow for greater pedestrian activation at the three-story building module.

8. *Parking lots*

Parking lots shall be screened from view of the public way.

Staff comment: The proposed development includes a gated entry to screen parking from view of the public way.

Parking lots shall be screened from neighboring properties.

Staff comment: The proposed development includes covered parking along the south building elevation. Staff requests more information (materials, fence protection for walls above 30" height) for the proposed retaining wall by others to function as screening for abutting properties.

Crosswalks shall be provided within parking lots and across entrance driveways, directing pedestrians to building entrances.

Staff comment: The applicant is proposing a small parking area with 11 spaces, including access to an internal sidewalk, which Staff finds appropriate for the size and scale of the project.

Street trees shall be planted along property frontage 25 feet on center.

Staff comment: The applicant is required to meet street tree site plan standards. Staff suggests the addition of trees within a planter at the location shown in Figure 3 as a streetscape amenity along the property frontage.

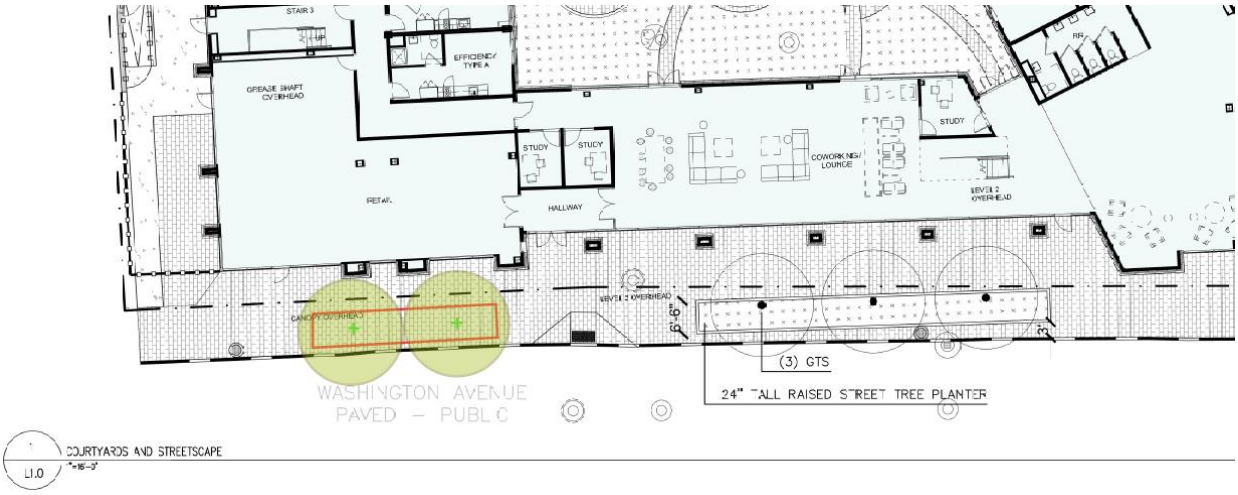


Figure 3: Staff diagram for suggested street tree locations

9. *Transit connections*

Development proposed along established transit corridors must design uninterrupted access from the proposed development to the transit stop.

Staff comment: The proposed development is located on an establish transit corridor. Staff are coordinating with Metro to determine the viability of adding a transit shelter at this location.

(*i*) *MULTIPLE-FAMILY STANDARDS*

Multiple-family shall meet the following standards:

a. Proposed structures and related site improvements shall meet the following standards:

1. *The exterior design of the proposed structure, shall be designed to complement and enhance the nearest residential neighborhood.*

Staff comment: Staff finds that the exterior design of the proposed buildings provides positive visual interest through architectural elements such as articulation of façade materials, arrangement of windows to indicate proposed uses, recessed building elements to enhance pedestrian scale.

2. *The proposed development shall respect the existing relationship of buildings to public streets.*

Staff comment: Staff finds that the proposed building location contributes to a continuation of a street wall along Washington Avenue and includes an extension of the brick sidewalk into the private property for greater accessibility from the public sidewalk.

3. *Open space on the site for all multiple-family development shall be integrated into the development site.*

   Staff comment: Staff finds that the proposed development includes a variety of open space through private balconies at residential units facing the street, shared courtyards at the interior of the building and a roof-level terrace above the three-story building module for active use and gathering. Staff recommends that the applicant identify pathways at the south courtyard and a vertical screening element (e.g. low retaining wall or screening fence with gate access at the drive aisle). In addition, Staff requests that the applicant indicate how the proposed tree canopy will overhead protection and privacy for the users of the internal courtyards. An alternative to a vegetated canopy would be a trellis to create a more passive open space use for residents.

4. *The design of proposed dwellings shall provide ample windows to enhance opportunities for sunlight and air in each dwelling in principal living areas and shall also provide sufficient storage areas.*

   Staff comment: Staff finds that the proposed building includes ample windows throughout each residential unit that either face the street, abutting properties or interior courtyards. Staff requests that the Applicant respond with how sufficient storage areas will be provided.

5. *The scale and surface area of parking and driveways and paved areas are arranged and landscape to properly screen vehicles from adjacent properties and streets.*

   Staff comment: Staff observes that the parking spaces are covered and requests additional information for the proposed retaining wall by others to appropriately screen the abutting properties.

Att. A

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

November 20, 2024

Subject: Major Site Plan Application
165 Washington Avenue, Portland, ME

Mr. Grooms:

On behalf of Redfern Properties, we are pleased to submit a Major Site Plan Application for the proposed redevelopment at 165 Washington Avenue, in Portland Maine (Chart 10, Map D, Lot 1) currently within the Neighborhood Business (B2b) Zoning District. The project proposes to redevelop the vacant lot and construct a new 7 floor multi-family apartment building with 326 dwelling units and a ground floor commercial space. The project will include additional internal residential amenity areas, two exterior courtyard amenity spaces, structured parking below the building, and various infrastructure upgrades.

We are pleased to submit an application which will increase the available housing stock consistent with the City's Comprehensive Plan, provide onsite affordable housing, implement stormwater treatment, improved sanitary sewer main capacity, drop existing overhead wires underground, improve the Washington Avenue streetscape, sidewalk reconstruction, street tree plantings and provide community space along the Washington Avenue corridor.

The project is subject to a Major Site Plan Development approval, along with the City's delegated review authority of a Maine DEP Stormwater Law and Maine DOT Traffic Movement Permit 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.

The following documents and drawings will be uploaded onto the City's electronic submission site per the procedure outlined in the application:

Documents:

- Section A: Cover Letter
- Section B: Major Site Plan Checklist
- Section C: Zoning Assessment
- Section D: Right, Title, Interest
- Section E: Easements
- Section F: Waiver Table
- Section G: Financial Capacity
- Section H Technical Capacity
- Section I: Conformity with Land Use Ordinance
- Section J: Stormwater Management Report
- Section K: Erosion & Sedimentation Control Report
- Section L: Fire Department Letter
- Section M: Wastewater Capacity Letter
- Section N: Lighting
- Section O: Architectural Design Narrative
- Section P: Utility Cover
- Section Q: Construction Management Plan
- Section R: Solid Waste
- Section S: Parking Analysis
- Section T: Traffic
    - Traffic Movement Permit Application
    - Transportation Demand Management Plan

Drawings:

- Civil Site Plan Set dated 11/20/2024.
    - Ferguson R-Tank System Designs
- Architectural Plan Set
- Landscape Plans

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

Att. C

ZONING ANALYSIS Relevant Zone(s) B2B - Community Business

All Projects:

	Required	Proposed
Lot Size	N/A	63,375 SF
Area Per Dwelling Unit	N/A	200.53 SF
Minimum Street Frontage	-	343 FT
Front Yard Minimum	0'	1.62 FT
Front Yard Maximum	10'	9.77 FT
Rear Yard	None	13.86 FT
Yard Right	None	27.17 FT
Yard Left	None	15.17 FT
Side Street Setback	N/A	N/A
Step Back	N/A	N/A
Maximum Lot Coverage	N/A	56.46%
Minimum Lot Coverage	N/A	56.46%
Maximum Height	75'	67.85 FT
Open Space	N/A	35.96%
Maximum Impervious Area	None	64.04%
Pavement Setback	N/A	N/A
Floor Area Ratio	N/A	N/A
Off Street Parking Spaces	None	11
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):			

AVERAGE GRADE: 70.65'
TOP OF BUILDING: 138.50'
BUILDING HEIGHT: 67.85'

90.49' 90.59' 90.45' 90.32' 90.19' 90.06' 90.39' 90.19' 90.19'
90.06' 90.06' 90.37' 90.69' 90.96' 90.97' 90.98'
93.50' 89.50' 84.50' 80.50' 76.50' 73.75' 73.10' 65.73' 65.71' 65.62' 63.96' 63.98' 63.91' 63.76' 63.61' 63.46' 63.46' 63.46' 63.46' 63.46' 63.46' 63.40'
64.22' 64.14' 64.05' 63.97' 63.88' 63.80' 63.71' 63.63' 63.54' 63.46'
90.20' 88.00' 86.00' 81.95' 65.71' 66.00' 66.15' 66.05' 65.55' 65.05' 65.10' 65.20' 65.30' 65.40' 65.50'
64.31' 64.31' 64.15' 64.39' 64.64' 64.76' 64.88' 65.06' 65.18'
66.44' 66.34' 66.24' 66.14' 66.04' 65.94' 65.84' 65.74' 65.64' 65.70' 65.60'
65.29' 65.41' 65.53' 65.64' 65.76' 65.88'
65.71' 65.71' 65.81' 66.01' 66.08' 66.16' 66.22' 66.12' 66.02' 65.92' 65.82' 65.75' 65.66' 65.51' 65.56' 65.71' 65.81' 65.68' 65.45' 65.86'

BIKE LANE

SITE PLAN
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY DATE
SITE PLAN	PFH 11/20/24

DRAWING NAME: AVERAGE GRADE EXHIBIT

PROJECT NAME: TAVATA – 165 WASHINGTON AVENUE
PORTLAND, MAINE, 04101

CLIENT: REDFERN PROPERTIES
P.O.BOX 8816, PORTLAND, MAINE 04104

ACORN ENGINEERING, INC
PO BOX 3372
PORTLAND, MAINE 04104
(207) 775–2655

FILE:	1202_CIVIL
JN:	1202
SCALE:	AS NOTED
DESIGN BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

DRAWING NO.
EX-1

Spot Grades			Average Grade
93.50	65.64	66.15	70.65
89.50	65.76	66.00	
84.50	65.88	65.71	
80.50	65.53	81.95	
76.50	65.86	86.00	
73.75	65.45	88.00	
65.73	65.68	90.20	
73.10	65.81	90.39	
65.71	65.71	90.49	
65.62	65.56	90.59	
63.96	65.51	90.45	
63.98	65.66	90.32	
63.91	65.75	90.19	
63.76	64.82	90.06	
63.61	65.92	90.19	
63.46	66.02	90.19	
63.46	66.12	90.06	
63.46	66.22	90.06	
63.46	66.16	90.37	
63.46	66.08	90.69	
63.46	66.01	90.96	
63.40	65.81	90.97	
64.22	65.71	90.98	
64.14	65.71		
64.05	66.44		
63.97	66.34		
63.88	66.24		
63.80	66.14		
63.71	66.04		
63.63	65.94		
63.54	65.85		
63.46	65.74		
64.31	65.64		
64.31	65.70		
64.15	65.60		
64.39	65.50		
64.64	65.40		
64.76	65.30		
64.88	65.20		
65.06	65.10		
65.18	65.05		
65.29	65.55		
65.41	66.05		

PURCHASE AND SALE AGREEMENT

165 WASHINGTON AVENUE, PORTLAND, MAINE

THIS PURCHASE AND SALE AGREEMENT ("Contract" or "Agreement"), made and entered into as of this ~~31st day of May~~ 1st day of June, 2023 (the "Effective Date"), is by and between **RAYMOND H. WATERHOUSE and ALINA WATERHOUSE,** individuals having an address at 105 Partridge Circle, Portland, Maine 04102 (hereinafter collectively referred to as "Seller"), and **REDFERN PROPERTIES LLC,** a Maine limited liability company having an address at P.O. Box 8816, Portland, Maine 04104, or its assigns (hereinafter referred to as "Buyer").

W I T N E S S E T H

WHEREAS, Seller is the record owner of fee simple title to certain real property situated in Portland, Cumberland County, Maine known as 165 Washington Avenue, Portland, Maine, together with certain improvements constructed thereon including a commercial building, and related amenities, facilities, improvements, and appurtenances thereto; and

WHEREAS, the Seller wishes to sell and convey said real property and improvements to Buyer and Buyer wishes to purchase the same from Seller.

NOW THEREFORE, for and in consideration of the foregoing, the sums of money to be paid hereunder, the mutual covenants herein contained, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto covenant, stipulate and agree as follows:

1. Description of Property to be Conveyed. The property which is to be sold and conveyed by Seller and purchased and accepted by Buyer pursuant to this Contract shall consist of the following:

(a) That certain parcel of land lying and being in Portland, Maine, being the property comprised of a 1.53 +/- acre lot identified by the Portland Assessor as Map 10, Block D, Lot 1 and Map 12, Block F, Lot 2, and described in that certain deed to Seller dated September 14, 2007, and recorded in the Cumberland County Registry of Deeds at Book 25470, Page 272, but excepting premises conveyed to Redfern Munjoy, LLC, by deed recorded in Book 31302, Page 177 of said Registry, and being more particularly described in Exhibit A attached hereto and made a part hereof, including all, rights, privileges, easements, hereditaments and appurtenances thereto, and all right, title and interest of Seller in and to the land lying in the bed of any public street, road or avenue in front of or adjoining said property (hereinafter collectively referred to as the "Land");

(b) All buildings, structures, facilities, fixtures, installations and improvements of every kind and description located in, on, over and under the Land, together with the appurtenances thereto including, without limitation, paved parking areas and various drainage and utility structures and improvements (collectively, the "Improvements"); and

(c) All of Seller's right, title and interest, if any, in and to the following (to the extent assignable and to the extent in the Seller's possession or control) and without warranty or representation: (i) all assignable warranties or guaranties given or made in respect of the Improvements; and (ii) all transferable consents, authorizations, variances or waivers, licenses, permits and approvals from any governmental or quasi-governmental agency, department, board, commission, bureau or other entity or instrumentality solely in respect of the Land or the Improvements (collectively, the "Personal Property").

The Land and Improvements are sometimes referred to herein collectively as the "Real Property." The Real Property and the Personal Property are referred to herein collectively as the "Subject Property".

2. Agreement to Sell and Purchase. Seller hereby agrees to sell and convey the Subject Property to Buyer, upon the terms and subject to the conditions set forth in this Contract. Buyer hereby agrees to purchase and accept the Subject Property from Seller, upon the terms and subject to the conditions set forth in this Contract.

3. Earnest Money Deposit. Within three (3) business days after the Effective Date, Buyer shall deposit the sum of [redacted] as the earnest money deposit (which amount shall hereinafter be referred to as the "Initial Earnest Money Deposit") hereunder with The Boulos Company, whose address is One Canal Plaza, Suite 500, Portland, Maine 04101 (hereinafter referred to as the "Escrow Agent"). So much of the Initial Earnest Money Deposit and the Additional Earnest Money Deposit (as hereinafter defined) as may have from time to time been deposited with Escrow Agent hereunder, and any interest earned thereon, are collectively referred to as the "Deposit". Upon Buyer's written request, and subject to the receipt by Escrow Agent of a completed and executed IRS Form W-9 and any other forms or information reasonably requested by the Escrow Agent, the Deposit will be placed in an interest-bearing account. Any interest accrued or accruing on the Deposit shall be and become part of the Deposit. Escrow Agent shall not be responsible for the amount of interest earned on, or charges on, the Deposit. By its counter-execution of this Agreement, Escrow Agent hereby agrees to hold the Deposit in escrow, subject to disbursement in accordance with the terms and provisions of this Contract. In the event Buyer does not elect to timely terminate this Contract pursuant to the express terms herein, the Deposit shall become non-refundable and shall not be returnable to the Buyer under any circumstances except in the event Seller is not able to provide title to the Subject Property as provided in this Contract, or otherwise defaults hereunder, but such Deposit shall, however, be credited to and considered as payment of part of the total Purchase Price (as defined below) at the time of closing hereunder.

Escrow Agent, may, at its option, require the receipt, release and authorization in writing of all parties before releasing the Deposit or delivering or redelivering documents or property to any party or to third parties. In the event a controversy arises over the Deposit, Escrow Agent, at its sole discretion, may tender the funds into court for settlement, after deducting its attorney's fees, court costs, and escrow fees, if any, which have accrued, including any attorney's fees and court costs relating to the tender into court. Seller and Buyer indemnify and hold harmless Escrow Agent and its agents and representatives from all loss or damage they

may sustain in connection with Escrow Agent's performance of these instructions and do hereby jointly and severally release and waive any claims they may have against Escrow Agent, other than any claims a party may have due to the gross negligence, malfeasance or misconduct of Escrow Agent in the performance of its duties hereunder.

4. Purchase Price and Method of Payment. Subject to credits, adjustments and prorations for which provisions are hereinafter expressly made, the total purchase price to be paid by Buyer to Seller for the Subject Property (the "Purchase Price") shall be [redacted] The Purchase Price shall be paid by Buyer to Seller in the manner and at the times as follows:

(i) The Deposit, to the extent paid by Buyer to Escrow Agent hereunder, shall be credited to Seller and considered as payment of part of the Purchase Price for the Subject Property at the time and upon consummation of the closing of the sale and purchase transaction contemplated in this Contract.

(ii) The balance of the Purchase Price shall be paid to Seller by Buyer by wire transfer or other immediately available funds acceptable to Seller, at the time of closing hereunder, subject to credits, adjustments and prorations as expressly provided herein.

5. Title and Survey.

(a) Title Commitment. Buyer shall obtain from a nationally recognized title company (sometimes referred to herein as the "Title Company") a commitment for owner's title insurance for the Real Property (the "Title Commitment"). Within five (5) days after the Effective Date, Seller shall deliver to Buyer copies of surveys of the Land that Seller may have in its possession or control (collectively, the "Existing Survey"). Buyer may order an update of the Existing Survey, or if no Existing Survey exists, a new survey of the Land; provided, however, Buyer must notify Seller of any material objections to the update of the Existing Survey or the new survey prior to the expiration of the Due Diligence Termination Date (as defined below), otherwise Buyer shall be deemed to have waived any right to object to same and any such inconsistencies shall constitute Permitted Exceptions (as defined below).

(b) Buyer's Review of Title Matters. Buyer shall have until the Due Diligence Termination Date to notify Seller in writing of any objection which Buyer may have to any matters reported or shown in the Title Commitment or the exception documents ("Buyer's Objection Letter"). Any matters reported in or shown by the Title Commitment and not timely objected to by Buyer as provided above shall be deemed to be "Permitted Exceptions". On or before the fifth (5th) business day following receipt of Buyer's Objection Letter, Seller shall elect, by delivering written notice of such election to Buyer and Escrow Agent ("Seller's Response") whether or not to cause the Title Company to remove any matters objected to in Buyer's Objection Letter. If Seller fails to deliver Seller's Response within the time frame set forth above, it shall be deemed to be an election by Seller not to cause Title Company to so remove such objections. Notwithstanding the foregoing, Seller shall be obligated to cure and remove without need for a Buyer's Objection Letter all of the following

title exceptions or encumbrances, if any: (i) the liens of any mortgage; (ii) tax liens for delinquent ad valorem real estate taxes; (iii) mechanics liens, judgment liens or other monetary liens; and (iv) broker's liens ("Seller's Mandatory Cure Items"). Seller shall have until Closing to cure and remove any Seller Mandatory Cure Items. If either (a) Seller elects to cause the Title Company to so remove and, at least one (1) day prior to the Closing (the "Cure Deadline"), Seller is unable to remove any exceptions or matters objected to by Buyer; or (b) Seller elects not to cause Title Company to so remove, then Buyer must elect, by delivering written notice of such election to Seller and Escrow Agent on or before (i) the fifth (5^{th}) business day following Buyer's receipt of Seller's Response, or (ii) if no Seller's Response is received by Buyer, the fifth (5^{th}) business day following the date on which Seller shall have been deemed to have responded, as provided above, or (iii) in the event Seller elects to cause the Title Company to so remove and, prior to the Cure Deadline, Seller is unable to remove any exceptions or matters objected to by Buyer, on or before the Cure Deadline, to: (A) terminate this Agreement (in which case Escrow Agent shall return the Deposit to Buyer, and neither party shall thereafter have any rights or obligations to the others hereunder, other than pursuant to any provision hereof which expressly survives the termination of this Agreement); or (B) proceed to a timely Closing without liability to Seller whereupon such objected to exceptions or matters shall be deemed to be Permitted Exceptions. Seller shall be responsible for removing any exceptions or deficiencies to title which first arise between the date upon which Permitted Exceptions are established ("Permitted Exception Date") and Closing unless created by or with the consent of Buyer.

6. Buyer's Due Diligence.

(a) Seller Deliverables. Seller shall deliver to Buyer within five (5) days of the Effective Date the following, if any (the "Property Documents"): Seller's existing survey(s) and/or title reports with respect to the Subject Property; copies of service contracts or management agreements, any environmental reports (including Phase I or Phase II reports) in Seller's possession or control; floor plans and building specifications, insurance information (including a current certificate of insurance regarding property, casualty and general liability insurance for the Subject Property) and property tax statements for the previous two (2) years; copies of certificate(s) of occupancy and any property condition reports.

Buyer agrees to return the foregoing and all such other documents to Seller, without retaining copies, in the event the closing hereunder does not occur.

(b) Inspection Rights. At all reasonable times from and after the Effective Date, Buyer, its agents and representatives shall be entitled at Buyer's sole cost and expense to make investigations with respect to the compliance of the Real Property and the Improvements with all applicable laws, ordinances, rules and regulations; to review any documents or information Buyer has or may receive with respect to the Subject Property; to review any contracts and agreements affecting the Subject Property; to enter onto the Real Property during normal business hours to conduct such inspections and investigations of the condition of the Property as Buyer deems relevant with respect to the operating systems, structural components, and site conditions of the Real Property and Improvements, and perform Phase I and if necessary, Phase II environmental studies, which may include without limitation drilling and borings and the taking of soil samples. Buyer shall at its own expense restore the Real Property

to as close as reasonably possible to its present condition. All such inspections shall be done by qualified inspectors chosen and paid for by Buyer. Seller agrees to reasonably cooperate with Buyer in connection with Buyer's investigations, and shall grant Buyer access to the Real Property at reasonable times upon reasonable prior notice. Buyer shall indemnify, protect, defend and hold harmless Seller from all claims (including, without limitation, any claim for a mechanic's lien or materialman's lien), causes of action, costs, losses, damages and reasonable attorney's fees incurred by Seller in connection with or arising out of any inspections or investigations carried on, by or on behalf of Buyer pursuant to this Section. The foregoing indemnity shall not apply to any claims (including, without limitation, claims that the Real Property has declined in value) or liabilities to the extent the same arise out of or are incurred in connection with (i) the negligence or willful misconduct of the Seller or their agents, consultants or contractors; (ii) the discovery by Buyer or its agents, consultants or contractors of any or pre-existing conditions on the Real Property; (iii) the release (other than by Buyer, its agents, consultants, employees, contractors or representatives) or discovery by Buyer or presence of any pollutants, hazardous waste, hazardous substance or material located on or about the Real Property, except to the extent that Buyer or its agents, consultants, employees, contractors or representatives have exacerbated such condition; (iv) the results, findings, tests or analyses of Buyer's environmental or other physical investigation of the Real Property; or (v) any disclosure or notification made or given by Buyer or any its agents, consultants or contractors to any governmental agency or other party that is required by law based upon the results, findings, tests or analyses of Buyer's environmental or other physical investigation of the Real Property. The provisions of this Section shall survive the Closing or the earlier termination of this Agreement.

(c) Buyer's Termination Right. Buyer shall have the right at any time on or before ninety (90) days after the Effective Date (the "Due Diligence Termination Date") to terminate this Contract if Buyer determines for any reason that the Property Documents or all or any portion of the Subject Property is not acceptable to Buyer in its sole and absolute discretion. Notwithstanding the foregoing, if Buyer's environmental consultant determines that a Phase II report is warranted, the Due Diligence Termination Date shall be extended for up to an additional period of ninety (90) days provided Buyer gives Seller written notice of its intent to so extend prior to the initial Due Diligence Termination Date, and provided Buyer confirms that it has waived all other due diligence conditions, including title review (subject to any Buyer's Objection Letter that may have been sent). If Buyer exercises its right to extend the Due Diligence Termination Date, said extension shall last until the earlier of (i) five (5) business days after Buyer has received the final results of its Phase II testing; and (ii) ninety (90) days after the original Due Diligence Termination Date. If Buyer delivers a written notice to Seller and Escrow Agent exercising its termination right hereunder ("Buyer's Termination Notice") on or before the Due Diligence Termination Date (as it may be extended), then (a) Escrow Agent shall return the Deposit to Buyer; (b) this Contract shall automatically terminate and be of no further force or effect and neither party shall have any further rights or obligations hereunder, other than pursuant to any provision hereof which expressly survive the termination of this Contract; and (c) Buyer shall, upon Seller's request, deliver to Seller copies of all surveys, environmental and other reports undertaken by Buyer with respect to the Subject Property without any representation or warranty of any kind or nature whatsoever, express or implied, about the accuracy, reliability or usefulness of any information contained therein. If Buyer fails to deliver to Seller and Escrow Agent Buyer's Termination Notice on or before the Due Diligence Termination Date, Buyer shall be deemed to have waived its right to terminate this Contract

pursuant to this Section, and [redacted] of the Deposit shall become non-refundable to Buyer (but applicable to the Purchase Price), except in the event of Seller default or inability or refusal to convey title as provided in this Contract.

7. Approval Contingency. This Contract is contingent upon Buyer obtaining all permits and approvals from the City of Portland (the "City") for its proposed use and occupancy of the Subject Property acceptable to Buyer in its sole and absolute discretion (the "Approvals"). An Approval shall not be deemed to have been "obtained" until it has become final and non-appealable, and any periods for challenge to the same (or any conditions to its final effectiveness) shall have expired. Buyer shall use its best efforts to obtain the Approvals as expeditiously as reasonably possible. Seller shall reasonably cooperate with Buyer in connection with Buyer obtaining the Approvals and agrees to execute and deliver all documents reasonably requested by Buyer, at no cost or liability to Seller. Buyer shall have sixty (60) days from the expiration of the Due Diligence Termination Date (the "Approval Date") to obtain the Approvals. If Buyer has not received its Approvals by the Approval Date, then Buyer shall have the right to extend the Approval Date for up to six (6) additional sixty (60) day periods (each, an "Approval Extension Period"), by giving notice to Seller on or before the Approval Date, as it may be extended, on the follow terms and conditions:

(i) If Buyer exercises the first Approval Extension Period, an additional [redacted] of the Deposit (for a total of [redacted]) shall become non-refundable to Buyer (but applicable to the Purchase Price), except in the event of Seller default or inability or refusal to convey title as provided in this Contract;

(ii) If Buyer exercises the second Approval Extension Period, an additional [redacted] Dollars of the Deposit (for a total of [redacted]) shall become non-refundable to Buyer (but applicable to the Purchase Price), except in the event of Seller default or inability or refusal to convey title as provided in this Contract;

(iii) If Buyer exercises the third Approval Extension Period, an additional [redacted] Dollars of the Deposit (for a total of [redacted]) shall become non-refundable to Buyer (but applicable to the Purchase Price), except in the event of Seller default or inability or refusal to convey title as provided in this Contract;

(iv) If Buyer exercises the fourth Approval Extension Period, an additional [redacted] Dollars of the Deposit (for a total of [redacted] shall become non-refundable to Buyer (but applicable to the Purchase Price), except in the event of Seller default or inability or refusal to convey title as provided in this Contract;

(v) If Buyer exercises the fifth Approval Extension Period, Buyer shall deposit with the Escrow Agent an additional [redacted] Dollar deposit (the "Additional Earnest Money Deposit"), and the Deposit (for a total of [redacted]) shall become non-refundable to Buyer (but applicable to the Purchase

Price), except in the event of Seller default or inability or refusal to convey title as provided in this Contract;

(vi) If Buyer exercises the sixth Approval Extension Period, Buyer shall deposit with the Escrow Agent an additional [redacted] Dollar Additional Earnest Money Deposit, and the Deposit (for a total of [redacted] shall become non-refundable to Buyer (but applicable to the Purchase Price), except in the event of Seller default or inability or refusal to convey title as provided in this Contract.

Such portion of the Deposit that is non-refundable as set forth in Section 6(c) above [redacted] and in subparagraphs 7(i) through (vi) above is hereinafter referred to as the "Non-refundable Deposit". At Seller's request, which may be made at any time and from time to time, Escrow Agent shall release the Non-refundable Deposit available as of the date of Seller's request(s) to Seller to, among other things, pay carrying costs of the Real Property, such as taxes, insurance, utilities etc., provided that Seller at the time they first request a release of the Non-refundable Deposit delivers to Buyer a comfort letter or account statement from a financial institution or investment management firm reflecting that Seller maintains accounts with such financial institution or investment management firm in an amount sufficient to fund Seller's obligation to return to Buyer the Non-refundable Deposit (or so much as has been released to Seller from time to time) pursuant to the terms of this Contract. Buyer hereby authorizes Escrow Agent to release the Non-refundable Deposit to Seller from time to time provided such comfort letter or account statement has been received by Buyer.

The Additional Earnest Money Deposit shall be considered part of the Deposit for all purposes of this Contract. If Buyer does not receive the Approvals on or prior to the Approval Date, as it may be extended, or if Buyer at any time prior to the Approval Date, as it may be extended, determines in its sole and absolute discretion that the Approvals will not be suitable or satisfactory for Buyer's proposed use and occupancy of the Subject Property, then Buyer may terminate this Contract by delivering written notice to Seller and Escrow Agent ("Buyer's Approval Termination Notice") exercising its termination right hereunder on or before the Approval Date, as it may be extended, whereupon (a) Escrow Agent shall return so much of the Deposit that is refundable at that time, if any, to Buyer; (b) release so much of the Deposit that is non-refundable at that time, if any, to Seller; and (c) this Contract shall automatically terminate and be of no further force or effect and neither party shall have any further rights or obligations hereunder, other than pursuant to any provision hereof which expressly survive the termination of this Contract. If Buyer fails to deliver to Seller and Escrow Agent Buyer's Approval Termination Notice on or before the Approval Date, as it may be extended, Buyer shall be deemed to have waived its right to terminate this Contract pursuant to this Section.

8. Conveyance of Subject Property and Personal Property; Delivery Free of Tenants and Occupants. At the time of Closing hereunder, Seller shall convey its fee simple interest and estate in and title to the Subject Property by Quitclaim with Covenant Deed, free and clear of any and all liens, security interests, exceptions or encumbrances arising by or though Seller, other than Permitted Exceptions. Seller shall pay for personal property taxes through the Closing Date (as hereinafter defined). Seller agrees to terminate the tenancy and/or occupancy of the any current tenants or occupants of the Subject Property, and to deliver the Subject Property free and

clear of all personal property, inventory, equipment, free-standing shelving, tenants and occupants. If Seller is unable to provide the Subject Property to Buyer free and clear of personal property, inventory, equipment, free-standing shelving, tenants and occupants, by the Closing Date then Seller shall be deemed in default of this Contract and Buyer shall have the right to terminate this Contract whereupon notwithstanding anything in this Contract to the contrary (a) Escrow Agent shall return the entire Deposit to Buyer; and (b) this Contract shall automatically terminate and be of no further force or effect and neither party shall have any further rights or obligations hereunder, other than pursuant to any provision hereof which expressly survive the termination of this Contract.

9. Closing. The sale and purchase transaction contemplated in this Contract shall be closed, and the Purchase Price paid, on the date that is forty-five (45_days after the Approval Date (as it may be extended) (the "Closing Date"). Purchaser shall notify Seller in writing when all Approvals have been obtained. The following documents and items shall be delivered by Seller and Purchaser at Closing, as applicable:

(a) A Quitclaim Deed with Covenant from Seller in form reasonably acceptable to Seller and Buyer, together with applicable conveyance tax forms.

(b) An Owner's Affidavit executed by Seller in the form provided by the Title Company, provided such requested Affidavit does not expand the liability or representations of Seller hereunder beyond the terms of this Contract.

(c) An Affidavit stating that Seller is a Maine resident, or in the alternative, a Certificate of Exemption, Certificate of Reduction or REW-1 filing form.

(d) An Affidavit of Seller stating that Seller is not a "foreign person" as defined in Section 1445(B)(2) of the Internal Revenue Code of 1986, as amended.

(e) All transferable licenses, permits, certificates, approvals, authorizations, variances and consents held by Seller and issued by governmental and quasi-governmental bodies, officers and authorities in respect to the ownership, occupancy, use and operation of the Subject Property in the possession or control of Seller.

(f) Reserved.

(g) Keys.

(h) Appropriate evidence of authorization reasonably satisfactory to the Title Company regarding the consummation of the transaction contemplated by this Contract.

Seller shall pay the following closing costs (a) any and all costs incurred by Seller in performing its obligations under this Contract, and (b) the cost of recording the discharge of any existing mortgage on the Subject Property and any other documents required to be recorded or filed in order to transfer title as provided herein. Buyer shall pay the following closing costs (a) title search and examination charges, and the premium for the Commitment and Lender's and/or Owner's Title Insurance Policy, if any, to be issued pursuant thereto; (b) the cost of the update to the Survey or a new survey, if any; (c) the cost of the brokerage commission payable to The

Boulos Company, (d) the cost of any inspections or investigations of the Subject Property, (e) the cost of recording the Deed and any mortgages or other recorded documents relating to its purchase of the Subject Property, and (f) all costs associated with Buyer's financing of its acquisition, if applicable, it being understood and agreed that obtaining financing is not a condition to Purchaser's obligations hereunder. Seller and Buyer will each pay one-half of the transfer tax payable with respect to the Purchase Price. Each of the respective parties shall bear its own attorneys' fees.

10. Possession and Risk of Loss. Without limiting the provisions of Section 8 of this Contract, possession of the Subject Property shall be delivered by Seller to Buyer at the time of closing hereunder, free and clear of all tenants and occupants. Risk of Loss shall be on Seller until transfer of Property.

11. Prorations. Prorations shall be made as of the Closing Date as if Buyer were in title for the entire Closing Date. The following shall be prorated and adjusted between Seller and Buyer:

(a) Utilities and Operating Expenses. Water, electricity, sewer, gas, telephone and other utility charges based, to the extent practicable, on final meter readings and final invoices.

(b) Assessments. All assessments, general or special, assessed as of the date hereof shall be prorated as of the Closing Date, with Seller being responsible for any installments of assessments that are due and payable prior to the Closing Date and Buyer being responsible for any installments of assessments that are due and payable on or after the Closing Date. All such assessments assessed after the date hereof shall be the sole responsibility of Buyer.

(c) Taxes. All ad valorem real estate and personal property taxes with respect to the Real Property and the Improvements shall be prorated as of the Closing Date, based on the most currently available final tax bill and on a cash basis for the tax year in which the Closing occurs, regardless of the year for which such taxes are assessed.

(d) Other. Such other items as are customarily prorated in transactions of this nature in the county in which the Project is located shall be ratably prorated.

12. Representations, Warranties and Covenants of Seller.

12.1 Seller hereby makes the following representations and warranties to Buyer:

(a) Seller's execution and delivery and performance of this Contract by the undersigned and the performance of its obligations hereunder, including the closing of the sale and purchase transaction contemplated herein on the terms set forth herein, have been duly authorized and directed by Seller and no further consents or approvals are or shall be required as a condition precedent to the consummation and closing of the sale and purchase transaction contemplated herein except as expressly set forth in this

Contract. Seller has taken all necessary action to authorize the execution, delivery and performance of this Contract and upon the execution and delivery of any document to be delivered by Seller on or prior to the Closing, this Contract and such document shall constitute the valid and binding obligation and agreement of Seller, enforceable against Seller in accordance with its terms.

(b) The performance by the Seller of the terms, covenants and conditions contained herein will not conflict with, constitute an event of default under, any agreement or other instrument to which Seller is a party or by which its properties or assets are bound.

(c) Seller is not a party to any leases, agreements, contracts or licenses affecting the Real Property or any use of the Real Property that would not be terminable at will by Buyer without penalty from and after the Closing.

(d) Seller has not received any written notice from any governmental authority that the Real Property, or the present condition, operation or use thereof, violates any applicable laws, rules, regulations, restrictions, covenants, agreements, site plan approvals, zoning or subdivision regulations or any duly issued variances and Seller has no other actual knowledge of any such violation(s).

(e) Seller has received no written notice that there is any pending judicial, municipal or administrative proceedings affecting the Real Property or in which Seller is a party by reason of Seller's ownership of the Real Property or any portion thereof, including, without limitation, proceedings for or involving collections, condemnations, eminent domain, alleged building code, zoning or environmental violations, or personal injuries or property damage alleged to have occurred on the Real Property or by reason of the condition or use of the Real Property and Seller has no other actual knowledge of any such proceedings.

(f) Seller represents that, after the execution of this Contract and until such time as Closing occurs or the Contract expires without performance, it shall not enter into any leases, encumbrances or other arrangements pertaining to the Real Property which shall not be removed or terminated not later than the Closing.

(g) To the best of Seller's knowledge, the Real Property does not contain and has not contained, any Hazardous Substances, other than in amounts that do not violate any applicable law or regulation. "Hazardous Substances" means and refers to any "hazardous substance" as now or hereafter defined in §101(14) of CERCLA or any regulations promulgated under CERCLA; (ii) any "hazardous waste" as now or hereafter defined in the RCRA or regulations promulgated under RCRA; (iii) any substance regulated by the Toxic Substances Control Act (15 U.S.C. §2601 et seq.); (iv) gasoline, diesel fuel, or other petroleum hydrocarbons; (v) asbestos and asbestos containing materials, in any form, whether friable or non-friable; (vi) polychlorinated biphenyls; (vii) radon gas; (viii) lead paint; (ix) any additional substances or materials which are

now or hereafter classified or considered to be hazardous or toxic under local, state or federal environmental laws.

(h) Seller is the sole owner of good, fee simple, marketable and insurable title to all of the Real Property.

(i) There are no options to purchase or rights of first refusal with respect to all or any part of the Real Property and Seller has entered into no contracts for the sale, pledge, hypothecation, assignment, lease or other transfer of all or any part of the Real Property, other than the existing lease to Northern Burner Supply Co., Inc. or its successor tenant, which will be terminated prior to Closing.

(j) Seller has paid, or will pay at or prior to Closing, all taxes (including all real estate, personal property, sales and use taxes), assessments, charges, fees, levies and impositions associated with the Real Property, coming due prior to the Closing Date for periods prior to the Closing Date. Seller knows of no actual or pending imposition of any assessments for public improvements and, to the best of Seller's knowledge, no such improvements have been constructed or planned that would be paid for by means of assessments upon the Real Property.

(k) Seller has received no notice of any claims, demands, suits, or actions arising out of or relating in any way to any water damage, water intrusion, mold growth or mold infestation occurring in, on or about the Real Property.

Seller shall indemnify, defend and hold Buyer and Buyer's members, managers, partners, officers, shareholders, directors and employees harmless from all claims, demands, liabilities, costs or expenses (including, without limitation, reasonable attorneys' fees) arising from or attributable to any breach by Seller of any of its warranties or representations in this Section 12.1 or elsewhere in this Contract, and the representations and warranties set forth herein and this indemnification shall survive the Closing for a period of twelve (12) months.

12.2 Seller covenants and agrees with Buyer as follows:

(a) From the Effective Date until physical possession of the Real Property has been delivered to Buyer, Seller will keep and maintain all of the Real Property in good order and condition, will not permit any waste with respect thereto and shall operate the Real Property in accordance with its current good faith business practices, provided, however, that nothing herein shall require Seller to continue to lease the Real Property to Northern Burner Supply Co., Inc. until Closing.

(b) From the Effective Date until the Closing Date, Seller shall not enter into any new agreements affecting the Subject Property unless such agreements may be terminated not later than the Closing without penalty.

(c) Between the Effective Date and the Closing Date, Seller shall not grant or permit any new encumbrances on or about the Subject Property.

13. Representations and Warranties of Buyer. Buyer represents, covenants and warrants to and agrees with Seller that Buyer has the legal right, power and authority to enter into this Contract and to perform all of its obligations hereunder, and the execution and delivery of this Contract and the performance by Buyer of its obligations hereunder (i) have been duly authorized by all requisite limited liability company action; and (ii) will not conflict with, or result in a breach of, any of the terms, covenants and provisions of the by-laws or articles of organization of Buyer or any law or any regulation, order, judgment, writ, injunction or decree of any court or governmental authority, or any agreement or instrument to which Buyer is a party or by which it is bound. No further consents or approvals are or shall be required as a condition precedent to the consummation and Closing of the sale and purchase transaction contemplated herein except as expressly set forth in this Contract. Buyer has taken all necessary action to authorize the execution, delivery and performance of this Contract and upon the execution and delivery of any document to be delivered by Buyer on or prior to the Closing, this Contract and such document shall constitute the valid and binding obligation and agreement of Buyer, enforceable against Buyer in accordance with its terms.

14. Default

(a) Buyer Default. In the event of any material default on the part of Buyer under this Contract, the Seller shall be entitled, as its sole remedy hereunder, to either (i) retain the Deposit as consideration for its execution of this Contract and in full settlement of, and as liquidated damages for, any and all claims for damages occasioned by Buyer's default, and this Contract shall terminate, expire, cease and become null and void and, thereafter, all parties hereto shall be relieved of any and all further obligations and liabilities to each other under this Contract, other than as to those obligations which specifically survive the termination of this Contract; (ii) enforce specific performance of Buyer's obligations under this Contract.

(b) Seller Default. In the event of any default on the part of Seller under this Contract, the Buyer, as its sole remedy hereunder, may elect any of the following: (i) enforce specific performance of Seller's obligations under this Contract if the nature of Seller's default has not rendered specific performance unavailable, or (ii) if the nature of Seller's default has rendered specific performance unavailable or in Buyer's sole and absolute discretion not desirable or ineffective as a remedy, Buyer shall receive a return of the entire Deposit and Buyer may seek damages; or (iii) waive the breach, or default or other closing condition and proceed to consummate the transaction contemplated hereby without any adjustment of the Purchase Price in accordance with the provisions of this Agreement; or (iv) terminate this Contract, whereupon neither party hereto shall have any further rights or obligations hereunder (except as expressly set forth herein as surviving termination), and the Escrow Agent shall deliver the entire Deposit to Buyer, and Buyer shall recover from Seller all of Buyer's reasonable out-of-pocket expenses incurred to the date of such termination.

15. Litigation and Attorneys' Fees. In the event it shall be necessary for either party to this Contract to bring suit to enforce any provision hereof or for damages on account of any breach of this Contract, then the prevailing party in such suit shall be entitled to recover from the other party its attorney fees and costs in any such litigation and any appeals therefrom.

16. Time of Essence. It is expressly agreed by the parties hereto that time is of the essence of this Contract and in the performance of all conditions, covenants, requirements, obligations and warranties to be performed or satisfied by either party hereto. Waiver of performance or satisfaction of timely performance or satisfaction of any condition, covenant, requirement, obligation or warranty by one party shall not be deemed to be a waiver of the performance or satisfaction of any other condition, covenant, requirement, obligation or warranty unless specifically consented to in writing. Whenever a date specified herein shall fall on a Saturday, Sunday or legal holiday, the date shall be extended to the next business day.

17. Captions and Paragraph Headings. Captions and paragraph headings contained in this Contract are for convenience and reference only and in no way define, describe, extend or limit the scope or content of this Contract nor the intent of any provision hereof.

18. Notices. Any notice or other communication permitted or required to be given hereunder by one party to the other shall be in writing and shall be either (i) hand delivered, (ii) sent by Federal Express or other overnight delivery service, or (iii) sent by email, to the party entitled or required to receive the same at the address specified below or at such other address as may hereafter be designated in writing by any such party, provided that email notice is permitted as an accommodation only and must be followed immediately by other permitted delivery method hereunder.

TO SELLER:

Raymond H. and Alina Waterhouse
105 Partridge Circle
Portland, Maine 04102
Email: lori@northernburner.com

with a copy to:

Jensen, Baird, Gardner & Henry
10 Free Street
Portland, Maine 04101
Attention: Michael Quinlan
Email: mquinlan@jensenbaird.com

TO BUYER:

Redfern Properties, LLC
P.O. Box 8816
Portland, Maine 04104
Email: jonathan@redfernproperties.com

with a copy to:

Murray, Plumb & Murray
75 Pearl Street
Portland, Maine 04101
Attention: Drew A. Anderson
Email: danderson@mpmlaw.com

TO ESCROW AGENT:

The Boulos Company
One Canal Plaza, Suite 500
Portland, Maine 04101
Email: dsigfridson@boulos.com

The respective attorneys for Seller and Buyer are authorized to give notices with the same force and effect as if given by the parties.

19. Governing Law and Binding Effect. This Contract and the interpretation and enforcement of the same shall be governed by and construed in accordance with the laws of the State of Maine and shall be binding upon, inure to the benefit of, and be enforceable by the parties hereto as well as their respective successors, heirs, executors, personal representatives, agents, and assigns.

20. Integrated Contract, Waiver and Modification. This Contract represents the complete and entire understanding and agreement between and among the parties hereto with regard to all matters involved in the purchase and sale transaction contemplated in this Contract and supersedes any and all prior or contemporaneous agreements, whether written or oral. No covenants, agreements, terms, provisions, warranties, statements, representations or undertakings, whether written or oral, made or executed by any party hereto shall be binding on any party hereto, unless specifically set forth or incorporated in this Contract. This Contract may not be modified or amended, nor may any covenant, agreement, condition, requirement, provision, warranty or obligation contained herein be waived, except in writing signed by all parties, or in the event that such modification, amendment or waiver is for the benefit of one or more of the parties hereto and to the detriment of the other or others, then the same must be in writing signed by that party or those parties hereto to whose detriment such modification, amendment or waiver inures.

21. Brokerage. Seller and Buyer hereby acknowledge, represent and warrant to each other that, other than The Boulos Company, who shall be paid by Buyer at Closing pursuant to a separate agreement or agreements, no broker or finder has been employed by either Seller or Buyer in connection with the sale and purchase transaction contemplated in this Contract and that no commission, finder's fee or similar remuneration, by whatever name, is payable by Seller or Buyer or due to any broker or finder in connection with this Contract or the sale and purchase transaction contemplated herein. Seller and Buyer each, respectively, hereby agree to indemnify, defend, save and hold the other harmless from and against the payment of any commissions or fees or claims for commissions or fees as a result of any actions taken or agreements, respectively, made by them with respect to the sale and purchase transaction contemplated in this Contract. The provisions of this Paragraph shall expressly survive any closing or closings hereunder or the termination of this Contract for any reason.

22. Assignment. This Agreement is not assignable by Seller except for the purpose of a like-kind exchange. Buyer shall be entitled to assign its right, title and interest herein to any limited liability company, corporation, partnership or other entity, whether now existing or

hereafter formed, controlled by, controlling or under common control with Buyer (each an "Affiliate"), provided that Redfern Properties, LLC shall remain liable for all obligations of Buyer under this Agreement regardless of any such assignment.

23. Non-Disclosure. Subject at all time to the rights of the parties as set forth in this Contract, unless and until the transaction contemplated hereby is closed, Buyer and Seller shall make no public announcements regarding the terms of this transaction. In any event, Buyer and Seller shall hold all proprietary information obtained by them with respect to each other or the Subject Property in strict confidence and shall not disclose such information to any other person or entity except to the extent necessary to consummate the transaction contemplated hereby.

24. Condemnation. In the event the Subject Property or any material portion or portions thereof shall be taken or condemned or be the subject of a bona fide written threat of condemnation by any governmental authorities or other entity prior to the closing, then the Buyer shall have the option of either (a) terminating this Contract by giving written notice thereof to the Seller, whereupon the Earnest Money Deposit shall be immediately refunded to the Buyer, and this Contract and all rights and obligations created hereunder shall be null and void and of no further force and effect, except as otherwise specified herein, or (b) requiring the Seller to convey the remaining portion or portions of the Subject Property to the Buyer pursuant to the terms and provisions hereof and to transfer and assign to the Buyer at the closing all of the right, title and interest of the Seller in and to any award made or to be made by reason of such condemnation, less amounts expended by Seller in connection therewith prior to such time. The Seller and the Buyer hereby further agree that the Buyer shall have the right to be present in all negotiations with any governmental authorities relating to the Subject Property and to be apprised of the compensation to be paid for any portion or portions thereof condemned by such governmental authorities or other entity.

25. Casualty. Seller will promptly upon receiving actual notice of a casualty, notify Buyer of any fire or other casualty affecting the Subject Property between the date hereof and the Closing. Unless otherwise mutually agreed in writing by Buyer and Seller, as soon as reasonably possible thereafter, subject to Seller's actual receipt of the proceeds, and subject in any event to the terms of any existing mortgage on the Real Property, Seller will commence any necessary repairs as a result of such fire or other casualty, and will provide Buyer with current information concerning insurance coverage therefor (the "Casualty Notice"). Buyer will have the right to terminate this Contract by written notice to Seller within fifteen (15) days following receipt of the Casualty Notice. If Buyer so terminates this Contract then, notwithstanding any provision of this Contract to the contrary, the entire Deposit, other than the portion of the Deposit that has become non-refundable, will be returned to Buyer, and the parties will have no further obligations or liabilities hereunder, except as otherwise expressly provided herein. If Buyer elects not to terminate this Contract, the purchase contemplated herein will be consummated without reduction of the Purchase Price within the later of ten (10) days after the expiration of such fifteen (15) day period or on the Closing Date specified herein, in which event the insurance proceeds will be used for such repairs, to the extent necessary, and Seller will assign transfer and set over to Buyer all of Seller's right, title and interest in and to such insurance proceeds less any amounts actually expended by Seller towards the repair or restoration prior to the date thereof, and Buyer shall receive a credit at Closing in an amount equal to the amount of the insurance deductible under Seller's insurance policy.

26. Execution in Counterparts. This Contract may be executed in counterparts, each of which shall be deemed an original and all such counterparts together shall be deemed to constitute an original instrument. Electronic signatures shall be afforded the full force and effect of original ink signatures.

27. Exchange. At either party's request, the other party shall cooperate to structure the sale of the Subject Property as a tax-deferred exchange under Section 1031 of the Internal Revenue Code, provided that: (a) the requesting party shall reimburse the other party for all resultant additional expenses it pays or incurs, (b) the other party shall not be obligated to take title to any property other than the Subject Property for any period of time, (c) the other party shall not be obligated to execute any notes or mortgages or to incur any liabilities as a result of participating in the exchange, (d) the Closing is not delayed beyond the Closing Date, and (e) the requesting party shall indemnify, defend and hold harmless the other party against claims, costs, loss, or liability arising from or related to the exchange.

[*Signatures appear on following page.*]

IN WITNESS WHEREOF, the parties have caused these presents to be executed as of the day and year first above written.

"SELLER"

Name: Raymond H. Waterhouse

Alina Waterhouse

"BUYER"

Redfern Properties, LLC

By. _____
Name. Jonathan Culley
Its: Member

"ESCROW AGENT"

The Boulos Company

By: _____
Name: Nate Stevens
Its: Designated Broker

EXHIBIT "A"

A certain lot or parcel of land, with the building thereon, situated on the easterly side of Washington Avenue in the City of Portland, County of Cumberland and State of Maine and being further bounded and described as follows:

Beginning at an iron set in the ground on the easterly side of said Washington Avenue at land now or formerly of the City of Portland; thence running North 79° 11' 30" East by land now or formerly of said City of Portland 181.49 feet to an iron set in the ground; thence running South 15° 52' East by Poplar Street Ext. (so called) 213.20' to an iron set in the ground at land now or formerly of Dewer Rich; thence running South 74° 21' West by said Rich land 33.23 feet to an iron set in the ground, thence running South 15° 39' East by said Rich land 64.00 feet to an iron set in the ground; thence running North 74° 21' East by said Rich land 33.47 feet to an iron set in the ground on the westerly line of said Poplar Street Ext. (so called); thence running South 15° 52' East by said Poplar Street Ext. (so called) 63.00 feet to an iron set in the ground; thence running South 74° 21' West 115.91 feet to an iron set in the ground; thence running South 82° 30' West 111.71 feet to an iron set in the ground on the easterly side of said Washington Avenue; thence running North 7° 30' West by the Easterly line of said Washington Avenue 254.40 feet to an angle in the easterly line of said Washington Avenue; thence running North 10° 15' 30" West by the easterly line of said Washington Avenue 88.25 feet to an iron set in the ground at land now or formerly of the City of Portland and said point of beginning.

The triangular strip of land lying northwesterly of Lots no. 10 and 20 on the Little, Weeks & Moody Plan was conveyed by the City of Portland to Equipment Leasing Co., Inc. by deed recorded in Cumberland County Registry of Deeds in Book 2695, Page 281.

Also, excepting all those certain premises conveyed by Raymond H. Waterhouse and Alina Waterhouse to Redfern Munjoy, LLC, by deed dated January 14, 2014, recorded in Book 31302, Page 177.

E. Summary of Written Easements

Exiting Easements:

There are no existing easements shown on the plan titled Boundary & Topographic Survey dated July 25, 2023, prepared by Owen Haskell, Inc.

Proposed Easements:

An easement will be granted to Central Maine Power for the locations of the primary transformer vaults that straddle the private property line and City ROW.

The developers are currently working with a general contractor to determine if temporary construction easements may be necessary and will provide supplemental information when available.

Standard to be Waived: Cite Ordinance or Technical Manual Standard	**Cite Standard Language:** Cite specific language of applicable Ordinance or Technical Manual Standard	**Waiver Being Sought:** Describe waiver being sought. Ex. – We are requesting a two-way parking lot drive aisle width of 20' feet.	**Justification for Waiver:** Address specific waiver criteria, if applicable, and document reasons for the waiver request.
Technical Manual 1.5.1.C Driveway Spacing	Driveway Spacing - 100 feet along arterial and collector streets with posted speeds of 35 mph or less	We are requesting a driveway spacing of 11.43 feet from the nearest abutting driveway	Proposes 11 parking spaces & reducing the exist. 3 curb cuts to 1. Minor driveway standards that takes the existing pattern of driveways in the surrounding context into account and limits impact on the street seem more appropriate given street context
Technical Manual Figure 1-16A	90 Degree Parking shall have a drive aisle width of 24 feet	We are requesting a drive aisle width of 22.22 feet	The 11 covered parking spaces are low turn over and tenant will be familiar with the turning movements. We request a 22.22' wide drive aisle which is been approved on similar projects.

Att. G

G. Financial Capacity

Please refer to the attached letter prepared by the Applicant providing additional information.

120 Exchange Street
Suite 330
Portland, ME 04101

Redfern PROPERTIES

Mr. Kevin Kraft
Director, Planning & Urban Development
City of Portland, Maine
389 Congress Street, 4th Floor
Portland, ME 04101

October 29, 2024

Subject: Financial & Technical Capacity - 165 Washington Avenue Site Plan Application

Dear Mr. Kraft:

With respect to Redfern Properties' financial and technical capacity to successfully execute the proposed development at 165 Washington Avenue, we refer you to our long track record of completing substantial development projects in Portland over the last 15 years. In sum, we have completed over $300M in development projects, all in the City of Portland. In each case, we have met our obligations to the City and our lenders. Recent projects include:

- The Casco, 263 apartments in the Old Port District, completed 2024
- Nightingale, mixed-use project with 165 residential apartments in on the former Mercy Hospital Campus, completed 2023
- Erlang, 81 residential units in a converted historic office building in the Arts District, completed 2023
- Hiawatha, 139 apartments in Longfellow Square, completed 2017

If necessary, we can provide a letter from one of our Banks, stating that our loan accounts are in good standing, but our track record is far stronger evidence of our capacity than a non-committal letter from a Bank.

Sincerely,

Jonathan Culley
Managing Partner

H. Technical Capacity

Redfern Properties develops, owns, and operates a portfolio of properties that includes the highest quality rental apartments in Portland. Redfern Properties is committed to developing innovative residential properties and focuses on infill and other "smart-growth" development in creating unique residences and commercial spaces, while making neighborhoods and communities more vibrant and sustainable. Redfern has permitted and constructed numerous recent projects including: The Casco, Nightingale (Mercy Redevelopment), Hiawatha, and the Erlang.

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 projects in Portland during the past several years, including: Munjoy Heights, East Bayside Lofts, The Hiawatha, the Erlang, The Nightingale (Mercy Redevelopment), the Casco, Winter Landing (CHOM Affordable Senior Housing), and The Equinox (CHOM Affordable Family Housing).

Soren DeNiord Design Studio (SDDS) is a professional landscape design firm located in Portland, Maine. Their portfolio includes award winning projects ranging in scale from residential to mixed use, commercial and institutional. As stewards of the environment and our clients' resources, we engage in projects with a commitment to sustainability and the intention of artfully responding to each site's unique challenges.

Holst Architecture has been a leader in creating some of the most innovative mixed-use multifamily housing projects for the last 20 years. With thoughtful design solutions, Holst has completed 34 market rate, student, affordable, or Permanent Supportive Housing projects, totaling over 3,300 units of housing. We currently have over half a dozen housing projects that are currently in design or under construction. From groundbreaking towers in downtown Portland, Oregon (937 Condominiums and more recently, Julia West House) to garden style townhomes in Eagle, Idaho (The Clara), we create multifamily housing that raises the bar.

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 13 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:

   Based on the scale of the proposed project a Traffic Movement Permit has been completed by a licensed traffic engineer. The site is located on Washington Avenue. The project is not anticipated to create any significant hazard to safety on the surrounding street network. Congestion of the intersections is not anticipated. See Section T. Traffic, which includes the Traffic Movement Permit application, 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 13.6.1.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) The site does not feature any shared circulation, parking, or transportation infrastructure. There are no anticipated or proposed developments directly abutting the property are at this time.

(iii) A sidewalk exists along Washington Avenue and will provide direct pedestrian access to the site. The sidewalk will be improved and widened as part of the project.

(iv) The proposed project does not abut or include any existing or proposed publicly accessible trails or trail connections.

(v) Egress and access to the site is directly off the sidewalk on Washington Avenue. There are no anticipated conflicts with traffic flows or turning movements.

b. Curb and Sidewalks:

(i) A sidewalk with curbing exists on Washington Avenue and will be reconstructed and widened as part of the proposed project.

(ii) Any disturbance to the sidewalk to accommodate the project will be rebuilt in conformance with 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 on a bus route with the closest bus stop located on Washington Avenue 150' south of the parcel.

b. Not applicable.

c. Not applicable.

4. Parking:

a. Vehicular parking:

(i) Per table 18-A: Off-street parking maximums for:
a. See Site Plan (Sheet C-10) for the Parking Summary

(ii) Proposed parking spaces are not located within the front and corner side yards of the parcel.

(iii) Parking spaces are designed to conform to the standards set forth in the City of Portland Technical Manual. A waiver is requested to reduce the drive aisle width.

b. Bicycle parking

(i) Per Table 18-A, a minimum of 163 bicycle parking spaces have been provided as part of the proposed project

(ii) N/A

c. Snow Storage:

(i) 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. Landscaping in designated snow storage areas shall be such that it can withstand the snow pile.

d. Electric Vehicle (EV) charging

(i) A minimum 20% of paring spaces will be Level 2 EV charging or higher. Additionally, 50% will be EV ready. See C-10 for additional information.

5. Transportation Demand Management (TDM):

a. As the project is a mixed-use 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. There are no known Significant Natural Features present on the project site.

b. Not applicable.

c. Not applicable.

2. Site landscaping and buffers.

a. On-Site Landscaping

(i) The project proposes 10 trees within the new courtyards and 6 street trees. Plantings including perennials are forthcoming.

(ii) Due to the existing slope on the site and proposed improvements, including retaining walls and building foundations, the existing vegetation and trees are unable to be preserved. The project proposes to replace the existing removed vegetation as shown on the landscaping plans.

(iii) Not Applicable

b. Buffers and screening

(i) The proposed solid waste containers will be located within the proposed building and not viewable from public sidewalks and adjacent streets.

(ii) Not applicable.

(iii) Not applicable

(iv) Not applicable

c. Parking and vehicle display lot landscaping.

(i) Not applicable, all parking proposed is to be covered parking.

(ii) Not applicable.

(iii) Not applicable.

d. Non-vehicular hardscape

(i) All uncovered paving for non-vehicular use shall have a minimum Solar Reflective Index (SRI) of 33 initially and 28 once aged three years

e. Street trees

(i) Please refer to the landscaping plan for the project for the proposed layout of street trees.

(ii) The project proposes to remove the existing street trees due to utility installation, access and circulation conflicts. Proposed street trees will be installed along the project frontage per the landscaping standards of the Technical Manual.

(iii) It is our understanding that there are no existing heritage or feature mature trees located on the property.

3. 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. A portion of the site will be directed to a subsurface sand filter with an R-tank detention system to meet the City's treatment requirements. Another portion of the site will be directed to a detention system to further elevate the sites storage capacity and meet the City's requirements. See the Stormwater Report for additional information.

(ii) Any stormwater that flows onto adjacent lots will not exceed the pre-development flows.

(iii) The stormwater network has been designed to decrease peak flow rates and not overburden the existing downstream capacity. The BMPs will connect to outlet control structures that slowly outlet between 24-48 hours as required.

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.

d. The existing subsurface and adjacent slope conditions are suitable to support the proposed development. The proposed development shall not adversely impact the development site or any abutting property. Refer to section K Erosion and Sedimentation Control Report for more information.

(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. An easement will be granted to Central Maine Power for the locations of the primary transformer vaults that straddle the private property line and City ROW. The developers are currently working with a general contractor to determine if temporary construction easements may be necessary and will provide supplemental information when available.

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. Additionally, fences will be utilized on the side yards to provide safety of tennant users and to deter potential offenders and delineate public and private spaces.

   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 (project proposes to upsize sewer from 8" to 15"), storm, and water utility mains within Washington Avenue.

   b. The existing overhead wires along the project frontage will be dropped underground. A proposed submersible transformer that is serviced by 3-phase primary conduits from a utility pole on Washington Avenue will serve the project. A secondary conduit will extend from the transformer to the building

   c. The building will be served by a proposed 8" sewer service connected to the redesigned 15" VC sewer main within Washington Avenue.

   d. The building will be served by a proposed 8" sewer service connected to the redesigned 15" VC sewer main within Washington Avenue.

   e. A proposed solid waste container will be located within the building and will 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. There are no known archaeological resources on the site.

    c. Not applicable

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) The project includes street lighting on Washington Avenue. The street lighting will be in conformance with the City's Technical Manual.

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. Signage and wayfinding:

a. 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. 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.

10. Design Standards:

a. The project has been designed to meet the standards set forth in the B2b Business Community zoning district. The project proposes to develop the parcel into a new multi-family apartment building with 326 dwelling units, ground floor commercial space, and other site and utility improvements. Please refer to the Site Plan and Architectural Drawings for additional information.

b. The development is not located within a Historic District.

A C O R N
ENGINEERING, INC.

STORMWATER MANAGEMENT REPORT

Prepared For:

Redfern Properties
P.O. Box 8816
Portland, ME 04104

Prepared By:

Acorn Engineering, Inc.
PO Box 3372
Portland, Maine 04104



November 2024

INTRODUCTION

Acorn Engineering, Inc. has been retained by Redfern Properties to provide civil engineering services for the proposed work located at 165 Washington Avenue, Portland, ME 04101. The site is currently comprised of the existing Northern Burner Supply building with gravel and paved surface parking areas. The property consists of approximately 1.50 acres of land. The proposed project anticipated increasing the total impervious area by approximately 13,640 square feet, and is subject to stormwater treatment due to redeveloping greater than 5,000 square feet of non-roof impervious area.

A stormwater analysis was prepared to demonstrate that the project will meet the requirements set forth by Maine DEP Chapter 500 Basic and General Standards and the following requirements from the City of Portland (the City):

- City of Portland Land Use Ordinance Article 14.6.2.D.
- City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards and Maine DEP Chapter 500 Stormwater Management.
- City of Portland Code of Ordinances Chapter 32 – Post-Construction Stormwater Management
- DPW Specific Standard: Provide a minimum detention volume of the projected 24 hour daily sanitary flows with a maximum outflow rate of 0.1 CFS per acre until the storage is maximized.

EXISTING CONDITIONS

The proposed project site is located at 165 Washington Avenue. A Boundary & Topographic Survey has been prepared by Owen Haskell, Inc., dated July 25, 2023.

The existing property is covered by approximately 55.3% impervious surfaces including the existing Northern Burner building, pavement, and gravel parking lots.

The project team is not aware of the presence of any existing significant natural features located on the site. Given the urban setting and existing impervious surfaces, a field inventory of significant natural features was not undertaken. The project is not located within a watershed classified as an Urban Impaired Stream.

PROPOSED DEVELOPMENT

The project proposes demolishing the existing Northern Burner Supply building and associated parking areas and constructing a 326-unit multi-family / mixed use building with commercial space on the first floor. It is anticipated that the building will be a mixture of two-bedroom, one-bedroom and studio units. The project also includes various parking, utility, and landscape improvements.

Proposed drainage improvements include catch basins, roof drains, foundation drains, and field inlets. Treatment is proposed through a subsurface sand filtration BMP and storage will be met using a Underdrained Subsurface Sand Filter and R-tank system. Ultimately the

proposed storm drain network outlets to the existing drainage system within Washington Avenue.

The development will be served by the Portland Water District, underground power/cable/communications, natural gas and the municipal sewer system. The project anticipates incorporating Maine DEP approved stormwater Best Management Practices (BMP) to meet the General and Flooding Standards.

For an analysis of water quality, please refer to the following section.

GENERAL STANDARDS – WATER QUALITY

The proposed project was designed to provide primary water quality treatment through the use of an Underdrained Subsurface Sand Filter (USSF). The system has been designed in accordance with the MDEP Volume III BMPs Technical Design Manual, Chapter 7.3. Subsurface Sand Filters BMP, and the City of Portland Technical Manual (Section 5) Redevelopment Standards.

MaineDEP Chapter 500 Redevelopment standards are utilized to determine the required treatment for this project. The Pollutant Rankings and corresponding Weighted Impact Rankings are outlined below.

Table 1 – Land Use and Pollutant Summary Table: Existing Conditions

Land use	Pollutant Ranking	Existing Area	Weighted Impact
Roads where idling may occur; high use parking lots	5	0.00 ac.	0.00
Other roads; medium use parking lots	4	0.61 ac.	1.62
Other parking lots and driveways; flat roof asphalt rooftops	3	0.23 ac.	0.46
Other rooftops; grassed areas mowed > twice per year; walkways / foot-traffic-only pavement	2	0.00 ac.	0.00
Non-grass landscaped areas; Stormwater treatment / storage systems	1	0.67 ac.	0.45
TOTAL		1.50 ac.	2.53

The corresponding pre-development map can be viewed in Attachment D of this report.

.

The proposed post development land use rankings are as follows:

Table 2 – Land Use and Pollutant Summary Table: Previously Approved Conditions			
Land use	**Pollutant Ranking**	**Existing Area**	**Weighted Impact**
Roads where idling may occur; high use parking lots	5	0.00 ac.	0.00
Other roads; medium use parking lots	4	0.10 ac.	0.27
Other parking lots and driveways; flat roof asphalt rooftops	3	0.00 ac.	0.00
Other rooftops; grassed areas mowed > twice per year; walkways / foot-traffic-only pavement	2	1.15 ac.	1.53
Non-grass landscaped areas; Stormwater treatment / storage systems	1	0.26 ac.	0.17
TOTAL		1.50 ac.	1.97

The corresponding post-redevelopment map can be viewed in Attachment E of this report.

From Tables 1 & 2 above, the weighted impact for the proposed redevelopment is less than the weight impact for the existing condition, therefore Chapter 500 requires the project provides 0% treatment of the site's developed area for Stormwater Projects. Regardless, the project will need to provide no less than 50% treatment of the site's impervious area due to the City of Portland Redevelopment Standards for projects that redevelop 5,000 sf (or more) of non-roof impervious area.

Treatment Area

The development shall provide water quality treatment in accordance with the City of Portland for no less than 50% of the redeveloped impervious area. Water quality treatment will be provided through the use of a subsurface sand filter and a pretreatment device.

Table 3 – Impervious Area			
Existing Impervious Area	Proposed Impervious Area	50 % Impervious Area Required to be Treated	Impervious Area with Treatment
36,133 SF	49,773 SF	24,887 SF	31,423 SF (63.1%)

Filter Area Sizing

A calculation for sand filter area is necessary to meet the requirements below the surface of the USSF. As defined in the Volume III: BMPs Technical Design Manual, Chapter 7, the surface area of the filter shall be no less than the sum of 5% of the tributary impervious area and 2% of the tributary vegetated area. The filter area is calculated by the following formula:

[(Imp. SF x 0.05) + (Veg. SF x 0.02)] = Filter Area (SF)

Sub catchment 1.1 is the area that drains toward the Subsurface sand filter and the land coverage breakdown is outlined below:

Impervious: 31,423 SF

Landscape: 2,954 SF

[31,423 x 0.05) + (2,954 x 0.02)] = 1,630 SF

Table 4 – Total Filter Surface Area displays the proposed USSF sizing requirement, actual size and the percentage of required area.

Table 4 – Total Filter Surface Area		
	Required Filter Area (SF)	Actual Filter Area (SF)
USSF	1,630	1,686

As shown, the size of the soil filter area will exceed the surface area requirements. Pretreatment rows are incorporated into the design. Refer to plans distributed by Ferguson Waterworks for additional information.

Water Quality Volume

In accordance with the Volume III: BMPs Technical Design Manual, a water quality volume of 1.0 inches times the tributary impervious area plus 0.4 inches times the tributary vegetated area is required to be treated by the USSF. The water quality volume is calculated by the following formula:

(Imp. SF x 1.0") + (Veg. SF x 0.4") = Treatment Volume (CF)

Sub catchment 1.1 is the area that drains toward the Subsurface sand filter and the land coverage breakdown is outlined below:

Table 5 – Water Quality Volume Table				
	Upgradient Landscaped Area (SF)	Upgradient Impervious Area (SF)	Total Treatment Volume Required (CF)	Treatment Volume Provided (CF)
USSF	2,954	31,423	2,717	3,507

[(31,423 x 1") + (2,954 x 0.4")] = 2,717 CF

The water quality treatment volume was confirmed by using the HydroCAD model. HydroCAD calculations are attached to this report to demonstrate the compliance. The storage volume within the crushed stone, chambers, and filter sand is added together to calculate the water quality volume.

FLOODING STANDARD – WATER QUANTITY

To meet the City's requirement of limiting the burden on the combined sewer main, the project is subject to provide a minimum detention volume of the projected 24 hour daily sanitary flows with a maximum outflow rate of 0.1 CFS per acre until the storage is maximized. The project will utilize R-Tanks that will be wrapped in geotextile fabric and crushed stone to provide storage before being collected by an orifice-controlled outlet control structure and direct to the street.

See below table for the project redevelopment requirements and calculations for water quality volume.

Table 6 – DPW Detention Volume Requirement			
	Projected 24 hour Daily Sanitary Flows	Total Detention Volume Required (CF)	Total Detention Volume Provided (CF)
-	46,164 GPD	6,172 CF	**6,217 CF**
R-Tank			2,710 CF*
USSF	-	-	3,507 CF**
* Detention Volume is measured at the bypass weir wall invert elevation 60.95' ** Detention Volume is measured at the bypass weir wall invert elevation 61.20'			

To meet the 0.1 CFS per acre requirement. A 1" orifice will be installed within the downgradient outlet control structures for the Underdrain Soil Filter with R-Tanks and the stand-alone R-Tank Detention system. The 1" orifice will decrease the flow out of the BMPs and as a result storage will be provided in excess of the project daily sanitary flows. Once the detention volume required has been reached the stormwater will overflow into the outlet pipe and enter the municipal system within Washington Avenue.

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 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 (Tc)

The times of concentration for subcatchments in both the pre and post conditions were calculated by entering the flow path with the associated ground cover and slopes. HydroCAD then calculated the Tc's and incorporated the total Tc for each subcatchment into the model. When the calculated Tc was less than six minutes (0.1 hours), a direct entry of six minutes was used as advised by the TR-55 model. Consistent with previous submissions and best practices, the sheet flow length for any Tc path was capped at 100 feet.

Curve Number (CN)

Within the pre-development model, the vegetated areas were considered fair grass, and impervious areas consisted of either roof of existing building or pavement from parking lot.

Pre-Development
- Pavement, Walkways, Roofs, Gravel – CN 98
- 75% Grass Cover – Good, HSG A – CN 39

Post-Development
- Pavement, Walkways, Roofs, Gravel – CN 98
- >75% Grass Cover (new landscaping) – Good, HSG A – CN 39

Pre-development Calculations

The pre-development model was broken into two separate subcatchments.
- Subcatchment 1 – This tributary area includes the entire parcel that drains toward the municipal storm drain network within Washington Avenue. Impervious area includes gravel, pavement, building roof, and upgradient grass and wooded areas.
- Subcatchment 2 – This tributary area includes the offsite area upgradient of the site that drains into the parcel. There is a steep hill with grades that range up to 80%. Land cover consists of mostly landscape areas comprised of trees and grass with minimal impervious area in the form of walkways.

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. Point of interest flow rates for the two sub catchments outlined above are as follows:

Table 7 – Pre-Development Peak Stormwater Flows

	2-Year Storm Event (cfs)	10-Year Storm Event (cfs)	25-Year Storm Event (cfs)
Total Runoff	1.40	3.59	5.66

Post-development Calculations

The post-development model was broken into four separate sub catchments.
- Subcatchment 1.1 – This tributary area includes a section of the building's roof and the central courtyard. The courtyard contains a mix of landscape and impervious coverage. This subcatchment is treated by a subsurface sand filter.
- Subcatchment 1.2 - This tributary area includes the south and eastern sides of the site. This area includes the remaining portion of the building roof, a secondary courtyard, and a walkway and stone swale on the eastern side of the site. The location is directed toward subsurface R-tanks that provide storage under the drive aisle.
- Subcatchment 1.3 – This tributary area includes the northern and western side of the site. This area includes a concrete walkway and the brick location on the projects frontage.
- Subcatchment 2 – This tributary area includes the offsite area upgradient of the site

that drains into the parcel. There is a steep hill with grades that range up to 80%. Land cover consists of mostly landscape areas comprised of trees and grass with minimal impervious area in the form of walkways. The location is directed toward subsurface R-tanks that provide storage under the drive aisle.

Total Peak flow rates for the post-development storm events are as follows:

Table 8 – Post-Development Peak Stormwater Flows			
	2-Year Storm Event (cfs)	10-Year Storm Event (cfs)	25-Year Storm Event (cfs)
Total Runoff	0.41	3.10	4.71

The post-development calculations include changes to the land use and the compensation provided by the stormwater BMPs. It should be noted that the project is also reducing the overall impervious area. As a result, the total peak flow rates in the post development are reduced in comparison to the total predevelopment flow rates for the 2, 10, & 25-year storms.

The following table represents a comparison of pre- development and post-development condition peak runoff rates for the proposed development and tributary area.

Table 9 – Comparison of Peak Flows						
POI	2-Year Storm Event (cfs)		10-Year Storm Event (cfs)		25-Year Storm Event (cfs)	
	Pre	Post	Pre	Post	Pre	Post
Total Runoff	1.40	0.41	3.59	3.10	5.66	4.71

A post-development watershed map developed for this project can be viewed in Attachment B, and a copy of the HydroCAD calculations is included within Attachment C of this report.

SOILS

Onsite soil information includes the following:

- Soil Conservation Service Medium Intensity Soil Survey for Cumberland County
- United States Department of Agriculture Web Soil Survey

Given the soils information, listed above, no onsite wastewater is proposed; the applicant does not intend to perform a more intense hydric soil boundary delineation because the waiver requirements set forth in the City of Portland Technical Manual – Section 7 – Soil Survey, Rev. 6/17/11 are met.

The area within and surrounding the project includes soil types listed in the table below. The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69. Higher "K" values indicate more erodible soils.

Table 10 - "K" Value		
Soils Type	**Subsurface**	**Substratum**
Hinckley Loamy Sand	0.17	0.17

The soil "K" value for the soil, listed above, shows a low susceptibility to erosion. The site's susceptibility to erosion is sourced from the Soil Conservation Service Medium Intensity Soil Survey for Cumberland County.

CONCLUSION

The proposed development was designed to meet the requirements implemented by the MDEP under the Stormwater Management Statute (38 M.R.S.A. § 420-D) as well as the City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards. The proposed project as designed is not anticipated to cause flooding or erosion problems within the subject site, abutters' sites, nor within the right-of-way. Overall, the project will provide an improvement to stormwater runoff and overall management from several perspectives as outlined above.

ATTACHMENTS

Attachment A: Pre-Development Watershed Map
Attachment B: Post-Development Watershed Map
Attachment C: HydroCAD Calculations
Attachment D: Pre-Redevelopment Map
Attachment E: Post Redevelopment Map
Attachment F: Stormwater Inspection and Maintenance Plan

GENERAL NOTES:

REFER TO STORMWATER REPORT FOR ADDITIONAL INFORMATION.

1 — SUBCATCHMENT

SUBCATCHMENT EXTENTS

POA — POINT OF ANALYSIS

TM 10-C-1
N/F
PORTLAND VOA
ELDERLY HOUSING, INC.

TM 12-H-1
N/F
MUNJOY HEIGHTS CONDO
32240/98
SEE 31302/177

TM 12-F-10,11
N/F
HIGH PEAKS, LLC
34058/254

TM 12-F-9
N/F JEFFREY A. CURRAN
37720/297

TM 12-F-8
N/F JEFFREY A. CURRAN
37720/297

TM 10-B-6
N/F
CITY OF PORTLAND
1720/252
EXCEPT
2695/281

2S

1S

EXISTING BUILDING

AREA=
65,375 S.F.
1.501 AC.

POA

BIKE LANE

WASHINGTON AVENUE
PAVED – PUBLIC

OHW

20 0 20 40

SCALE: 1" = 20'

PERMITTING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
SITE PLAN	PFH 11/20/24

DRAWING NAME: PRE-DEVELOPMENT WATERSHED MAP

PROJECT NAME: TAVATA – 165 WASHINGTON AVENUE
PORTLAND, MAINE, 04101

CLIENT: REDFERN PROPERTIES
P.O. BOX 8816, PORTLAND, MAINE 04104

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ACORN ENGINEERING, INC
PO BOX 8816, PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1202_CIVIL
JN:	1202
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER
11/20/24

DRAWING NO.
EX-1

GENERAL NOTES:

REFER TO STORMWATER REPORT FOR ADDITIONAL INFORMATION.

1 — SUBCATCHMENT

SUBCATCHMENT EXTENTS

POA — POINT OF ANALYSIS

1 — POND

AREA WITH TREATMENT

TM 10-C-1
N/F
PORTLAND VOA
ELDERLY HOUSING, INC.

TM 12-H-1
N/F
MUNJOY HEIGHTS CONDO
32240/98
SEE 31302/177

TM 12-F-10,11
N/F
HIGH PEAKS, LLC
34058/254

TM 12-F-9
N/F JEFFREY A. CURRAN
37720/297

TM 12-F-8
N/F JEFFREY A. CURRAN
37720/297

TM 10-B-6
N/F
CITY OF PORTLAND
1720/252
EXCEPT
2695/281

2S

1.1S

1.2S

1.3S

1

2

AREA=
65,375 S.F.
1.501 AC.

WASHINGTON AVENUE
PAVED – PUBLIC

BIKE LANE

POA

20 0 20 40
SCALE: 1" = 20'

PERMITTING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
SITE PLAN	PFH 11/20/24

DRAWING NAME: POST DEVELOPMENT WATERSHED MAP

PROJECT NAME: TAVATA – 165 WASHINGTON AVENUE
PORTLAND, MAINE, 04101

CLIENT: REDFERN PROPERTIES
P.O. BOX 8816, PORTLAND, MAINE 04104

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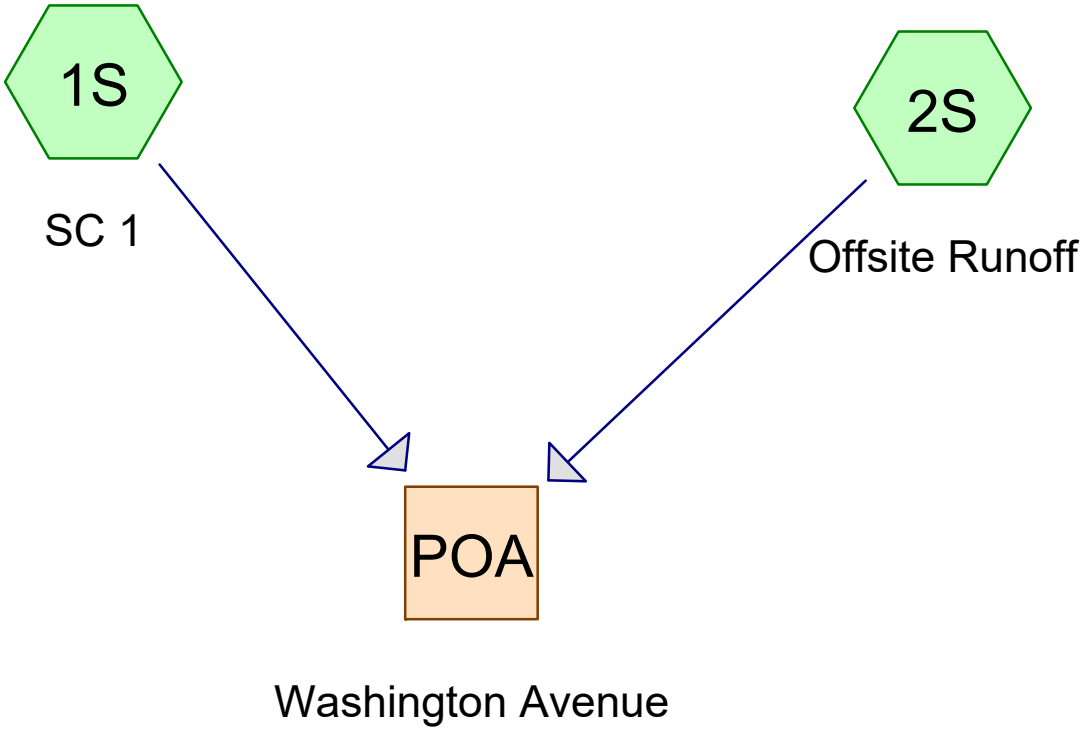
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FILE:	1202_CIVIL
JN:	1202
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
EX-2



Subcat Reach Pond Link

Routing Diagram for Pre Development
Prepared by HP Inc., Printed 11/20/2024
HydroCAD® 10.00-26 s/n 00620 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.060	39	>75% Grass cover, Good, HSG A (1S, 2S)
0.300	98	Gravel (1S)
0.441	98	Pavement (1S, 2S)
0.223	98	Roof, decks (1S)
2.023	**67**	**TOTAL AREA**

Time span=1.00-36.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SC 1 Runoff Area=65,377 sf 55.27% Impervious Runoff Depth=0.87"
Tc=6.0 min CN=72 Runoff=1.40 cfs 0.109 af

Subcatchment 2S: Offsite Runoff Runoff Area=22,730 sf 25.58% Impervious Runoff Depth=0.20"
Tc=6.0 min CN=54 Runoff=0.04 cfs 0.009 af

Reach POA: Washington Avenue Inflow=1.40 cfs 0.117 af
Outflow=1.40 cfs 0.117 af

Total Runoff Area = 2.023 ac Runoff Volume = 0.117 af Average Runoff Depth = 0.69"
52.39% Pervious = 1.060 ac 47.61% Impervious = 0.963 ac

Summary for Subcatchment 1S: SC 1

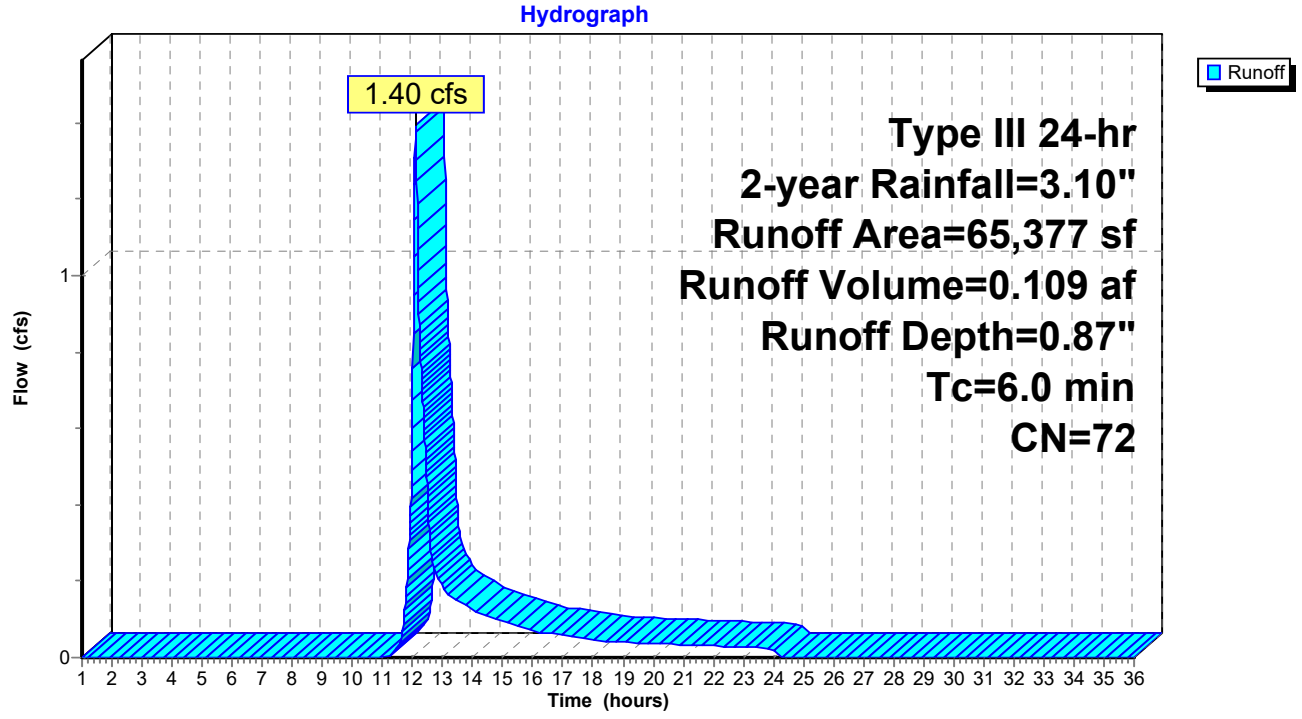
Runoff = 1.40 cfs @ 12.10 hrs, Volume= 0.109 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
*	9,698	98	Roof, decks
	29,244	39	>75% Grass cover, Good, HSG A
*	13,379	98	Pavement
*	13,056	98	Gravel
	65,377	72	Weighted Average
	29,244		44.73% Pervious Area
	36,133		55.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: SC 1



Summary for Subcatchment 2S: Offsite Runoff

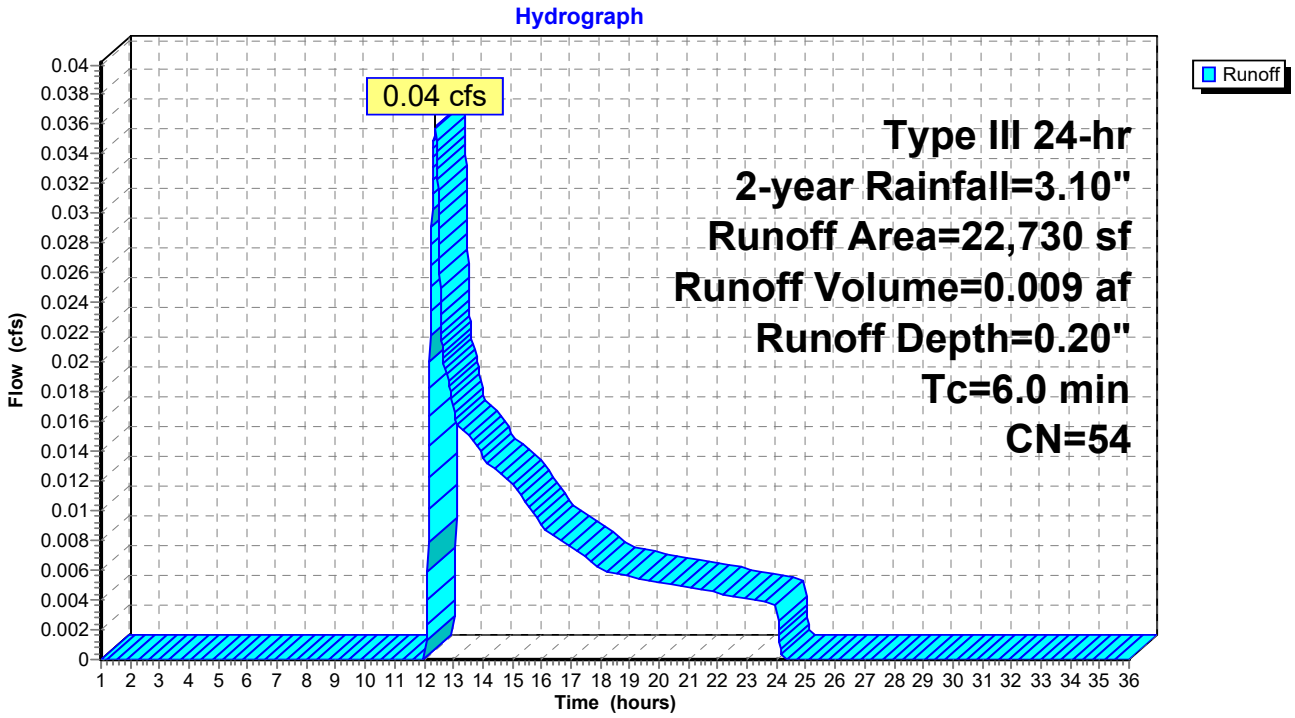
Runoff = 0.04 cfs @ 12.38 hrs, Volume= 0.009 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
	16,915	39	>75% Grass cover, Good, HSG A
*	5,815	98	Pavement
	22,730	54	Weighted Average
	16,915		74.42% Pervious Area
	5,815		25.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: Offsite Runoff

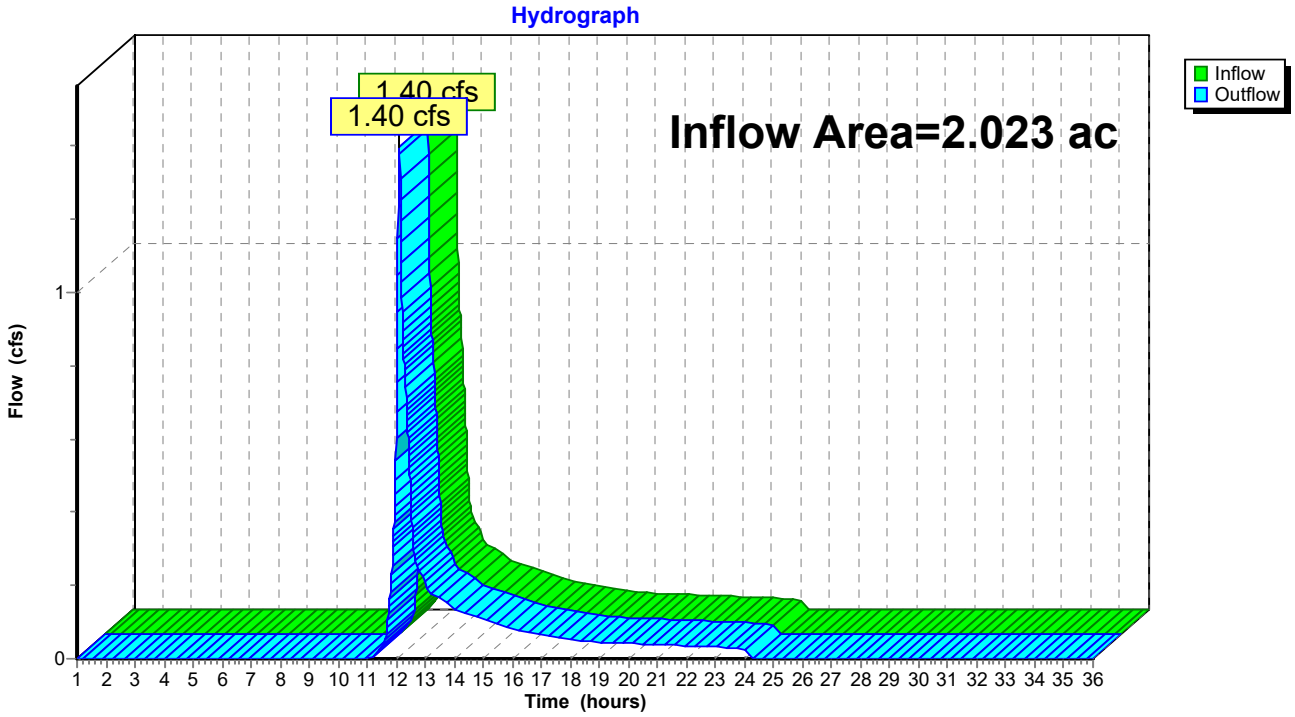


Summary for Reach POA: Washington Avenue

Inflow Area = 2.023 ac, 47.61% Impervious, Inflow Depth = 0.69" for 2-year event
Inflow = 1.40 cfs @ 12.10 hrs, Volume= 0.117 af
Outflow = 1.40 cfs @ 12.10 hrs, Volume= 0.117 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Reach POA: Washington Avenue



Time span=1.00-36.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SC 1 Runoff Area=65,377 sf 55.27% Impervious Runoff Depth=1.89"
Tc=6.0 min CN=72 Runoff=3.28 cfs 0.237 af

Subcatchment 2S: Offsite Runoff Runoff Area=22,730 sf 25.58% Impervious Runoff Depth=0.73"
Tc=6.0 min CN=54 Runoff=0.32 cfs 0.032 af

Reach POA: Washington Avenue Inflow=3.59 cfs 0.269 af
Outflow=3.59 cfs 0.269 af

Total Runoff Area = 2.023 ac Runoff Volume = 0.269 af Average Runoff Depth = 1.60"
52.39% Pervious = 1.060 ac 47.61% Impervious = 0.963 ac

Summary for Subcatchment 1S: SC 1

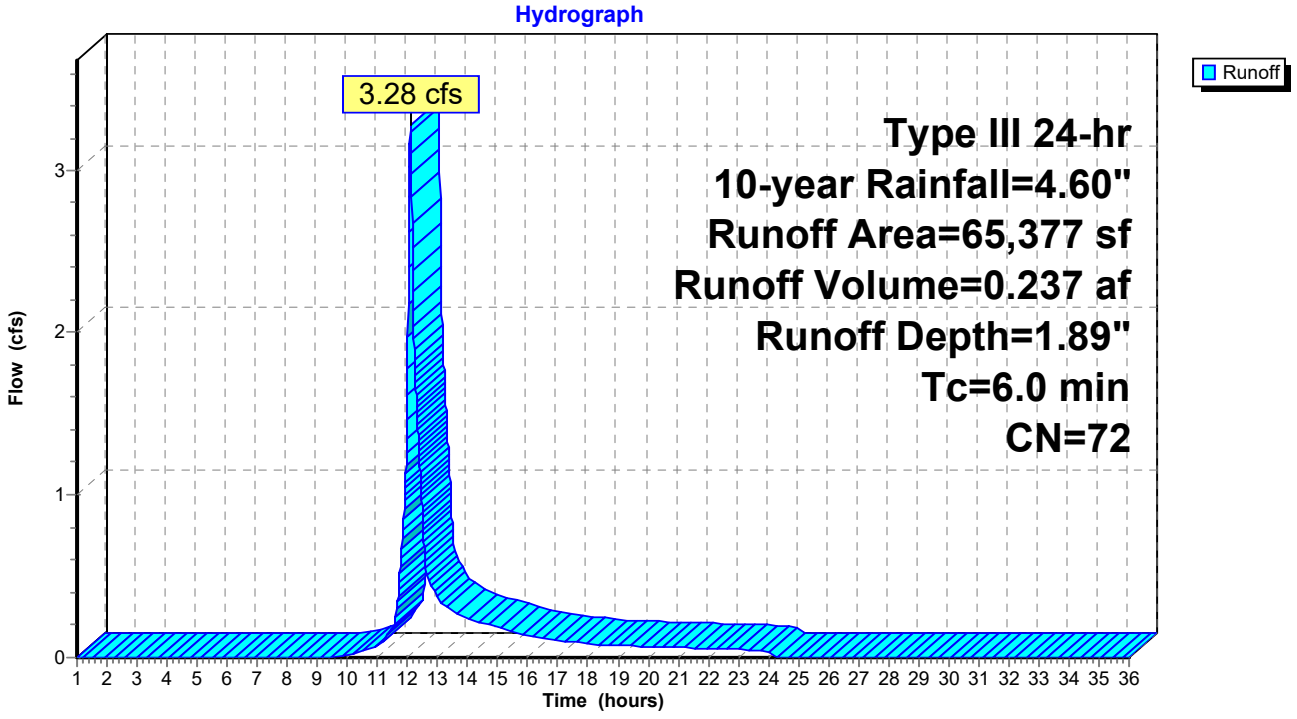
Runoff = 3.28 cfs @ 12.09 hrs, Volume= 0.237 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

	Area (sf)	CN	Description
*	9,698	98	Roof, decks
	29,244	39	>75% Grass cover, Good, HSG A
*	13,379	98	Pavement
*	13,056	98	Gravel
	65,377	72	Weighted Average
	29,244		44.73% Pervious Area
	36,133		55.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: SC 1



Summary for Subcatchment 2S: Offsite Runoff

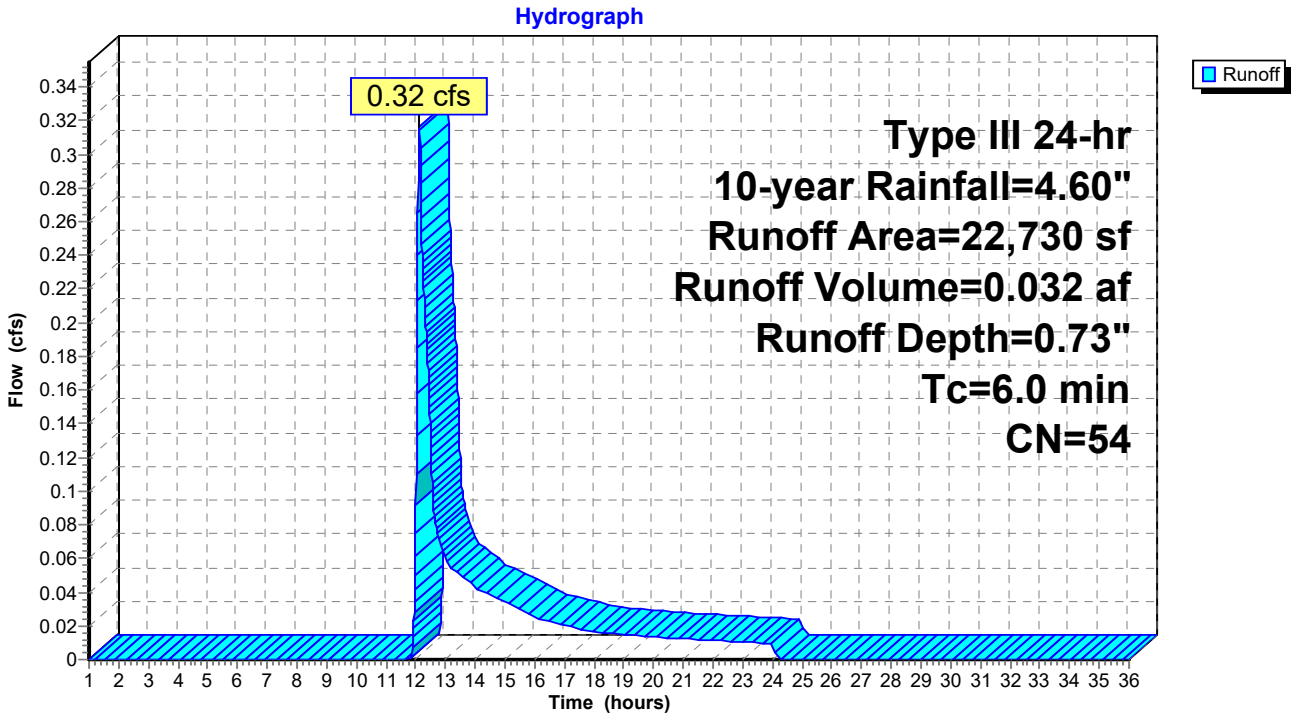
Runoff = 0.32 cfs @ 12.11 hrs, Volume= 0.032 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

	Area (sf)	CN	Description
	16,915	39	>75% Grass cover, Good, HSG A
*	5,815	98	Pavement
	22,730	54	Weighted Average
	16,915		74.42% Pervious Area
	5,815		25.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: Offsite Runoff

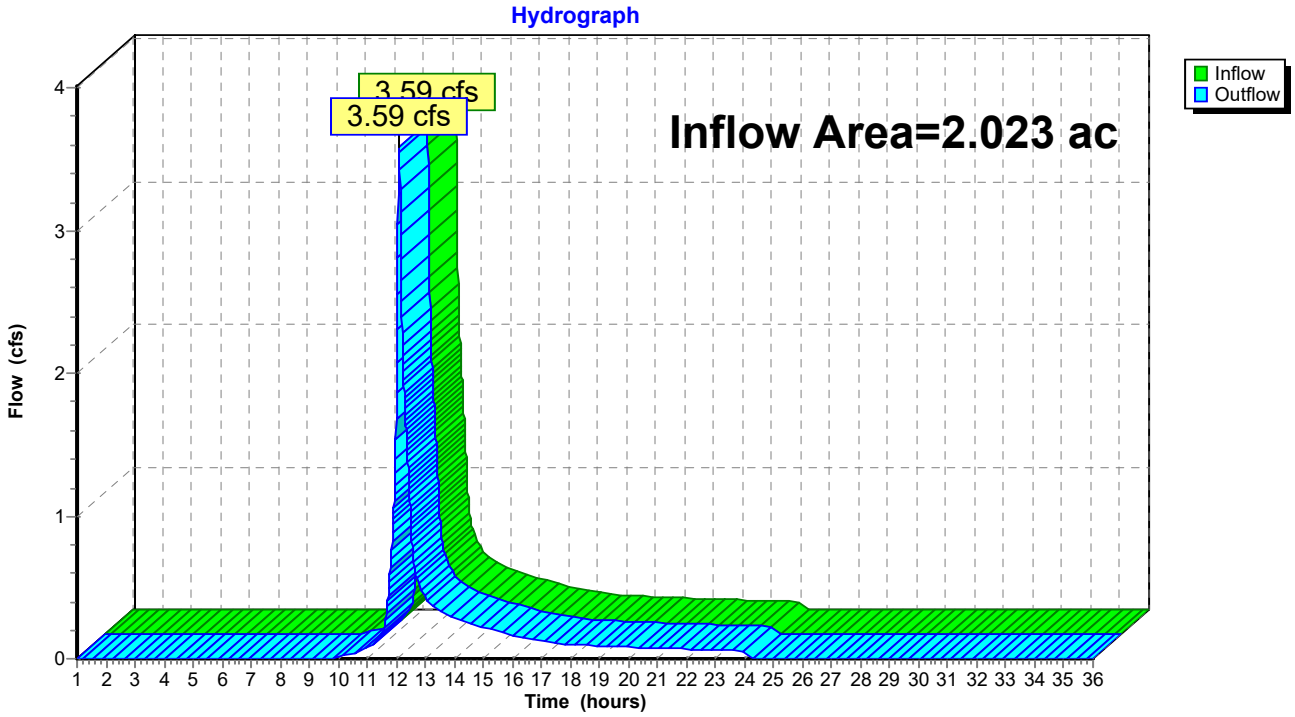


Summary for Reach POA: Washington Avenue

Inflow Area = 2.023 ac, 47.61% Impervious, Inflow Depth = 1.60" for 10-year event
Inflow = 3.59 cfs @ 12.09 hrs, Volume= 0.269 af
Outflow = 3.59 cfs @ 12.09 hrs, Volume= 0.269 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Reach POA: Washington Avenue



Time span=1.00-36.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SC 1 Runoff Area=65,377 sf 55.27% Impervious Runoff Depth=2.83"
Tc=6.0 min CN=72 Runoff=4.97 cfs 0.354 af

Subcatchment 2S: Offsite Runoff Runoff Area=22,730 sf 25.58% Impervious Runoff Depth=1.33"
Tc=6.0 min CN=54 Runoff=0.70 cfs 0.058 af

Reach POA: Washington Avenue Inflow=5.66 cfs 0.412 af
Outflow=5.66 cfs 0.412 af

Total Runoff Area = 2.023 ac Runoff Volume = 0.412 af Average Runoff Depth = 2.44"
52.39% Pervious = 1.060 ac 47.61% Impervious = 0.963 ac

Summary for Subcatchment 1S: SC 1

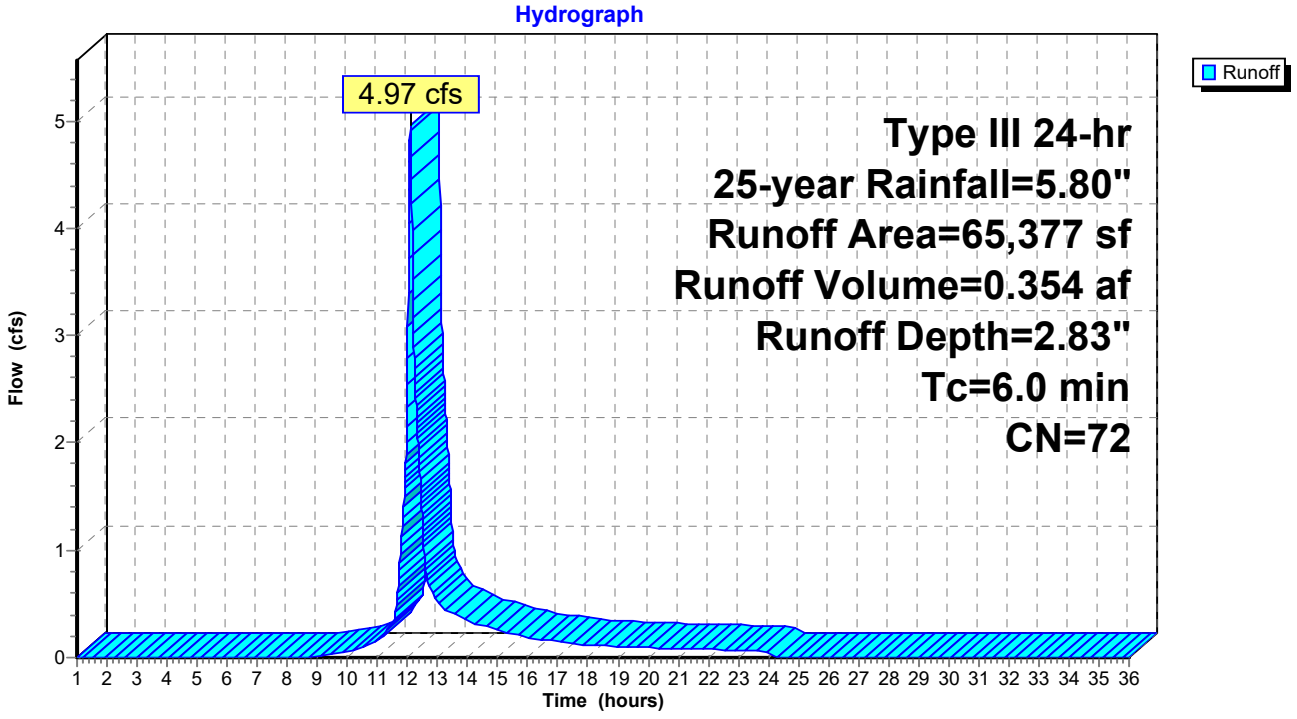
Runoff = 4.97 cfs @ 12.09 hrs, Volume= 0.354 af, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

	Area (sf)	CN	Description
*	9,698	98	Roof, decks
	29,244	39	>75% Grass cover, Good, HSG A
*	13,379	98	Pavement
*	13,056	98	Gravel
	65,377	72	Weighted Average
	29,244		44.73% Pervious Area
	36,133		55.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: SC 1



Summary for Subcatchment 2S: Offsite Runoff

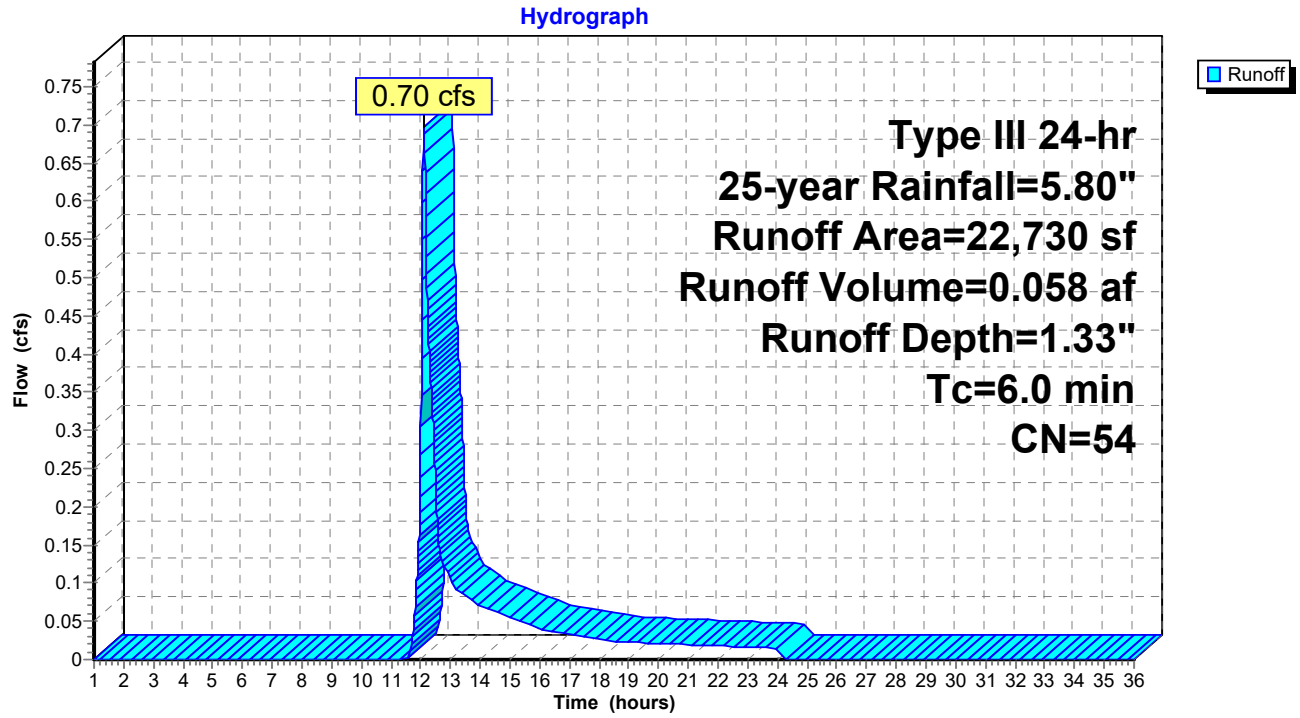
Runoff = 0.70 cfs @ 12.10 hrs, Volume= 0.058 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

	Area (sf)	CN	Description
	16,915	39	>75% Grass cover, Good, HSG A
*	5,815	98	Pavement
	22,730	54	Weighted Average
	16,915		74.42% Pervious Area
	5,815		25.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: Offsite Runoff

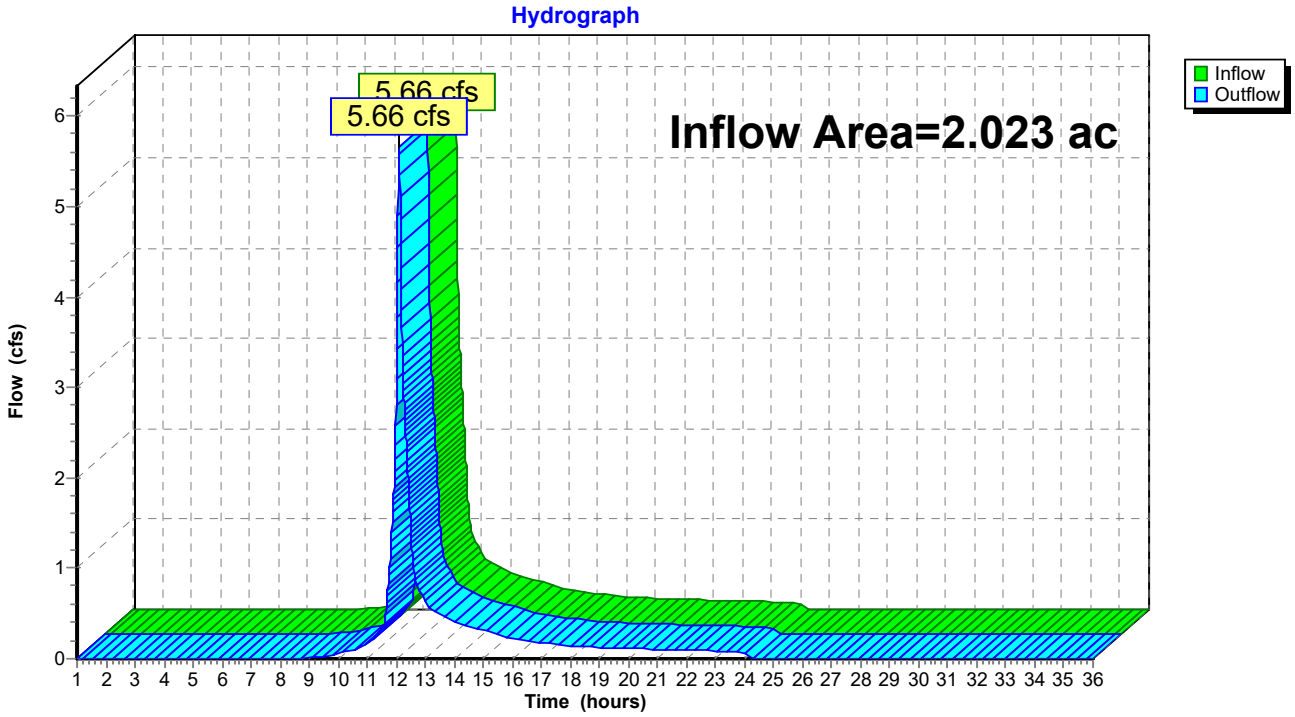


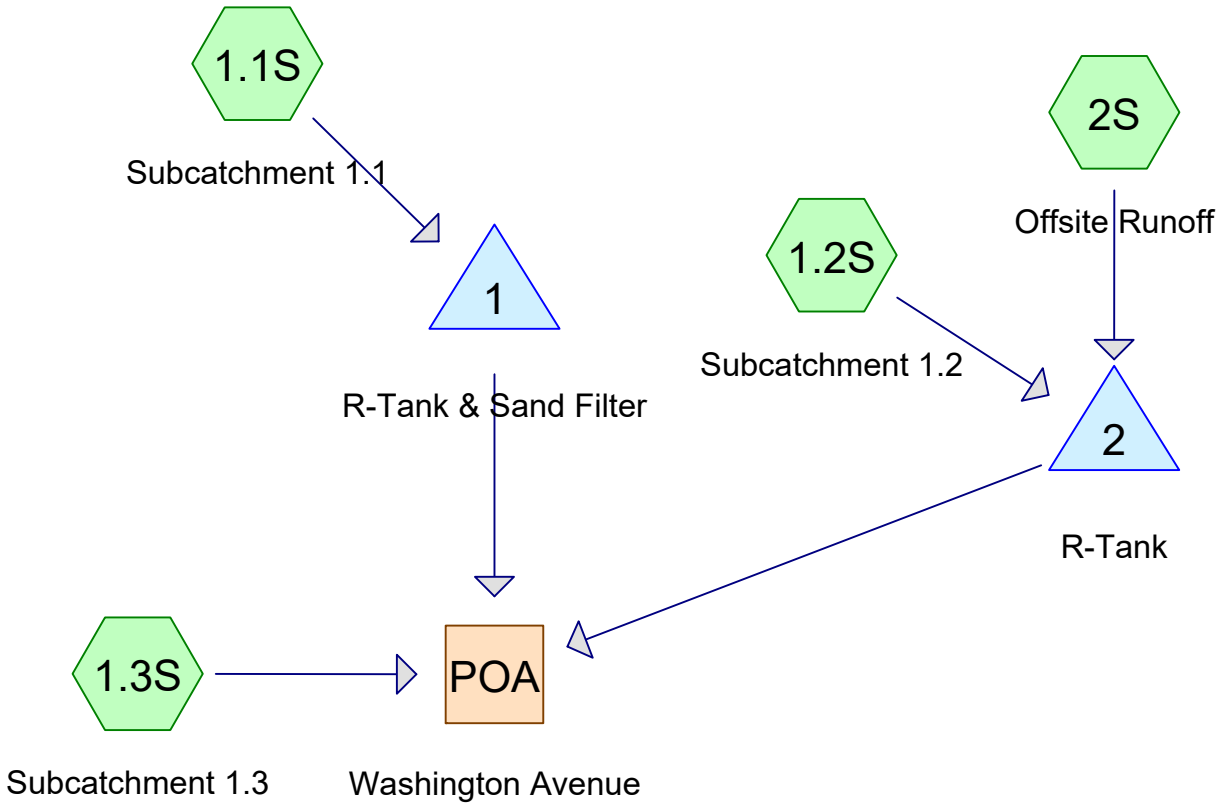
Summary for Reach POA: Washington Avenue

Inflow Area = 2.023 ac, 47.61% Impervious, Inflow Depth = 2.44" for 25-year event
Inflow = 5.66 cfs @ 12.09 hrs, Volume= 0.412 af
Outflow = 5.66 cfs @ 12.09 hrs, Volume= 0.412 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Reach POA: Washington Avenue





Subcat Reach Pond Link

Routing Diagram for Post Development 11.20.24
Prepared by HP Inc., Printed 11/20/2024
HydroCAD® 10.00-26 s/n 00620 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.680	39	>75% Grass cover, Good, HSG A (1.2S, 1.3S, 2S)
0.055	98	Brick (1.3S)
0.038	98	Concrete Walkway (1.2S, 1.3S)
0.068	39	Courtyard Landscape (1.1S)
0.060	98	Couryard Impervious (1.1S)
0.234	98	Pavement (1.2S, 2S)
0.856	98	Roof, decks (1.1S, 1.2S)
0.032	98	Stone (1.2S)
2.024	**76**	**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
0.680	0.000	0.000	0.000	0.000	0.680	>75% Grass cover, Good	1.2S, 1.3S, 2S
0.000	0.000	0.000	0.000	0.055	0.055	Brick	1.3S
0.000	0.000	0.000	0.000	0.038	0.038	Concrete Walkway	1.2S, 1.3S
0.000	0.000	0.000	0.000	0.068	0.068	Courtyard Landscape	1.1S
0.000	0.000	0.000	0.000	0.060	0.060	Couryard Impervious	1.1S
0.000	0.000	0.000	0.000	0.234	0.234	Pavement	1.2S, 2S
0.000	0.000	0.000	0.000	0.856	0.856	Roof, decks	1.1S, 1.2S
0.000	0.000	0.000	0.000	0.032	0.032	Stone	1.2S
0.680	**0.000**	**0.000**	**0.000**	**1.344**	**2.024**	**TOTAL AREA**	

Summary for Subcatchment 1.1S: Subcatchment 1.1

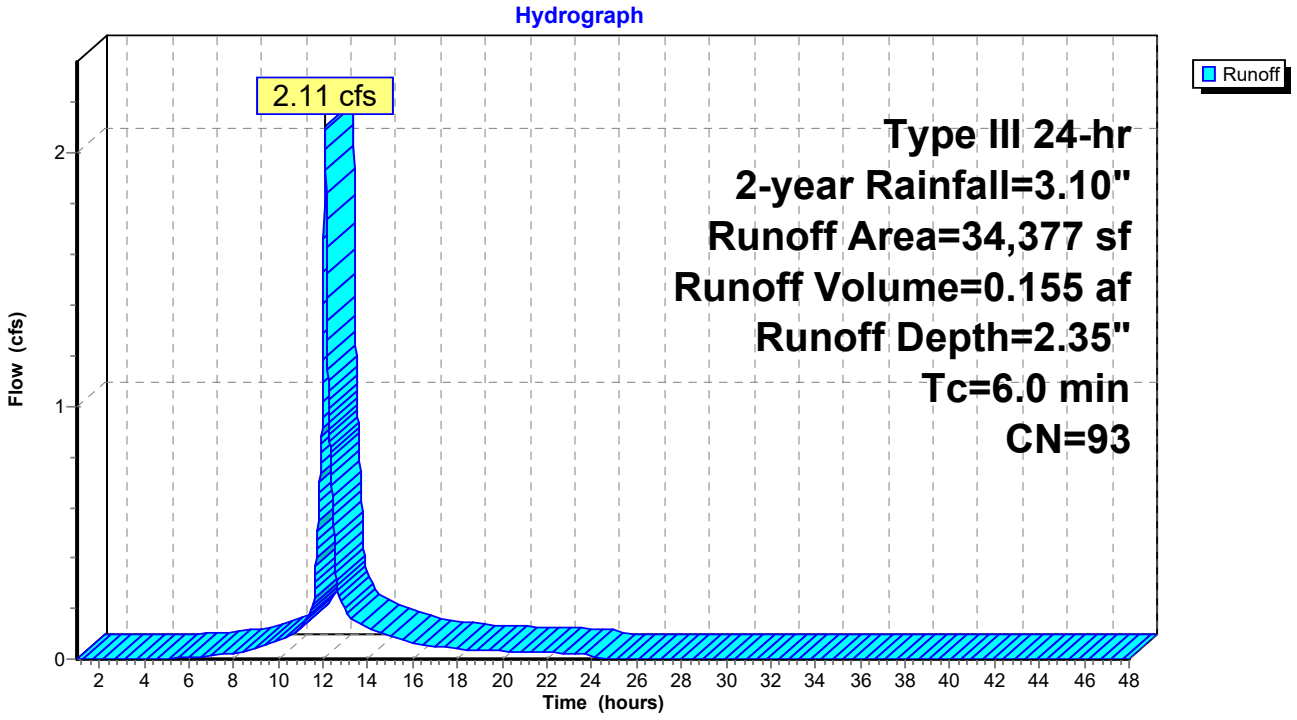
Runoff = 2.11 cfs @ 12.09 hrs, Volume= 0.155 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
*	28,810	98	Roof, decks
*	2,954	39	Courtyard Landscape
*	2,613	98	Couryard Impervious
	34,377	93	Weighted Average
	2,954		8.59% Pervious Area
	31,423		91.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1.1S: Subcatchment 1.1



Summary for Subcatchment 1.2S: Subcatchment 1.2

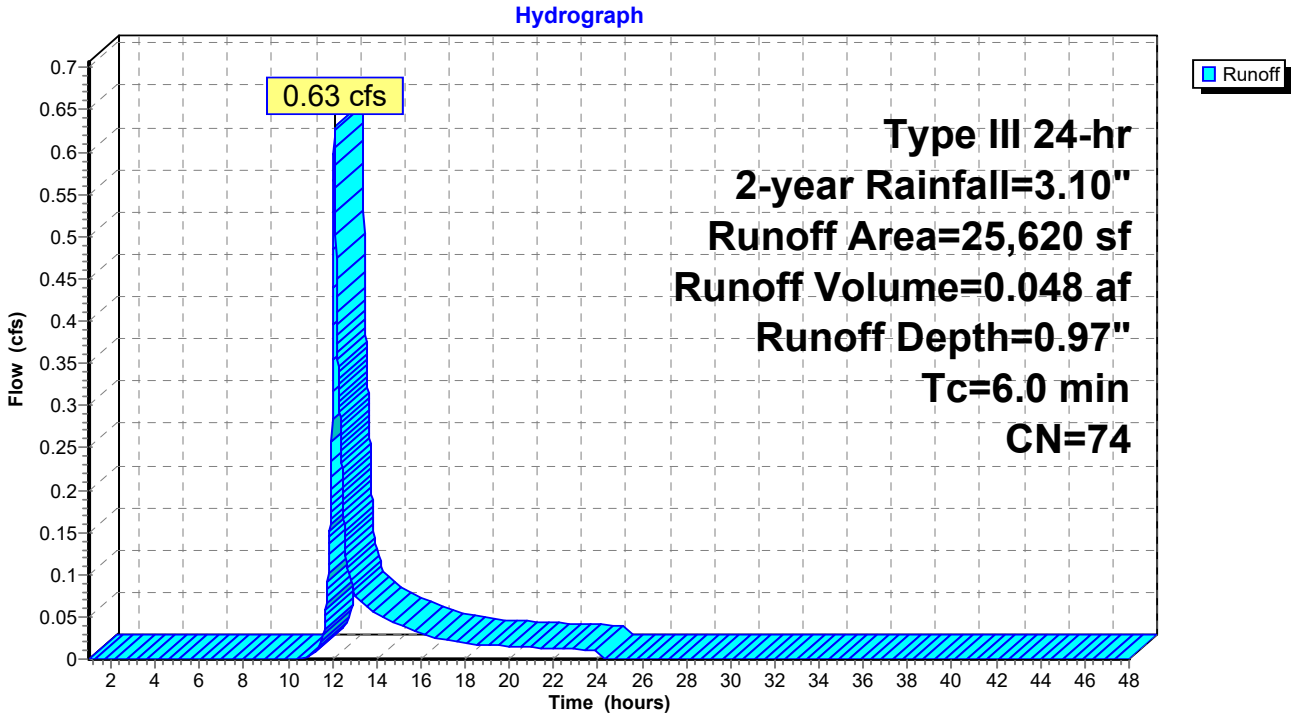
Runoff = 0.63 cfs @ 12.10 hrs, Volume= 0.048 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
*	8,488	98	Roof, decks
*	4,393	98	Pavement
*	811	98	Concrete Walkway
*	1,386	98	Stone
	10,542	39	>75% Grass cover, Good, HSG A
	25,620	74	Weighted Average
	10,542		41.15% Pervious Area
	15,078		58.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1.2S: Subcatchment 1.2



Summary for Subcatchment 1.3S: Subcatchment 1.3

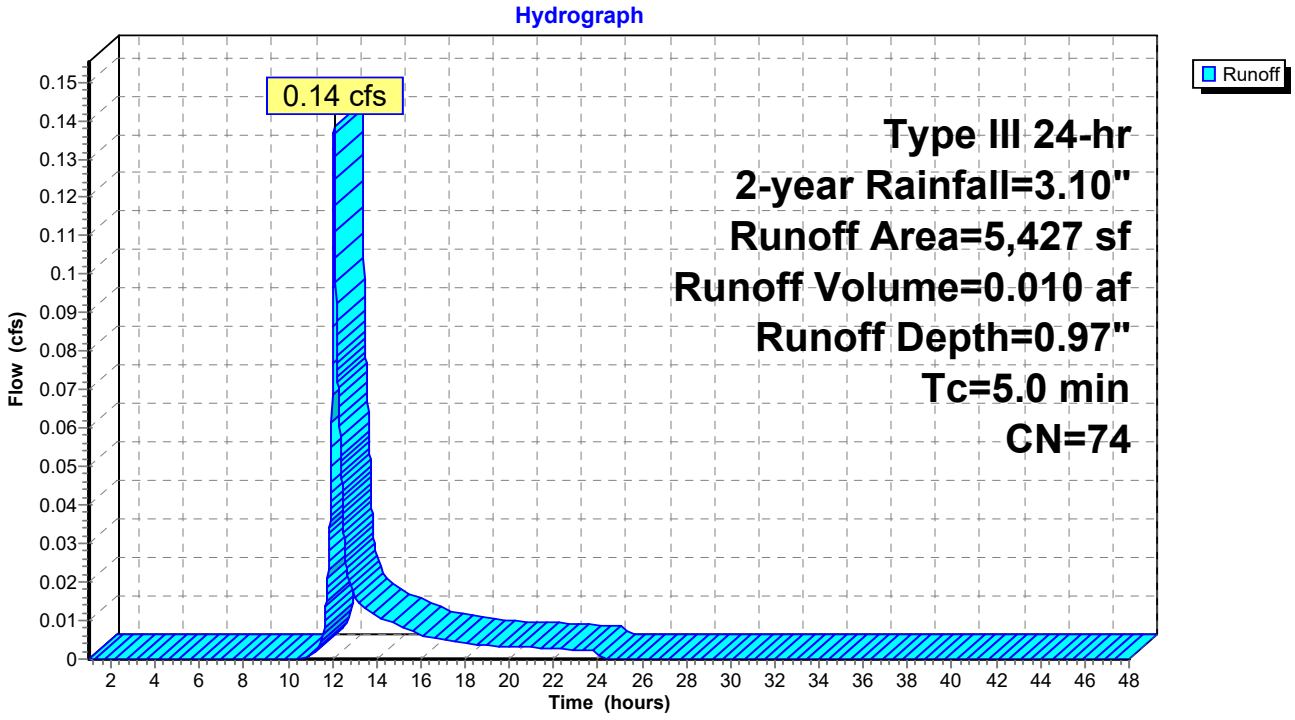
Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.010 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
*	2,399	98	Brick
	2,170	39	>75% Grass cover, Good, HSG A
*	858	98	Concrete Walkway
	5,427	74	Weighted Average
	2,170		39.99% Pervious Area
	3,257		60.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 1.3S: Subcatchment 1.3



Summary for Subcatchment 2S: Offsite Runoff

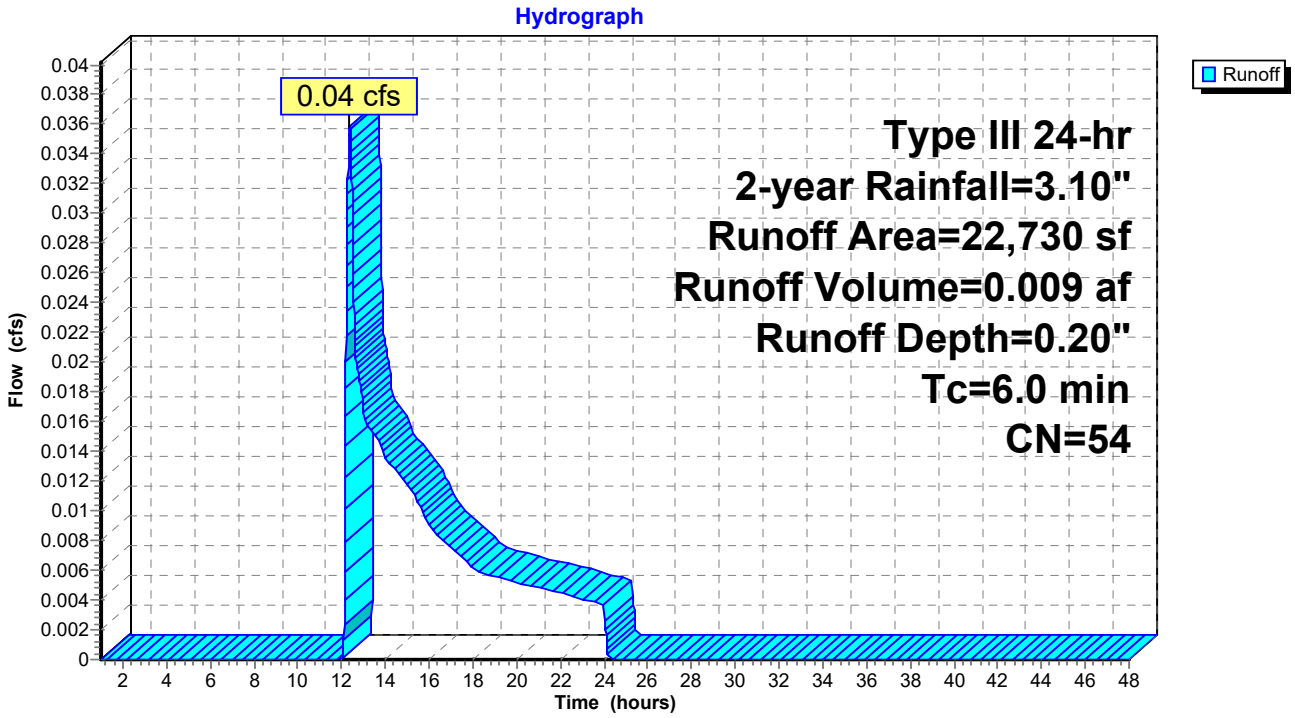
Runoff = 0.04 cfs @ 12.38 hrs, Volume= 0.009 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
	16,915	39	>75% Grass cover, Good, HSG A
*	5,815	98	Pavement
	22,730	54	Weighted Average
	16,915		74.42% Pervious Area
	5,815		25.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: Offsite Runoff

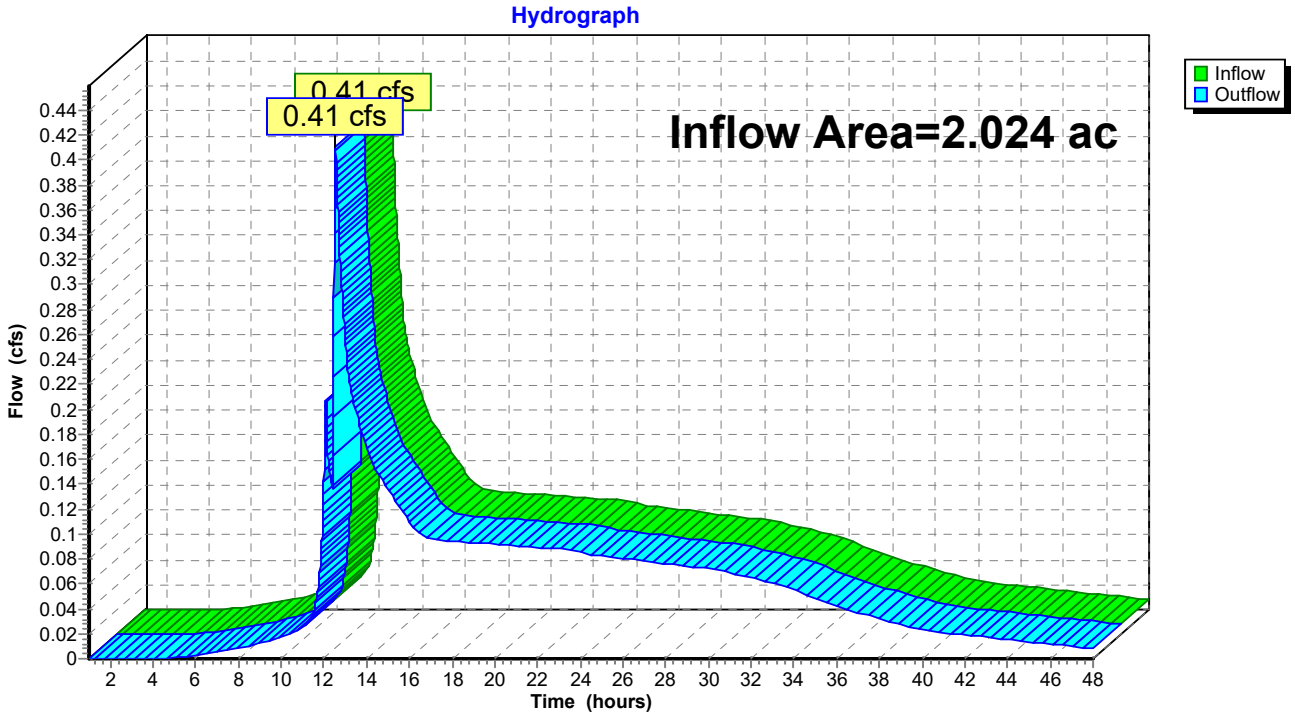


Summary for Reach POA: Washington Avenue

Inflow Area = 2.024 ac, 63.04% Impervious, Inflow Depth > 1.30" for 2-year event
Inflow = 0.41 cfs @ 12.55 hrs, Volume= 0.220 af
Outflow = 0.41 cfs @ 12.55 hrs, Volume= 0.220 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs

Reach POA: Washington Avenue



Summary for Pond 1: R-Tank & Sand Filter

Inflow Area = 0.789 ac, 91.41% Impervious, Inflow Depth = 2.35" for 2-year event
Inflow = 2.11 cfs @ 12.09 hrs, Volume= 0.155 af
Outflow = 0.35 cfs @ 12.55 hrs, Volume= 0.153 af, Atten= 83%, Lag= 28.1 min
Primary = 0.35 cfs @ 12.55 hrs, Volume= 0.153 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 61.29' @ 12.55 hrs Surf.Area= 6,744 sf Storage= 3,643 cf
Flood Elev= 66.00' Surf.Area= 6,744 sf Storage= 4,639 cf

Plug-Flow detention time= 600.5 min calculated for 0.153 af (99% of inflow)
Center-of-Mass det. time= 595.2 min (1,389.0 - 793.8)

Volume	Invert	Avail.Storage	Storage Description
#1	56.56'	674 cf	**Crushed Stone (Prismatic)** Listed below (Recalc) 1,686 cf Overall x 40.0% Voids
#2	57.56'	253 cf	**Course Gravel Transition Layer (Prismatic)** Listed below (Recalc) 843 cf Overall x 30.0% Voids
#3	58.06'	506 cf	**Sand Filter (Prismatic)** Listed below (Recalc) 2,529 cf Overall x 20.0% Voids
#4	59.56'	1,093 cf	**Stone (Prismatic)** Listed below (Recalc) 4,957 cf Overall - 2,223 cf Embedded = 2,733 cf x 40.0% Voids
#5	60.06'	2,112 cf	**R-Tanks (Prismatic)** Listed below (Recalc) Inside #4 2,223 cf Overall x 95.0% Voids
		4,639 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.56	1,686	0	0
57.56	1,686	1,686	1,686

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
57.56	1,686	0	0
58.06	1,686	843	843

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.06	1,686	0	0
59.56	1,686	2,529	2,529

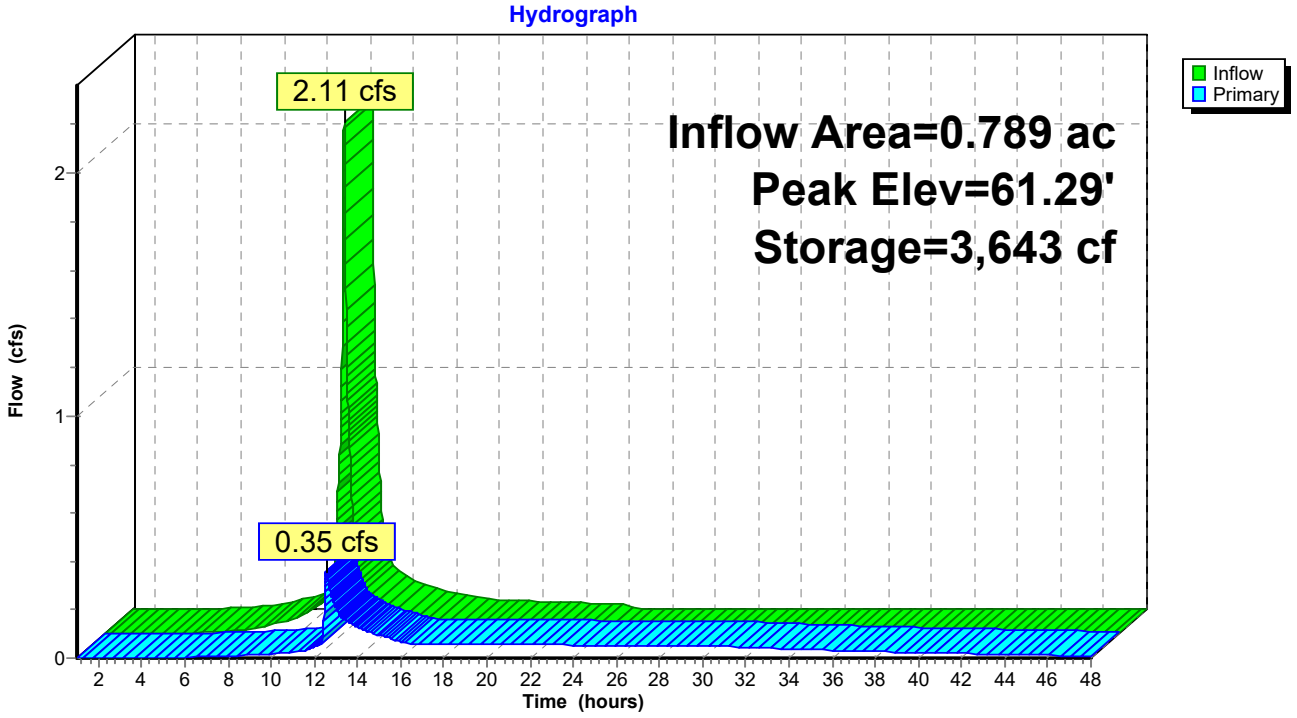
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.56	1,686	0	0
62.50	1,686	4,957	4,957

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
60.06	1,544	0	0
61.50	1,544	2,223	2,223

Device	Routing	Invert	Outlet Devices
#1	Primary	56.45'	**15.0" Round Culvert** L= 69.0' Ke= 0.900 Inlet / Outlet Invert= 56.45' / 55.80' S= 0.0094 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	56.55'	**1.0" Horiz. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	61.20'	**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

Primary OutFlow Max=0.35 cfs @ 12.55 hrs HW=61.29' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.35 cfs of 9.58 cfs potential flow)
└─**2=WQ Orifice** (Orifice Controls 0.06 cfs @ 10.48 fps)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.30 cfs @ 0.83 fps)

Pond 1: R-Tank & Sand Filter



Summary for Pond 2: R-Tank

Inflow Area = 1.110 ac, 43.21% Impervious, Inflow Depth = 0.61" for 2-year event
Inflow = 0.63 cfs @ 12.10 hrs, Volume= 0.056 af
Outflow = 0.03 cfs @ 16.68 hrs, Volume= 0.056 af, Atten= 95%, Lag= 275.1 min
Primary = 0.03 cfs @ 16.68 hrs, Volume= 0.056 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 59.54' @ 16.68 hrs Surf.Area= 1,094 sf Storage= 1,346 cf

Plug-Flow detention time= 501.4 min calculated for 0.056 af (100% of inflow)
Center-of-Mass det. time= 501.5 min (1,382.0 - 880.5)

Volume	Invert	Avail.Storage	Storage Description
#1	57.88'	800 cf	**Crushed Stone (Prismatic)**Listed below (Recalc) 4,726 cf Overall - 2,727 cf Embedded = 1,999 cf x 40.0% Voids
#2	58.38'	2,591 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) Inside #1 2,727 cf Overall x 95.0% Voids
		3,390 cf	Total Available Storage

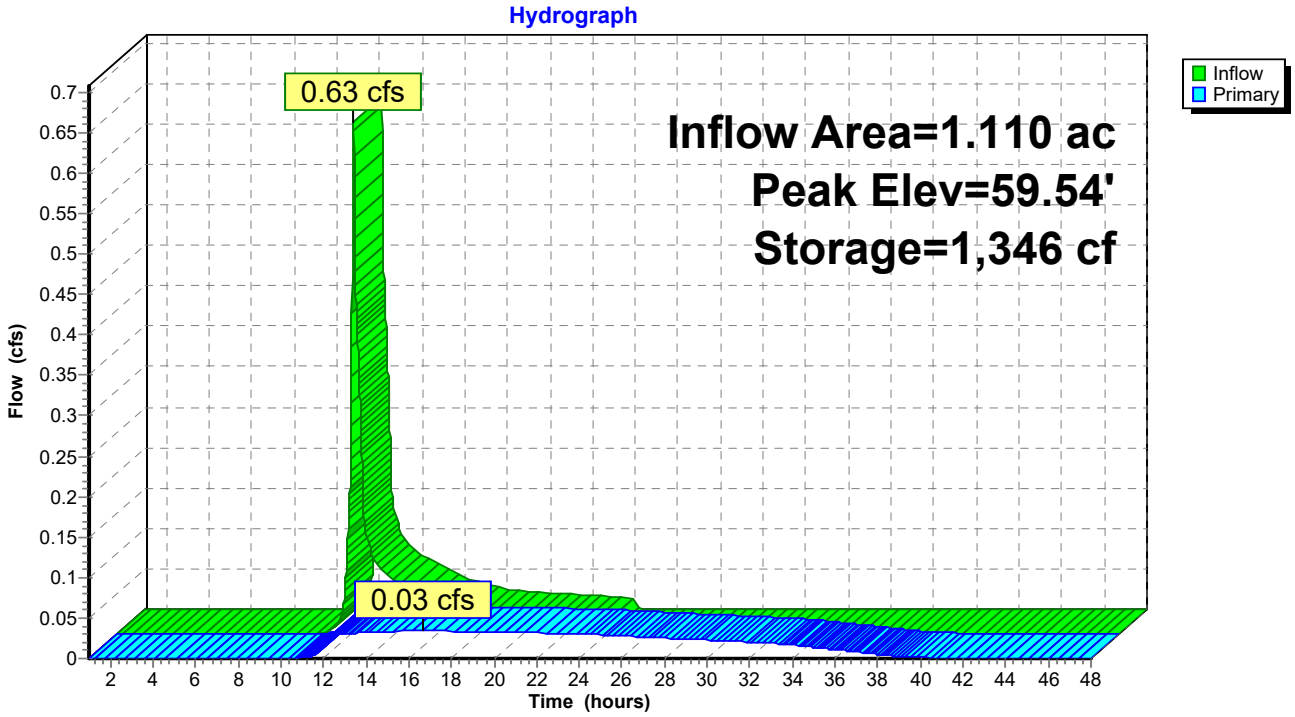
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
57.88	1,094	0	0
62.20	1,094	4,726	4,726

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.38	967	0	0
61.20	967	2,727	2,727

Device	Routing	Invert	Outlet Devices
#1	Primary	57.75'	**15.0" Round 15" storm drain** L= 44.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.75' / 57.53' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	57.85'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	60.95'	**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

Primary OutFlow Max=0.03 cfs @ 16.68 hrs HW=59.54' TW=0.00' (Dynamic Tailwater)
└**1=15" storm drain** (Passes 0.03 cfs of 5.04 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 6.19 fps)
  └**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2: R-Tank


Hydrograph
Inflow
Primary
0.63 cfs
0.03 cfs
Inflow Area=1.110 ac
Peak Elev=59.54'
Storage=1,346 cf
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
0.7
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Subcatchment 1.1S: Subcatchment 1.1

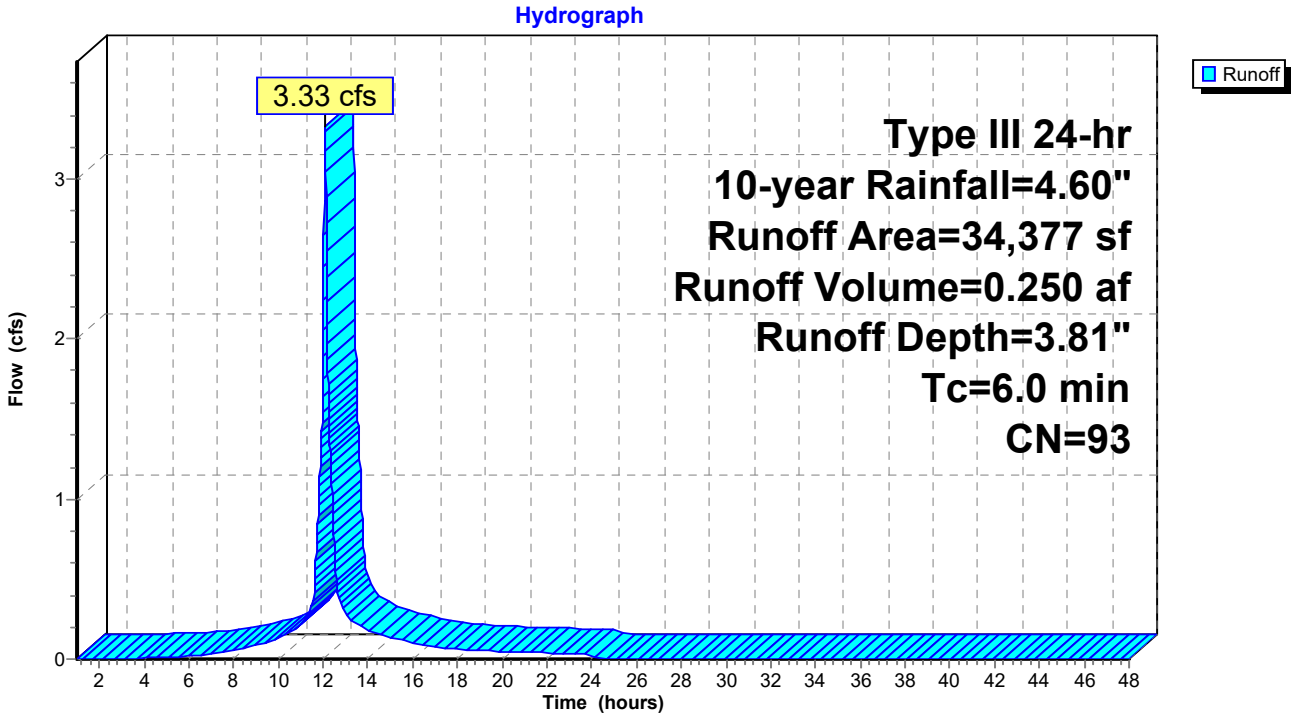
Runoff = 3.33 cfs @ 12.08 hrs, Volume= 0.250 af, Depth= 3.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

	Area (sf)	CN	Description
*	28,810	98	Roof, decks
*	2,954	39	Courtyard Landscape
*	2,613	98	Couryard Impervious
	34,377	93	Weighted Average
	2,954		8.59% Pervious Area
	31,423		91.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1.1S: Subcatchment 1.1



Summary for Subcatchment 1.2S: Subcatchment 1.2

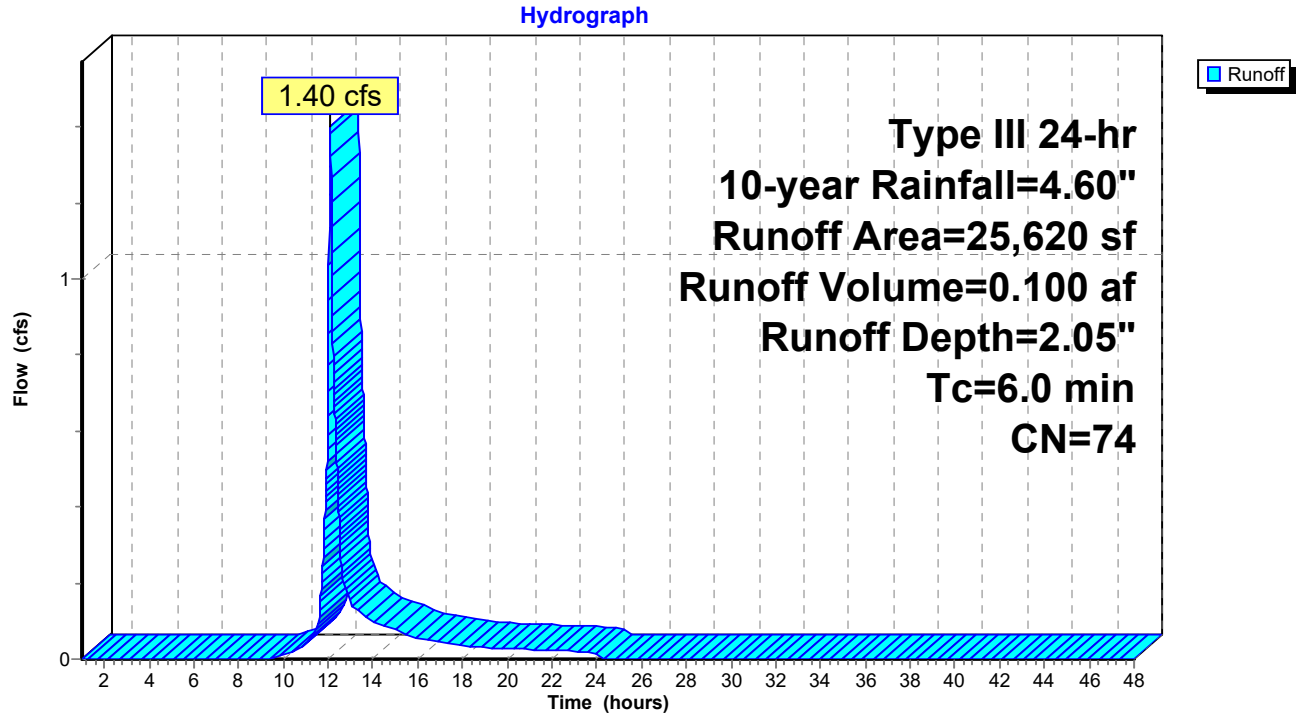
Runoff = 1.40 cfs @ 12.09 hrs, Volume= 0.100 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

	Area (sf)	CN	Description
*	8,488	98	Roof, decks
*	4,393	98	Pavement
*	811	98	Concrete Walkway
*	1,386	98	Stone
	10,542	39	>75% Grass cover, Good, HSG A
	25,620	74	Weighted Average
	10,542		41.15% Pervious Area
	15,078		58.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1.2S: Subcatchment 1.2



Summary for Subcatchment 1.3S: Subcatchment 1.3

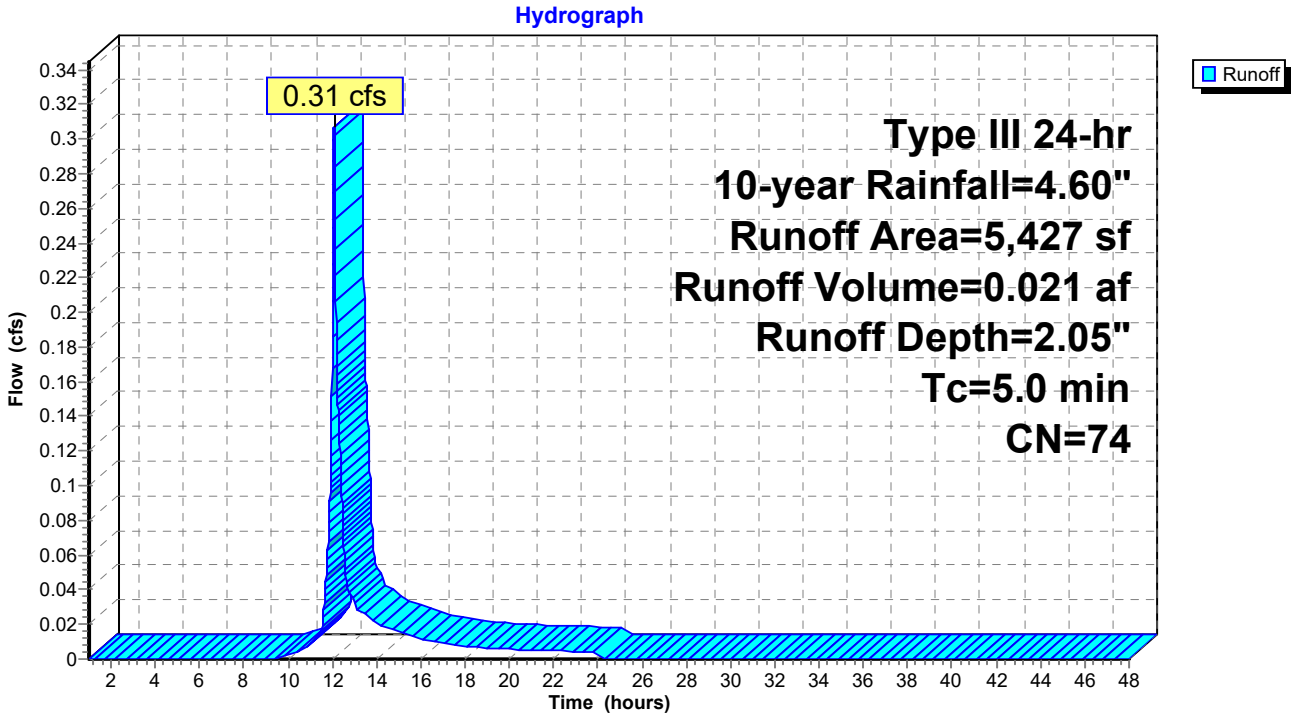
Runoff = 0.31 cfs @ 12.08 hrs, Volume= 0.021 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

	Area (sf)	CN	Description
*	2,399	98	Brick
	2,170	39	>75% Grass cover, Good, HSG A
*	858	98	Concrete Walkway
	5,427	74	Weighted Average
	2,170		39.99% Pervious Area
	3,257		60.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 1.3S: Subcatchment 1.3



Summary for Subcatchment 2S: Offsite Runoff

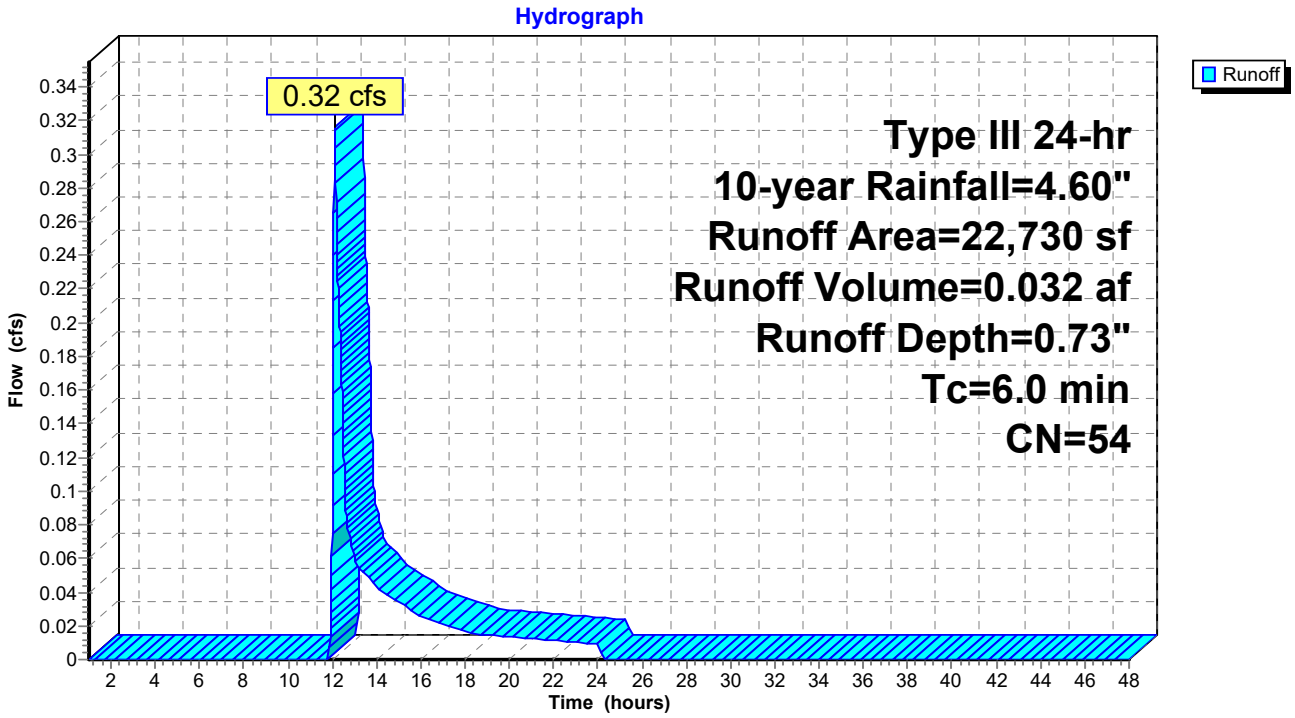
Runoff = 0.32 cfs @ 12.11 hrs, Volume= 0.032 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

	Area (sf)	CN	Description
	16,915	39	>75% Grass cover, Good, HSG A
*	5,815	98	Pavement
	22,730	54	Weighted Average
	16,915		74.42% Pervious Area
	5,815		25.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: Offsite Runoff

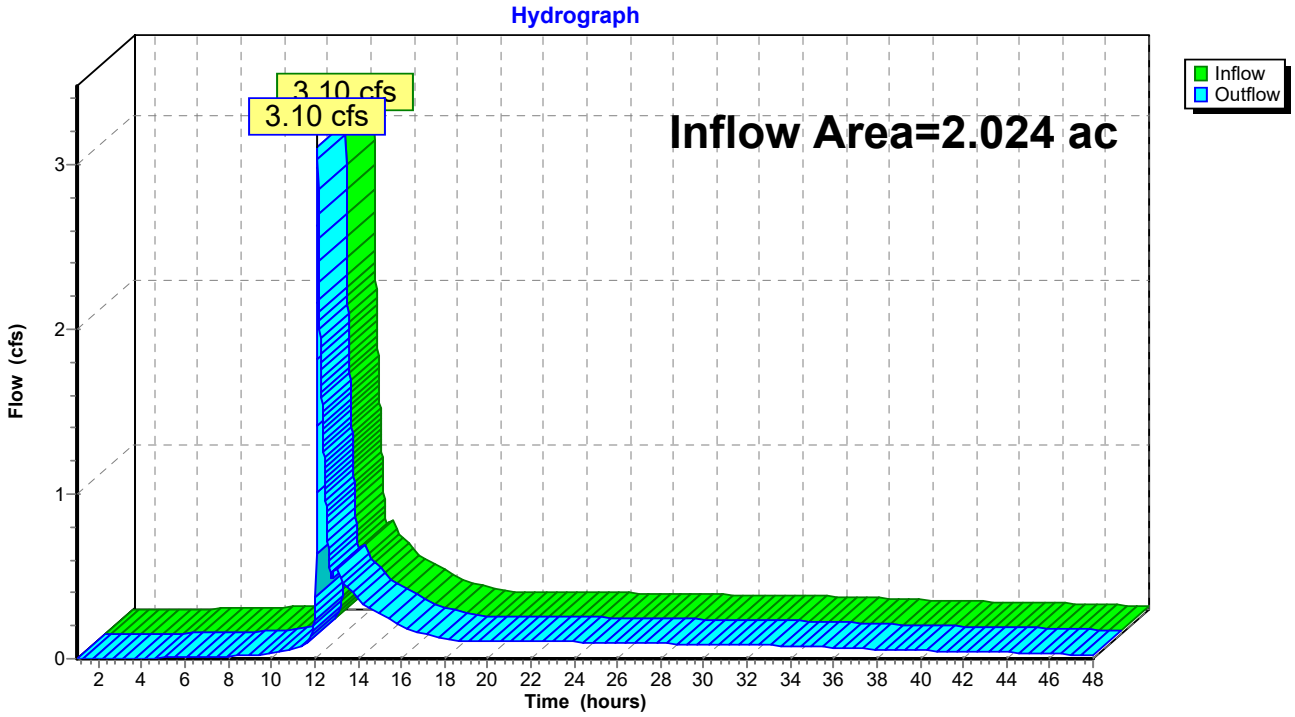


Summary for Reach POA: Washington Avenue

Inflow Area = 2.024 ac, 63.04% Impervious, Inflow Depth > 2.37" for 10-year event
Inflow = 3.10 cfs @ 12.13 hrs, Volume= 0.400 af
Outflow = 3.10 cfs @ 12.13 hrs, Volume= 0.400 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs

Reach POA: Washington Avenue



Summary for Pond 1: R-Tank & Sand Filter

Inflow Area = 0.789 ac, 91.41% Impervious, Inflow Depth = 3.81" for 10-year event
Inflow = 3.33 cfs @ 12.08 hrs, Volume= 0.250 af
Outflow = 2.82 cfs @ 12.13 hrs, Volume= 0.248 af, Atten= 15%, Lag= 3.0 min
Primary = 2.82 cfs @ 12.13 hrs, Volume= 0.248 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 61.58' @ 12.13 hrs Surf.Area= 6,744 sf Storage= 4,021 cf
Flood Elev= 66.00' Surf.Area= 6,744 sf Storage= 4,639 cf

Plug-Flow detention time= 415.0 min calculated for 0.248 af (99% of inflow)
Center-of-Mass det. time= 408.3 min (1,189.1 - 780.8)

Volume	Invert	Avail.Storage	Storage Description
#1	56.56'	674 cf	**Crushed Stone (Prismatic)** Listed below (Recalc) 1,686 cf Overall x 40.0% Voids
#2	57.56'	253 cf	**Course Gravel Transition Layer (Prismatic)** Listed below (Recalc) 843 cf Overall x 30.0% Voids
#3	58.06'	506 cf	**Sand Filter (Prismatic)** Listed below (Recalc) 2,529 cf Overall x 20.0% Voids
#4	59.56'	1,093 cf	**Stone (Prismatic)** Listed below (Recalc) 4,957 cf Overall - 2,223 cf Embedded = 2,733 cf x 40.0% Voids
#5	60.06'	2,112 cf	**R-Tanks (Prismatic)** Listed below (Recalc) Inside #4 2,223 cf Overall x 95.0% Voids
		4,639 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.56	1,686	0	0
57.56	1,686	1,686	1,686

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
57.56	1,686	0	0
58.06	1,686	843	843

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.06	1,686	0	0
59.56	1,686	2,529	2,529

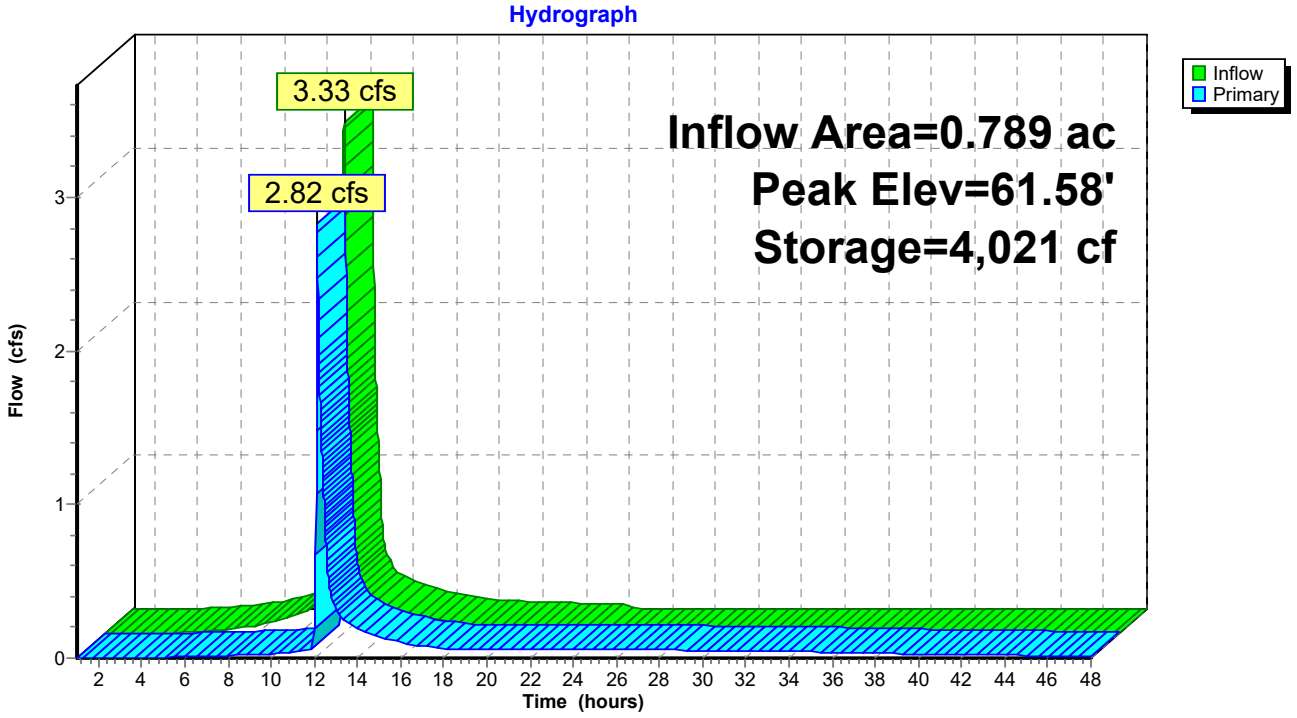
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.56	1,686	0	0
62.50	1,686	4,957	4,957

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
60.06	1,544	0	0
61.50	1,544	2,223	2,223

Device	Routing	Invert	Outlet Devices
#1	Primary	56.45'	**15.0" Round Culvert** L= 69.0' Ke= 0.900 Inlet / Outlet Invert= 56.45' / 55.80' S= 0.0094 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	56.55'	**1.0" Horiz. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	61.20'	**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

Primary OutFlow Max=2.81 cfs @ 12.13 hrs HW=61.58' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.81 cfs of 9.90 cfs potential flow)
└─**2=WQ Orifice** (Orifice Controls 0.06 cfs @ 10.80 fps)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 2.75 cfs @ 1.80 fps)

Pond 1: R-Tank & Sand Filter



Summary for Pond 2: R-Tank

Inflow Area = 1.110 ac, 43.21% Impervious, Inflow Depth = 1.43" for 10-year event
Inflow = 1.71 cfs @ 12.10 hrs, Volume= 0.132 af
Outflow = 0.21 cfs @ 13.02 hrs, Volume= 0.131 af, Atten= 88%, Lag= 55.6 min
Primary = 0.21 cfs @ 13.02 hrs, Volume= 0.131 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 61.01' @ 13.02 hrs Surf.Area= 1,094 sf Storage= 2,768 cf

Plug-Flow detention time= 591.3 min calculated for 0.131 af (99% of inflow)
Center-of-Mass det. time= 586.2 min (1,443.2 - 857.0)

Volume	Invert	Avail.Storage	Storage Description
#1	57.88'	800 cf	**Crushed Stone (Prismatic)**Listed below (Recalc) 4,726 cf Overall - 2,727 cf Embedded = 1,999 cf x 40.0% Voids
#2	58.38'	2,591 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) Inside #1 2,727 cf Overall x 95.0% Voids
		3,390 cf	Total Available Storage

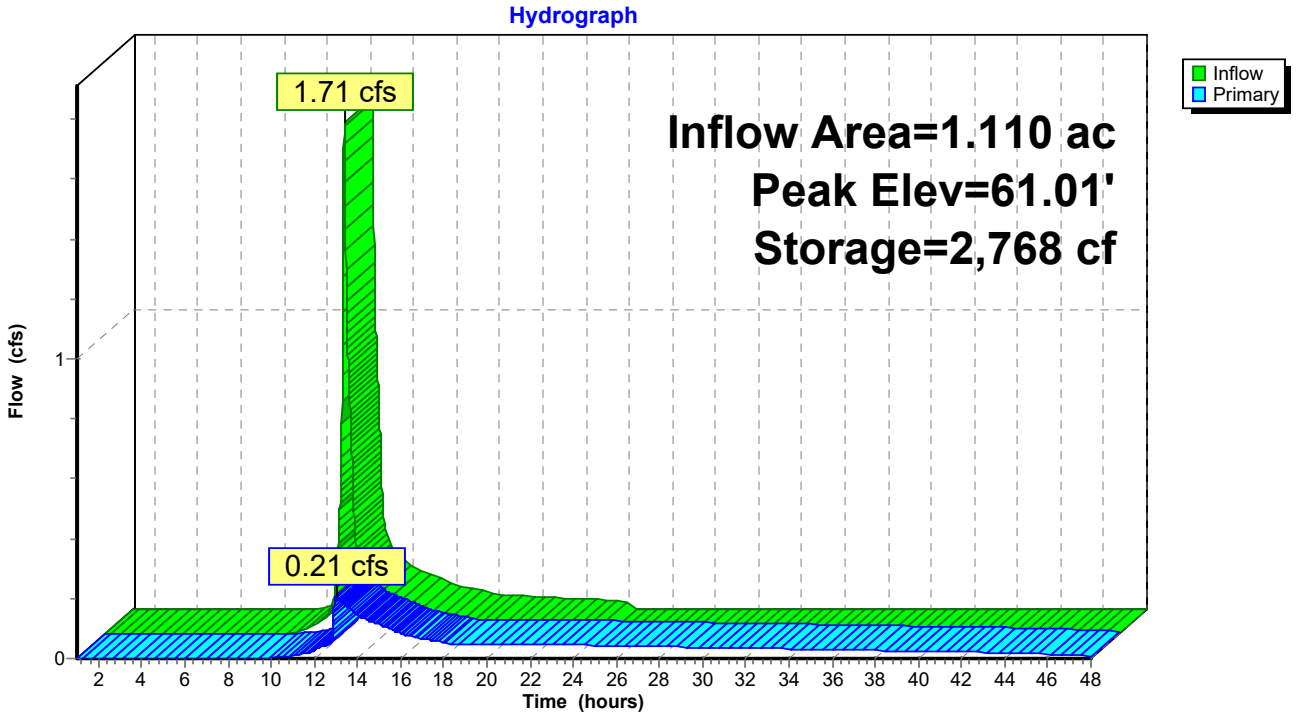
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
57.88	1,094	0	0
62.20	1,094	4,726	4,726

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.38	967	0	0
61.20	967	2,727	2,727

Device	Routing	Invert	Outlet Devices
#1	Primary	57.75'	**15.0" Round 15" storm drain** L= 44.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.75' / 57.53' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	57.85'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	60.95'	**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

Primary OutFlow Max=0.21 cfs @ 13.02 hrs HW=61.01' TW=0.00' (Dynamic Tailwater)
└**1=15" storm drain** (Passes 0.21 cfs of 7.57 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.50 fps)
  └**3=Broad-Crested Rectangular Weir** (Weir Controls 0.16 cfs @ 0.68 fps)

Pond 2: R-Tank


Hydrograph
1.71 cfs
0.21 cfs
Inflow Area=1.110 ac
Peak Elev=61.01'
Storage=2,768 cf
Inflow
Primary
Flow (cfs)
0
1
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
Time (hours)

Summary for Subcatchment 1.1S: Subcatchment 1.1

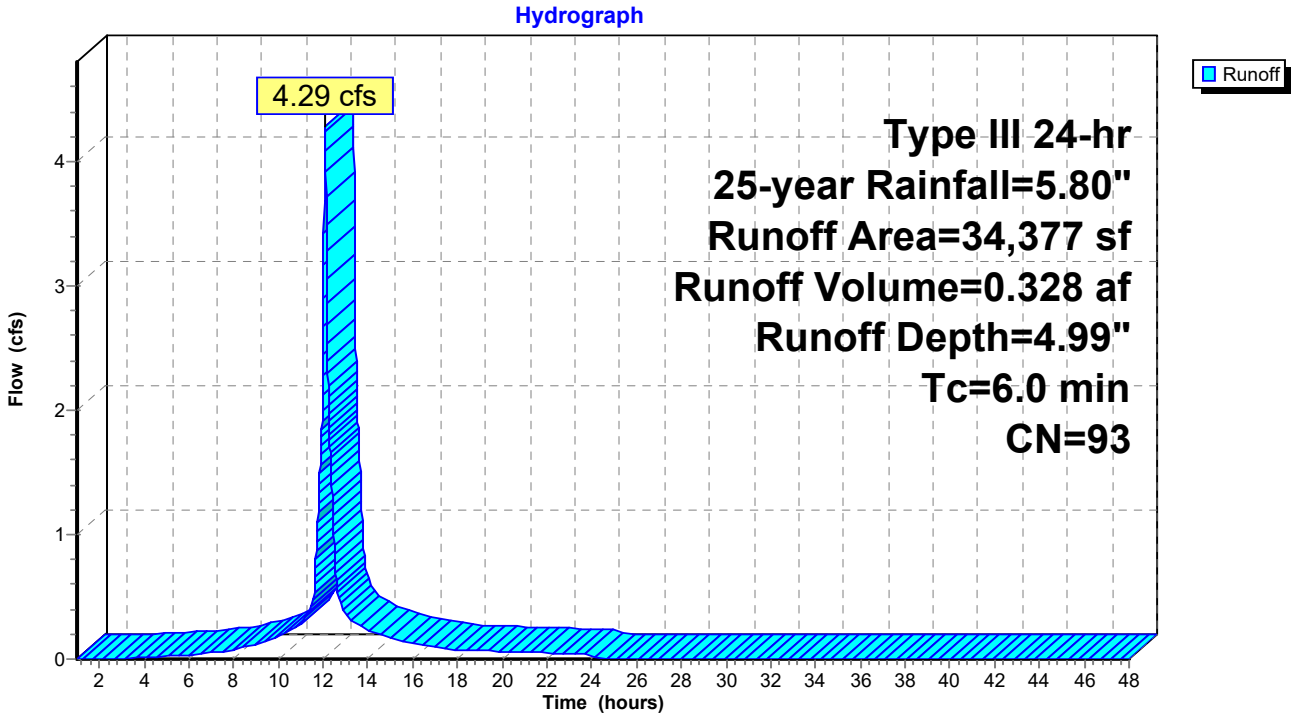
Runoff = 4.29 cfs @ 12.08 hrs, Volume= 0.328 af, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

	Area (sf)	CN	Description
*	28,810	98	Roof, decks
*	2,954	39	Courtyard Landscape
*	2,613	98	Couryard Impervious
	34,377	93	Weighted Average
	2,954		8.59% Pervious Area
	31,423		91.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1.1S: Subcatchment 1.1



Summary for Subcatchment 1.2S: Subcatchment 1.2

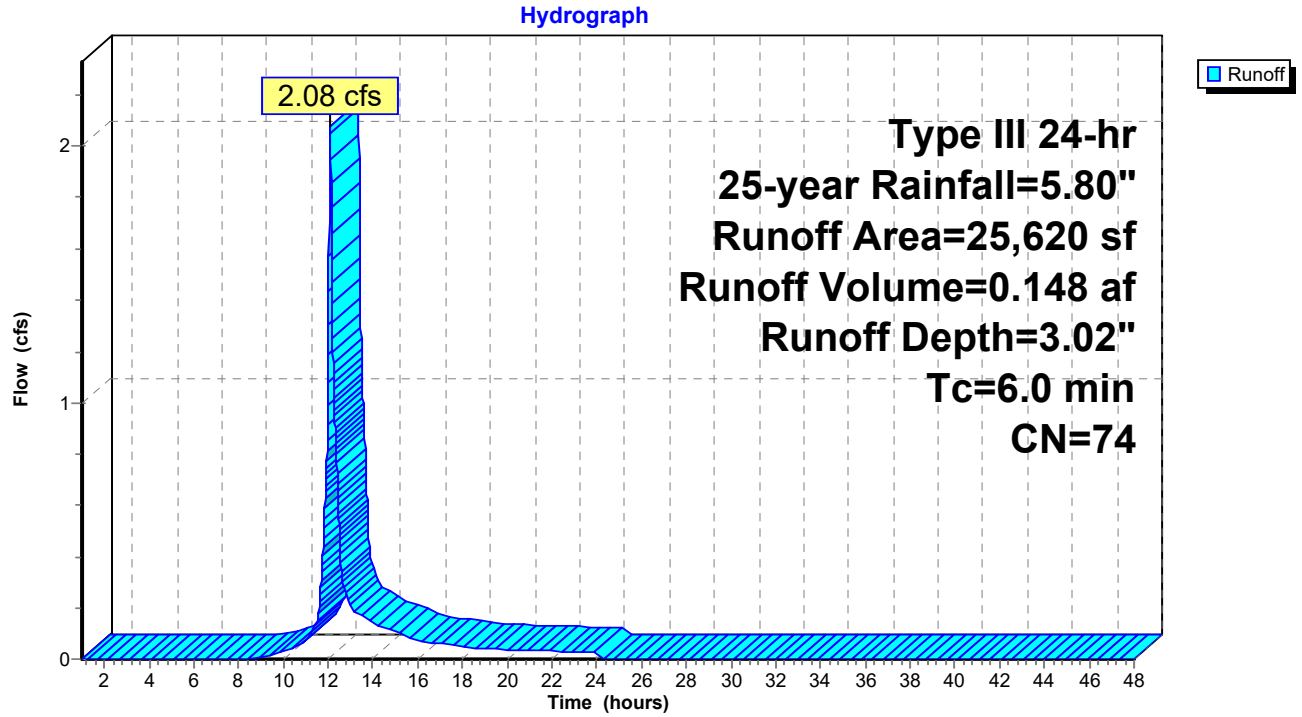
Runoff = 2.08 cfs @ 12.09 hrs, Volume= 0.148 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

	Area (sf)	CN	Description
*	8,488	98	Roof, decks
*	4,393	98	Pavement
*	811	98	Concrete Walkway
*	1,386	98	Stone
	10,542	39	>75% Grass cover, Good, HSG A
	25,620	74	Weighted Average
	10,542		41.15% Pervious Area
	15,078		58.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1.2S: Subcatchment 1.2



Summary for Subcatchment 1.3S: Subcatchment 1.3

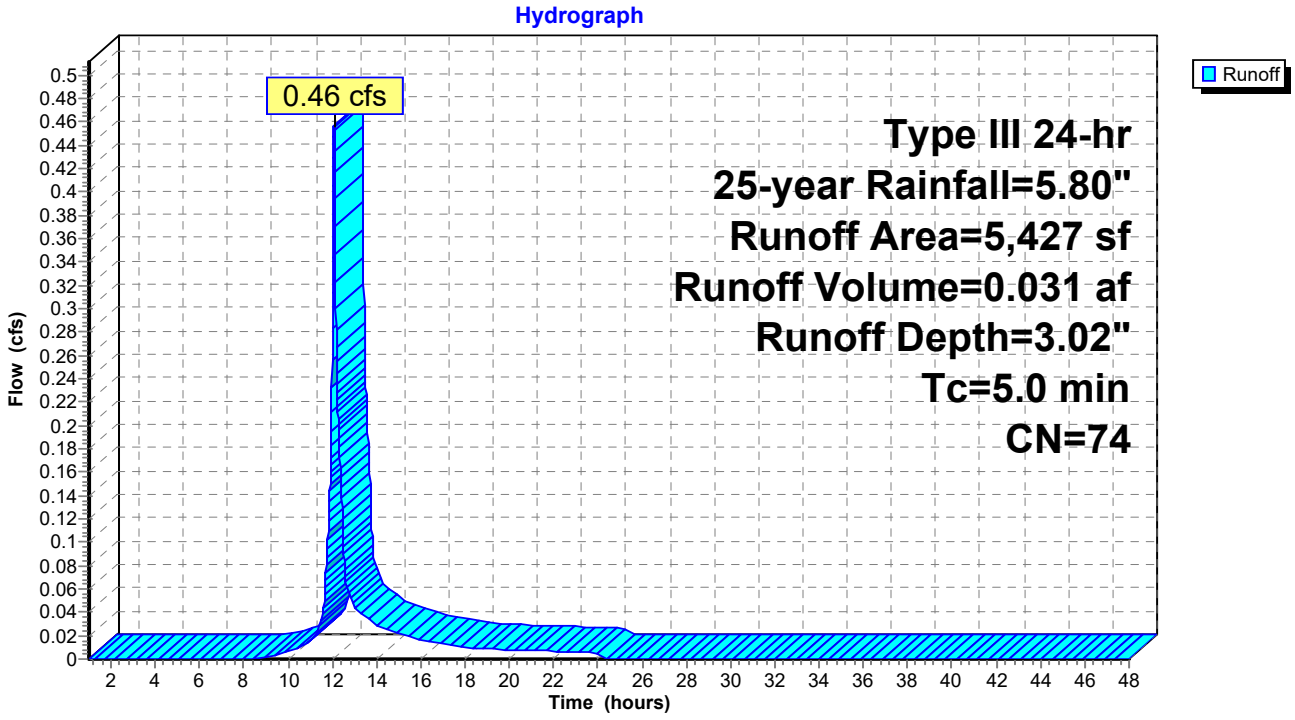
Runoff = 0.46 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

	Area (sf)	CN	Description
*	2,399	98	Brick
	2,170	39	>75% Grass cover, Good, HSG A
*	858	98	Concrete Walkway
	5,427	74	Weighted Average
	2,170		39.99% Pervious Area
	3,257		60.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 1.3S: Subcatchment 1.3



Summary for Subcatchment 2S: Offsite Runoff

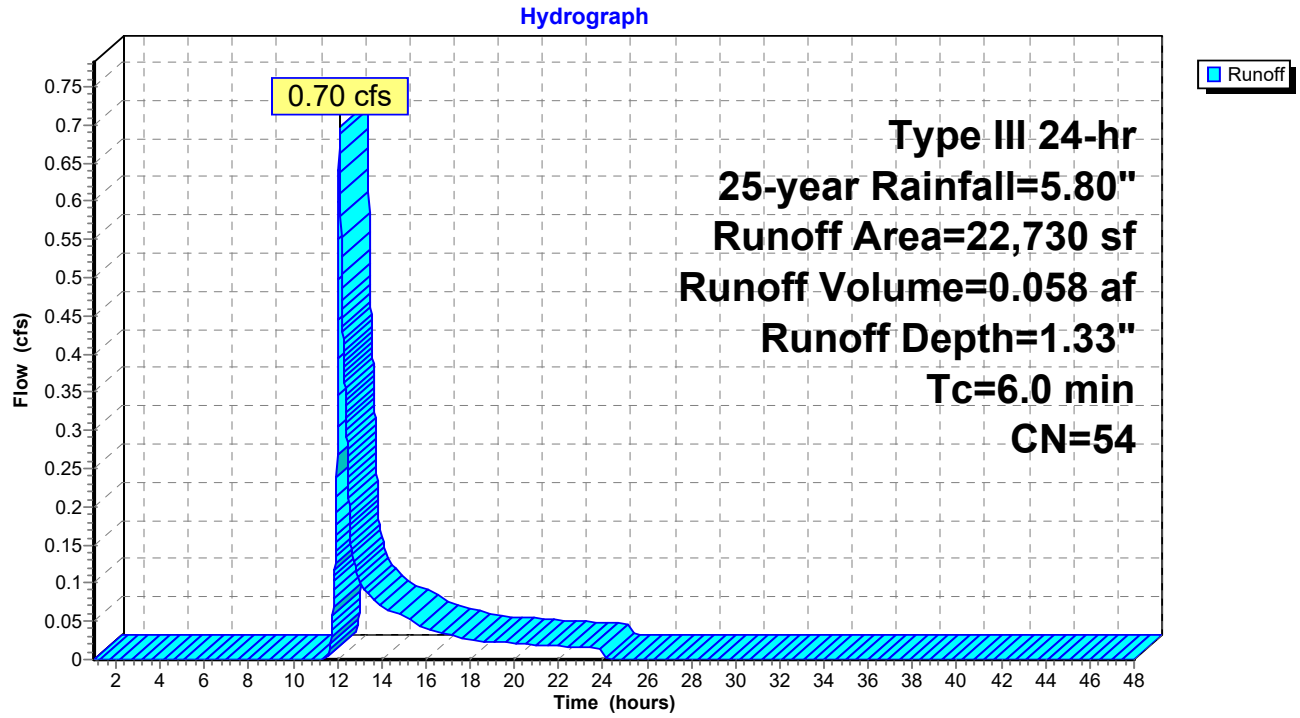
Runoff = 0.70 cfs @ 12.10 hrs, Volume= 0.058 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

	Area (sf)	CN	Description
	16,915	39	>75% Grass cover, Good, HSG A
*	5,815	98	Pavement
	22,730	54	Weighted Average
	16,915		74.42% Pervious Area
	5,815		25.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: Offsite Runoff

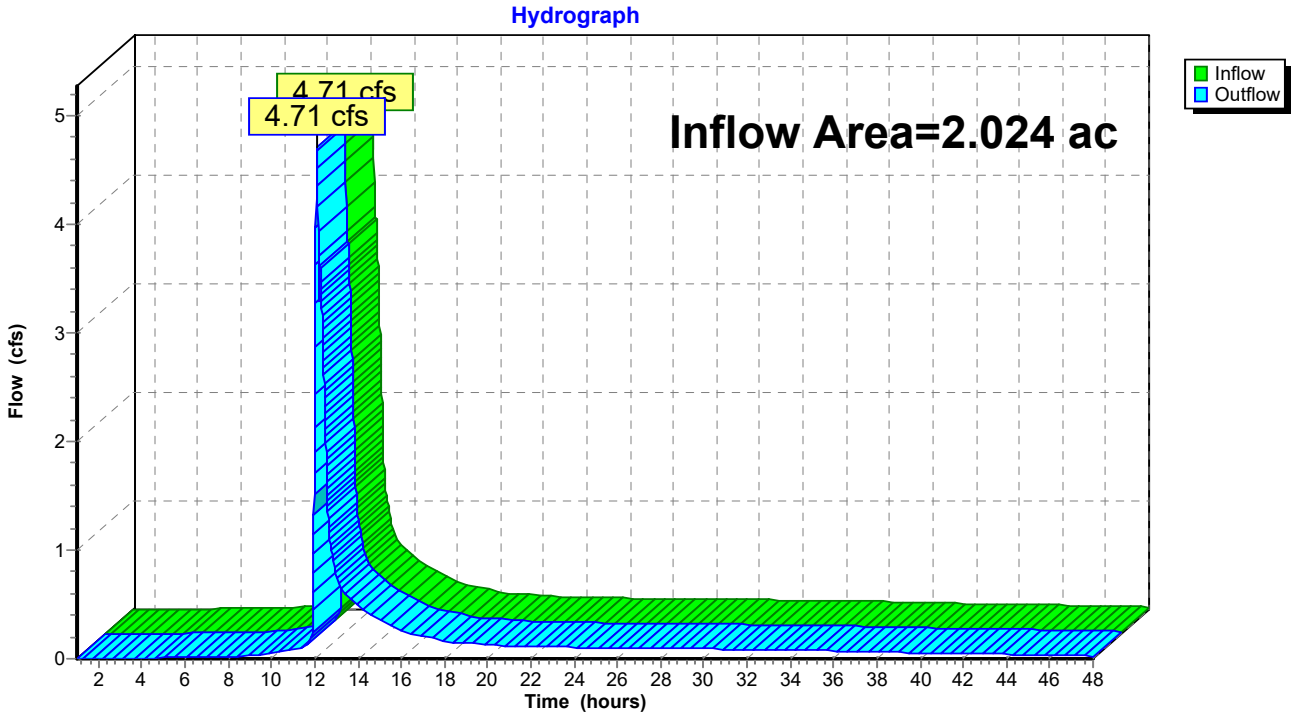


Summary for Reach POA: Washington Avenue

Inflow Area = 2.024 ac, 63.04% Impervious, Inflow Depth > 3.32" for 25-year event
Inflow = 4.71 cfs @ 12.10 hrs, Volume= 0.559 af
Outflow = 4.71 cfs @ 12.10 hrs, Volume= 0.559 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs

Reach POA: Washington Avenue



Summary for Pond 1: R-Tank & Sand Filter

Inflow Area = 0.789 ac, 91.41% Impervious, Inflow Depth = 4.99" for 25-year event
Inflow = 4.29 cfs @ 12.08 hrs, Volume= 0.328 af
Outflow = 4.23 cfs @ 12.10 hrs, Volume= 0.324 af, Atten= 1%, Lag= 0.8 min
Primary = 4.23 cfs @ 12.10 hrs, Volume= 0.324 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 61.69' @ 12.10 hrs Surf.Area= 6,744 sf Storage= 4,096 cf
Flood Elev= 66.00' Surf.Area= 6,744 sf Storage= 4,639 cf

Plug-Flow detention time= 335.9 min calculated for 0.324 af (99% of inflow)
Center-of-Mass det. time= 329.1 min (1,103.1 - 774.0)

Volume	Invert	Avail.Storage	Storage Description
#1	56.56'	674 cf	**Crushed Stone (Prismatic)** Listed below (Recalc) 1,686 cf Overall x 40.0% Voids
#2	57.56'	253 cf	**Course Gravel Transition Layer (Prismatic)** Listed below (Recalc) 843 cf Overall x 30.0% Voids
#3	58.06'	506 cf	**Sand Filter (Prismatic)** Listed below (Recalc) 2,529 cf Overall x 20.0% Voids
#4	59.56'	1,093 cf	**Stone (Prismatic)** Listed below (Recalc) 4,957 cf Overall - 2,223 cf Embedded = 2,733 cf x 40.0% Voids
#5	60.06'	2,112 cf	**R-Tanks (Prismatic)** Listed below (Recalc) Inside #4 2,223 cf Overall x 95.0% Voids
		4,639 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.56	1,686	0	0
57.56	1,686	1,686	1,686

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
57.56	1,686	0	0
58.06	1,686	843	843

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.06	1,686	0	0
59.56	1,686	2,529	2,529

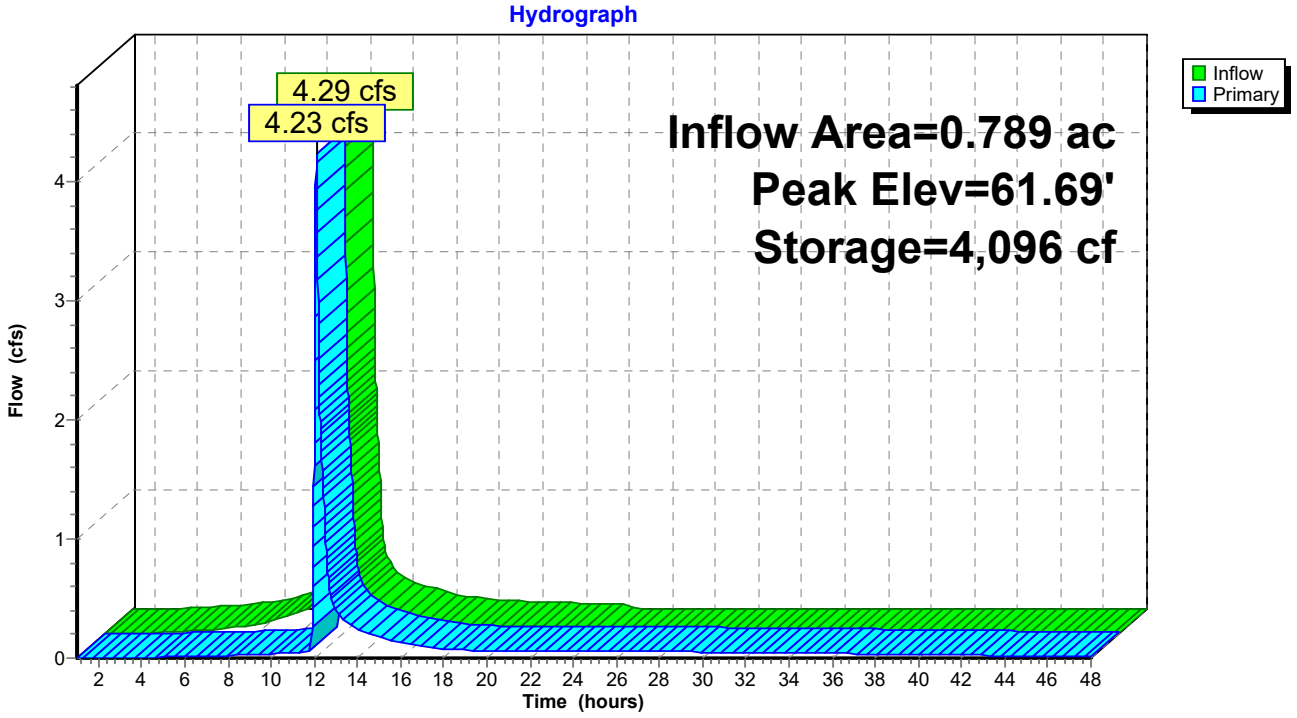
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.56	1,686	0	0
62.50	1,686	4,957	4,957

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
60.06	1,544	0	0
61.50	1,544	2,223	2,223

Device	Routing	Invert	Outlet Devices
#1	Primary	56.45'	**15.0" Round Culvert** L= 69.0' Ke= 0.900 Inlet / Outlet Invert= 56.45' / 55.80' S= 0.0094 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	56.55'	**1.0" Horiz. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	61.20'	**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

Primary OutFlow Max=4.23 cfs @ 12.10 hrs HW=61.69' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 4.23 cfs of 10.03 cfs potential flow)
└─**2=WQ Orifice** (Orifice Controls 0.06 cfs @ 10.92 fps)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 4.17 cfs @ 2.11 fps)

Pond 1: R-Tank & Sand Filter



Summary for Pond 2: R-Tank

Inflow Area = 1.110 ac, 43.21% Impervious, Inflow Depth = 2.22" for 25-year event
Inflow = 2.77 cfs @ 12.09 hrs, Volume= 0.206 af
Outflow = 1.37 cfs @ 12.28 hrs, Volume= 0.204 af, Atten= 51%, Lag= 11.4 min
Primary = 1.37 cfs @ 12.28 hrs, Volume= 0.204 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 61.19' @ 12.28 hrs Surf.Area= 1,094 sf Storage= 2,942 cf

Plug-Flow detention time= 400.6 min calculated for 0.204 af (99% of inflow)
Center-of-Mass det. time= 394.9 min (1,240.1 - 845.2)

Volume	Invert	Avail.Storage	Storage Description
#1	57.88'	800 cf	**Crushed Stone (Prismatic)**Listed below (Recalc) 4,726 cf Overall - 2,727 cf Embedded = 1,999 cf x 40.0% Voids
#2	58.38'	2,591 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) Inside #1 2,727 cf Overall x 95.0% Voids
		3,390 cf	Total Available Storage

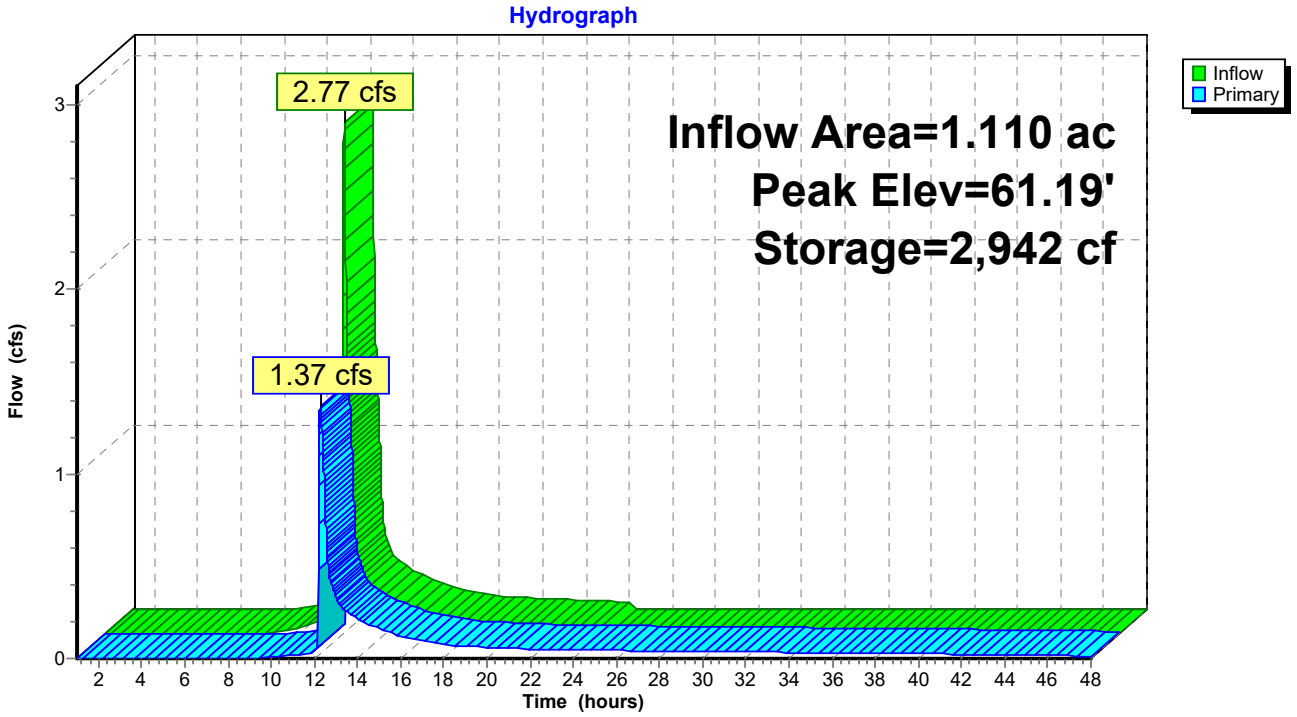
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
57.88	1,094	0	0
62.20	1,094	4,726	4,726

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.38	967	0	0
61.20	967	2,727	2,727

Device	Routing	Invert	Outlet Devices
#1	Primary	57.75'	**15.0" Round 15" storm drain** L= 44.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.75' / 57.53' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	57.85'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	60.95'	**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

Primary OutFlow Max=1.37 cfs @ 12.28 hrs HW=61.19' TW=0.00' (Dynamic Tailwater)
└**1=15" storm drain** (Passes 1.37 cfs of 7.83 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.74 fps)
  └**3=Broad-Crested Rectangular Weir** (Weir Controls 1.32 cfs @ 1.38 fps)

Pond 2: R-Tank


Hydrograph
2.77 cfs
1.37 cfs
Inflow Area=1.110 ac
Peak Elev=61.19'
Storage=2,942 cf
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
2
3
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

165 WASHINGTON AVE LAND USE AND POLLUTANT SUMMARY TABLE

LAND USE	COLOR	POLLUTANT RANKING	EXISTING AREA	WEIGHTED AVE. RANKING
ROADS WHERE IDLING MAY OCCUR PERIODICALLY DUE TO TRAFFIC AND INTERSECTIONS; HIGH USE PARKING LOTS		5	0.00 AC	0.00
OTHER ROADS; MEDIUM USE PARKING LOTS		4	0.61 AC	1.62
OTHER PARKING LOTS AND DRIVEWAYS; FLAT ASPHALT ROOFTOPS; ROOFS ON AN INDUSTRIAL FACILITY		3	0.23 AC	0.46
OTHER ROOFTOPS; BIKEWAYS; GRASSED AREAS MOWED MORE THAN TWICE PER YEAR; WALKWAYS / FOOT TRAFFIC-ONLY PAVEMENT		2	0.00 AC	0.00
NON-GRASS LANDSCAPED AREAS; STORMWATER TREATMENT / STORAGE SYSTEMS (EXCEPT BUFFERS)		1	0.67 AC	0.45
TOTAL			1.50 AC	2.53

TM 10-C-1
N/F
PORTLAND VOA
ELDERLY HOUSING, INC.

TM 12-H-1
N/F
MUNJOY HEIGHTS CONDO
32240/ 98
SEE 31302/177

TM 12-F-10,11
N/F
HIGH PEAKS, LLC
34058/254

TM 12-F-9
N/F JEFFREY A. CURRAN
37720/297

TM 12-F-8
N/F JEFFREY A. CURRAN
37720/297

TM 10-B-6
N/F
CITY OF PORTLAND
1720/252
EXCEPT
2695/281

AREA=
65,375 S.F.
1.501 AC.

BIKE LANE

WASHINGTON AVENUE
PAVED – PUBLIC

OHW

20 0 20 40
SCALE: 1" = 20'

PERMITTING
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY DATE
SITE PLAN	PFH 11/20/24

DRAWING NAME: PRE REDEVELOPMENT IMPACT RANKINGS

PROJECT NAME: TAVATA – 165 WASHINGTON AVENUE
PORTLAND, MAINE, 04101

CLIENT: REDFERN PROPERTIES
P.O. BOX 8816, PORTLAND, MAINE 04104

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ACORN ENGINEERING, INC.
PO BOX 3427, PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1202_CIVIL
JN:	1202
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
EX-3

165 WASHINGTON AVE LAND USE AND POLLUTANT SUMMARY TABLE

LAND USE	COLOR	POLLUTANT RANKING	EXISTING AREA	WEIGHTED AVE. RANKING
ROADS WHERE IDLING MAY OCCUR PERIODICALLY DUE TO TRAFFIC AND INTERSECTIONS; HIGH USE PARKING LOTS		5	0.00 AC	0.00
OTHER ROADS; MEDIUM USE PARKING LOTS		4	0.10 AC	0.27
OTHER PARKING LOTS AND DRIVEWAYS; FLAT ASPHALT ROOFTOPS; ROOFS ON AN INDUSTRIAL FACILITY		3	0.00 AC	0.00
OTHER ROOFTOPS; BIKEWAYS; GRASSED AREAS MOWED MORE THAN TWICE PER YEAR; WALKWAYS / FOOT TRAFFIC-ONLY PAVEMENT		2	1.15 AC	1.53
NON-GRASS LANDSCAPED AREAS; STORMWATER TREATMENT / STORAGE SYSTEMS (EXCEPT BUFFERS)		1	0.26 AC	0.17
TOTAL			1.50 AC	1.97

LEGEND



20 0 20 40

SCALE: 1" = 20'

PERMITTING
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY DATE
SITE PLAN	PFH 11/20/24

DRAWING NAME: POST REDEVELOPMENT IMPACT RANKINGS

PROJECT NAME: TAVATA - 165 WASHINGTON AVENUE PORTLAND, MAINE, 04101

CLIENT: REDFERN PROPERTIES
P.O. BOX 8816, PORTLAND, MAINE 04104

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PO BOX 3422, PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1202_CIVIL
JN:	1202
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. NEIL
15318
LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
EX-4

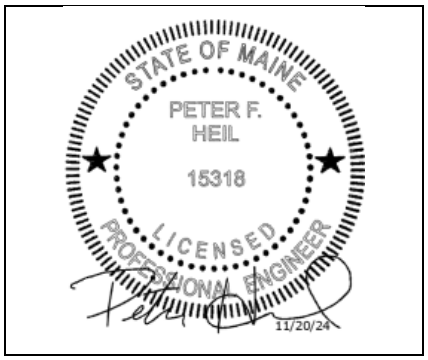
POST CONSTRUCTION - STORMWATER INSPECTION & MAINTENANCE PLAN

Prepared For:

Redfern Properties
P.O. Box 8816
Portland, ME 04104

Prepared By:

Acorn Engineering, Inc.
PO Box 3372
Portland, Maine 04102



November 2024

RESPONSIBLE PARTY

The owner, Redfern Properties and/or their successor shall be responsible for contracting with a qualified stormwater professional to implement the Inspection and Maintenance Plan. The qualified stormwater professional shall maintain a stormwater log (report) summarizing inspections, maintenance, and corrective action taken. The Qualified Stormwater Professional shall annually submit the Stormwater Log to the Engineering Department prior to June 15th.

The following is an example of a qualified stormwater professional that the owner may contract through.

Organization: Peter Heil, PE
Acorn Engineering, Inc
Portland, Maine

Phone: (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 inspection and maintenance criteria are based upon the Maine DEP - Stormwater Management for Maine, Volume III: BMPs Technical Design Manual. Refer to the Grading and Drainage Plan for the location of the BMPs

PURPOSE

This Inspection and Maintenance Plan has been individually tailored to this parcel's stormwater infrastructure, site characteristics, and their respective opportunities and limitations related to reducing the pollutant load on the receiving watershed. The maintenance of a parcel's impervious surfaces and stormwater infrastructure is critical to extending the long-term performance and effectiveness of Best Management Practices (BMPs). The Inspection and Maintenance Plan represents the parcel's minimum activities to meet the permit requirements. The parcel shall still be subject to any applicable Civil Site Plans, Permit Applications, Erosion and Sedimentation Control Plans Reports, Stormwater Management Plans, Inspection and Maintenance Manuals, and all Municipal, State, and Federal rules. The applicant shall be responsible for retaining post construction and maintenance documents for at least 5 years.

OPERATION AND MAINTENANCE ACTIVITY

Catch Basins / Field Inlets:

Catch basins and field inlets shall be inspected to confirm that the structure is operating properly.

- Inspect the presence of accumulated sediment or debris any sediment shall be removed. The equipment shall meet the following minimum specifications; power jet and water source for washing down the storm drain, vacuum attachment for catch basin cleaning, and a liquid handling method to dewater the material.
- Sediment shall be removed when accumulation is within 6 inches of the outfall pipe invert. Legally dispose of accumulated sediment and debris from the bottom of the basin, inlet grates, and inflow channels to the basin.
- If the basin outlet is designed with a hood to trap floatable materials (e.g. Snout), check to ensure watertight seal is working.
- Appropriately dispose of all collected material.

Sweeping:

Annual sweeping of the parking lot following the snow melt, if necessary. Appropriately dispose of all collected material.

Storm Drains:

The storm drain shall be annually inspected for the presence of accumulated sediment or debris. Any sediment shall be removed as required.

- The equipment shall meet the following minimum specifications; power jet and water source for washing down the storm drain, vacuum attachment for catch basin cleaning, and a liquid handling method to dewater the material.
- Inspect and legally dispose of accumulated sediment and debris within the storm drains between basins. Liquids must be decanted on-site and returned to the catch basin.

Underdrained Subsurface Sand Filter & R-Tank:

The maintenance of the underdrained subsurface sand filters shall be in accordance with the following activities identified below and the Stormwater Drainage System Maintenance Agreement included within Stormwater Report.

- The system should be inspected after every major storm in the first few months to ensure proper function. Thereafter, the filter should be inspected annually.
- Inspect and maintain the R-Tanks in accordance with the attached proprietary Operation and Maintenance Plan.

Vegetated Areas and Embankments:

Inspect all landscaped and or vegetated slopes and embankments on an annual basis. Vegetated areas with bare areas or sparse growth (<90% coverage) shall be revegetated. Mulch shall be applied to landscaped areas, as necessary. Dead or decaying landscaping (ground cover, shrubs, trees etc.) shall be replanted in accordance with the approved Site Plan

INSPECTION AND MAINTENANCE TABLE

Inspection and Maintenance Frequency	Spring or Yearly	Summer	Fall	As Necessary
Catch Basins	X			X
Vegetated Areas & Slopes	X			X
Underdrained subsurface sand filter & R-Tank	X			X
Storm Drains	X			X
Sweeping	X			X

In the above chart, it is assumed the certified stormwater professional will inspect each item in the spring. Inspections outside of the spring visits can likely be conducted by the property manager.

ATTACHED

1. R-Tank Operation and Maintenance

Housekeeping Notes

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 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*.

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.

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."

6. **Authorized Non-stormwater discharges.** Identify and prevent contamination by non-stormwater discharges. Where allowed non-stormwater discharges exist, they must be identified and steps should be taken to ensure the implementation of appropriate pollution prevention measures for the non-stormwater component(s) of the discharge. Authorized non-stormwater discharges are:

   (a) Discharges from firefighting activity;

   (b) Fire hydrant flushings;

   (c) Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);

   (d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);

   (e) Routine external building washdown, not including surface paint removal, that does not involve detergents;

   (f) Pavement washwater (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material had been removed) if detergents are not used;

   (g) Uncontaminated air conditioning or compressor condensate;

   (h) Uncontaminated groundwater or spring water;

   (i) Foundation or footer drain-water where flows are not contaminated;

   (j) Uncontaminated excavation dewatering (see requirements in Appendix C(5));

   (k) Potable water sources including waterline flushings; and

   (l) Landscape irrigation.

7. **Unauthorized non-stormwater discharges .** The Department's approval under this Chapter does not authorize a discharge that is mixed with a source of nonstormwater, other than those discharges in compliance with Appendix C (6). 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.

R-TANK® OPERATION, INSPECTION AND MAINTENANCE

Operation

Your 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. Inspections should be done every six months for the first year of operation, and at least yearly thereafter. 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 most inspections 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, and OSHA requirements.

All maintenance features of your system can be accessed through a covering at the surface. With the lid removed, you can visually inspect each component to identify sediment, trash, and other contaminants within the structure. Check you construction plans to identify the maintenance features engineered into your R-Tank system, which may include:

Upstream Pipes, Inlets, and Manholes

- Working from the structures adjacent the R-Tank toward those farther away, check for debris and sediment in both the structures and the pipes. Be sure to Include all structures that contain pre- treatment systems. Some structures may include a sump.

Maintenance Ports

- Located near the inlet and outlet connections and throughout the system, check sediment depth at each port.

Inspection Ports

- Less common, inspection ports are primarily located within the Treatment Row of an R-Tank System. These should be used to check for sediment deposits but are typically too small to access for backflushing.

Treatment Row

- On installations in 2018 or later, inlet pipes may connect to a row of modules with 12” diameter access holes running horizontally through the module that can be jet vacuumed. Check these rows for accumulation of sediment and debris.

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 guide.

Maintenance

For modules taller than 40” the R-Tank System should be back-flushed once sediment accumulation has reached 6”. For modules less than 40” tall, perform maintenance when sediment depths are greater than 15% of the total system height.

If your system includes a Treatment Row with linear access through the modules from the inlet pipe, backflush this area when sediment depths reach 6”.

BEFORE ANY MAINTENANCE IS PERFORMED ON YOUR SYSTEM -
PLUG THE OUTLET PIPE TO PREVENT CONTAMINATION OF THE DOWNSTREAM SYSTEMS.

Begin by cleaning all upstream structures, pipes, and pre-treatment systems containing sediment and/or debris. If your system includes a Treatment Row, this portion of the system should be cleaned with traditional jet-vac equipment. Add a centralizer to the jet for easiest access through the modules.

To back-flush the R-Tank, water is pumped into the system through the Maintenance Ports as rapidly as possible. 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.

STEP BY STEP INSTRUCTIONS FOR INSPECTION AND MAINTENANCE CAN BE FOUND ON THE NEXT PAGE, WITH A MAINTENANCE LOG ON THE LAST PAGE.

INSPECTION

1. Upstream Structures
    a. Remove cover
    b. Use flashlight to detect sediment deposits If present, measure sediment depth
    c. Inspect pipes connecting to R-Tank
        i. If inlet pipes connect to Treatment Row, check sediment depth within these modules
        ii. If access for measurement inside the Treatment Row is difficult, sediment depth can be estimated based on the coverage of the round, 12” opening of the module
    d. Inspect pre-treatment systems (if present)
    e. Record results on Maintenance Log
    f. Replace cover
    g. Repeat for ALL Manholes upstream of R-Tank until no sedimentation is observed and all pre- treatment systems have been checked
2. Maintenance Ports
    a. Remove cap
    b. Use flashlight to detect sediment deposits
    c. If present, measure sediment depth with stadia rod
    d. Record results on maintenance log
    e. Replace cap
    f. Repeat for ALL Maintenance Ports
3. Inspection Port
    a. Remove cap
    b. Use flashlight to detect sediment deposits
    c. If present, measure sediment depth with stadia rod
    d. Record results on Maintenance Log
    e. Replace cap

MAINTENANCE

1. Plug system outlet to prevent discharge of back-flush water
2. Vacuum all upstream structures, inlet pipes, and stormwater pre-treatment systems
3. If a Treatment Row is present, vacuum this row of modules
4. Determine best location to pump out back-flush water. Typically, the outlet structure will work best, but sometimes the Maintenance Ports must be used.
5. Remove cap from Maintenance Port and pump water as rapidly as possible into system through port to suspend sediments, pumping dirty water out of the system from the outlet or nearby Maintenance Port
6. Repeat at all Maintenance Ports until sediment levels are reduced to a satisfactory level
7. Sediment-laden water shall be disposed of per local regulations
8. Replace any remaining caps or covers and remove outlet plug
9. Record the back-flushing event in your Maintenance Log with any relevant specifics

R-Tank® Maintenance Log

Site Name:		Company:	
Location:		Contact:	
City and State:		Phone:	
System Owner:		Email:	

Date	Location	Sediment Depth	Observations / Notes	Initials

Ferguson Waterworks
94 Pleasant Ave
South Portland, ME 04106

Zachary Stevens, P.E.
Project Engineer
Acorn Engineering, Inc.
PO Box 3372
Portland, ME 04104

November 20th, 2024

SUBJECT: 165 Washington Ave Redevelopment – Portland, ME
R-Tank - Plan Review and Construction Oversight Commitment

Dear Mike,

Thank you for forwarding the permit plans for the 165 Washington Ave Redevelopment in Portland, ME to Ferguson Waterworks for review of the proposed R-Tank Subsurface storage system.

After reviewing the permit plans with the latest revision November 13th 2024, as well as the hydrocad modeling, our team has provided a concept for R-Tank systems that consists of

- Courtyard System: 443 R-Tank^{HD} Single modules, and 78 R-Tank^{HD} Single Access Modules over a sand filter
- Parking Lot System: 314 R-Tank^{HD} Double modules

The treatment rows for the Courtyard System above a sand fitler have been sized (according to Maine DEP regulations) to be able to handle the flow of the 1yr 24 hour storm, accounting for 0.02cfs per Access Module. Based on the hydrocad modeling received, total flow into the system necessitates a minimum 78 R-Tank^{HD} Access Modules between three separate treatment rows.

The plan set includes all the details and specification information necessary for both the permitting and construction of the detention system.

The R-Tank system has been designed with a 3” stone base (meeting the 3” minimum requirement), 2 ft stone perimeter surrounding the modules, and a sectional build-up over the system that meets the min cover guidance for R-Tank^{HD} systems designed in traffic loaded locations.

The cover over the system fits within the allowable cover limits. For R-TankHD modules, minimum cover for traffic rating consists of 20" total cover (including 12" of stone). Maximum cover allowable cannot exceed 7' from module top to finished grade.

The R-Tank modules for both systems are to be wrapped with an N080 Non-Woven Geotextile fabric. The excavation for each system will be wrapped with 30 mil. Pvc liner (sides and bottom) sandwiched by two layers of N080 Non-Woven Geotextile fabric . The R-Tank Treatment rows are to be wrapped in 30 Mil. PVC Liner (Top and sides only) between two layers of N080 Non-Woven Geotextile. Two layers of S300 Woven fabric is to be placed under each treatment row section.

An appropriate number of inspection ports have been provided for proper maintenance and inspection.

Overall, Ferguson takes no exceptions to the 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
Sam Wojichowksi – Engineered Stormwater Solutions Specialist (New England)

ACORN ENGINEERING, INC.

K. EROSION & SEDIMENTATION CONTROL REPORT

Prepared For:

Redfern Properties
P.O. Box 8816
Portland, ME 04104

Prepared By:

Acorn Engineering, Inc.
P.O. Box 3372
Portland, Maine 04104



November 2024

INTRODUCTION

Acorn Engineering, Inc. has been retained by Redfern Properties to provide civil engineering services for the proposed work located at 165 Washington Avenue, Portland, ME 04101. The project proposes to demolish the existing Northern Burner Supply building and associated parking areas and construct a 326-unit multi-family / mixed use building with commercial space on the first floor. It is anticipated that the building will be a mixture of two-bedroom, one-bedroom and studio units. The project also includes various parking, utility, and landscape 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 165 Washington Avenue. A Boundary & Topographic Survey has been prepared by Owen Haskell, Inc. on July 25, 2023.

Abutting Uses:

- North OS-R Zone — Land Banks
- East B2b/RN4 Zone — Residential
- South B2b/RN4 Zone — Multi-Use Commercial/Residential
- West B2b Zone — Retail/Residential

A large majority of the existing site is impervious surface that mainly includes the existing Northern Burner Supply building and parking lots. The slope within the existing developed area is relatively flat with steep grades along the rear of the parcel.

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**
Hinkley Loamy Sand	0.17	0.17

The soil "K" value for the soil, listed above, shows a low susceptibility to erosion. The site's susceptibility to erosion is from the Soil Conservation Service Medium Intensity Soil Survey for Cumberland County. Although 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 signs of erosion.

1.3 Critical Areas

There are no critical 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 Washington Avenue 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 winter stabilization plan in this report and the Maine Erosion and Sediment Control BMP manual for further information.

2.1.13 It is of the utmost importance that stormwater runoff and potential sediment from the construction site be diverted around the proposed underdrains until the trench is backfilled.

2.2 Permanent Erosion Control Measures

The following permanent erosion control measures are intended for post disturbance areas of the project.

2.2.1 All disturbed areas during construction, not subject to other proposed conditions, shall receive a minimum 4" of loam, limed, and mulched. Erosion control blankets or mats shall be placed over the mulch in areas noted in paragraph 4.1 of this report.

2.2.2 All stormwater devices shall be installed, and tributary areas stabilized prior receiving stormwater.

2.2.3 Refer to the Maine Erosion and Sediment Control BMP manual for additional information.

3.0 EROSION AND SEDIMENTATION CONTROL PLAN

3.1 The Erosion and Sedimentation Control Plan is included within the plan set.

4.0 DETAILS AND SPECIFICATIONS

4.1 Erosion Control Details and Specifications are included in the plan set.

5.0 STABILIZATION PLAN FOR WINTER CONSTRUCTION

Winter Construction consists of earthwork disturbance between the dates of November 1 and April 15. If a construction site is not stabilized with pavement, a road gravel base, 75% mature vegetation cover or riprap by November 15, then the site shall be protected with over-winter stabilization. Any area not stabilized with pavement, vegetation, mulching, erosion control mix, erosion control mats, riprap, or gravel base on a road shall be considered open.

The contractor shall limit the work area to areas that work will occur in during the subsequent 15 days and so that it can be mulched one day prior to a snow event. The contractor shall stabilize work areas prior to opening additional work areas to minimize areas without erosion control measures.

The following measures shall be implemented during winter construction periods:

5.1 Sediment Barriers

During frozen conditions, sediment barriers may consist of erosion control mix berms or any other recognized sediment barriers as frozen soil prevents the proper installation of hay bales or silt fences.

5.2 Mulching

All areas shall be considered to be denuded until seeded and mulched. Hay and straw mulch shall be applied at a rate of 150 lb. per 1,000 square feet or 3 tons/acre (twice the normal accepted rate of 75-lbs./1,000 s.f. or 1.5 tons/acre) and shall be properly anchored. Erosion control mix must be applied with a minimum 4-inch thickness. Mulch shall not be spread on top of snow. The snow shall be removed down to a one-inch depth or less prior to application. After each day of final grading, the area shall be properly stabilized with anchored hay or straw or erosion control matting. An area shall be considered to have been stabilized when exposed surfaces have been either mulched or adequately anchored so that ground surface is not visible through the

mulch. Between the dates of November 1 and April 15, all mulch shall be anchored by either mulch netting, tracking or wood cellulose fiber. The cover will be considered sufficient when the ground surface is not visible through the mulch. After November 1st, mulch and anchoring of all exposed soil shall occur at the end of each final grading workday.

5.3 Soil Stockpiling

Stockpiles of soil or subsoil shall be mulched for over winter protection with hay or straw at twice the normal rate or with a four-inch layer of erosion control mix. This shall be done within 24 hours of stocking and re-established prior to any rainfall or snowfall.

5.4 Seeding

Between the dates of October 15th and April 1st, loam or seed shall not be required. During periods of above freezing temperatures finished areas shall be fine graded and either protected with mulch or temporarily seeded and mulched until the final treatment can be applied. If the date is after November 1st and if the exposed area has not been loamed, final grading with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched.

Dormant seeding may be placed prior to the placement of mulch or erosion control blankets. If dormant seeding is used for the site, all disturbed areas shall receive 4" of loam and seed at an application rate of 5 lbs./1,000 s.f. All areas seeded during the winter shall be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 75% catch) shall be revegetated by replacing loam, seed and mulch. If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.

5.5 Over winter stabilization of disturbed soils

By September 15th, all disturbed soils on areas having a slope less than 15% shall be seeded and mulched. If the disturbed areas are not stabilized by this date, then one of the following actions shall be taken to stabilize the soil for late fall and winter:

- Stabilize the soil with temporary vegetation – By October 1st, seed the disturbed soil with winter rye at a seeding rate of 3lbs per 1,000 s.f., lightly mulch the seeded soil with hay or straw at 75 lbs per 1,000 s.f., and anchor the mulch with plastic netting. Monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed soil before November 1st, then mulch the area for over-winter protection.

- Stabilize the soil with sod – Stabilize the disturbed soil with properly installed sod by October 1st. Proper installation includes pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

- Stabilize the soil with mulch – By November 15th, mulch the disturbed soil by spreading hay or straw at a rate of at least 150 lbs per 1,000 s.f. on the area so that no soil is visible through the mulch. Immediately after applying the mulch, anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

5.6 Over winter stabilization of disturbed slopes

All stone-covered slopes shall be constructed and stabilized by November 15th. All slopes to be vegetated shall be seeded and mulched by September 1st. A slope is considered a grade greater than 15%. If a slope to be vegetated is not stabilized by September 1st, then one of the following action shall be taken to stabilize the slope for late fall and winter:

- Stabilize the soil with temporary vegetation and erosion control mats – By October 1st the disturbed slope shall be seeded with winter rye at a seeding rate of 3 lbs per 1,000 s.f. and then install erosion control mats or anchored mulch over the seeding. If the rye fails to grow at least three inches or fails to cover at least 75% of the slope by November 1st, then the contractor shall cover the slope with a layer of erosion control mix or with stone riprap.

- Stabilize the soil with sod – The disturbed slope shall be stabilized with properly installed sod by October 1st. Proper installation includes the contractor pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The contractor shall not use late-season sod installation to stabilize slopes having a grade greater than 3H:1V or having groundwater seeps on the slope face.

- Stabilize the soil with erosion control mix – Erosion control mix shall be properly installed by November 15th. The contractor shall not use erosion control mix to stabilize slopes having grades greater than 2H:1V or having groundwater seeps on the slope face.

- Stabilize the soil with stone riprap – Place a layer of stone riprap on the slope by November 15th. A registered professional engineer shall be hired to determine the stone size needed for stability on the slope and to design a filter layer for underneath the riprap.

6.0 INSPECTION AND MAINTENANCE

A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct periodic visual inspections of installed erosion control measures. The frequency of inspection shall occur at least once every two weeks, as well as after a "storm event". A "storm event" shall consist 0.5 inches of rain within a 24-hour period. The following Erosion and Sediment Control - Best Management Practices (BMP's) shall 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.

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
- Medium Intensity Soil Survey for Cumberland County

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.

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



October 28, 2024

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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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: 1:754 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

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

6

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 21, Aug 26, 2024

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
HIC	Hinckley loamy sand, 8 to 15 percent slopes	0.8	54.5%
HID	Hinckley loamy sand, 15 to 25 percent slopes	0.7	45.5%
Totals for Area of Interest		**1.5**	**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

HIC—Hinckley loamy sand, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2svm9
Elevation: 0 to 1,480 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Hinckley and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Kame terraces, outwash plains, kames, eskers, moraines, outwash terraces, outwash deltas
Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, riser
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash

Hydric soil rating: No

HID—Hinckley loamy sand, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2svmc
Elevation: 0 to 1,460 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Hinckley and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Outwash plains, eskers, moraines, outwash terraces, outwash deltas, kame terraces, kames
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, riser
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

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: 1:754 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

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

MAP LEGEND

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

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 21, Aug 26, 2024

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
HIC	Hinckley loamy sand, 8 to 15 percent slopes	A	0.8	54.5%
HID	Hinckley loamy sand, 15 to 25 percent slopes	A	0.7	45.5%
Totals for Area of Interest			**1.5**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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ACORN ENGINEERING, INC.

Chief Gillespie
City of Portland Fire Department
380 Congress St.
Portland, ME 04101

November 20, 2024

Subject: 165 Washington Avenue – Fire Department Checklist
Section L of Application

On behalf of Redfern Properties, the design team is pleased to respond to the Portland Fire Department Site Review Checklist.

1. Name, address, telephone number of applicant:

   Redfern Properties
   P.O. Box 8816,
   Portland, ME 04101
   (207) 261-5151

2. Name address, telephone number of architect:

   HOLST Architecture
   123 NE 3rd Avenue, Suite 310
   Portland, Oregon 97232
   (503) 233-9856

3. Proposed uses of any structures [NFPA and IBC classification]

   NFPA: Apartment / IBC: R-2

4. Square footage of all structures, including decks [total and per story]

Existing

Existing Building		
Total	Approx. 19,396	**gfa**

Proposed

Multi-Family Building		
1st Floor	28,074	sf
2nd Floor	32,157	sf
3rd Floor	37,447	sf
4th Floor	34,114	sf
5th Floor	25,625	sf
6th Floor	25,625	sf
7th Floor	25,625	sf
Total	Approx. 208,667	**gfa**

5. Elevation of all structures

   The proposed 7-story structure's height will be below the allowable 75 feet within the B-2b zoning district. Please refer to the building elevations provided by the Architect for additional information.

6. Proposed fire protection of all structures

   The proposed buildings 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 directly west of the existing building on Washington Avenue. 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 Multi-family building will be serviced by a proposed 2" domestic water service connection, a 6" domestic water service connection as well as a 8" fire suppression service from the existing 8" water main within Washinton Avenue.

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

   Access to the structure is provided directly on Washington Avenue and from the drive isle along the southeast side of the site.

NFPA 1 – Chapter 18 Fire Department Access and Water Supply

18.2 Fire Department Access:

The project site is located in a heavily developed area and is fronted by a public street. The following pavement street width is currently available:

- Washington Avenue: 43 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: There are no dead-end roadway conditions more than one hundred fifty feet in length included as part of the proposed project. Please refer to C-10, which provides specifics on the 150 lf fire access lane.

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 structures onsite is provided directly from Washington Avenue and from the internal drive isle. See the Site Plan for additional information.

3.4.3 Building setbacks, where required by zoning, shall be adequate to allow for emergency vehicle access and related emergency response activities and shall be evaluated based on the following factors:

- *Building Height.*
- *Building Occupancy.*
- *Construction Type.*
- *Impediments to the Structures.*
- *Safety Features Provided.*

Response: The proposed development layout has contemplated emergency access conditions and provides for safe and efficient access along the public street for emergency vehicles.

3.4.4. Fire Dept. access roads shall extend to within 50' of an exterior door providing access to the interior of the structure.

Response: The building will be provided with exterior doors that will be within 50' of a Fire Department access route, namely Washington Avenue.

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 165 Washington Avenue in Portland Maine. The final address locations will be coordinated with public works as part of the proposed subdivision application process.

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.

M. Calculation of Wastewater Flowrate for 165 Washington Avenue

The project proposes to construct a new multi-family apartment building with 326 dwelling units with ground floor commercial space. Along with the proposed building, the project would include additional amenity space, associated structured parking below the building and infrastructure upgrades.

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			
Northern Burner Supply Company, Inc. (Vacant)	-	-	Unknown
Total Gallons per Day (Existing)			-
Proposed Flow			
Residential	(108) Efficiency Units	120 GPD/ Unit	12,960
Residential	(128) Studio Units	120 GPD/ Unit	15,360
Residential	(12) 1-Bedroom Units	120 GPD/ Unit	1,440
Residential	(78) 2 Bedroom Units	210 GPD / Unit	16,380
Retail	10 Employees	12 GPD / Employee	120
Total Gallons per Day (Proposed)			**46,260 GPD**
Net Change			**+46,260 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 **46,260** gallons per day (GPD).

N. Lighting

The project proposes exterior lighting at egresses and street lighting on Washington Avenue to that will be in conformance with the City Technical Manual. Please refer to the Photometric Plan and attached cut sheets prepared by Reflex Lighting for additional information.

Luminaire Schedule						
Symbol	Qty	Label	Arrangement	Description	LLF	Luminaire Lumens
⊗	17	C1	Single	COOPER: HCE6SD010-HM60125830-61WDR	0.900	706
●	3	CITY	Single	RUGOPHANE: ESL2-P20S-30K-AS-CMC-TG3-S-P7-NL2X2-BNDF13-200CMC	0.900	11141
▮	14	W1	Single	PERFORMANCE IN LIGHTING: MIO-M-10W-T3-CXX-3K-UNV-O-10V	0.900	542

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
ENTIRE AREA	Illuminance	Fc	0.25	4.8	0.0	N.A.	N.A.

CHARRON REFLEX LIGHTING

#	Date	Comments

Revisions

Drawn By: Michael O'Brien
Checked By:
Date:11/4/2024
Contact: mobrien@charroninc.com
Scale: NTS

165 WASHINGTON AVE REDEVELOPMENT

PORTLAND, ME

Page M of 1

MIMIK 10





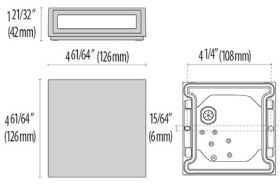
Wall sconce series. Fixtures consist of:

- Multi-step powder-coat painting process, optimized against UV rays and corrosion.
- Copper-free precision die-cast aluminum housing and mounting plate.
- Extra-clear, flat, tempered silk-screened soda-lime glass diffuser.
- Micro-prismatic patterned, flat, tempered silk-screened soda-lime glass diffuser (FLAT versions).
- Custom molded, anti-aging gasket(s).
- Stainless steel external hardware.
- Custom MCPCB utilized to maximize heat dissipation and promote a long LED life.
- High-transmittance transparent optics.
- Single (M) or dual (B) light emission.
- IESNA Type III light distribution (FLAT).
- IESNA Type III light distribution.
- 20° x 20° beam angle (C/I).
- Input voltage: 120-277 V (50 / 60 Hz), integral driver.
- Customizing facade faceplate available for MIMIK FLAT versions (ordered separately).
- Consult factory for dimming options, custom finishes (please specify RAL color), and non-cataloged CCT (Kelvin) options.
- Product meets Buy American Act requirements within ARRA.
- 5-year warranty.
- Marine Grade finish.
- Suitable for Natatorium applications.

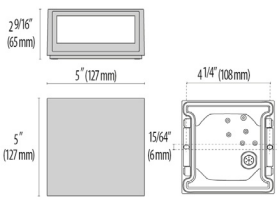
IP 65 · WET · PRONTO · cULus LISTED · RAL · IK 06 1 J

FINISHES

- **AN-96** / Iron gray / Textured
- **GR-94** / Aluminum metallic / Textured
- **WH-87** / White / Textured
- **BK-81** / Black / Textured
- **RB-10** / Iron rust / Textured



MIMIK
10 FLAT



MIMIK
10

Scan here for installation instructions

WATTAGE	
MIMIK 10 M T3	5W
MIMIK 10 M T3	10W
MIMIK 10 M C/I	5W
MIMIK 10 M C/I	10W
MIMIK 10 FLAT M	5W
MIMIK 10 FLAT M	10W
MIMIK 10 FLAT B	10W
MIMIK 10 B C/I	10W
MIMIK 10 B C/I+T3	10W

LUMEN OUTPUT		2700K	3000K	3500K	4000K
MIMIK 10 M T3	5W	292	314	336	358
MIMIK 10 M T3	10W	505	542	579	617
MIMIK 10 M C/I	5W	307	349	390	432
MIMIK 10 M C/I	10W	607	653	699	745
MIMIK 10 FLAT M	5W	440	451	462	473
MIMIK 10 FLAT M	10W	751	771	790	810
MIMIK 10 FLAT B	10W	857	880	902	925
MIMIK 10 B C/I	10W	725	779	833	888
MIMIK 10 B C/I+T3	10W	657	707	756	806

Revision 23
10/24

Order Guide - Mimik 10

Order code example: **M10F-B-AM-27K-120V-NA**

M10-

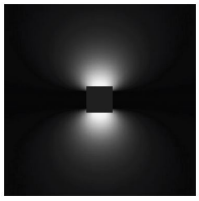
Housing Style	Light Emission	Wattage	Optics	Finish	Kelvin	Voltage	Controls	Accessories

Housing Style	Light Emission	Wattage	Optics	Finish	Kelvin	Voltage	Controls	Accessories
M10 Standard **M10F** Flat *Flat Housing is only suitable for T3 Distrubution	**M** (One-Way) **B** (Two-Way)	**5W** 5 watts **10W** 10 watts (max) **XX** Specify wattage must be below max	**Standard Housing only** **Select one for M & two for B** **Leave Blank for Flat Housing** **T3** Type III **T4** Type IV **C/I** 20˚ beam **10** 10˚ Beam **40** 40˚ Beam **65** 65˚ Beam	**AM** Aluminum Metallic **IG** Iron Gray **IR** Iron Rust **BK** Textured Black **WH** Textured White **CC** Custom Color	**27K** 2700k **3K** 3000k **35K** 3500k **4K** 4000k **RED** Static Red **GRN** Static Green **BLU** Static Blue **AMB** Static Amber **RGBW** RGBW (flat only)	**UNV** 120-277V	(When selecting Flat housing, or B (two-way) emmisions, Dimming options must be remote) **NA** Non Dimming (standard) **0-10V** 0-10V Dimming **ELV** ELV Dimming	(SEE PICTURES BELOW) **FC** Facade cover **SP8** 8" Square Panel **L24** 24" Vertical Panel **L33** 33" Vertical Panel **L48** 48" Vertical Panel **RP7** 7" Round Panel **Wedge** Wedge Panel **D-Wedge** Double Wedge Panel **SIGN** Signage **REM** Remote mounted Emergency battery back up **RDR** Remote driver **CON2** (double-gang j-box, adaptor plate and 1/2" knockouts) **CON4** (double-gang j-box, adaptor plate and 3/4" knockouts) **BABAA** Build America Buy America Act compliant

80 CRI STANDARD - OTHER OPTIONS AVAILABLE

Performance in Lighting reserves the right to make all necessary changes without prior notice.

MIMIK 10



8" Square Panel



L24 Vertical Panel



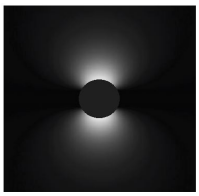
L33 Vertical Panel



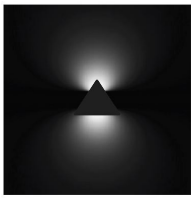
L48 Vertical Panel



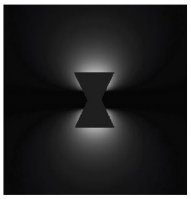
Signage Panel



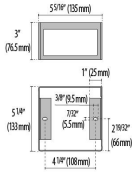
7" Round Panel



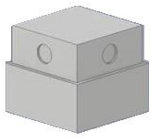
Wedge Panel



Double Wedge Panel



Fascade Cover



CON 2/4
Surface Mounted
J-box with Conduit
Entry

Performance in Lighting reserves the right to make all necessary changes without prior notice.

Performance in Lighting - 2621 Keys Pointe - Powder Springs, Georgia 30013 - USA - voice 770.822.2115 - info.usa@pil.lighting
www.performanceinlighting.com

REMOTE RGBW ACCESSORIES

Power Supply



17433
Kit driver 48V



17096
Kit driver 48V WP

RF Controls



3104173
RGBW RF controller 4 channel
(0.35A each CH)



31041730
RGBW RF controller WP 4 channel
(0.35A each CH)



310429
RGBW hand held remote

DMX Controls



178973
RGBW DMX enabler/decoder 4
channel (0.35A each CH)



1789730
RGBW DMX enabler/decoder WP 4
channel (0.35A each CH)



11015
Terminating Resistor



110150
Terminating Resistor WP

Project		Catalog #		Type	
Prepared by		Notes		Date	



HALO Commercial

HC6 | HM6 | 61 | 61PS

6-inch LED downlight and wall wash

Typical Applications

Office • Healthcare • Hospitality • Institutional • Mixed-Use/Retail

Interactive Menu

- Order Information page 2
- Product Specifications page 4
- Photometric Data page 5
- Energy & Performance Data page 8
- Connected Systems page 10
- Product Warranty

Product Certification

ENERGY STAR · Efficiency Standards T24 Can be used to comply with California Title 24 Non-Residential · wet location · Chicago Plenum Approved · FC · RoHS Compliant · UL Certified

Product Features

QS Quick Spec · Showerlight

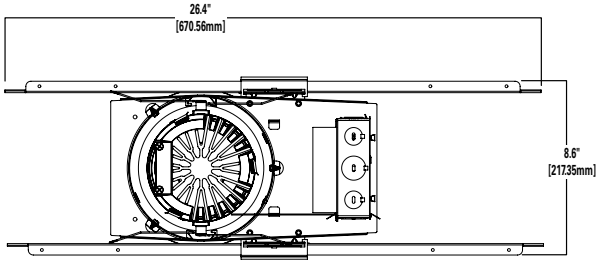
Control Compatibility

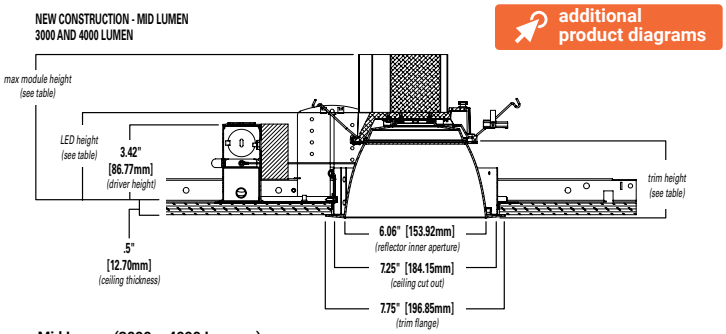
WaveLinx LITE · WaveLinx PRO

Top Product Features

- New construction/remodel series; 500 to 6,000 lumens
- Narrow, Medium and Wide distributions; Wall wash with rotatable linear spread lens
- 2700K, 3000K, 3500K, 4000K, 5000K CCT; 80 or 90 CRI
- Universal voltage 120V-277V; Standard 0-10V driver dims to 1%
- Mounting frame converts to remodel that installs from below the ceiling
- Quick Spec emergency backup mounting frames - fast delivery option

Dimensional and Mounting Details





additional product diagrams

Mid Lumen (3000 – 4000 Lumens)

Distribution	Max. Module Height	Trim Height	LED Height
Narrow	6.6"	3.4"	3.8"
Medium	6.7"	3.5"	3.9"
Wide	6.5"	3.3"	3.7"
Baffle	6.5"	3.3"	3.7"

Mounting Frame Order Information

Sample Number: HC620D010REM7 – HM60525835 - 61MDC

A complete luminaire consists of a housing frame, LED module, and reflector (ordered separately)

Mounting Frame	Lumens	Driver Options	Factory Installed Emergency & Connected Lighting Options	Accessories (Order & Install Separately)
HC6 = 6" new construction downlight housing **HC6CP** = 6" new construction housing, Chicago Plenum - CCEA compliant	**05** = 500 lm **07** = 750 lm **10** = 1000 lm **15** = 1500 lm **20** = 2000 lm **25** = 2500 lm **30** = 3000 lm **35** = 3500 lm **40** = 4000 lm **45** = 4500 lm (7) **50** = 5000 lm (7) **55** = 5500 lm (7) **60** = 6000 lm (7)	**D010**=UNV 120-277V, 50/60Hz, 0-10V 1%-100% dimming at 120-277V on 0-10V controls **Canada Option 500-5000 lumens:** **D010347** = 347VAC 50/60Hz 0-10V 1%-100% dimming. For 500, 750, 1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000lm models only (1) **Canada Option 5500-6000 lumens:** **D010X347** = step down transformer factory installed (with standard "D010" 120V-277V LED driver). For 5500, 6000lm models only (1)	**REM7** = 7 watt emergency battery pack with remote test / indicator light, use with D010 only (1) (2) (6) **REM14** = 14 watt emergency battery pack with remote test / indicator light, use with D010 only (1) (2) (6) **IEM7** = 7 watt emergency battery pack with integral test / indicator light, use with D010 only (1) (2) (6) **IEM14** = 14 watt emergency battery pack with integral test / indicator light, use with D010 only (1) (2) (6) **BOD7ST** = 7.5 watt Bodine self-test emergency battery pack with remote test / indicator light, use with D010 only (1) (2) (6) **WTA** = Factory WaveLinx PRO Tilemount Sensor Kit (4) **WTK** = Factory WaveLinx LITE Tilemount Sensor Kit (5) **WPN** = WaveLinx PRO Wireless Node without Sensor (9) **WLN** = WaveLinx LITE Wireless Node without Sensor (10)	**HB128APK** = L channel hanger bar, 26", pair (replacement) **RMB22** = Adjustable wood joist mounting bars, pair, extend to 22" long **HSA6** = Slope Adapter for 6" Aperture Housings, Specify Slope (refer to instructions for installing housing and trim) **H347** = 347 to 120V step down transformer, 75VA **H347200** = 347 to 120V step down transformer, 200VA **WTA** = Field WaveLinx PRO Tilemount Sensor Kit (4) **WTK** = Field WaveLinx LITE Tilemount Sensor Kit (5)
		DLV = Distributed Low Voltage dimming driver 1%-100%, 1000-4000 lumens only. For use with DLVP system only, refer to DLVP specifications for details. (1)	**REMV7** = 7 watt emergency battery pack with remote test / indicator light, use with DLV only (1) (2) (3) (6) **REMV14** = 14 watt emergency battery pack with remote test / indicator light, use with DLV only (1) (2) (3) (6) **IEMV7** = 7 watt emergency battery pack with integral test / indicator light, use with DLV only (1) (2) (3) (6) **IEMV14** = 14 watt emergency battery pack with integral test / indicator light, use with DLV only (1) (2) (3) (6)	
Notes	**Notes** (7) Marked Spacing: Center to Center of Adjacent Luminaires = 36" Center of Luminaire to Building Member = 18" Minimum overhead = 0.5	**Notes** (1) Not available with CP models	**Notes** (1) Not available with CP models (2) Not available with D010347 (347V models) (3) ULus for U.S. only (4) WTA = WaveLinx PRO tilemount sensor kit for daylight dimming, PIR motion sensing, and optional RLTS - Real Time Location Services, use with D010 only. (Refer to WaveLinx PRO specifications.) (5) WTK = WaveLinx LITE tilemount sensor kit for daylight dimming, PIR motion sensing, use with D010 only. (Refer to WaveLinx LITE specifications.) (6) Emergency battery backup options are Non-IC only, and rated for a minimum starting temperature of 0°C (9) WPN = WaveLinx PRO wireless node provides luminaire-level control with scene and zone configuration without an integrated sensor; Connects wirelessly with daylight dimming sensor and PIR motion sensor if desired. Use with 0-10V driver only. Not compatible with 347V or Chicago plenum. (Refer to WaveLinx PRO specifications.) (10) WLN = WaveLinx LITE wireless node provides luminaire-level control with scene and zone configuration without an integrated sensor; Connects wirelessly with daylight dimming sensor and PIR motion sensor if desired. Use with 0-10V driver only. Not compatible with 347V or Chicago plenum. (Refer to WaveLinx LITE specifications.)	**Notes** (4) WTA = WaveLinx PRO tilemount sensor kit for daylight dimming, PIR motion sensing, and optional RLTS - Real Time Location Services, use with D010 only. (Refer to WaveLinx PRO specifications.) (5) WTK = WaveLinx LITE tilemount sensor kit for daylight dimming, PIR motion sensing, use with D010 only. (Refer to WaveLinx LITE specifications.)

Quick Spec Emergency Mounting Frame Order Information

Select from the Quick Spec Mounting Frame ordering information to receive the *Fast Delivery* option for the frame.

Sample Number :

Quick Spec Emergency Mounting Frame: RR-HC620D010REM7

LED module and reflectors are ordered separately.

Order separately: LED Module: HM60525835 | Reflector: 61MDC

Quick Spec Code	Mounting Frame	Lumens	Driver Options	Factory Installed Emergency & Connected Lighting Options	Accessories (Order & Install Separately)
RR = East Region **BRR** = West Region	**HC6** = 6" new construction downlight housing	**10** = 1000 lm **15** = 1500 lm **20** = 2000 lm **30** = 3000 lm **40** = 4000 lm	**D010**=UNV 120-277V, 50/60Hz, 0-10V 1%-100% dimming at 120-277V on 0-10V controls	**REM7** = 7 watt emergency battery pack with remote test / indicator light, use with D010 only (2) (6) **REM14** = 14 watt emergency battery pack with remote test / indicator light, use with D010 only (2) (6) **IEM7** = 7 watt emergency battery pack with integral test / indicator light, use with D010 only (2) (6) **IEM14** = 14 watt emergency battery pack with integral test / indicator light, use with D010 only (2) (6)	**HB128APK** = L channel hanger bar, 26", pair (replacement) **RMB22** = Adjustable wood joist mounting bars, pair, extend to 22" long
Notes	**Notes**	**Notes**	**Notes**	**Notes** (2) Not available with D010347 (347V models) (6) Emergency battery backup options are Non-IC only, and rated for a minimum starting temperature of 0°C	**Notes**

LED Module Order Information

LED Module	Lumens	CRI/CCT	
HM6 = 6" LED Modules For use with HC6 - HC6CP New Construction housings only	**0525** = 500 - 2500 lumen **3040** = 3000-4000 lumen **4560** = 4500-6000 lumen	**827** = 80CRI, 2700K **830** = 80CRI, 3000K **835** = 80CRI, 3500K **840** = 80CRI, 4000K **850** = 80CRI, 5000K	**927** = 90CRI, 2700K **930** = 90CRI, 3000K **935** = 90CRI, 3500K **940** = 90CRI, 4000K **950** = 90CRI, 5000K
Notes	**Notes**	**Notes**	

Trim Order Information

Reflector	Distribution[8]	Finish	Flange	Accessories
61 = 6" conical reflector	**ND** = narrow 55° beam angle 0.97 SC **MD** = medium 60° beam angle 1.10 SC **WD** = wide 65° beam angle 1.28 SC **RWW** = rotatable wall wash with linear spread lens	**C** = Specular clear **H** = Semi-specular clear **W** = White	**Blank** = Polished flange standard with C & H reflectors **Blank** = White flange standard with W reflector **WF** = White flange option available with C & H reflectors	**61RWWPK** = Replacement part kit - wall wash lens insert - for use with 61RWW* only.
Notes	**Notes** (8) Values are nominal, with specular clear reflector, other finishes and field results may vary.	**Notes**	**Notes**	**Notes**

Baffle	Distribution[8]	Finish	Flange	Accessories
61 = 6" baffle reflector	**WD** = wide 65° beam angle 1.28 SC (nominal) **RWW** = rotatable wall wash with linear spread lens	**BB** = Black baffle **WB** = White baffle	**Blank** = White flange standard with BB, & WB **BF** = Black flange option available with BB	**61RWWPK** = Replacement part kit - wall wash lens insert - for use with 61RWW* only.
Notes	**Notes** (8) Values are nominal, with specular clear reflector, other finishes and field results may vary.	**Notes**	**Notes**	**Notes**

Reflector	Distribution[8]	Finish	Flange
61PS = 6" non-conductive polymer 'dead front' conical reflector[9]	**MD** = medium 60° beam angle 1.10 SC (nominal)	**W** = White	**Blank** = White flange standard with W reflector
Notes (9) 61PS is 1000-2000 lumens Non-IC rated. 500 & 750 lumens IC rated. 61PS is not for use over 2000lm in Non-IC or over 750lm in IC.	**Notes** (8) Values are nominal, with specular clear reflector, other finishes and field results may vary.	**Notes**	**Notes**

IEM Reflector	Distribution[8]	Finish	Flange	Integral Emergency
61 = 6" IEM reflector for integral emergency only	**ND** = narrow 55° beam angle 0.97 SC **MD** = medium 60° beam angle 1.10 SC **WD** = wide 65° beam angle 1.28 SC	**C** = Specular clear **H** = Semi-specular clear **W** = White	**Blank** = Polished flange standard with C & H reflectors **Blank** = White flange standard with W reflector **WF** = White flange option available with C & H reflectors	**IEM** = Reflector for use with integral emergency housings only. Provides access hole for integral emergency test switch.
Notes	**Notes** (8) Values are nominal, with specular clear reflector, other finishes and field results may vary.	**Notes**	**Notes**	**Notes**

IEM Baffle	Distribution[8]	Finish	Flange	Integral Emergency
61 = 6" IEM baffle reflector for integral emergency only	**WD** = wide 65° beam angle 1.28 SC (nominal)	**BB** = Black baffle **WB** = White baffle	**Blank** = White flange standard with BB, & WB **BF** = Black flange option with BB	**IEM** = Reflector for use with integral emergency housings only. Provides access hole for integral emergency test switch.
Notes	**Notes** (8) Values are nominal, with specular clear reflector, other finishes and field results may vary.	**Notes**	**Notes**	**Notes**

Product Specifications

Housing Frame
- Boat shaped galvanized steel plaster frame with adjustable plaster lip
- Accommodates 1/2" to 1-1/2" thick ceilings
- Installs in new construction or from below the finished ceiling (non-accessible) for remodeling (with mounting bars removed)
- Provided with two remodel clips to secure the frame to the ceiling

Universal Mounting Bracket
- Adjusts 2" vertically from above and below the ceiling
- Use with the included mounting bars or with 1/2" Electric Metallic Tube (EMT)
- Removable to facilitate remodeling installation from below the finished ceiling

Mounting Bars
- Captive pre-installed No Fuss™ mounting bars lock to T-grid with screwdriver or pliers
- Centering detents allow for consistent positioning of fixtures

LED Module
- Proximity phosphors over chip on board LEDs provide a uniform source with high efficiency and no pixilation
- Available in 80 or 90 color rendering index (CRI)
- Color accuracy within 3 SDCM provides color consistency and uniformity
- 90 CRI option: R9>50 (refer to chromaticity information for details)
- Available in 2700K, 3000K, 3500K, 4000K and 5000K correlated color temperature (CCT)
- Lumen options include 500, 750, 1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000, 5500, 6000 lumens (nominal)
- Passive thermal management achieves 60,000 hours at 70% lumen maintenance (L70) in insulated ceilings (IC) and non-IC applications
- Integral diffuse lens provides visual shielding
- Integral connector allows quick connection to housing flex

Reflector
- Self-flanged aluminum reflectors available in narrow, medium or wide distribution patterns
- Medium distribution polymer non-conductive matte white reflector may be used to meet local codes for 'dead front' applications (500 & 750 lumen max. in IC and 2000 lumen max. in Non-IC)
- Wall wash reflector features a rotatable linear spread lens for alignment of vertical illumination
- Reflectors attach to LED module with three speed clamps
- Available in multiple painted or plated finishes

Reflector/Module Retention
- Reflector/module assembly is securely retained in the housing with two torsion springs

Driver
- Field-replaceable constant current driver provides low noise operation
- Universal 120-277VAC 50/60Hz input standard
- Continuous, 1% to 100% dimming with 0-10V analog control
- Optional low-voltage DC driver for use with Distributed Low Voltage Power (DLVP) system
- Distributed Low Voltage Power (DLVP) system combines power, lighting and controls with ease of installation (refer to DLVP Design Guide at www.cooperlighting.com for details)

Canada Options
- 347VAC 50/60Hz; 1% dimming on 0 -10V analog control, for 500, 750, 1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000 lumen models only
- 347V step down transformer factory installed with the standard "D010" 120V-277V, LED driver on 5500, 6000 lumen models only

Emergency Option
- Provides 90 minutes of standby lighting, meeting most life safety codes for egress lighting
- Available with integral or remote charge indicator and test switch
- Available Self-Test (self-diagnostic) with remote charge indicator and test switch
- Quick Spec emergency ordering option for quick-turn projects

Connected Lighting System
Two WaveLinx connected solutions to choose from. Refer to WaveLinx system specifications and application guides for details.

WaveLinx PRO Tilemount Sensor Kit
- WaveLinx PRO WTA tilemount sensor kit offers daylight dimming, PIR motion sensing, scene and zone configuration, automatic commissioning; and optional RLTS - Real Time Location Services available.

WaveLinx PRO Wireless Node
- WaveLinx PRO WPN wireless node provides luminaire-level control with scene and zone configuration without an integrated sensor; Connects wirelessly with daylight dimming sensor and PIR motion sensor if desired. Use with 0-10V driver only. **Note:** Not compatible with 347V or Chicago plenum.

WaveLinx LITE Tilemount Sensor Kit
- WaveLinx LITE WTK tilemount sensor kit offers daylight dimming and PIR motion sensing, scene and grouping configuration.

WaveLinx LITE Wireless Node
- WaveLinx LITE WLN wireless node provides luminaire level control with scene and zone configuration without an integrated sensor; Connects wirelessly with daylight dimming sensor and PIR motion sensor if desired. Use with 0-10V driver only. **Note:** Not compatible with 347V or Chicago plenum.

WaveLinx Tilemount Sensor Kits Application
- The WTA and WTK tilemount sensor kits include a control module mounted on the luminaire junction box via 1/2" knock-out, and a tilemount sensor on 54-inch whip; for ceiling installation by direct-mount spring clips or via mounting bracket in octagon ceiling boxes.
- The WTA and WTK tilemount sensor kits may be ordered as factory installed on the luminaire, or ordered separately as a field installed accessory kit.
- **Note: WaveLinx PRO devices are only compatible with the WaveLinx PRO system.**
- **Note: WaveLinx LITE devices are only compatible with the WaveLinx LITE system.**

Junction Box
- Galvanized steel junction box
- 20 in^3 internal volume excluding voltage barrier
- 25 in^3 internal total volume
- Voltage barrier for 0-10V dimming wires (occupies one 1/2" pry-out space)
- Listed for eight #12 AWG (four in, four out) 90˚C conductors and feed-thru branch wiring
- Three 1/2" and two 3/4" trade size pry-outs available
- Three 4-port push wire nuts for mains voltage with 1-port for fixture connection

Compliance
- cULus Certified to UL 1598 / C22.2 No. 250.0, suitable for damp locations and wet locations in covered ceilings only
- Emergency options provided with UL Listed emergency drivers to UL 924 / C22.2 No. 141, suitable for indoor/damp locations
- IP20 - Above finished ceiling; IP65 - Below finished ceiling
- Non-Insulated ceiling (Non-IC) rated for 2500, 3000, 3500, 4000, 4500, 5000, 5500, 6000 lumen models (insulation must be kept 3" from top and sides)
- Insulated ceiling (IC) rated for 500, 750, 1000, 1500, 2000 lumen models and suitable for direct contact with air permeable insulation* (IC models are also suitable for Non-IC installations)
- Non-IC marked spacing required for 4500, 5000, 5500, 6000 lumen models
  - Marked Spacing Center to Center of Adjacent Luminaires = 36"
  - Center of Luminaire to Building Member = 18"
  - Minimum overhead = 0.5"
- Airtight per ASTM-E283-04
- Suitable for use in clothes closets when installed in accordance with the NEC 410.16 spacing requirements
- EMI/RFI emissions FCC CFR Title 47 Part 15 Class A at 120/277V
- Contains no mercury or lead and RoHS compliant
- Photometric testing completed in accordance of IES LM-79-08
- Lumen maintenance projection in accordance of IES LM-80-08 and TM-21-11
- 500, 750, 1,000, 1,500 and 2,000 lumen, 90 CRI, ICAT models may be used to comply with State of California Title 24 residential code, per JA8 certification standards
- May be used to comply with State of California Title 24 non-residential code as a dimmable LED luminaire
- ENERGY STAR® certified, reference certified light fixtures database

*Not for use in direct contact with spray foam insulation, consult NEMA LSD57-2013

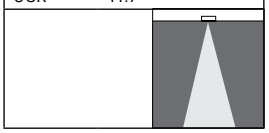
Warranty
- Five year limited warranty, consult website for details. www.cooperlighting.com/legal

Photometric Data

View IES files

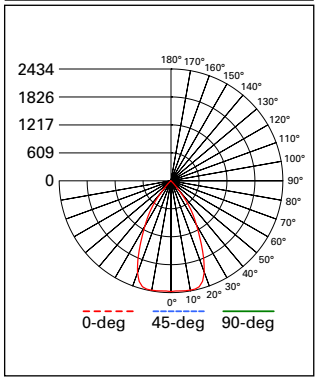
NARROW DISTRIBUTION - SPECULAR CLEAR FINISH, 2000 LUMEN MODEL, 80 CRI, 3500K

NARROW (55° BEAM*)	
Test Number	P581878
Housing	HC620D010
Module	HM60525835
Reflector	61NDC
Lumens	2228 Lm
Efficacy	111.4 Lm/W
SC	0.93
UGR	11.7

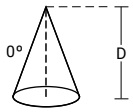


CANDLEPOWER DISTRIBUTION

Downlight



CONE OF LIGHT



MH	FC	L	W
5.5'	80.2	5	5
7'	49.5	6.4	6.4
8'	37.9	7.4	7.4
9'	30	8.2	8.2
10'	24.3	9.2	9.2
12'	16.9	11	11

CANDELA TABLE

Degrees Vertical	Candela
0	2427
5	2422
15	2405
25	1621
35	761
45	118
55	12
65	3
75	2
85	0
90	0

ZONAL LUMEN SUMMARY

Zone	Lumens	% Fixture
0-30	1636	73.4
0-40	2098	94.2
0-60	2223	99.8
0-90	2228	100
90-180	0	0
0-180	2228	100

LUMINANCE

Average Candela Degrees	Average 0° Luminance
45	9187
55	1118
65	376
75	318
85	0

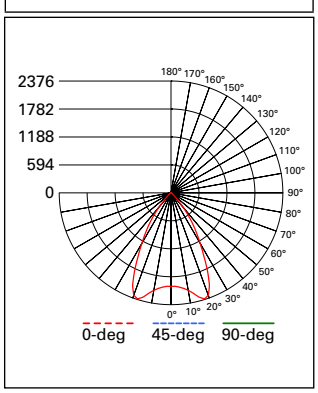
MEDIUM DISTRIBUTION - SPECULAR CLEAR FINISH, 2000 LUMEN MODEL, 80 CRI, 3500K

MEDIUM (60° BEAM*)	
Test Number	P581875
Housing	HC620D010
Module	HM60525835
Reflector	61MDC
Lumens	2307 Lm
Efficacy	115.3 Lm/W
SC	1.06
UGR	11.8

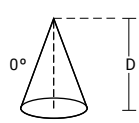


CANDLEPOWER DISTRIBUTION

Downlight



CONE OF LIGHT



MH	FC	L	W
5.5'	68.7	5.6	5.6
7'	42.4	7.2	7.2
8'	32.5	8.2	8.2
9'	25.7	9.4	9.4
10'	20.8	10.4	10.4
12'	14.4	12.4	12.4

CANDELA TABLE

Degrees Vertical	Candela
0	1998
5	2022
15	2307
25	1842
35	796
45	126
55	15
65	4
75	2
85	0
90	0

ZONAL LUMEN SUMMARY

Zone	Lumens	% Fixture
0-30	1671	72.4
0-40	2163	93.8
0-60	2301	99.7
0-90	2307	100
90-180	0	0
0-180	2307	100

LUMINANCE

Average Candela Degrees	Average 0° Luminance
45	9753
55	1395
65	571
75	318
85	0

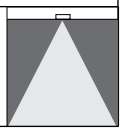
Note: Refer to IES files for more product data.

Photometric Data

View IES files

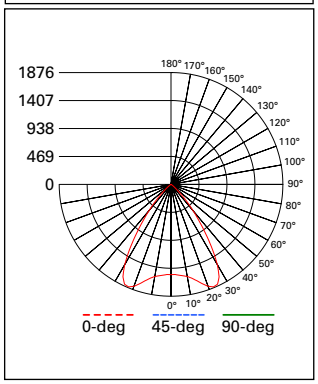
WIDE DISTRIBUTION - SPECULAR CLEAR FINISH, 2000 LUMEN MODEL, 80 CRI, 3500K

WIDE (65° BEAM*)	
Test Number	P581885
Housing	HC620D010
Module	HM60525835
Reflector	61WDC
Lumens	2359 Lm
Efficacy	118 Lm/W
SC	1.28
UGR	11.6

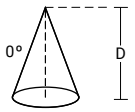


CANDLEPOWER DISTRIBUTION

Downlight



CONE OF LIGHT



MH	FC	L	W
5.5'	50.5	7	7
7'	31.2	8.8	8.8
8'	23.9	10.2	10.2
9'	18.8	11.4	11.4
10'	15.3	12.8	12.8
12'	10.6	15.4	15.4

CANDELA TABLE

Degrees Vertical	Candela
0	1526
5	1540
15	1685
25	1861
35	1027
45	252
55	32
65	6
75	2
85	0
90	0

ZONAL LUMEN SUMMARY

Zone	Lumens	% Fixture
0-30	1461	61.9
0-40	2105	89.2
0-60	2351	99.6
0-90	2359	100
90-180	0	0
0-180	2359	100

LUMINANCE

Average Candela Degrees	Average 0° Luminance
45	19506
55	3078
65	765
75	318
85	0

*Value are nominal with specular clear reflectors, other finishes and field results may vary.
SC = Spacing Criteria
UGR = Unified Glare Rating

Photometric Multipliers (Nominal Lumen Values)

500 Lumen	750 Lumen	1000 Lumen	1500 Lumen	2000 Lumen	2500 Lumen	3000 Lumen	3500 Lumen
0.33	0.44	0.54	0.74	1.00	1.12	1.46	1.76

4000 Lumen	4500 Lumen	5000 Lumen	5500 Lumen	6000 Lumen
1.81	2.17	2.28	2.38	2.65

Multipliers for relative lumen values with other series models.

Color Finish Multipliers

Finish code	C	H	W/WB	BB
Finish	Specular Clear	Semi-Specular	Matte White White Baffle	Black Baffle
Multiplier	1.00	0.92	0.91	0.82

Multipliers for relative lumen values with other color finishes.

CCT Multipliers – 80CRI

2700K	3000K	3500K	4000K	5000K
0.92	0.98	1.00	1.03	1.03

Multipliers for relative lumen values with other series color temperatures.

CCT Multipliers – 90CRI

2700K	3000K	3500K	4000K	5000K
0.77	0.84	0.89	0.90	0.90

Multipliers for relative lumen values with other series color temperatures.

Note: Refer to IES files for more product data.

Photometric Data

View IES files

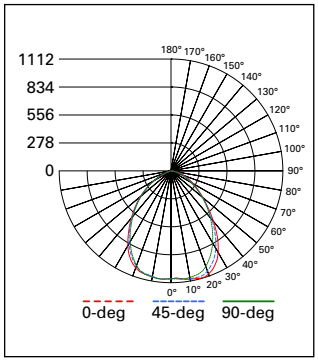
WALL WASH DISTRIBUTION - SPECULAR CLEAR FINISH, 2000 LUMEN MODEL, 80 CRI, 3500K

WALL WASH	
Test Number	P581882
Housing	HC620D010
Module	HM60525835
Reflector	61RWWC
Lumens	2179 Lm
Efficacy	109 Lm/W
SC	1.15



CANDLEPOWER DISTRIBUTION

Downlight



CANDELA TABLE	
Degrees Vertical	Candela
0	1080
5	1081
15	1112
25	1034
35	800
45	514
55	319
65	184
75	85
85	12
90	0

ZONAL LUMEN SUMMARY		
Zone	Lumens	% Fixture
0-30	849	39
0-40	1313	60.2
0-60	1978	90.8
0-90	2179	100
90-180	0	0
0-180	2179	100

LUMINANCE	
Average Candela Degrees	Average 0° Luminance
45	39810
55	30479
65	23907
75	17983
85	7359

SC = Spacing Criteria, nominal for specular clear reflector, other finishes and field results may vary.

SINGLE UNIT FOOTCANDLES

	2.5' from wall (distance from fixture along wall)						
1	19.3	13.8	6.1	2.2	0.7	0.3	0.1
2	29.1	22.6	12.3	5.7	2.5	1.2	0.6
3	27.6	22.5	13.8	7.3	3.7	1.9	1
4	21	18.2	12.4	7.4	4.2	2.4	1.4
5	14.4	13.1	9.9	6.6	4.1	2.5	1.6
6	9.7	9.1	7.5	5.5	3.7	2.5	1.6
7	6.7	6.4	5.5	4.3	3.2	2.2	1.5
8	4.7	4.6	4.1	3.4	2.7	2	1.4
9	3.4	3.3	3.1	2.7	2.2	1.7	1.3
10	2.5	2.5	2.4	2.1	1.8	1.4	1.1

MULTIPLE UNIT FOOTCANDLES

	2.5' from wall (Distance from fixture along 3')			2.5' from wall (Distance from fixture along 4')		
1	21.5	19.1	21.5	20	12.1	20
2	34.7	34.4	34.7	31.6	24.6	31.6
3	34.9	36	34.9	31.3	27.6	31.3
4	28.4	30.7	28.4	25.2	24.8	25.2
5	21	23.2	21	18.6	19.8	18.6
6	15.2	16.8	15.2	13.4	15	13.4
7	11	12	11	9.9	11	9.9
8	8.1	8.7	8.1	7.4	8.2	7.4
9	6.1	6.5	6.1	5.6	6.2	5.6
10	4.6	4.9	4.6	4.3	4.7	4.3

Photometric Multipliers (Nominal Lumen Values)

500 Lumen	750 Lumen	1000 Lumen	1500 Lumen	2000 Lumen	2500 Lumen	3000 Lumen	3500 Lumen
0.33	0.44	0.54	0.74	1.00	1.12	1.46	1.76

4000 Lumen	4500 Lumen	5000 Lumen	5500 Lumen	6000 Lumen
1.81	2.17	2.28	2.38	2.65

Multipliers for relative lumen values with other series models.

Color Finish Multipliers

Finish code	C	H	W/WB	BB
Finish	Specular Clear	Semi-Specular	Matte White White Baffle	Black Baffle
Multiplier	1.00	0.92	0.91	0.82

Multipliers for relative lumen values with other color finishes.

CCT Multipliers – 80CRI

2700K	3000K	3500K	4000K	5000K
0.92	0.98	1.00	1.03	1.03

Multipliers for relative lumen values with other series color temperatures.

CCT Multipliers – 90CRI

2700K	3000K	3500K	4000K	5000K
0.77	0.84	0.89	0.90	0.90

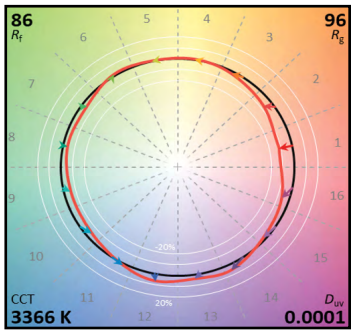
Multipliers for relative lumen values with other series color temperatures.

Note: Refer to IES files for more product data.

Energy & Performance Data

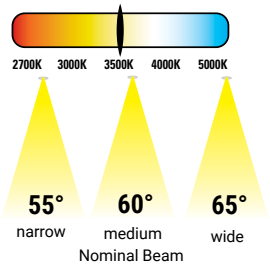
COLOR METRICS - TM-30-15 & CRI/CIE (3500K)

80 CRI Color Metric Summary - 3500K*

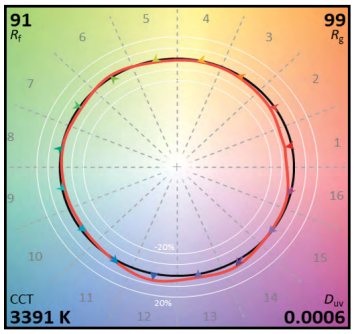


Reference Illuminant — Test Source

TM-30-15	Rf = 86
	Rg = 95.5
CRI/CIE	Ra = 83.8
	R9 = 10.3

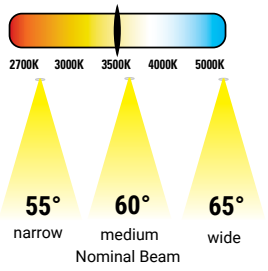


90 CRI Color Metric Summary - 3500K*



Reference Illuminant — Test Source

TM-30-15	Rf = 91.1
	Rg = 99
CRI/CIE	Ra = 92.4
	R9 = 55.1



* Color values are based on 61WDWB reflector, other finishes and field results may vary.

ENERGY DATA

Series	500 lumen		750 lumen		1000 lumen		1500 lumen		2000 lumen	
Input Voltage 120-277VAC	120V	277V	120V	277V	120V	277V	120V	277V	120V	277V
Input Current (A)	0.051	0.026	0.067	0.036	0.083	0.039	0.119	0.053	0.171	0.077
Input Power (W)	6.1	6.5	7.9	8.3	10	10.4	14.5	14.5	20.9	20.6
In-rush (A)	1.9	8.4	2	8.4	2.2	8.5	2.7	8.5	2.1	9.7
Inrush duration (µs)	251	135	237	133	250	134	250	139	245	131
THD (%)	6.2	13.5	7.4	8.8	5.4	10.3	10	6.7	6.5	7.9
PF	≥ 0.99	≥ 0.9	≥ 0.98	≥ 0.92	≥ 0.99	≥ 0.95	≥ 0.99	≥ 0.97	≥ 0.99	≥ 0.96

Series	2500 lumen		3000 lumen		3500 lumen		4000 lumen		4500 lumen	
Input Voltage 120-277VAC	120V	277V	120V	277V	120V	277V	120V	277V	120V	277V
Input Current (A)	0.23	0.103	0.24	0.107	0.292	0.152	0.351	0.159	0.384	0.172
Input Power (W)	27.5	27.5	28.6	28.5	34.6	35.1	42.1	42.1	45.9	45.6
In-rush (A)	2.5	5.6	2.5	11.6	3.4	13.9	3.1	14.7	3.1	14.8
Inrush duration (µs)	232	123	216	111	183	95	200	98	202	100
THD (%)	6.5	8.1	7.8	8.3	5.6	10	4.1	9.5	4.5	8.5
PF	≥ 0.99	≥ 0.96	≥ 0.99	≥ 0.96	≥ 0.99	≥ 0.93	≥ 0.99	≥ 0.94	≥ 0.99	≥ 0.95

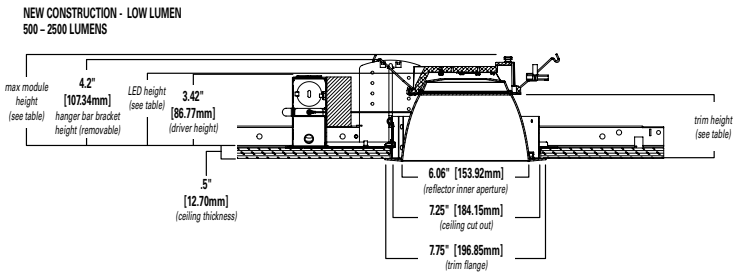
Series	5000 lumen		5500 lumen		6000 lumen	
Input Voltage 120-277VAC	120V	277V	120V	277V	120V	277V
Input Current (A)	0.419	0.186	0.457	0.201	0.489	0.214
Input Power (W)	50.1	49.5	54.6	53.7	58.4	57.4
In-rush (A)	3.1	15	3.2	14.8	3.4	14.8
Inrush duration (µs)	202	117	196	131	192	121
THD (%)	5.5	7.6	7	7.2	8.1	7.2
PF	≥ 0.99	≥ 0.96	≥ 0.99	≥ 0.96	≥ 0.99	≥ 0.97

Minimum starting temperature -30°C (-22°F)* (Nominal input 120-277VAC & 100% of rated output power)
Sound Rating: Class A standards

Notes:
* Emergency Battery packs are rated for a minimum starting temperature of 0°C.

Dimensional and Mounting Details

NEW CONSTRUCTIONS - LOW LUMEN 500 – 2500 LUMENS



Low Lumen (500 – 2500 Lumens)*

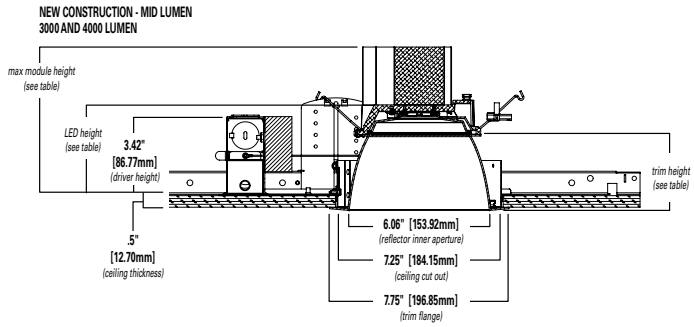
Distribution	Max. Module Height	Trim Height	LED Height
Narrow	4.5"	3.4"	3.8"
Medium	4.6"	3.5"	3.9"
Wide	4.4"	3.3"	3.7"
Baffle	4.4"	3.3"	3.7"

*Max. height w/removable hanger bar bracket 4.2"



Low Lumen Module

NEW CONSTRUCTIONS - MID LUMEN 3000 – 4000 LUMENS



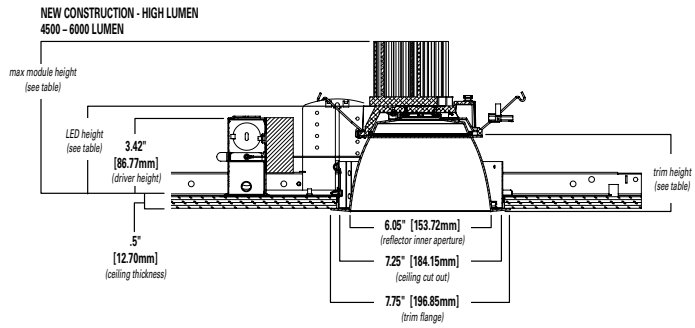
Mid Lumen (3000 – 4000 Lumens)

Distribution	Max. Module Height	Trim Height	LED Height
Narrow	6.6"	3.4"	3.8"
Medium	6.7"	3.5"	3.9"
Wide	6.5"	3.3"	3.7"
Baffle	6.5"	3.3"	3.7"



Mid Lumen Module

NEW CONSTRUCTIONS - HIGH LUMEN 4500 – 6000 LUMENS



High Lumen (4500 – 6000 Lumens)

Distribution	Max. Module Height	Trim Height	LED Height
Narrow	6.9"	3.4"	3.8"
Medium	7.0"	3.5"	3.9"
Wide	6.8"	3.3"	3.7"
Baffle	6.8"	3.3"	3.7"



High Lumen Module

Connected Solutions



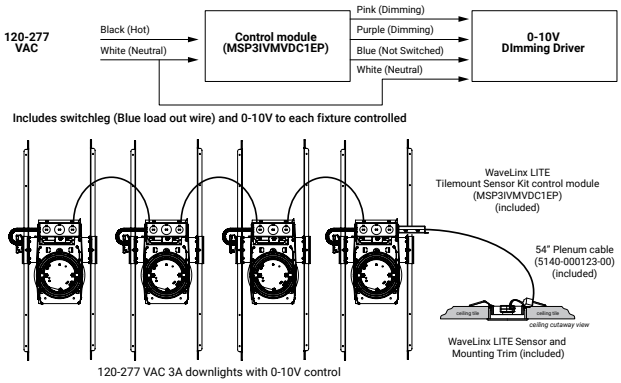
WaveLinx LITE - WTK Tilemount Sensor

WaveLinx LITE devices only compatible with the WaveLinx LITE system.

- Intuitive Android™ or Apple® iOS® app for basic system code compliant set up and configuration via Bluetooth
- Up to 28 unique areas per project site (WaveLinx LITE Bluetooth network)
- Up to 50 devices for an area, any one of 16 control zones, up to 6 occupancy sets, and custom lighting scenes
- Automatic occupancy or vacancy, sensor sensitivity, daylight dimming, etc. configurable through the app
- Refer to the WaveLinx system specifications for details

Device Security | Manual Dimmer | Occupancy Sensor | Daylighting Control | Manually Switched ON/OFF | Tuning Control | Lumen Maintenance Control | Scenes

WaveLinx LITE WTK Tilemount Wiring Diagram



WaveLinx LITE Bluetooth Enabled System



WaveLinx PRO – WTA Tilemount Sensor

WaveLinx PRO devices only compatible with the WaveLinx PRO system.



- WaveLinx PRO tilemount functionality configures zones and customizes settings from one secure mobile app
- Automatic code commissioning that meets the strictest codes
- Fixtures and sensors integrate with Wireless Area Controller, Wall Stations, and Control Devices
- Stand-Alone Offices or Entire Building Network Installations



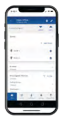
Downlights with tilemount sensor wireless communication
Highly efficient LED fixtures



WaveLinx Area Controller
Provides centralized coordination of multiple area control options



Wireless Wall Station/Receptacle
Provides customized wireless control of each area



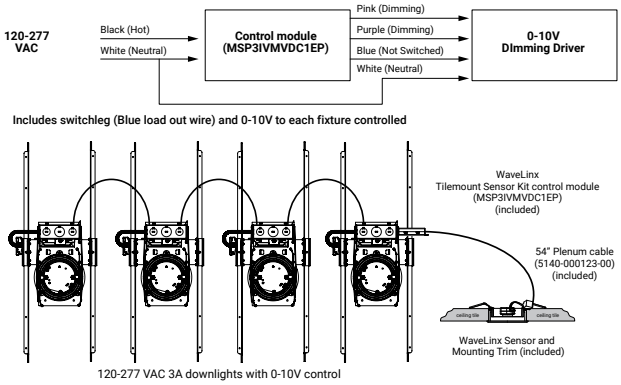
Mobile Applications
Provides personalized, local control from a tablet or smartphone

WaveLinx mobile app settings

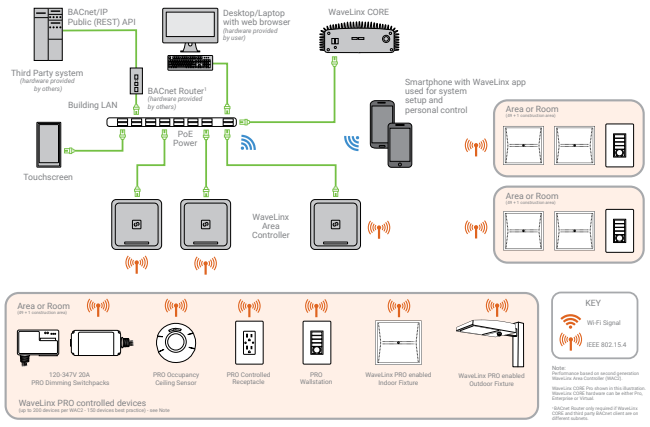
Manual Dimmer | Occupancy Sensor | Lumen Maintenance Control | Daylighting Control

Receptacle Control | Tuning Control | Scheduling | Manually Switched ON/OFF | Demand Response

WaveLinx WTA Tilemount Wiring Diagram



WaveLinx CORE Building Management Integration



Connected Solutions



WaveLinx LITE Wireless Node - WLN

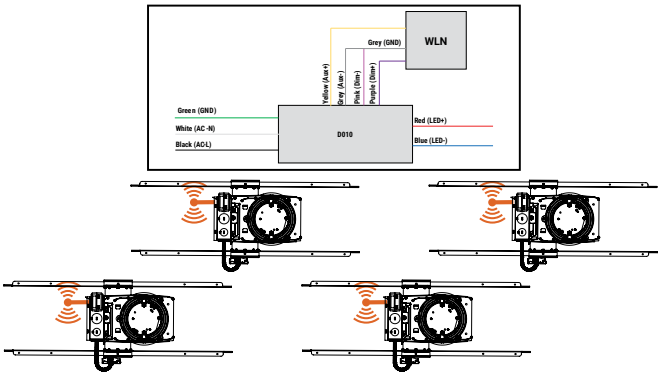
WaveLinx LITE devices only compatible with the WaveLinx LITE system.

- Intuitive Android™ or Apple® iOS® app for basic system code compliant set up and configuration via Bluetooth
- Up to 28 unique areas per project site (WaveLinx LITE Bluetooth network)
- Up to 50 devices for an area, any one of 16 control zones, up to 6 occupancy sets, and custom lighting scenes
- Refer to the WaveLinx system specifications for details

WaveLinx mobile app settings

Device Security | Manual Dimmer | Occupancy Sensor | Daylighting Control | Manually Switched ON/OFF | Tuning Control | Lumen Maintenance Control | Scenes

WaveLinx LITE Wireless Node (WLN) Wiring Diagram



WaveLinx LITE Bluetooth Enabled System





WaveLinx PRO Wireless Node - WPN

WaveLinx PRO devices only compatible with the WaveLinx PRO system.

- WaveLinx Wireless functionality configures zones and customizes settings from one secure mobile app
- Automatic code commissioning that meets the strictest codes
- Fixtures and sensors integrate with WaveLinx Area Controller, Wall Stations, and Control Devices
- Stand-Alone Offices or Entire Building Network Installations



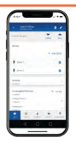
Downlights with wireless communication
Highly efficient LED fixtures



WaveLinx Area Controller
Provides centralized coordination of multiple area control options



Wireless Wall Station/Receptacle
Provides customized wireless control of each area

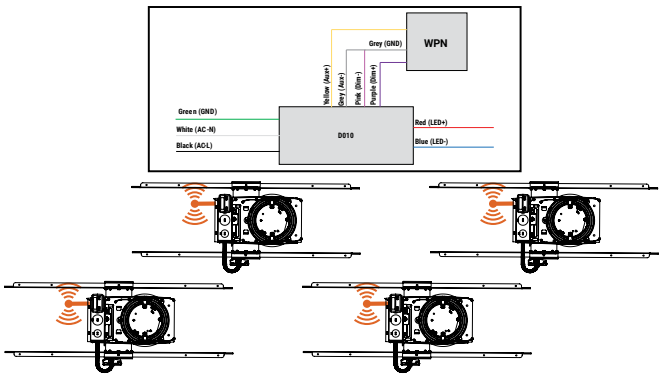


Mobile Applications
Provides personalized, local control from a tablet or smartphone

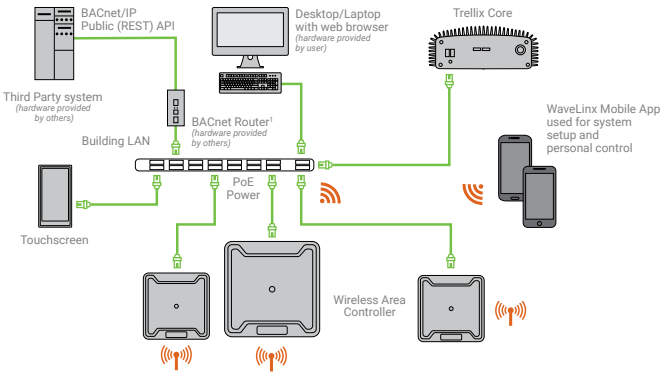
WaveLinx mobile app settings

Manual Dimmer | Occupancy Sensor | Lumen Maintenance Control | Daylighting Control | Receptacle Control | Tuning Control | Scheduling | Manually Switched ON/OFF | Demand Response

WaveLinx PRO Wireless Node (WPN) Wiring Diagram



WaveLinx CORE Building Management Integration



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Specifications and dimensions subject to change without notice.

O. Architectural Design Narrative

Please find attached the design narrative completed by HOLST Architecture.

TAVATA

ARCHITECTURAL DESIGN NARRATIVE
November 20, 2024

CONTENTS

I. Proposal ..... page 2
II. Site Plan Narrative ..... page 3
III. Technical Standards and Design Guidelines ..... page 8

I. PROPOSAL

Project Location: 165 Washington Ave, Portland, ME 04101

The proposed building is a new, 7-story, mixed-use housing project of approximately 207,496 square feet. The project includes tuck-under parking, retail shell space, resident amenities, and 326 housing units broken down into 108 efficiency units, 128 studios, 12 1-bedroom units, and 78 2-bedroom units. The building massing is designed to optimize natural ventilation and daylight for residents by including two exterior courtyards and providing a roof-top amenity deck atop a stepped-down middle portion of its massing. The building also steps down to the South to protect views for the neighboring property and steps back 15' from the adjacent community orchard to the North, mitigating any impact of shadows cast for most of the year. The building's primary cladding materials include a mix of brick and fiber cement panel, with most of the brick visible from Washington Ave and fiber cement panel located on back (East) of the building and in the residential courtyards. Granite stone veneer is used along the base of the building to minimize wear and tear on the façade and large, glazed openings with decorative metallic highlights are used at the street edge to offer warmth and visual interest. Additionally, there are substantial building overhangs and canopies located at building entrances to offer weather protection for pedestrians.

II. SITE PLAN NARRATIVE

LAND USE CODE - Chapter 14
14.6.4 Site Design Standards

A. Massing, ventilation, and wind impact.
1. The bulk, location, or height of proposed buildings and structures shall not result in health or safety problems from a reduction in ventilation to abutting structures or changes to the existing wind climate that would result in unsafe wind conditions for users of the site and/or adjacent public spaces.

2. The bulk, location, or height of proposed buildings and structure shall minimize, to the extent feasible, any substantial diminution in the value or utility to neighboring structures under different ownership and not subject to a legal servitude in favor of the site being developed.

3. Development shall locate all HVAC venting mechanisms to direct exhaust away from public spaces and residential properties directly adjacent to the site.

Response: The building maintains enough distance from all existing neighboring buildings so as not to create any health or safety problems due to reduced ventilation or unsafe wind conditions.

Per the design narrative (previous page), the massing of the building steps down from 7 stories to 4 stories at the South portion to avoid obstructing views from the neighboring condominium development.

No HVAC venting mechanisms that create direct exhaust from the building will be located near public spaces and residential properties directly adjacent to the site.

B. Shadow.
All development outside the B-3, B-5, B-6 and B-7 zones shall be designed to avoid and/or mitigate the adverse impacts of shadows cast by new structures

or building additions from falling on publicly accessible open space in accordance with the shadow standards of the Technical Manual.

Response: The building is designed to mitigate the impacts of shadow on the public spaces surrounding the property, including the zoned OS property to the North where there's currently a public orchard. Dates used to analyze the impacts of shading are outlined in the City of Portland Technical Manual, Section 11 (March 21st, June 21st, May 6th, and December 21st).

C. Snow and ice loading.
All development shall be designed to prevent significant amounts of accumulated snow and ice from loading or falling onto adjacent properties or public ways.

Response: The proposed building does not have any sloped roofs or awnings to prevent the shedding of snow or ice onto adjacent properties or public ways. Any measurable snow event would require the snow to be trucked off site by the property management company (Redfern).

D. View corridors.
The massing, location, and height of development shall not substantially obstruct public view corridors identified in the Downtown Vision View Corridor Protection Plan.

Response: Development is outside the Downtown Vision View Corridor Protection Plan.

E. Historic resources.
1. When developments affect designated landmarks or lie within designated historic districts or historic landscape districts, such development shall be required to obtain a Certificate of Appropriateness under Article 17.

2. When any part of a proposed development is within 100 feet of any designated landmark, historic district, except the India Street Historic District, or historic landscape district, such development shall be generally compatible

with the major character-defining elements of the landmark or portion of the district in the immediate vicinity of the proposed development. Character-defining elements of landmarks and historic districts are identified in the historic resources inventory and respective historic district designation reports. For the purposes of this provision, "compatible" design shall be defined as design which respects the established building patterns and visual characteristics that exist in a given setting and, at the same time, is a distinct product of its own time. To aid the review authority in its deliberations, Historic Preservation staff shall provide a written analysis of the proposed development's immediate context, identifying the major character defining elements and any established building patterns that characterize the context.

3. All development shall document and protect state or local archaeological resources known to exist or discovered on the site.

a. Protection shall include leaving archaeological resources untouched beneath a new development through adaptation of foundation design or architectural layout.

b. Where the applicant can demonstrate that complete protection is not feasible, the applicant shall excavate and document archeological resources. Such measures shall be conducted in consultation with the City's historic preservation program and Maine Historic Preservation Commission. For resources of state significance, excavation and documentation shall be conducted by a qualified professional, in coordination with Maine Historic Preservation Commission. Local archeological resources may or may not be recognized by the Maine Historic Preservation Commission as significant and shall include the following:

i. Original seawall structure located landward of Commercial Street.

ii. Inactive historic family cemetery plots.

iii. Historic railroad beds including but not limited to the Portland Lewiston interurban railroad.

iv. Original structure and/or landforms associated with the Cumberland and Oxford Canal.

v. Buried portions of colonial and post-colonial period structures or built features located on the Portland Peninsula predating the Great Fire of 1866.

vi. Pre-colonial occupation sites identified by shell middens or other evidence.

vii. Sites listed or eligible for listing on the National Register of Historic Places.

c. In order to preserve archeological resources, the review authority may waive standards listed in the City of Portland Technical Manual where necessary if it is determined that such a waiver would not jeopardize the health, safety, or welfare of the development's occupants, the public, or the natural environment.

Response: The building site does not lie within a designated historic district nor is within 100 feet away from one. No known archaeological resources exist on the site and full compliance with section 3.a-c of this chapter will be adhered to if archaeological resources are discovered during construction of the building.

F. Exterior Lighting.

1. Site lighting

a. All exterior site lighting shall be full cutoff with no light emitted above the horizontal plane or spilled onto adjacent properties and streets. Illumination levels shall be adequate but not excessive for the safety, comfort, and convenience of occupants and users of the site, and shall conform to the lighting standards of the Technical Manual.

b. Where light from a proposed development may adversely impact adjacent residential properties, exterior lighting shall employ house side shielding.

2. Architectural and specialty lighting.

a. Architectural and specialty lighting of such features as architectural details, monuments, public art, or other site features shall be designed to illuminate specific details or attributes only and shall meet the lighting standards of the Technical Manual.

b. Up-lighting by any method is prohibited except for public buildings and parklands; clock towers and steeples; landscape features; designated historic landmarks; flags of state, federal, or national jurisdictions; and public art. Such light fixtures, brackets, conduits, and all other components shall be designed by a lighting professional and shall be scaled and placed to minimize their visibility and installed in accordance with the lighting standards of the Technical Manual.

3. Street lighting. All development shall provide municipal street lighting adequate for the safety and comfort of pedestrians and motorists and, where applicable, conforming to specific lighting district requirements as specified in the street lighting standards of the Technical Manual.

Response: See included lighting plan for photometrics and cut sheets of lighting fixtures proposed.

III. TECHNICAL STANDARDS AND DESIGN GUIDELINES

DESIGN MANUAL

Development in the B-1, B-1b, B-2, B-2b shall meet the following guidelines in order to meet the Site Plan Standards.

1. Building location and form*.*

Buildings shall be located near the street so as to create an urban street wall. An urban street wall is created by a pattern of buildings which line the street in a consistent manner, thereby establishing a desirable spatial relationship between the building in the commercial district and the major object. Location is one of several related factors defining the street environment.

Building Form, including height, bulk, and massing, contribute to the development of a street wall. The desired condition is to have the building frame and enclose the street, which is achieved by providing building height that is proportionate to the width of the adjoining major street. A ratio of building height to street width of one-to-two creates a strong "room-like" street, while a one- to-three ratio provides good street definition and proportion. Shorter buildings of one story facing broad streets will not achieve the desired relationship.

In the B-2b zone, buildings adjacent to streets should approach 1:2 height to street width, with a minimum of 1:3. For a fifty-foot street right-of-way, therefore, a minimum height of 15' is required, with 25' height preferred. An eighty-foot right-of-way requires about 27' to achieve the 1:3 proportion., with 40'-height preferred. Obviously, buildings located as close as possible to the street right-of- way will provide better definition and proportion than buildings set further back.

Response: The proposed building is located within the required front setback per the B-2b dimensional standards and is continuous across most of the street facing property line creating a continuous street wall. The building steps in height along Washington Avenue but maintains a minimum 1:2 height to street ratio along the entire street facing frontage. 110 feet of the building frontage

maintains a 1:2 ratio with Washington Avenue's 65' wide right-of-way and the rest of the building exceeds the ratio in height. This stepping in height helps to break up the scale of the development while maintaining a continuous urban street wall.

***2. Building Function**.*

An urban street and business district requires a substantial intensity and variety of uses. It is beneficial to have mixed uses within portions of buildings situated near the street. For example, a retail first floor might have office or residential on the second or third floors. This provides both the scale of building height desired, as well as the economic vitality of the business district.

Response: The ground floor of the building will have a variety of active uses. The NW corner will have retail space while the rest of the building's ground floor spaces will have resident-focused amenities including coworking spaces, study lounges, office, and lobby space. Additional active use amenity space will be located on the second floor which includes study and coworking spaces, as well as a fitness room and 4th floor roof deck. Any inactive uses along the ground floor street edge have been minimized as much as possible.

***3. Orientation of buildings and their entrances to the street**.*

Major building entries shall be designed and located to provide the primary building access oriented to the public street and sidewalk. Doorways should be prominent and obvious in appearance, so as to attract the users toward the entry. Major entry features should primarily address the street, with entry courts, display windows, signage, lights, walkways, and vestibules, as appropriate. Major entries should be adjacent to, or very close to, the street and public sidewalk.

Response: All building entrances face the public street and major entrances have an overhead canopy for weather protection.

***4. Windows**.*

Windows shall be located in all building facades visible from the public way, especially on building facades along the major public street. Retail uses

with store fronts are the most desirable feature for locations adjacent to the public sidewalk; and active, transparent (minimum visible transmittance (VT) of .7 or greater), and interesting windows contribute the maximum value. Limitations on transparency, such as dark or reflective glass, or interior coverings, should be avoided. Where uses (such as office) are not conducive to transparent viewing from the public way, windows can still convey a sense of activity and presence along the street. Even these more private windows can convey occupancy and habitation when lighted from within, as during evening hours, even if the interior is screened from view.

Response: All ground floor active use spaces have glazed storefront windows facing the street with maximum transparency. The office spaces will remain transparent with glazed storefront windows but will have interior shades for occupants to control for light and privacy when appropriate.

5. Building character, detail, scale, and graphic qualities.

Building design will include various architectural and graphic amenities to provide a strong presence along a street and relate a building to its community. Awnings, canopies, and flags may be utilized to highlight entryways and to further identify the activity and identity of a use. Facade lighting may be used to highlight entryways or to provide visual interest along an otherwise blank facade Building scale, roof pitch, architectural detail, and fenestration shall be designed to complement and be compatible with surrounding residential and commercial buildings.

Response: Awnings are used to highlight major building and retail entrances, and lighting will be included in these areas as well as in building overhangs along the street frontage to provide a comfortable pedestrian experience. Large, glazed openings on the ground floor will provide light and visual interest during day and night and fenestration patterning has been designed to match the commercial character of the neighborhood.

6. Signage and building entrances.

*Building entrances and building signage in the B-1, B-1b, and B-2b zones will be designed and constructed at the pedestrian scale. *We may need to revise the Sign Ordinance for allowed height and dimension of signs.*

Response: Building signage will be limited to key areas and constructed at the pedestrian scale.

***7. Development relationship to street**.*

Building facades and site amenities shall form a cohesive wall of enclosure along a street. Where buildings are not located at the street line, site amenities, including masonry walls, fences, and landscaping, shall be placed along the street to provide a sense of enclosure or definition.

Response: The entire building façade is located at the street line with sidewalk paving continuing up to the building's facade.

***8. Parking lots**.*

Parking Lots shall be screened from view of the public way. Landscaping or fencing shall be used to screen parking lots from public ways and residential neighbors. Where parking is located within the front yard (or side yard of a corner lot), a landscaped buffer or fence shall be placed along the street line to distinguish the private space from the public space and to help define the street wall.

Parking lots shall be screened from neighboring properties. A densely planted landscape buffer or fencing shall be installed to protect neighboring properties from the impacts associated with the parking lot and the use it serves.

Crosswalks shall be provided within parking lots and across entrance driveways, directing pedestrians to building entrances.

Street trees shall be planted along property street frontage 25ft. on center.

Response: The parking lot is located along the side yard where the building will screen parked cars from the street and will have planting to screen it from the

neighboring property. Street trees will be located along the street frontage at a maximum of 25 feet on-center where possible.

***9. Transit connections**.*

Development proposed along established transit corridors must design uninterrupted access from the proposed development to the transit stop. An easement to place a transit shelter may be requested for development located along a transit corridor.

Response: The closest transit stops are located approximately 150 feet to the South and approximately 300 feet to the North and the building will have uninterrupted access to these two locations.

END

P. Utilities

Please see below for the proposed utility breakdown as part of the redevelopment of 165 Washington Avenue.

Water:

The proposed development will be served by an 8" fire suppression, 6" domestic, and a 2" domestic water service. The 6" domestic will serve the residential units and the 2" domestic will serve the first-floor commercial space. The proposed services will tap into the existing 8" Cast Iron pipe water main within Washington Avenue.

Sewer:

The project proposed to relocate the existing 8" Sewer Main in the Washington Avenue sidewalk to the street from Cove Street to Gould Street and upsize to a 15" PVC SDR pipe. The proposed development will be served by two 8" sewer service connections to the new combined 15" PVC combined sewer main in Washington Avenue.

Stormwater:

Please refer to the Stormwater Report for additional information.

UGE/T/C:

It is assumed the existing overhead wires along the project frontage, on Washington Avenue, will be dropped underground. The development will require a proposed submersible transformer that is serviced by 3-phase primary conduits from a utility pole on Washington Avenue. A secondary conduit will extend from the transformer to the building.

Gas:

There is an existing 4" HDPE gas main located within Washington Avenue. The project will have a new gas service connecting into this main, with any meters located on the side of the building.

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.

ACORN ENGINEERING, INC.

Department of Public Works
Attn: Bradley Roland
212 Canco Road
Portland, Maine 04103

November 14, 2024

Subject: 165 Washington Avenue Redevelopment
Ability to Serve Request

Mr. Roland:

On behalf of Redfern Properties, we are pleased to submit the following request for Portland Department of Public Work's ability to serve at a proposed project at 165 Washington Avenue in Portland, Maine. It is our understanding that the project proposes to construct a new multi-family apartment building with 326 dwelling units with ground floor commercial space. Along with the proposed building, the project would include additional amenity space, associated structured parking below the building and infrastructure upgrades.

The development will upsize the existing 8" combined sewer main along the project frontage to a 15" combined sewer main and proposes to move the sewer alignment into the street. Additionally, the project will incorporate two new 8" sewer service connections and two new stormwater network connections to the 15" sewer main. Please refer to the attached Utility Plan & Grading Plan for additional information.

Based upon Section 4 of the *Maine Subsurface Wastewater Disposal Rules*, the table below outlines the proposed flow. The proposed project is anticipated to increase the net flow by approximately **46,260** 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.

Estimate of Anticipated Daily Flows			
Development	Unit Size	Gallons per Day per Unit	Total Gallons per Day (GPD)
Existing Flow			
Northern Burner Supply Company, Inc. (Vacant)	-	-	Unknown
Total Gallons per Day (Existing)			-
Proposed Flow			
Residential	(108) Efficiency Units	120 GPD/ Unit	12,960
Residential	(128) Studio Units	120 GPD/ Unit	15,360
Residential	(12) 1-Bedroom Units	120 GPD/ Unit	1,440
Residential	(78) 2 Bedroom Units	210 GPD / Unit	16,380
Retail	10 Employees	12 GPD / Employee	120
Total Gallons per Day (Proposed)			**46,260 GPD**
Net Change			**+46,260 GPD**
*Values based on Chapter 241 State of Maine: Subsurface Wastewater Disposal Rules, most recent edition			

On behalf of the client, we are requesting DPW's ability to serve the project.

I have attached a Boundary and Topographic Survey created by Owen Haskell, Inc., to facilitate your review, as well as a preliminary utility and grading 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

October 28, 2024

RE: 165 Washington Avenue Redevelopment
Ability to Serve Request

To Whom It May Concern:

On behalf of Redfern Properties, we are pleased to submit the following request for Portland Water District's ability to serve at a proposed project at 165 Washington Avenue in Portland, Maine. It is our understanding that the project proposes to construct a new multi-family apartment building with approximately 327 dwelling units with ground floor commercial space. Along with the proposed building, the project would include additional amenity space, associated structured parking below the building and infrastructure upgrades.

It is assumed the development will require an 8" fire suppression, 6" domestic, and a 2" domestic water service. It is assumed the 6" domestic will likely be used for the residential units and the 2" domestic for the first-floor commercial spaces. The existing water main within Washington Avenue is 8", material and age of pipe is unknown at this time. Please refer to the 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			
Northern Burner Supply Company, Inc. (Vacant)	-	-	Unknown
Total Gallons per Day (Existing)			-
Proposed Flow			
Residential	(108) Efficiency Units	120 GPD/ Unit	12,960
Residential	(129) Studio Units	120 GPD/ Unit	15,480
Residential	(12) 1-Bedroom Units	120 GPD/ Unit	1,440
Residential	(78) 2 Bedroom Units	210 GPD / Unit	16,380
Retail	10 Employees	12 GPD / Employee	120

Total Gallons per Day (Proposed)	46,380 GPD
Net Change	**+46,380 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 **46,380** 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. Additional information, such as utility mapping within Washington Avenue 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 Boundary and Topographic Survey created by Owen Haskell, 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.

Unitil Service Corp.
Attn: Scott Carpenter
376 Riverside Industrial Parkway
Portland, Maine 04103

October 28, 2024

RE: 165 Washington Avenue Redevelopment
Ability to Serve Request

Dear Mr. Carpenter:

On behalf of Redfern Properties, we are pleased to submit the following request for Unitil's ability to serve at a proposed project at 165 Washington Avenue in Portland, Maine. It is our understanding that the project proposes to construct a new multi-family apartment building with approximately 327 dwelling units with ground floor commercial space. Along with the proposed building, the project would include additional amenity space, associated structured parking below the building and infrastructure upgrades.

There is an existing gas main located within the Washington Avenue sidewalk along the project frontage. Size, material, age are unknown at this time. The project will have a new gas service connecting into this main, with any meters located to the side of the building.

On behalf of the client, we are requesting the following information:

1. Any additional gas lines within Washington Avenue.
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 and Topographic Survey created by Owen Haskell, 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 F. Heil, PE
Project Manager
Acorn Engineering, Inc.

October 29, 2024

Acorn Engineering, Inc.
PO Box 3372
Portland, Maine 04104

Attn: Zachary Stevens, PE & Peter F. Heil, PE

Subject/Description of project: 165 Washington Avenue, Portland - Ability to Serve Request

Re: Natural Gas Ability to Serve Response

Dear Zachary and Peter,

Thank you for your interest in using natural gas for the above referenced project.

This is to confirm that Unitil has a 4 inch HDPE natural gas in front of the property at 165 Washington Avenue, Portland.

Once the gas load is available please send that along and we can size any new gas mains, services and/or meter(s) that will be needed.

If you have any further questions or require additional information, please contact me at 207-541-2543 or email at carpenters@unitil.com.

Sincerely,

Scott Carpenter

Scott Carpenter
Senior Business Development Representative
207-541-2543

Q. Construction Management Plan

Project Address: 165 Washington Avenue, Portland, ME

Project Description:

The project proposes to demolish the existing Northern Burner Supply building and construct a new multi-family / mixed-use apartment building with 326 dwelling units with ground floor commercial space. Along with the proposed building, the project would include additional amenity space, associated structured parking below the building and infrastructure upgrades.

Project Team Summary:

Owner:	Redfern Properties
General Contractor:	Penobscot General Contractors
Civil Engineer:	Acorn Engineering, Inc.
Architect:	HOLST Architecture
Structural Engineer:	Structural Integrity

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:

   Although not anticipated, if blasting occurs, it shall conform to Article VIII. In Chapter 14 of the City Code and Section 3.7 in the City's Technical Manual.

3. Building Code:

   Employ the best practices, as applicable, of Chapter 33 Safeguards During Construction, from the 2009 International Building Code.

D. Construction Administration and Communication

The Contractor will work closely with adjacent abutters, businesses, and all parties informed, as far in advance as possible, of scheduled work, particularly work anticipated to cause significant noise, vibrations, or dust. Communication in order to comply with all agreements, ordinances, and special permits will be of the utmost importance. Contractor contact information shall be posted on a sign on the construction fence along Washington Avenue 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:

Haynes Johnston
Redfern Properties
(207) 261-5151

GC and Subcontractor information will be posted along Washington Avenue 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:	2025
Project End Date:	2027

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 Washington Avenue.

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 Washington Avenue. 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 Washington Avenue 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 on Washington Avenue 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. Due to the existing sparse landscaping on site, no protection during construction will be necessary.

3. Stored materials shall be identified and avoid being located under/near trees.

J. Construction Staging Area

1. The Contractor shall submit a plan with locations depicted for the location of material staging areas, the location of on-site temporary construction trailers, the location of on-site truck delivery holding areas, the location of on-site truck washing stations, masonry mixing stations, the general location of the construction security fence and the general location of temporary construction dumpsters. This plan shall be submitted at or prior to the pre-construction meeting. Any open storage areas shall be shown on the plan.

2. Delivery Truck Holding Areas On-Site: The majority of materials delivered to the site will be scheduled such that they are able to be off-loaded immediately. On days when the construction activities require multiple truck deliveries, these deliveries will be carefully scheduled so that there is always adequate on-site area for the holding of trucks until they can be unloaded. Once at the site all vehicles will be brought within the fence line and will make every attempt to avoid queuing on public streets. If, for any reason, on-site holding of trucks is not feasible, an off-site location must be designated and shown on the submitted plan referenced above in J.1.

3. All deliveries for materials shall comply with the City's noise requirements.

K. Parking During Construction

1. Adequate parking for construction workers shall be provided 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 the reconstruction:

    - Gravel & Stone – Approx. 617 CY. Earthwork subcontractor(s) pit to project site.
    - Hot Mix Asphalt – Approx. 172 tons. Paving subcontractor(s) pit to project site.

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 multi-family building will utilize an interior trash room. Please refer to the attached architectural plan for more information. Bins will be rolled out to the curb and collected by a private hauler, to be contracted for removal services.

S. Parking Analysis

Per Land Use ReCode Section 18-A Off Street Parking Table Maximums. The project does not require any parking onsite and the maximum allowed parking onsite is calculated below.

Residential: 1 space per 2 dwelling units (326 units) = 652 Parking Spaces

Retail: 1 Space per 300 SF of Floor Area = 6 Spaces

Total Maximums Parking Spaces allowed = 658 Spaces

The project proposes 11 parking spaces on site, including 2 ADA parking spaces, and 2 EV parking spaces under the building, significantly below the maximum allowed parking spaces and plans to implement strategies identified in the attached Transportation Demand Management Plan to promote multi-modal transportation options, including biking and walking.

Per Land Use ReCode Section 18-A Off Street Parking Table, the require bicycle parking space for residential units are 1 space per every 2 dwelling units, which results in 163 bike spaces required for the project. Please refer to C-10 for the locations of the bike racks, including internal bike room and external bike racks to meet the demand.

All mixed-use developments more than 50,000 SF shall be required to design and implement a Transportation Demand Management (TDM) Plan. Please refer to the attached Section T: Traffic for additional information.

Barton & Loguidice

Att. T1

TRAFFIC MOVEMENT PERMIT

FOR PROPOSED

165 Washington Avenue
RESIDENTIAL & COMMERCIAL REDEVELOPMENT

165 Washington Ave, Portland, Maine

Prepared For: **Redfern Properties, LLC**
Prepared By: Barton & Loguidice

November, 2024
2943.001.001

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Residential & Commercial Redevelopment

165 Washington Avenue, Maine

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APPENDIX 28

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	**X**
Traffic 100-200 PCE's (Expedited)	
Traffic 200+ PCE's	

Name of Applicant: **Redfern Properties, LLC**

Address: **120 Exchange St, Suite 330, Portland, ME 04101** Telephone: **(207) 261-5303**

Name of local contact or agent: **John Q. Adams, P.E., PTOE, Barton & Loguidice, LLC**

Address: **383 US Route 1, Suite 2A, Box 4, Scarborough, ME 04074** Telephone: **(207) 331-6694**

Name and type of development: **165 Washington Ave: 326 Apartment Units & 1,800sf Commercial Unit**

Location of development including road, street, or nearest route number: **165 Washington Ave, Portland, ME 04101**

City/Town/Plantation: **Portland** County: **Cumberland**, Tax Map # **12** Lot # **F002**

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 X

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? **No**

Existing DEP or MDOT permit number (if applicable): **N/A**

Name(s) of DOT staff person(s) contacted concerning this application: **N/A**

Name(s) of DOT staff person(s) present at the scoping meeting for 200+ applications: **N/A**

NOTICE OF INTENT TO FILE
Traffic Movement Permit

Please take notice that

Redfern Properties, LLC
120 Exchange St, Suite 330, Portland, ME 04101
(207) 261-5303

Are intending to file a Maine Department of Transportation Traffic Movement Permit with the City of Portland under their delegated review authority pursuant to the provisions of 23 M.R.S.A. § 704 - A on or about

November 20, 2024

The application is for the development of a 7-floor multi-use building with 326 apartment units and 1,800sf of retail space located at 165 Washington Avenue in the City of Portland. The project is anticipated to generate the following peak hour trips:

AM Peak Hour (Street) = 98
PM Peak Hour (Street) = 99
Saturday Peak Hour = 109

At the following location:

165 Washington Ave
Portland, ME 04101

Any interested party may request in writing to participate in the scoping meeting for the subject project no later than 20 days after the application is found by the City to be complete and is accepted for processing. 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 City of Portland's Planning and Urban Development office during normal working hours.

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

1/2000

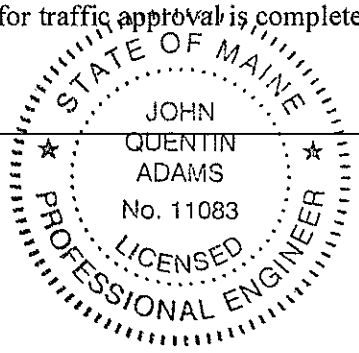
CERTIFICATION

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

Signature: _____ Re/Cert/Lic No.: _____

Name (print): John Q. Adams

Date: 11-20-24



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."

	10/25/2024
Signature of applicant	Date

ABUTTERS LIST

IAS_PARCEL_ID	ST_NUM	ST_NAME	UNIT_NUM	OWN	OWN_ADDR	OWN_CITY	OWN_ST	OWN_ZIP
008 A007001	170	NORTH ST		CITY OF PORTLAND	389 CONGRESS ST	PORTLAND	ME	4101
010 D001001	165	WASHINGTON AVE		WATERHOUSE RAYMOND H & ALINA WATERHOUSE	105 PARTRIDGE CIR	PORTLAND	ME	4102
012 F008001	163	WASHINGTON AVE		CURRAN JEFFREY A	163 WASHINGTON AVE	PORTLAND	ME	4101
012 F010001	9	E COVE ST		HIGH PEAKS LLC	PO BOX 482	AUBURN	ME	4212
012 F011001	3	E COVE ST		HIGH PEAKS LLC	PO BOX 482	AUBURN	ME	4212
012 F014001	159	WASHINGTON AVE		ANASTACIO RAMON L & RUBY L ANASTACIO JTS	159 WASHINGTON AVE	PORTLAND	ME	4101
012 H001001	79	WALNUT ST	1	NIELSEN CATHERINE E & GARY M NIELSEN JTS	2283 WEST RIVER RD	AUGUSTA	ME	4330
012 H001002	191	SHERIDAN ST	2	FILLER NORMA M	191 SHERIDAN ST	PORTLAND	ME	4101
012 H001003	193	SHERIDAN ST	3	ENGLERT EVIANA L F & ALEXANDER M F ENGLERT TRUSTEES	193 SHERIDAN ST # 3	PORTLAND	ME	4101
012 H001004	197	SHERIDAN ST	4	FAHERTY ROBERT DOUGLASS & ELIZABETH ANNE OWENS JTS	197 SHERIDAN ST # 4	PORTLAND	ME	4101
012 H001005	199	SHERIDAN ST	5	BAGG PETER VN VET & PATRICIA BAGG JTS	199 SHERIDAN ST	PORTLAND	ME	4101
012 H001006	201	SHERIDAN ST	6	UNDERBERG PAUL D & SHARON E UNDERBERG JTS	201 SHERIDAN ST	PORTLAND	ME	4101
012 H001007	203	SHERIDAN ST	7	BOOKIN STEPHEN O ETAL JTS	4B PLOVER WAY	GLOUCESTER	MA	1930
012 H001008	205	SHERIDAN ST	8	PITEGOFF PETER & ANN CASADY JTS	205 SHERIDAN ST	PORTLAND	ME	4101
012 H001009	207	SHERIDAN ST	9	THOMPSON DAVID CHARLES & TANJA CURTIS JTS	207 SHERIDAN ST # 9	PORTLAND	ME	4101
012 H001010	211	SHERIDAN ST	10	MAYER ELDON C JR & BETTY F MAYER TRUSTEES	7 CENTRAL LANDING RD	CHEBEAGUE ISLAND	ME	4017
012 H001011	213	SHERIDAN ST	11	MACHESNEY DAVID & NANCY MACHESNEY JTS	213 SHERIDAN ST	PORTLAND	ME	4101
012 H001012	215	SHERIDAN ST	12	HART LESLIE & KEVIN SCHOCHAT JTS	215 SHERIDAN ST	PORTLAND	ME	4101
012 H001013	217	SHERIDAN ST	13	PEACOCK BRADLEY D & TRACY O PEACOCK JTS	809 ELMWOOD AVE	WILMETTE	IL	60091
012 H001014	219	SHERIDAN ST	14	COYLE MICHAEL & ANGELA COYLE JTS	930 ROBIN RD	STATE COLLEGE	PA	16801
012 H001015	223	SHERIDAN ST	15	SHAFFER MARGUERITE SANDS & BENNETT MATTHEW JACKS JTS	223 SHERIDAN ST	PORTLAND	ME	4101
012 H001016	225	SHERIDAN ST	16	POLLAK BERNARD E & BETTY J LORBER JTS	225 SHERIDAN ST	PORTLAND	ME	4101
012 H001017	227	SHERIDAN ST	17	WILLIAMS FREDRIC W	227 SHERIDAN ST	PORTLAND	ME	4101
012 H001018	229	SHERIDAN ST	18	SAX SHAWNEE A & DOUGLAS S SAX JTS	229 SHERIDAN ST	PORTLAND	ME	4101
012 H001019	200	SHERIDAN ST	19	CURTIS HEATHER E TRUSTEE	200 SHERIDAN ST # 19	PORTLAND	ME	4101
012 H001020	202	SHERIDAN ST	20	GUNASEKERA GESHRI & JOHN RUDOY JTS	202 SHERIDAN ST	PORTLAND	ME	4101
012 H001021	204	SHERIDAN ST	21	REINHARZ JEHUDA & YAEL REINHARZ TRUSTEES	204 SHERIDAN ST # 21	PORTLAND	ME	4101
012 H001022	206	SHERIDAN ST	22	ROBINS TERRELL S & SUZANNE ROBINS JTS	206 SHERIDAN ST	PORTLAND	ME	4101
012 H001023	208	SHERIDAN ST	23	MORSE ROBERT L & MARY E MORSE JTS	208 SHERIDAN ST	PORTLAND	ME	4101
012 H001024	210	SHERIDAN ST	24	MARSTERS ANDREW & MARY SPALDING MARSTERS JTS	210 SHERIDAN ST	PORTLAND	ME	4101
012 H001025	218	SHERIDAN ST	25	RITTER GREGG T	218 SHERIDAN ST # 25	PORTLAND	ME	4101
012 H001026	220	SHERIDAN ST	26	220 LOBSTER ROLL LLC	90 FURMAN ST # N-611	BROOKLYN	NY	11201
012 H001027	222	SHERIDAN ST	27	DUNN ERIN C & CHAD W ROBERTSON JTS	222 SHERIDAN ST	PORTLAND	ME	4101
012 H001028	224	SHERIDAN ST	28	PRATT MARIANNA M	224 SHERIDAN ST	PORTLAND	ME	4101
012 H001029	226	SHERIDAN ST	29	MARINO RICHARD	226 SHERIDAN ST	PORTLAND	ME	4101
012 H001000	79	WALNUT ST		MUNJOY HEIGHTS CONDO	79 WALNUT ST	PORTLAND	ME	4101
010 A030001	192	WASHINGTON AVE		192 WASHINGTON AVE LLC	PO BOX 1398	PORTLAND	ME	4104
010 F002001	184	WASHINGTON AVE		LORING CHARLES AMVETS POST NO 25	186 WASHINGTON AVE	PORTLAND	ME	4101
010 F004001	178	WASHINGTON AVE		NO PLACE LLC	PO BOX 1321	SCARBOROUGH	ME	4070
010 F007001	170	WASHINGTON AVE		TMJ ASSOCIATES	P.O.BOX 734	PORTLAND	ME	4104
010 F011001	180	WASHINGTON AVE		HARMON DAVID L	8 CHASE LN	SACO	ME	4072
010 F012001	182	WASHINGTON AVE		MAINE MODERN DEVELOPMENT INC	8 CHASE LN	SACO	ME	4072
012 D004001	168	WASHINGTON AVE		TMJ ASSOCIATES	PO BOX 734	PORTLAND	ME	4104
010 A031001	190	WASHINGTON AVE		PIERPONT ERIC	50 E ST	SOUTH PORTLAND	ME	4106

Section 1

1

1A. Site Plan

Redfern Properties LLC, is proposing the construction of a 208,667sf mixed-use residential and commercial building on the 1.31-acre parcel addressed 165 Washington Avenue in the City of Portland. Of the total acreage, 1.31 acres are developable. The project will construct a 7-floor multi-use building with 326 apartment units and 1,800sf of retail space on the ground level. Access to the site will be provided via a single driveway entrance, which intersects with the eastern side of Washington Avenue 120 feet north of East Cove Street.

The project will provide storage for 163 bicycles and 11 vehicle parking spaces, 2 of which will be signed and striped as handicapped.

1B. Existing & Proposed Uses

Existing

The existing development parcel is occupied by a vacant building that formerly was occupied by Northern Burner Supply, a wholesale distributor of heating and electrical supplies. Access to the existing site is provided by two driveway entrances that intersect with the eastern side of Washington Avenue, both of which will be removed with the development of the proposed project.

Proposed

The proposed development will construct a 7-floor multi-use building with 326 apartment units and 1,800sf of retail space on the ground level. Access to the site will be provided via a single driveway entrance, which intersects with the eastern side of Washington Avenue 120 feet north of East Cove Street.

The project will provide storage for 163 bicycles and 11 vehicle parking spaces, 2 of which will be signed and striped as handicapped.

1C. Regional Mapping

For the regional mapping analysis, we have established a study area with a ¼-mile radius from the site entrance at Main Street. The study area is based on MaineDOT's requirements for an urban/suburban development area.

Pedestrian & Bicycle Trip Origins/Destinations

Portland, within a ¼-mile radius of the site entrance, generally consists of residential, retail, and commercial land uses. It is assumed that these existing residential dwellings could be pedestrian/bicycle trip origins and that the pedestrian/bicycle destinations would be the retail and commercial institutional land uses generally located around Washington Avenue, Anderson Street, and Marginal Way.

Pedestrian Infrastructure

A review of existing pedestrian and bicycle infrastructure was completed using Google Earth and field surveys. Our surveys show that within the ¼-mile study radius, there are existing sidewalks on one or both sides of most streets. The existing sidewalks and crosswalks are illustrated in the *Regional Mapping Plan* attached in *Section A of the appendix*.

Bicycle Infrastructure
A review of existing pedestrian and bicycle infrastructure was completed using Google Earth, as well as field surveys. Our surveys show that within the ¼-mile study radius, there are striped bicycle lanes on the southbound Washington Avenue travel lane between Back Cove Trail and Walnut Street, on the northern side of Fox Street between Washington Avenue and Anderson Street, and on both sides of Marginal Way for the length of the study area. The existing bike lanes are illustrated in the *Regional Mapping Plan* attached in *Section A of the appendix*.

Bus Infrastructure
From a survey of Google Earth, we have identified the existing bus stops within the study area. The *Regional Mapping Plan* attached in *Section A of the appendix* illustrates the locations of the bus stops. The plan shows that there are existing bus stops on both sides of Washington Avenue within the vicinity of the development site.

Pedestrian Infrastructure Gaps
As shown in the *Regional Mapping Plan*, there are no significant gaps in the pedestrian sidewalk infrastructure.

1D. Proposed Uses in the General Vicinity of the Proposed Development

Traffic generated by projects that have been approved by the Local Planning Board and/or the Maine Department of Transportation, yet are not opened, must be included in the estimate of pre-development traffic. The City of Portland has been consulted to identify any and all development projects whose trips may impact the study area. The City identified 5 projects which potentially impact the study area:

- Roux Institute – 1 Bean Pot Circle
- St. Lawrence Performing Arts Center
- 70 Thames Street
- 385 Congress Street
- 58 Fore Street

Project and traffic information for each of the five identified projects is provided below:

Roux Institute
Traffic estimates prepared for the Roux Institute show that **18** AM peak hour trips and **21** PM peak hour trips will travel north on Washington Avenue to I-295, and **1** AM peak hour trip and **19** PM peak hour trips will travel from I-295 south on Washington Avenue.

St. Lawrence Performing Arts Center
Friends of St. Lawrence Church are proposing a 401-seat building expansion to the existing St. Lawrence Arts Center located at 76 Congress Street. Site trip assignments, prepared by Traffic Solutions in support of the proposed project, estimate **10** trips will travel directionally on Walnut Street to the proposed St. Lawrence Arts Center site from the Washington Avenue corridor in the "pre-event" peak hour, assumed to be the PM peak hour.

70 Thames Street is a 3-story mixed-use building composed of 43,730sf of office space, 2,00sf of retail space, and 8,315sf (300 seats) of restaurant space. Gorrill Palmer's traffic estimates show that the site produces **63 trips** in the AM peak hour and **129** trips in the PM peak hour. The approximate entry and exit trips, based on the data provided in ITE, are provided below:

AM Peak Hour:	**PM Peak Hour:**
Enter = 51	Enter = 56
Exit = 12	Exit = 73

385 Congress Street provides 156 hotel rooms and 9 residential condominiums. The TDM prepared for the project shows that the site will generate **49 trips** in the AM peak hour and **34 trips** in the PM peak hour. The trips are broken down into entry and exit trips below:

AM Peak Hour:	**PM Peak Hour:**
Enter = 19	Enter = 15
Exit = 30	Exit = 19

58 Fore Street is composed of a 128-room hotel, 43 condominium units, 4,928sf of retail space, 18,083sf of food & beverage, and a 19,697sf spa. Gorrill Palmer's traffic estimates show that the site is expected to generate **419 trips** in the AM peak hour and **565 trips** in the PM peak hour. The approximate entry and exit trips, which have been prepared based on the data provided in the TDM plan, are provided below:

AM Peak Hour:	**PM Peak Hour:**
Enter = 226	Enter = 283
Exit = 193	Exit = 282

1E. Site Trip Generation

Trip generation for the proposed 326 apartment units and 1,800sf of commercial space was determined based on the trip generation rates provided in the 11th edition of the Institute of Transportation Engineers (ITE) *Trip Generation Manual*. The ITE Manual provides numerous land use codes (LUC) and the average volume of site generated trips produced by each category.

Trip generation calculations for the 326 apartment units were prepared using *LUC #221—Multi-Family Housing (Mid-Rise)*, which ITE describes as "*apartments and condominiums located in a building that has between four and 10 floors of living space. Access to individual dwelling units is through an outside building entrance, a lobby, an elevator, and a set of hallways."*

Trip generation calculations for the 1,800sf of commercial spaces were prepared using *LUC #932 – High-Turnover (Sit-Down) Restaurant*, defined by ITE as "*full-service eating establishments with a typical duration of stay of 60 minutes or less. This restaurant is usually moderately priced, frequently belongs to a restaurant chain, and is commonly referred to as casual dining. Generally, the restaurants serve lunch and dinner; they may also be open for breakfast and are sometimes open 24 hours a day."*

In the *Trip Generation Manual*, for LUC #221 and LUC #932, ITE provides the *Average* trip generation rate and the *Fitted Curve* trip generation rate. MaineDOT guidelines state that when $R^2 \geq 0.80$, the *Fitted Curve* trip generation rate shall be used. The trip generation calculations for the apartment units and commercial space are provided below in Table 1.1 and Table 1.2:

Table 1.1 ITE Trip Generation Calculations (Dense Multi-Use Urban)							
Land Use	**Multifamily Housing (Mid-Rise) Not Close to Rail Transit - LUC 221**						
Time Period	**Dwelling Units (X)**	**R^2**	**Fitted Curve Equation/ Avg. Rate**	**Trips Generated (T)**	**Distribution Entering / Exiting**	**Enter**	**Exit**
Weekday	326	n/a	2.93	955	50% / 50%	478	477
AM Weekday Peak Hour (Street)	326	0.96	T = 0.25(X) + 5.35	87	15% / 85%	13	74
PM Weekday Peak Hour (Street)	326	0.97	T = 0.29(X) - 6.26	88	73% / 27%	64	24
AM Weekday Peak Hour (Generator)	326	0.69	0.23	75	17% / 83%	13	62
PM Weekday Peak Hour (Generator)	326	0.78	0.24	78	63% / 37%	49	29
Saturday Peak Hour*	326	n/a	0.27	88	50% / 50%	44	44

*ITE does not provide trip distribution for Saturday peak hour. Assumed to be 50/50.

Table 1.2 ITE Trip Generation Calculations (General Urban/Suburban)						
Land Use	**High-Turnover (Sit-Down) Restaurant - LUC 932**					
Time Period	**Sq. Footage (1k)**	**Avg. Trip Generation Rate (Trips Per 1k Sf)**	**Trips Generated**	**Distribution Entering / Exiting**	**Enter**	**Exit**
Weekday	1.8	107.20	193	50% / 50%	97	96
AM Weekday Peak Hour (Street)	1.8	9.57	18	55% / 45%	10	8
PM Weekday Peak Hour (Street)	1.8	9.05	17	61% / 39%	11	6
AM Weekday Peak Hour (Generator)	1.8	13.68	25	57% / 43%	15	10
PM Weekday Peak Hour (Generator)	1.8	16.35	30	51% / 49%	16	14
Saturday Peak Hour	1.8	11.19	21	51% / 49%	11	10

Summarizing the trip generation calculations shown in the preceding tables, Table 1.3, following, provides the trip generation calculations for the proposed development:

Table 1.3 ITE Trip Generation Summary			
Time Period	**Total Trips**	**Enter**	**Exit**
Weekday	1148	575	573
AM Weekday Peak Hour (Street)	105	23	82
PM Weekday Peak Hour (Street)	105	75	30
AM Weekday Peak Hour (Generator)	100	28	72
PM Weekday Peak Hour (Generator)	108	65	43
Saturday Peak Hour	109	55	54

The preceding table shows that the proposed multi-use building is expected to generate 105 trips during the AM peak hour of the adjacent street, and 105 trips during the PM peak hour of the adjacent street. During the peak hours of the generator, the site is expected to produce 100 trips in the AM and 108 trips in the PM. During the Saturday peak hour, the development is expected to generate 109 trips.

1F. Net New Trips

MaineDOT Traffic Movement Permit Regulations allow for trip generation credits to be taken for on-site uses that are displaced by the development of a site which were operational within the past 10 years. Within the past 10 years, the site was occupied by Northern Burner Supply Company, a heating and air conditioning/HVAC wholesale distributer store. The development was located in a 9,500sf building which will be removed with the development of the project. The trip generation estimates for Northern Burner Supply Co., which were prepared using ITE's LUC #110 – General Light Industrial, are provided below in Table 1.4:

Table 1.4
ITE Trip Generation Calculations (General Urban /Suburban)

Land Use	General Light Industrial - LUC 110					
Time Period	**Sq. Footage (1k)**	**Avg. Trip Generation Rate (Trips Per 1k Sf)**	**Trips Generated**	**Distribution Entering / Exiting**	**Enter**	**Exit**
Weekday	9.5	4.87	46	50% / 50%	23	23
AM Weekday Peak Hour (Street)	9.5	0.74	7	88% / 12%	6	1
PM Weekday Peak Hour (Street)	9.5	0.65	6	14% / 86%	1	5
AM Weekday Peak Hour (Generator)	9.5	0.91	9	87% / 13%	8	1
PM Weekday Peak Hour (Generator)	9.5	0.80	8	18% / 82%	1	7
Saturday Peak Hour		Closed				

Table 1.4 shows that the site's prior use generated 7 trips during the AM peak hour of the adjacent street and 6 trips during the PM peak hour of the adjacent street. During the AM and PM peak hours of the generator, the site produced 9 trips and 8 trips, respectively.

Taking credit for the site's prior use, Table 1.5, following, presents the net new site trip generation:

Table 1.5
Net New Trip Generation Calculations

Time Period	Proposed Trip Generation			Existing Trip Generation			Net New Trip Generation		
	Total	**Enter**	**Exit**	**Total**	**Enter**	**Exit**	**Total**	**Enter**	**Exit**
Weekday	1148	575	573	-46	-23	-23	1102	552	550
AM Weekday Peak Hour (Street)	105	23	82	-7	-6	-1	98	17	81
PM Weekday Peak Hour (Street)	105	75	30	-6	-1	-5	99	74	25
AM Weekday Peak Hour (Generator)	100	28	72	-9	-8	-1	91	20	71
PM Weekday Peak Hour (Generator)	108	65	43	-8	-1	-7	100	64	36
Saturday Peak Hour	109	55	54	0	0	0	109	55	54

The preceding table shows that the proposed multi-use building is expected to generate 98 net new trips during the AM peak hour of the adjacent street, and 99 net new trips during the PM peak hour of the adjacent street. During the peak hours of the generator, the site is expected to produce 91 net new trips in the AM and 100 net new trips in the PM. During the Saturday peak hour, the development is expected to generate 109 net new trips.

1G. Trip Adjustments

It is assumed that a certain number of trips generated by the proposed apartment units will also visit the proposed restaurant located on the ground floor. We have calculated the internally captured (shared) trips for proposed developments using the approach recommended by the ITE *Trip Generation Handbook*, which recommends using the NCHRP Report 684 methodology. The NCHRP Report 684 determines the internally captured trips between office, retail, restaurant, cinema/entertainment, residential, and hotel land uses.

The NCHRP spreadsheets, *attached in Section A of the appendix*, have been prepared by inputting the net new trips generated by the proposed residential and restaurant uses. The outputs of the spreadsheets are summarized below in Table 1.6:

Table 1.6
NCHRP Report 684 Summary

Time Period	Internal Capture Percentages			External Vehicle Trips		
	Total	Enter	Exit	Total	Enter	Exit
AM Weekday Peak Hour (Street)	4%	12%	2%	94	15	79
PM Weekday Peak Hour (Street)	6%	4%	12%	93	71	22
Saturday Peak Hour	7%	7%	7%	101	51	50

Table 1.6 shows that with the internally captured trips accounted for, the site is expected to produce 94 net new trips in the AM peak hour, 93 net new trips in the PM peak hour, and 101 net new trips in the PM peak hour.

While the Saturday peak hour is the site's highest trip generator, by 6 trips, the most critical study time periods are the AM and PM peak hours of the street due to the higher directional traffic volumes on the existing roadway. Accordingly, in this analysis, we will be studying the AM and PM peak hours of the street. To be conservative in our analyses, in this application, we will be completing the traffic analysis using the unadjusted site generated trips shown in Table 1.3

1H. Site Trip Distribution

Vehicle trips generated by the proposed multi-use building have been assigned to and from the site during the AM and PM peak hours based on the entering and exiting distribution patterns provided by ITE. The entering and exiting distributions for LUC #221 are provided in Table 1.7, and the entering and exiting distributions for LUC #932 are provided in Table 1.8.

Table 1.7
ITE Trip Generation Calculations

Land Use	LUC #221
Time Period	Distribution Entering / Exiting
AM Weekday Peak Hour (Street)	15% / 85%
PM Weekday Peak Hour (Street)	73% / 27%

Table 1.8 ITE Trip Generation Calculations			
Land Use	**LUC #932**		
Time Period	**Distribution Entering / Exiting**		
AM Weekday Peak Hour (Street)	55%	/	45%
PM Weekday Peak Hour (Street)	61%	/	39%

1J. Site Trip Assignment

Trips generated by the proposed development in the AM and PM peak hour time periods have been assigned to and from the development site following the existing traffic patterns recorded at the intersection of Washington Avenue at Eastern Promenade and Washington Avenue at Walnut Street/Fox Street. The turning movement counts, collected in October of 2024, are attached in *Section A of the appendix* and illustrated in **Figure 1**, which is also attached in *Section A of the appendix*. The trip assignment percentages are provided below in Table 1.9:

Table 1.9 Percent Site Trip Assignment		
Approach (To/From)	**AM Peak Hour**	**PM Peak Hour**
Eastern Promenade	12%	11%
Washington Ave (North)	30%	30%
Walnut St	7%	9%
Washington Ave (South)	40%	34%
Fox St	11%	16%

The site generated trips have been assigned through the intersections, to/from the site, following the percentages shown in Table 1.6. **Figure 2**, attached in *Section A of the appendix*, illustrates the site trip assignment.

Section 2

2

2A. Crash Analysis

MaineDOT's Office of Safety, Crash Records Section, has provided crash data for the latest three-year period (2021 – 2023) for the section of Washington Avenue between the Eastern Promenade and Fox Street/Walnut Street intersections. A summary of the crash report is provided below, and additional crash data outside of the study area is included in *Section B of the appendix*.

Table 2.1
2021 - 2023 Crash Summary
Washington Ave btw. Fox St and Eastern Promenade

#	Location		Total Crashes	Critical Rate Factor
1	Washington Ave @	Site	0	0.00
2	Washington Ave @	Walnut St	5	1.05
3	Washington Ave @	Eastern Promenade	5	1.08
4	Washington Ave @	Fox St	3	0.62
4	Washington Ave btw.	Fox St and Walnut St	0	0.00
6	Washington Ave btw.	Walnut St and Site	6	0.97
7	Washington Ave btw.	Site and Eastern Prom	2	0.47

MaineDOT considers any roadway intersection or segment a high crash location (HCL) if both of the following criteria are met:

- ***8 or more crashes in the most recent three-year period***
- ***A Critical Rate Factor greater than or equal to 1.00***

As shown in the preceding table, there are no high crash locations within the defined study area.

2B. Pedestrian & Bike Crash Analysis

A review of MaineDOT's Public Map Viewer shows that 0 bicycle crashes and 0 pedestrian crashes occurred in the study area.

Section 3

3

3A. Entrance/Exit Location

The development site will be accessed via a single driveway entrance, which intersects with the eastern side of Washington Avenue 120 feet north of East Cove Street.

3B. Entrance & Exit Plan View

Intersection sight distances were directionally recorded from the proposed site entrance in accordance with the criteria established within the MaineDOT's *Highway Driveway and Entrance Rules* publication, which require the following minimum sight distances for non-mobility roadways based upon the posted speed limit:

MaineDOT Sight Distance Standards	
Posted Speed Limit	**Minimum Sight Distance**
25 mph	**200 feet**
30 mph	250 feet
35 mph	305 feet
40 mph	360 feet
45 mph	425 feet
50 mph	495 feet

The section of Washington Avenue fronting the proposed site driveway is posted at 25 mph, requiring an unobstructed sight distance of 200 feet. In accordance with *Highway Driveway and Entrance Rules,* sight distance measurements were recorded using the following procedures: "*Sight distance is measured to and from the point on the centerline of the proposed access that is located 10 feet from the edge of traveled way. The height of the hypothetical person's view is considered to be 3½ feet above the pavement, and the height of the object being viewed is considered to be 4¼ feet above the pavement.*"

The field measurements recorded from the proposed site entrance looking directionally onto Washington Avenue indicate that existing sight distances are in excess of the minimum standard based on the 25 mph posted speed limit. Looking left, we recorded a sight distance of 225 feet; looking right, we recorded a measurement in excess of 400 feet.

3C. Entrance/Exit Design

The proposed project, including any required off-site improvements, will be designed and constructed as directed by the City of Portland.

3D. Entrance/Exit Criteria

This site driveway will be designed to meet the requirements of the City of Portland's Technical Standards.

Section 4

4

4. Title, Right or Interest

A PURCHASE AND SALE AGREEMENT, signed and dated July 1, 2023, provides documentation of Redfern Properties, LLC's ownership in the property portrayed in the *Boundary & Topographic Survey*, dated July 25, 2023, prepared by Owen Haskell, Inc. and attached in *Section E of the appendix*. The P&SA is attached in *Section C of the appendix*.

Section 5

5

5. Public or Private Right-of-way

The *Boundary & Topographic Survey* plan, dated July 25, 2023, prepared by Owen Haskell, Inc., and attached in *Section E of the appendix*, indicates that there are no easements on the development parcel.

Section 6

6

6. Schedule

Redfern Properties LLC is anticipating the start of construction in 2025 with a spring 2027 completion.

Section 6½

6½ A EXISTING & PROJECTED TRAFFIC VOLUMES

6A-1. Existing Traffic Volumes

Manual turning movement traffic counts were conducted at the signalized intersection of Washington Avenue at Fox Street/Walnut Street and the unsignalized intersection of Washington Avenue at Eastern Promenade on October 16, 2024, during the weekday AM and PM peak hours.

All vehicular traffic entering the study intersections was recorded in 15-minute intervals; the AM traffic data was recorded between 7:00 and 9:00 AM, and the PM traffic data was recorded between 3:00 and 6:00 PM. From a summary of the data, peak hour time periods were established for the *"peak"* commuter travel periods. At the intersection of Washington Avenue at Fox Street/Walnut Street, the AM peak hour begins at 7:45 AM, and the PM peak hour begins at 4:15 PM. At the intersection of Washington Avenue and Eastern Promenade, the AM peak hour begins at 7:30 AM, and the PM peak hour begins at 4:15 PM. The turning movement count reports are attached in *Section A of the appendix*.

The 2024 traffic volumes are illustrated in Figure 1, attached in *Section A of the appendix*.

6½ A-2. Seasonal Adjustments

Traffic data collected during the month of October requires a seasonal adjustment to reflect the "*peak*" travel conditions found during the summer months of July and August. MaineDOT provides Weekly Mean Factors for adjusting traffic volumes collected outside of the peak time periods.

MaineDOT utilizes highway classifications of I, II, or III for all State and Local roadways. MaineDOT's 2023 Count Book classifies Washington Avenue, Eastern Promenade, Walnut Street, and Fox Street as Group I roadways. **Group I** *roadways or urban roads are those which carry commuter traffic and exhibit little seasonal change in traffic volumes.* The Group I classification indicates that the roadways at the study intersections will experience minimal seasonal fluctuation.

In accordance with MaineDOT's 2023 Weekly Group Mean Factors, we have applied a seasonal adjustment factor of 1.046 to the traffic volumes recorded at both study intersections.

6½ A-3. Annual Adjustments

This traffic study has been prepared based on a projected build-out year of 2027. MaineDOT's traffic counts recorded on Washington Avenue southeast of Anderson Street show that traffic volumes on Washington Avenue have experienced negative annual growth between 2014 (AADT 5,623) and 2022 (AADT 4680). To be conservative in this study, we will apply a 1% annual growth rate to the recorded traffic volumes (factor of 1.0303).

Figure 3, attached in *Section A of the appendix*, depicts the 2027 design hour traffic volumes, including the seasonal and annual adjustments.

6½ A-4. Other Development Trips

Traffic generated by projects that have been approved by the Local Planning Board and/or the Maine Department of Transportation, yet are not opened, must be included in the estimate of pre-development traffic. The City of Portland has been consulted to identify any and all development projects whose trips may impact the study area. The City has identified 5 projects which may impact the study area:

- Roux Institute – 1 Bean Pot Circle
- St. Lawrence Performing Arts Center
- 70 Thames Street
- 385 Congress Street
- 58 Fore Street

Project and traffic information for each of the five identified projects is provided below:

Roux Institute
Traffic estimates prepared for the Roux Institute show that **18** AM peak hour trips and **21** PM peak hour trips will travel north on Washington Avenue to I-295, and **1** AM peak hour trip and **19** PM peak hour trips will travel from I-295 south on Washington Avenue.

St. Lawrence Performing Arts Center
Friends of St. Lawrence Church are proposing a 401-seat building expansion to the existing St. Lawrence Arts Center located at 76 Congress Street. Site trip assignments, prepared by Traffic Solutions in support of the proposed project, estimate **10** trips will travel directionally on Walnut Street to the proposed St. Lawrence Arts Center site from the Washington Avenue corridor in the "pre-event" peak hour, assumed to be the PM peak hour.

70 Thames Street is a 3-story mixed-use building composed of 43,730sf of office space, 2,00sf of retail space, and 8,315sf (300 seats) of restaurant space. Gorrill Palmer's traffic estimates show that the site produces **63 trips** in the AM peak hour and **129** trips in the PM peak hour. The approximate entry and exit trips, based on the data provided in ITE, are provided below:

AM Peak Hour:	**PM Peak Hour:**
Enter = 51	Enter = 56
Exit = 12	Exit = 73

385 Congress Street provides 156 hotel rooms and 9 residential condominiums. The TDM prepared for the project shows that the site will generate **49 trips** in the AM peak hour and **34 trips** in the PM peak hour. The trips are broken down into entry and exit trips below:

AM Peak Hour:	**PM Peak Hour:**
Enter = 19	Enter = 15
Exit = 30	Exit = 19

58 Fore Street is composed of a 128-room hotel, 43 condominium units, 4,928sf of retail space, 18,083sf of food & beverage, and a 19,697sf spa. Gorrill Palmer's traffic estimates show that the site is expected to generate **419 trips** in the AM peak hour and **565 trips** in the PM peak hour. The approximate entry and exit trips, which have been prepared based on the data provided in the TDM plan, are provided below:

AM Peak Hour:	**PM Peak Hour:**
Enter = 226	Enter = 283
Exit = 193	Exit = 282

6½ A-5. Other Development Site Trip Assignment

Traffic generated by the other development sites has been assigned through the study intersections following the existing traffic patterns and/or the assumptions listed below:

Roux Institute

The trips traveling north and south on Washington Avenue have been assigned through the study intersections following the traffic patterns illustrated in Figure 1. The Roux Institute's site trip assignment is provided in **Figure 4**, attached in *Section A of the appendix*.

St. Lawrence Performing Arts Center

The traffic figure, prepared by Traffic Solutions and *attached in Section A of the appendix*, shows that 10 trips will travel east, via Walnut Street, from Washington Avenue during the PM peak hour. We have assigned the trips through the study intersections following the traffic patterns illustrated in Figure 1. The St. Lawrence site trip assignment is depicted in **Figure 5**, attached in *Section A of the appendix*.

70 Thames Street & 58 Fore Street

Based on the roadway network adjacent to these sites and the easiest routes to I-295, we have assumed that 20% of the sites entering and exiting trips will travel through the intersection of Washington Avenue, Fox Street, and Walnut Street. We have then assigned them through the study intersections following the existing traffic patterns shown in Figure 1. The 70 Thames Street and 58 Fore Street other development site trip assignments are provided in **Figure 6** and **Figure 7**, respectively, attached in *Section A of the appendix*.

385 Congress Street

Based on the adjacent roadway network and the most convenient route to I-295, we have assumed that 10% of the sites entering and exiting trips will travel through the intersection of Washington Avenue, Fox Street, and Walnut Street. We have then assigned them through the study intersections following the existing traffic patterns shown in Figure 1. The 385 Congress Street site trip assignment is provided in **Figure 8**, attached in *Section A of the appendix*.

6½ A-6. 2027 Pre-Development Traffic

2027 pre-development traffic estimates, illustrated in **Figure 9** and *attached in Section A of the appendix*, have been prepared by combining the 2027 design hour traffic volumes shown in Figure 3 with the other development trips shown in Figures 4, 5, 6, 7, and 8.

6½ A-7. 2027 Post-Development Traffic

The 2027 post-development traffic volumes are provided in **Figure 10**, attached in *Section A of the appendix*. This figure has been prepared by combining the 2027 pre-development traffic volumes shown in Figure 9 with the site trip assignment shown in Figure 2.

6½ B Analysis

6½ B-2. Capacity Analysis

A capacity analysis of the 2027 pre- and post-development traffic conditions has been performed for the 3 identified study intersections listed below:

1. Washington Avenue @ Eastern Promenade
2. Washington Avenue @ Walnut Street/Fox Street

3. Washington Avenue @ Site Entrance

Within the capacity analysis, we review the level of service (LOS) for the vehicle movements at each of the study intersections. LOS is a measurement of the delay experienced by stopped vehicles at an intersection. LOS rankings are similar to the academic grading system, where an "A" is very good with little delay, and an "F" represents very poor conditions. The following chart presents the relationship between delay and LOS for signalized and unsignalized intersections.

Level of Service Criteria for Signalized Intersections		Level of Service Criteria for Unsignalized Intersections	
Level of Service	**Total Control Delay (sec/veh)**	**Level of Service**	**Total Control Delay (sec/veh)**
A	Up to 10.0	A	Up to 10.0
B	10.1 to 20.0	B	10.1 to 15.0
C	20.1 to 35.0	C	15.1 to 25.0
D	35.1 to 55.0	D	25.1 to 35.0
E	55.1 to 80.0	E	35.1 to 50.0
F	Greater Than 80.0	F	Greater Than 50.0

The capacity analysis was performed using Synchro 12 inputs and SimTraffic 12 reporting outputs. The results are based upon 7 SimTraffic runs, averaging 5 runs with the lowest and highest run removed. The SimTraffic reports are included in *Section D of the appendix.*

Table B1, following, summarizes the results of the capacity analysis completed for the AM and PM peak hours of the 2027 pre- and post-development conditions.

Table B2 Level of Service Summary								
Approach/Lane	2027 Pre-Development				2027 Post-Development			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay (sec./veh.)	LOS	Delay (sec./veh.)	LOS	Delay (sec./veh.)	LOS	Delay (sec./veh.)	LOS
Washington Ave at Fox Street/Walnut Street								
Washington Ave - NB Left	19.1	B	17.8	B	25.4	C	15.8	B
Washington Ave - NB Thru/Right	14.1	B	21.9	C	14.7	B	22.7	C
Washington Ave - SB Left	7.7	A	23.5	C	8.4	A	23.2	C
Washington Ave - SB Thru/Right	20.8	C	20.7	C	22.2	C	18.7	B
Fox St - NE Left/Thru	34.3	C	33.6	C	36.0	D	36.7	D
Fox St - NE Right	11.1	B	5.5	A	11.6	B	5.5	A
Walnut St - Left/Thru	33.5	C	34.6	C	34.7	C	34.6	C
Walnut St - Right	4.0	A	7.6	A	3.6	A	7.1	A
Overall	***20.3***	***C***	***23.1***	***C***	***21.5***	***C***	***23.2***	***C***
Washington Ave at Eastern Prom								
Eastern Prom - WB Left/Right	10.3	B	11.5	B	11.8	B	11.7	B
Washington Ave - NB Thru/Right	2.2	A	3.2	A	1.1	A	1.6	A
Washington Ave - SB Left/Thru	2.8	A	4.6	A	2.9	A	4.2	A
Overall	***3.8***	***A***	***4.8***	***A***	***3.8***	***A***	***4.0***	***A***
Washington Ave at Site								
Site - WB Left/Right	-	n/a	-	n/a	11.4	B	9.7	A
Washington Ave - NB Thru/Right	-	n/a	-	n/a	1.3	A	2.1	A
Washington Ave - SB Left/Thru	-	n/a	-	n/a	1.6	A	1.9	A
Overall	***-***	***n/a***	***-***	***n/a***	***2.4***	***A***	***2.2***	***A***

1. Washington Ave @ Fox St/Walnut St

The capacity analysis shows that the proposed development has minimal impact on the signalized intersection of Washington Avenue, Fox Street, and Walnut Street. In the pre-development and post-development peak hours, the level of delay at the intersection of Washington Avenue, Fox Street, and Walnut Street is expected to remain similar.

Overall, the intersection will continue to operate at an LOS C in the AM and PM peak hours, with minor increases in the overall intersection delay.

2. Washington Ave @ Eastern Prom

The analysis shows that during the pre- and post-development peak hours, the Eastern Promenade approach will continue operating at LOS B, while the Washington Avenue approaches will remain at LOS A. Overall, the intersection is projected to operate at LOS A with very minor changes in LOS.

3. Washington Ave @ Site

At the site's intersection with Washington Avenue, the capacity analysis shows that Washington Avenue approaches will operate at LOS A while the site entrance will operate at LOS B in the AM peak hour and LOS A in the PM peak hour.

Overall, the intersection will operate at an LOS A with an average delay of 2.4 seconds and 2.2 seconds in the AM and PM peak hours, respectively.

6½ B-3. Vehicle Queuing Analysis

In addition to outputting the vehicle delay, SimTraffic also provides vehicle queue reports, which show the expected average queue, 95th percentile queue, and maximum queue. For the 2027 pre- and post-development conditions, the 95th percentile vehicle queue results are summarized in Table B2, below, while the average and maximum vehicle queues are included in the SimTraffic reports provided in *Section D of the appendix*.

Table B2
95th Percentile Vehicle Queue Summary

Approach/Lane	Storage Length (ft.)	2027 Pre-Development		2027 Post-Development	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
		Queue Length (ft)	Queue Length (ft)	Queue Length (ft)	Queue Length (ft)
Washington Ave at Fox Street/Walnut Street					
Washington Ave - NB Left	30	54	57	55	61
Washington Ave - NB Thru/Right	n/a	164	307	162	347
Washington Ave - SB Left	30	37	57	40	54
Washington Ave - SB Thru/Right	n/a	327	229	373	134
Fox St - NE Left/Thru	n/a	114	184	124	114
Fox St - NE Right	90	77	91	88	38
Walnut St - Left/Thru	n/a	147	110	137	59
Walnut St - Right	40	79	70	81	32
Washington Ave at Eastern Prom					
Eastern Prom - WB Left/Right	n/a	108	97	125	98
Washington Ave - NB Thru/Right	n/a	5	5	7	-
Washington Ave - SB Left/Thru	n/a	142	161	133	150
Washington Ave at Site					
Site - WB Left/Right	n/a	-	-	70	47
Washington Ave - NB Thru/Right	n/a	-	-	-	7
Washington Ave - SB Left/Thru	n/a	-	-	67	71

1. Washington Ave @ Fox St/Walnut St

The vehicle queuing analysis shows the 30-foot Washington Avenue left-turn lanes are exceeded by 1-2 vehicle lengths (25' per vehicle) in the pre-development and post-development peak hours.

2. Washington Ave @ Eastern Prom
The vehicle queuing analysis shows that the vehicle queues at the intersection of Washington Avenue and Eastern Promenade will remain similar in the pre- and post-development peak hours.

3. Washington Ave @ Site
At the site's intersection with Washington Avenue, the queuing analysis shows that vehicle queues of 67 and 65 feet are anticipated in the post-development AM and PM peak hours, respectively.

6½ C Summary

6½ C-1. Capacity Analysis

A capacity of the 2027 pre- and post-development traffic conditions has been performed for the 3 identified study intersections: Washington Avenue @ Eastern Promenade, Washington Avenue @ Walnut Street/Fox Street, and Washington Avenue @ Site.

1. Washington Ave @ Fox St/Walnut St
The capacity analysis shows that the proposed development has minimal impact on the signalized intersection of Washington Avenue, Fox Street, and Walnut Street. In the pre-development and post-development peak hours, the level of delay at the intersection of Washington Avenue, Fox Street, and Walnut Street is expected to remain similar.

Overall, the intersection will continue to operate at an LOS C in the AM and PM peak hours, with minor increases in the overall intersection delay.

2. Washington Ave @ Eastern Prom
The analysis shows that during the pre- and post-development peak hours, the Eastern Promenade approach will continue operating at LOS B, while the Washington Avenue approaches will remain at LOS A. Overall, the intersection is projected to operate at LOS A with very minor changes in LOS.

3. Washington Ave @ Site
At the site's intersection with Washington Avenue, the capacity analysis shows that Washington Avenue approaches will operate at LOS A while the site entrance will operate at LOS B in the AM peak hour and LOS A in the PM peak hour.

Overall, the intersection will operate at an LOS A with an average delay of 2.4 seconds and 2.2 seconds in the AM and PM peak hours, respectively.

6½ C-3. Vehicle Queuing Analysis

A vehicle queueing analysis was completed for the 2027 pre- and post-development conditions at each of the three study intersections.

1. Washington Ave @ Fox St/Walnut St
The vehicle queuing analysis shows the 30-foot Washington Avenue left-turn lanes are exceeded by 1-2 vehicle lengths (25' per vehicle) in the pre-development and post-development peak hours.

2. Washington Ave @ Eastern Prom
The vehicle queuing analysis shows that the vehicle queues at the intersection of Washington Avenue and Eastern Promenade will remain similar in the pre- and post-development peak hours.

3. Washington Ave @ Site

At the site's intersection with Washington Avenue, the queuing analysis shows that vehicle queues of 67 and 65 feet are anticipated in the post-development AM and PM peak hours, respectively.

APPENDIX

A. TRAFFIC FIGURES, NCHRP REPORT 684 CALCULATION SHEETS, REGIONAL MAPPING PLAN, TRAFFIC SOLUTIONS ST. LAWRENCE TRAFFIC FIGURE, & TRAFFIC COUNTS

B. MAINEDOT CRASH DATA

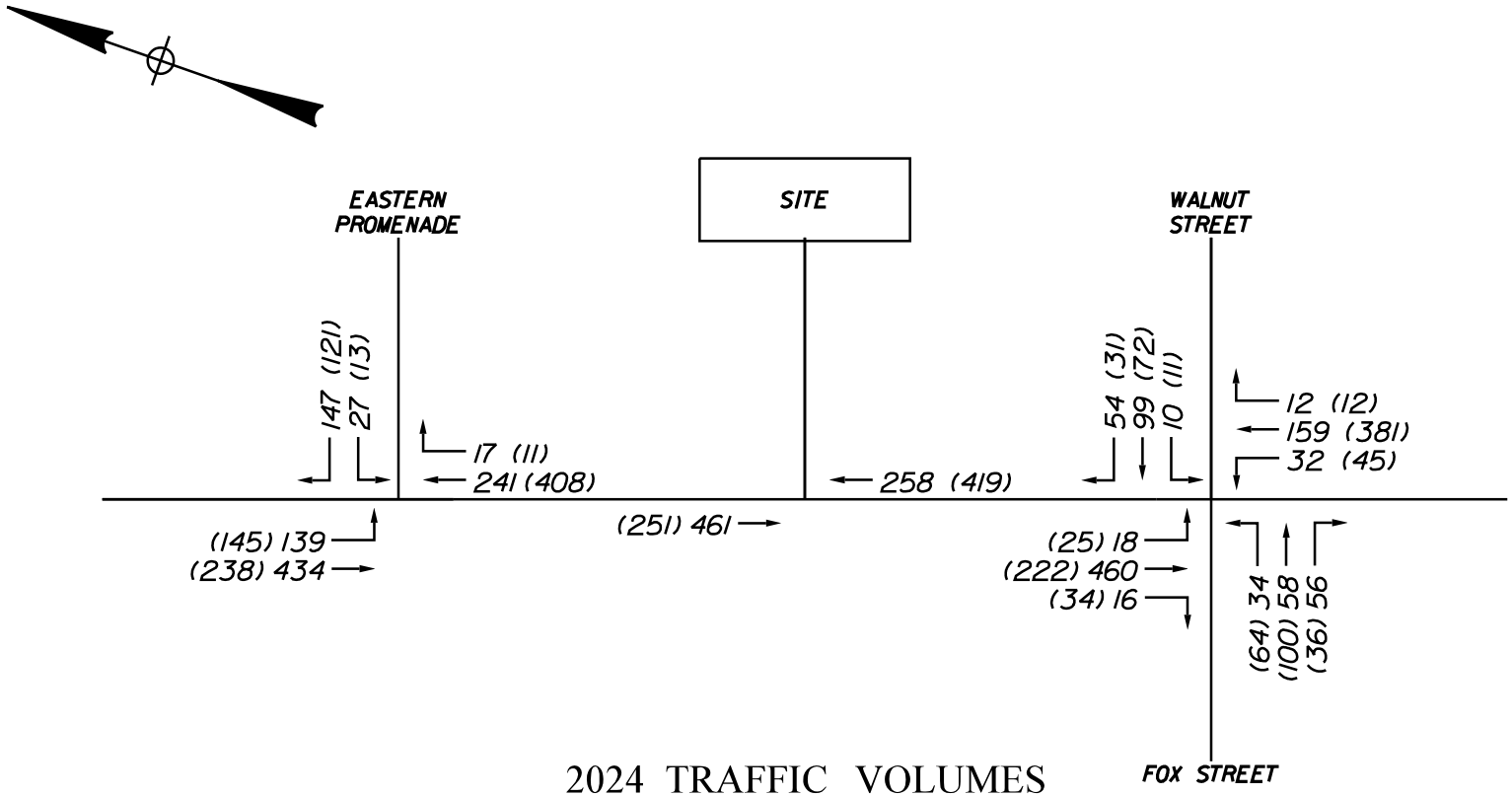
C. PURCHASE & SALE AGREEMENT

D. SIMTRAFFIC CAPACITY ANALYSIS REPORTS

E. BOUNDARY & TOPOGRAPHIC SURVEY PLAN & SITE PLAN

APPENDIX A

- TRAFFIC FIGURES
- NCHRP REPORT 684 CALCULATION SHEETS
- REGIONAL MAPPING PLAN
- TRAFFIC SOLUTIONS ST. LAWRENCE TRAFFIC FIGURE
- TRAFFIC COUNTS



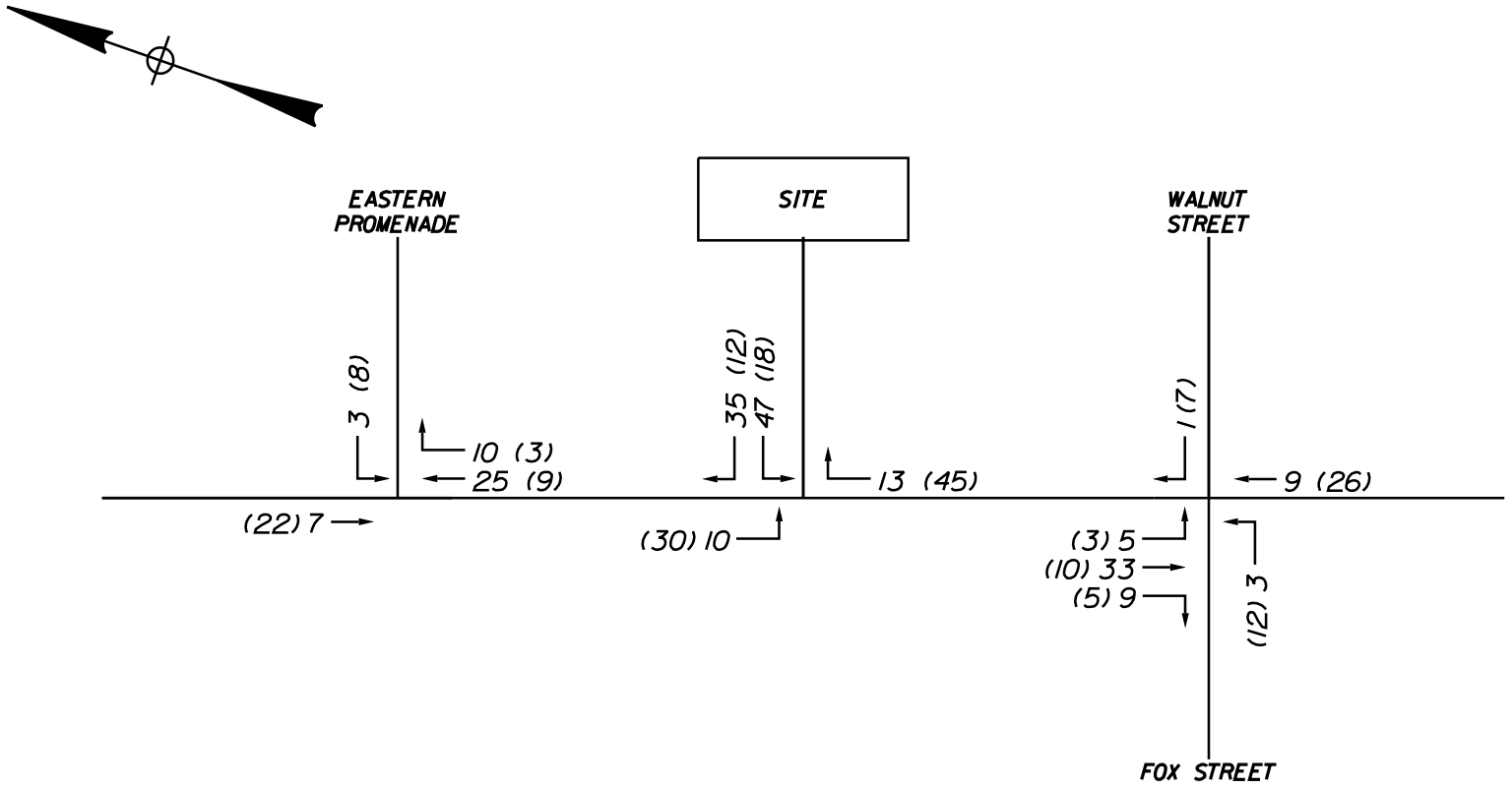
2024 TRAFFIC VOLUMES

FIGURE 1

LEGEND:
XX = AM PEAK HOUR
(XX) = PM PEAK HOUR

165 WASHINGTON AVE DEVELOPMENT
PORTLAND, MAINE
DATE: NOV., 2024

Barton & Loguidice



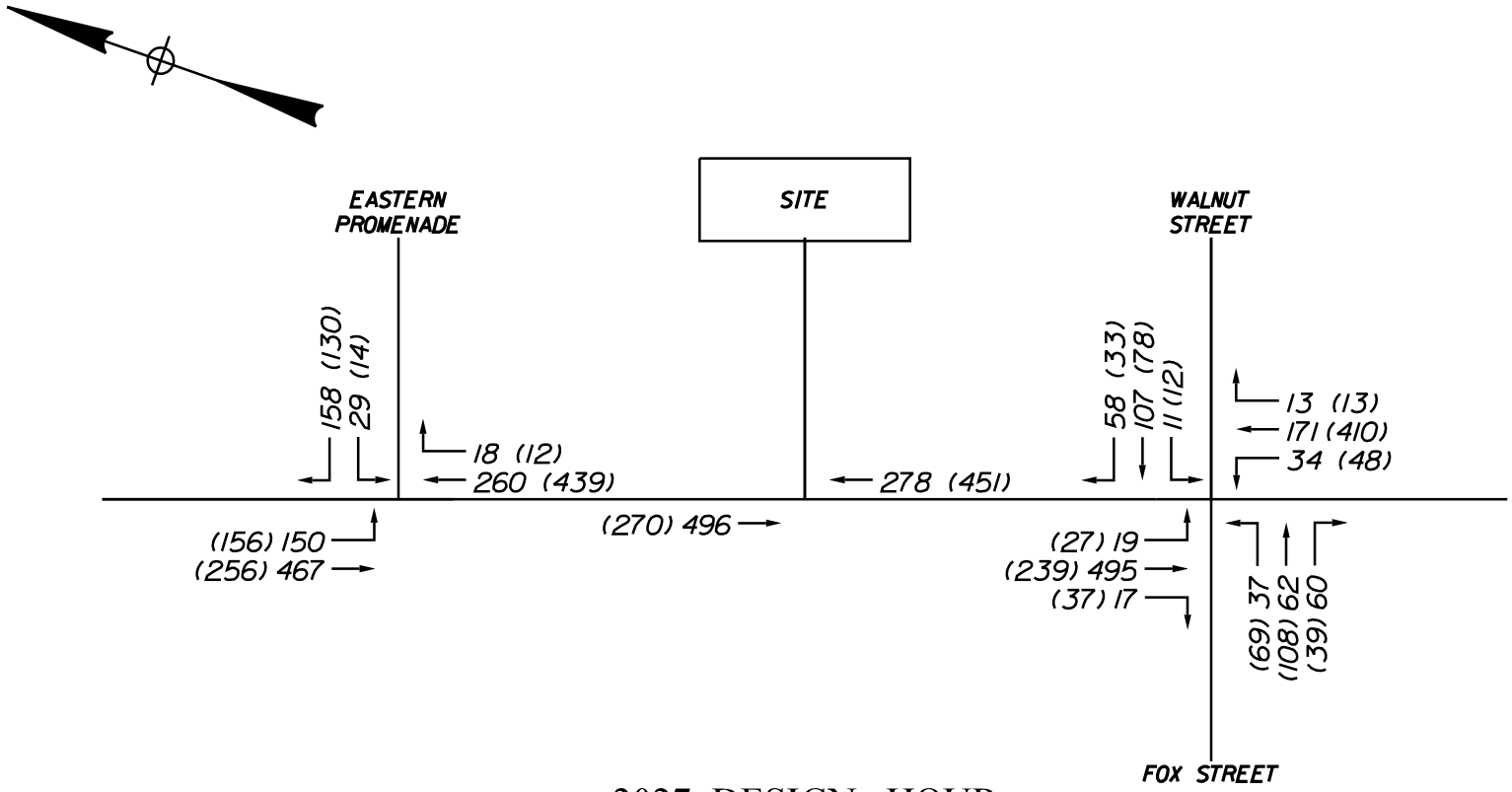
SITE TRIP ASSIGNMENT

FIGURE 2

LEGEND:
XX = AM PEAK HOUR
(XX) = PM PEAK HOUR

165 WASHINGTON AVE DEVELOPMENT
PORTLAND, MAINE
DATE: NOV., 2024

Barton & Loguidice



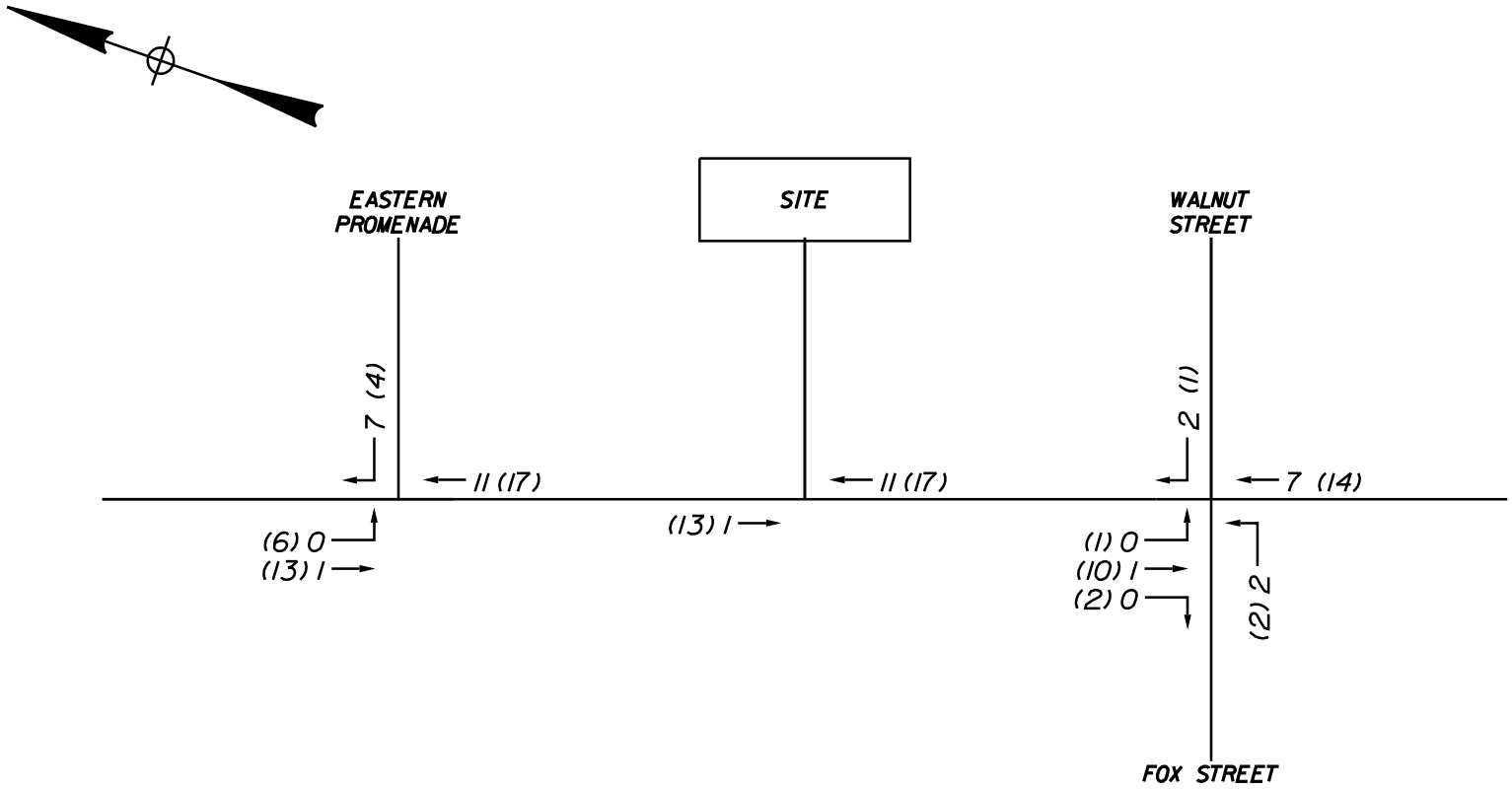
2027 DESIGN HOUR
TRAFFIC VOLUMES

FIGURE 3

LEGEND:
XX = AM PEAK HOUR
(XX) = PM PEAK HOUR

165 WASHINGTON AVE DEVELOPMENT
PORTLAND, MAINE
DATE: NOV., 2024

Barton & Loguidice



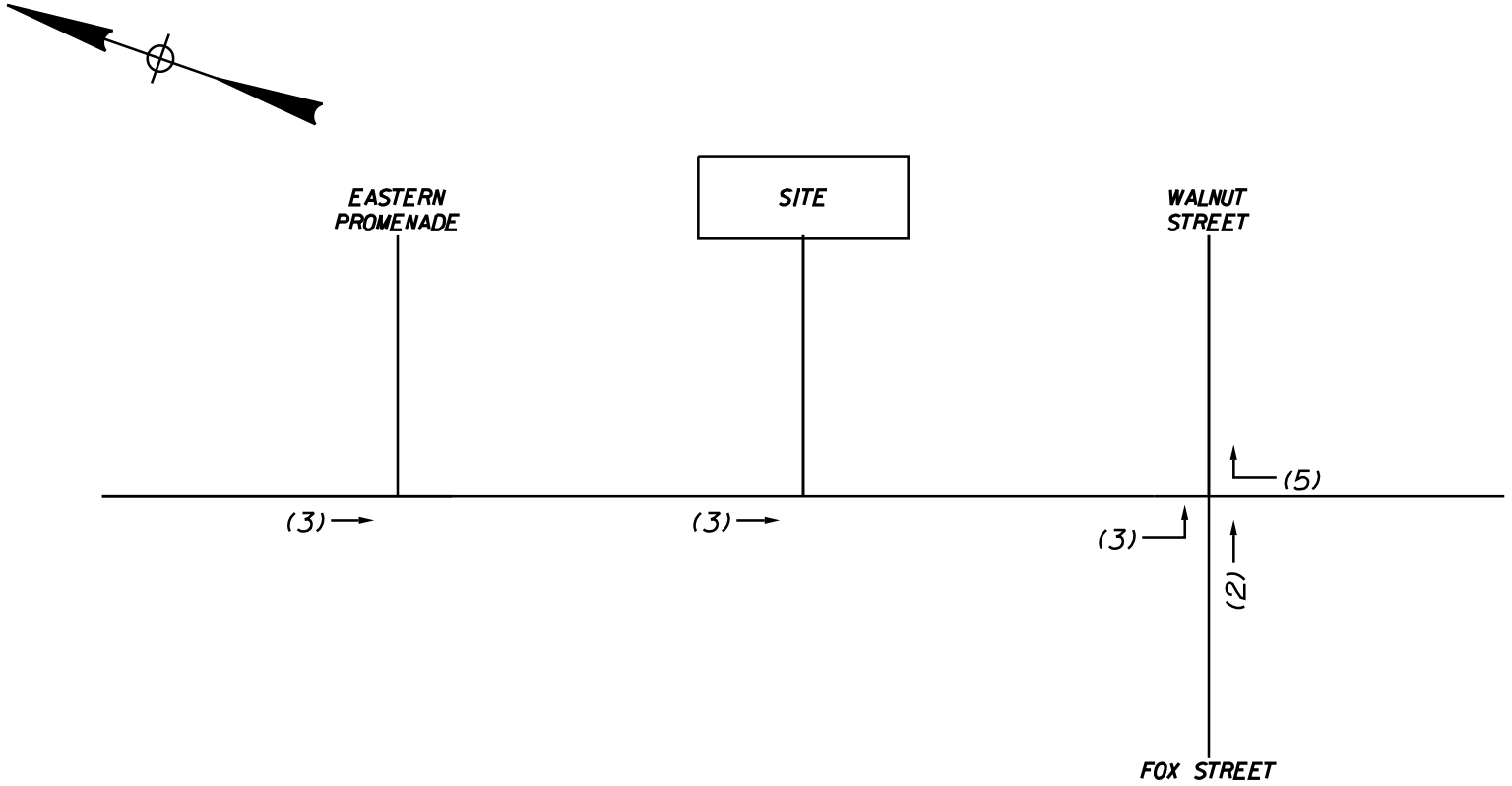
ROUX INSTITUTE
OTHER DEVELOPMENT
TRIP ASSIGNMENT

FIGURE 4

LEGEND:
XX = AM PEAK HOUR
(XX) = PM PEAK HOUR

165 WASHINGTON AVE
DEVELOPMENT
PORTLAND, MAINE
DATE: NOV., 2024

Barton & Loguidice



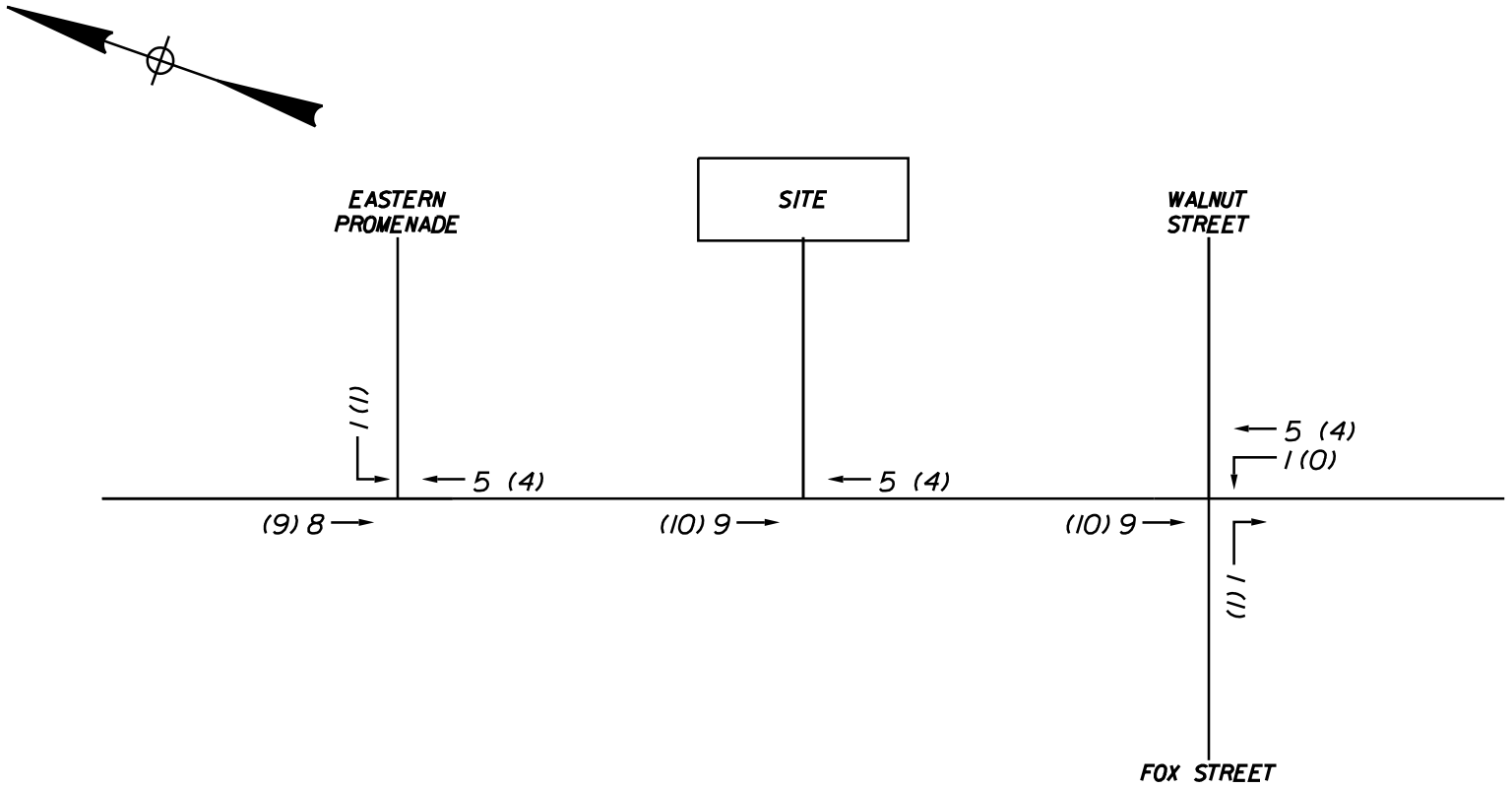
ST. LAWRENCE
OTHER DEVELOPMENT
TRIP ASSIGNMENT

FIGURE 5

LEGEND:
(XX) = PM PEAK HOUR

165 WASHINGTON AVE
DEVELOPMENT
PORTLAND, MAINE
DATE: NOV., 2024

Barton & Loguidice



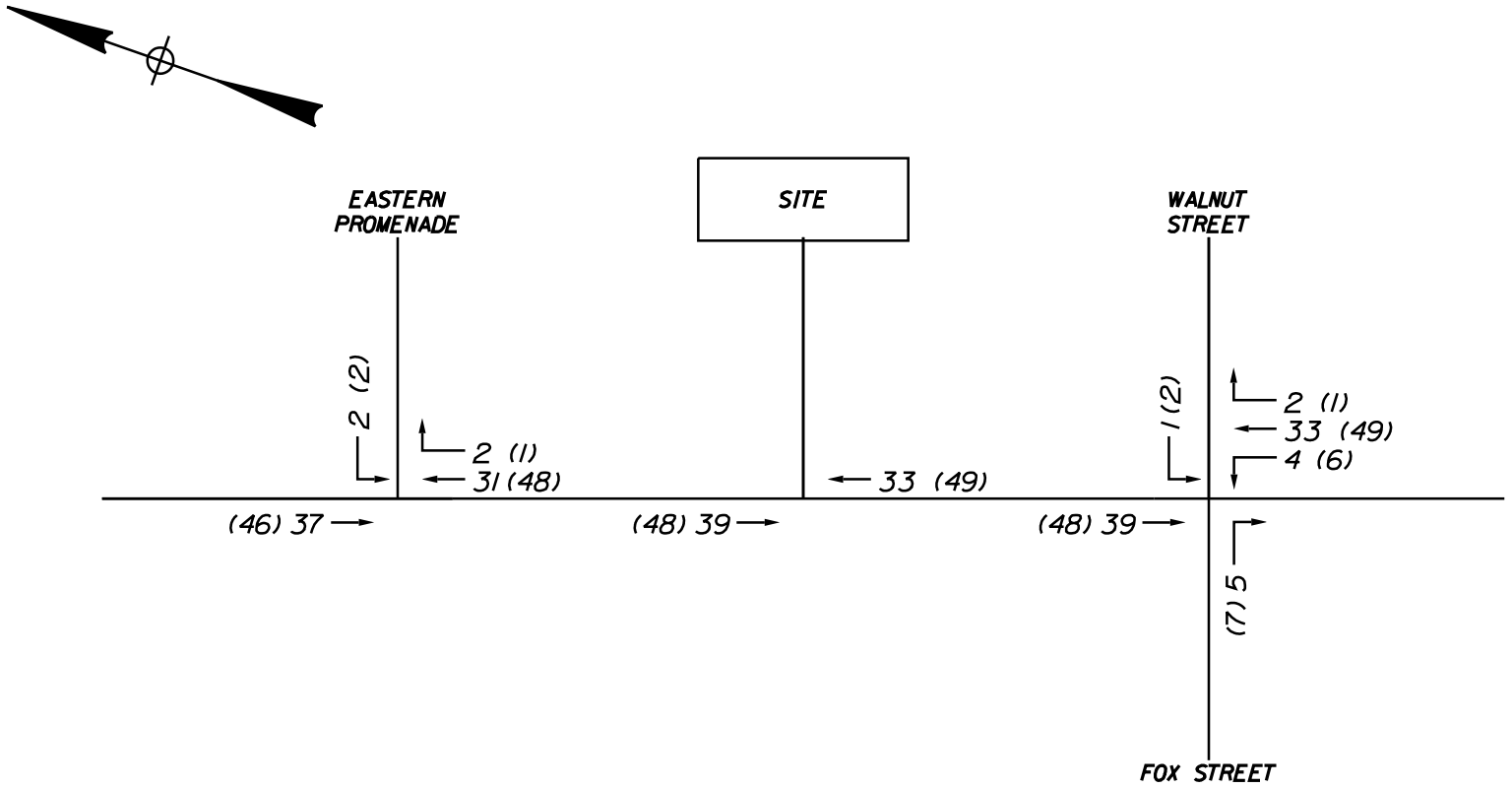
70 THAMES STREET
OTHER DEVELOPMENT
TRIP ASSIGNMENT

FIGURE 6

LEGEND:
XX = AM PEAK HOUR
(XX) = PM PEAK HOUR

165 WASHINGTON AVE
DEVELOPMENT
PORTLAND, MAINE
DATE: NOV., 2024

Barton & Loguidice



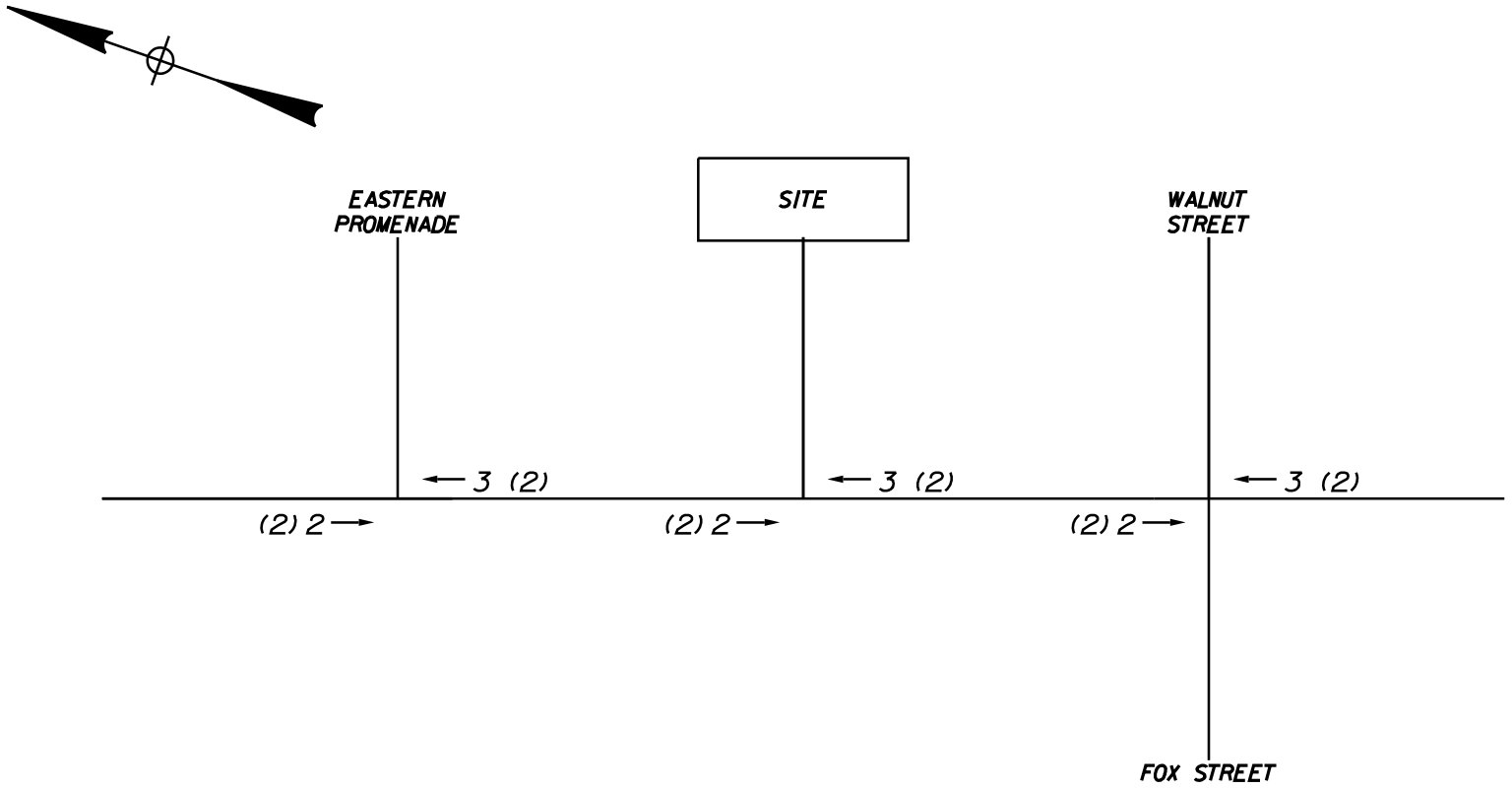
58 FORE STREET
OTHER DEVELOPMENT
TRIP ASSIGNMENT

FIGURE 7

LEGEND:
XX = AM PEAK HOUR
(XX) = PM PEAK HOUR

165 WASHINGTON AVE
DEVELOPMENT
PORTLAND, MAINE
DATE: NOV., 2024

Barton & Loguidice



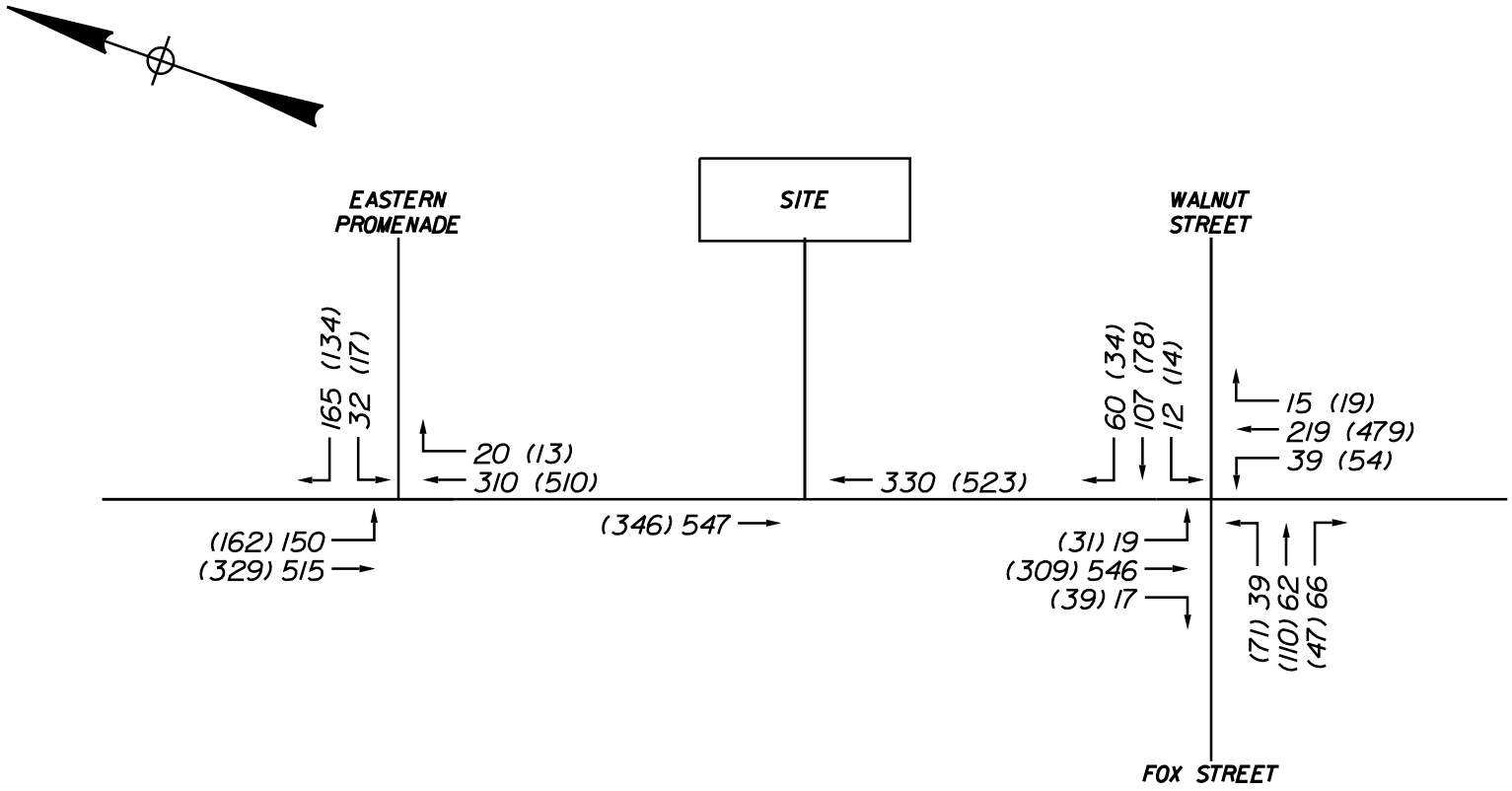
385 CONGRESS STREET
OTHER DEVELOPMENT
TRIP ASSSIGNMENT

FIGURE 8

LEGEND:
XX = AM PEAK HOUR
(XX) = PM PEAK HOUR

165 WASHINGTON AVE
DEVELOPMENT
PORTLAND, MAINE
DATE: NOV., 2024

Barton & Loguidice



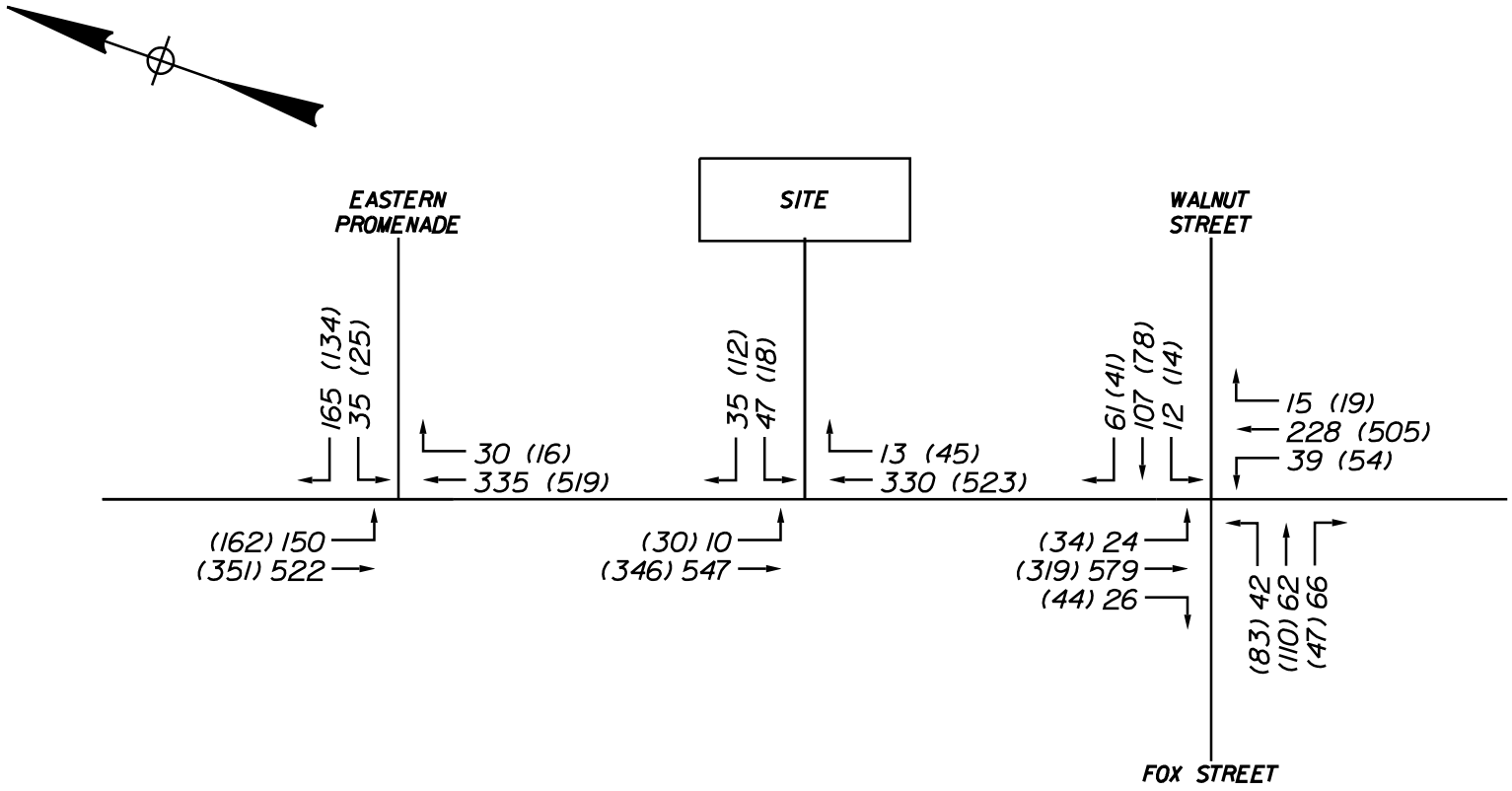
2027 PRE-DEVELOPMENT
TRAFFIC VOLUMES

FIGURE 9

LEGEND:
XX = AM PEAK HOUR
(XX) = PM PEAK HOUR

165 WASHINGTON AVE
DEVELOPMENT
PORTLAND, MAINE
DATE: NOV., 2024

Barton & Loguidice



2027 POST-DEVELOPMENT
TRAFFIC VOLUMES

FIGURE 10

LEGEND:
XX = AM PEAK HOUR
(XX) = PM PEAK HOUR

165 WASHINGTON AVE DEVELOPMENT
PORTLAND, MAINE
DATE: NOV., 2024

Barton & Loguidice

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Multi-Use Development	**Organization:**	B&L
Project Location:	165 Washington Ave	**Performed By:**	JWS
Scenario Description:		**Date:**	11/20/2024
Analysis Year:	2027	**Checked By:**	
Analysis Period:	**Weekday AM Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				0		
Restaurant	932	1,800	Square Feet	18	10	8
Cinema/Entertainment				0		
Residential	221	326	Dwelling	80	7	73
Hotel				0		
All Other Land Uses[2]				0		
Total				98	17	81

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	1	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	98	17	81
Internal Capture Percentage	4%	12%	2%
External Vehicle-Trips[3]	94	15	79
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	10%	13%
Cinema/Entertainment	N/A	N/A
Residential	14%	1%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual* , published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Multi-Use Development	**Organization:**	B&L
Project Location:	165 Washington Ave	**Performed By:**	JWS
Scenario Description:		**Date:**	11/20/2024
Analysis Year:	2027	**Checked By:**	
Analysis Period:	**Weekday PM Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				0		
Restaurant	932	1,800	Square Feet	17	11	6
Cinema/Entertainment				0		
Residential	221	326	Dwelling	82	63	19
Hotel				0		
All Other Land Uses[2]				0		
Total				99	74	25

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	2	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	99	74	25
Internal Capture Percentage	6%	4%	12%
External Vehicle-Trips[3]	93	71	22
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	18%	17%
Cinema/Entertainment	N/A	N/A
Residential	2%	11%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual* , published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Multi-Use Development	**Organization:**	B&L
Project Location:	165 Washington Ave	**Performed By:**	JWS
Scenario Description:		**Date:**	11/20/2024
Analysis Year:	2027	**Checked By:**	
Analysis Period:	**Saturday Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				0		
Restaurant	932	1,800	Square Feet	21	11	10
Cinema/Entertainment				0		
Residential	221	326	Dwelling	88	44	44
Hotel				0		
All Other Land Uses[2]				0		
Total				109	55	54

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	2	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	2	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	109	55	54
Internal Capture Percentage	7%	7%	7%
External Vehicle-Trips[3]	101	51	50
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	18%	20%
Cinema/Entertainment	N/A	N/A
Residential	5%	5%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual* , published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute



PLAN

150 0 150 300

Scale of Feet

LEGEND

= SITE

= SIDEWALK/MULTIUSE PATH

= BIKE LANE

= BUS STOP

Barton & Loguidice

PROJ. MANAGER	JOHN Q. ADAMS	BY	DATE
DESIGN-DETAILED	JWS	JWS	11/2024
CHECKED-REVIEWED			
DESIGN2-DETAILED2			SIGNATURE
DESIGN3-DETAILED3			
REVISIONS 1			P.E. NUMBER
REVISIONS 2			
REVISIONS 3			DATE
REVISIONS 4			
FIELD CHANGES			

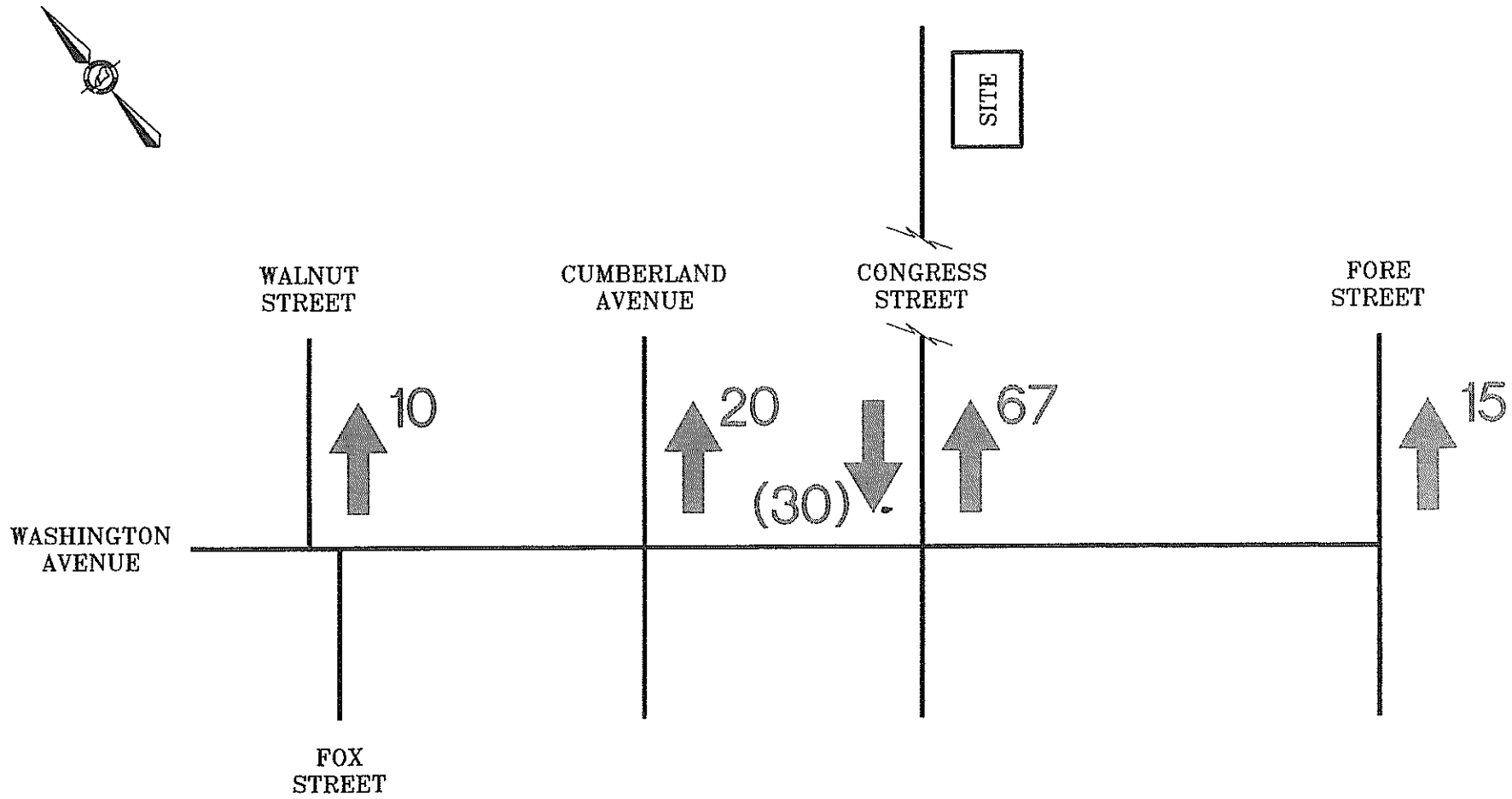
PORTLAND
165 WASHINGTON AVE

REGIONAL MAPPING PLAN

SHEET NUMBER

1

OF 1



LEGEND

XX = EVENT VEHICLE TRIPS

(XX) = OFF-SITE VALET VEHICLE STORAGE TRIPS

SITE TRIP ASSIGNMENT (PRE-EVENT PEAK)

FIGURE 1

E:\LAND PROJECTS\34000\34439 TRAFFIC SOLUTIONS\ST. LAWRENCE ART CENTER\PLANSET\ST. LAWRENCE ART CENTER FIG 1.DWG

ST. LAWRENCE ART CENTER PORTLAND, MAINE	TRAFFIC SOLUTIONS 235 BANCROFT STREET, PORTLAND, MAINE 04102-1753
DATE: JULY, 2017	FIGURE: 1

Traffic Solutions
17 Mountview Drive
Gorham, ME 04038

Portland Washington, Walnut, Fox
October 16, 2024 AM
Sunny
St.Clair Associates

File Name : Portland Washington, Walnut, Fox 10-16-2024 AM
Site Code : 10162411
Start Date : 10/16/2024
Page No : 1

Groups Printed- Passenger Car - Truck - Semi - Bus - Bicycle

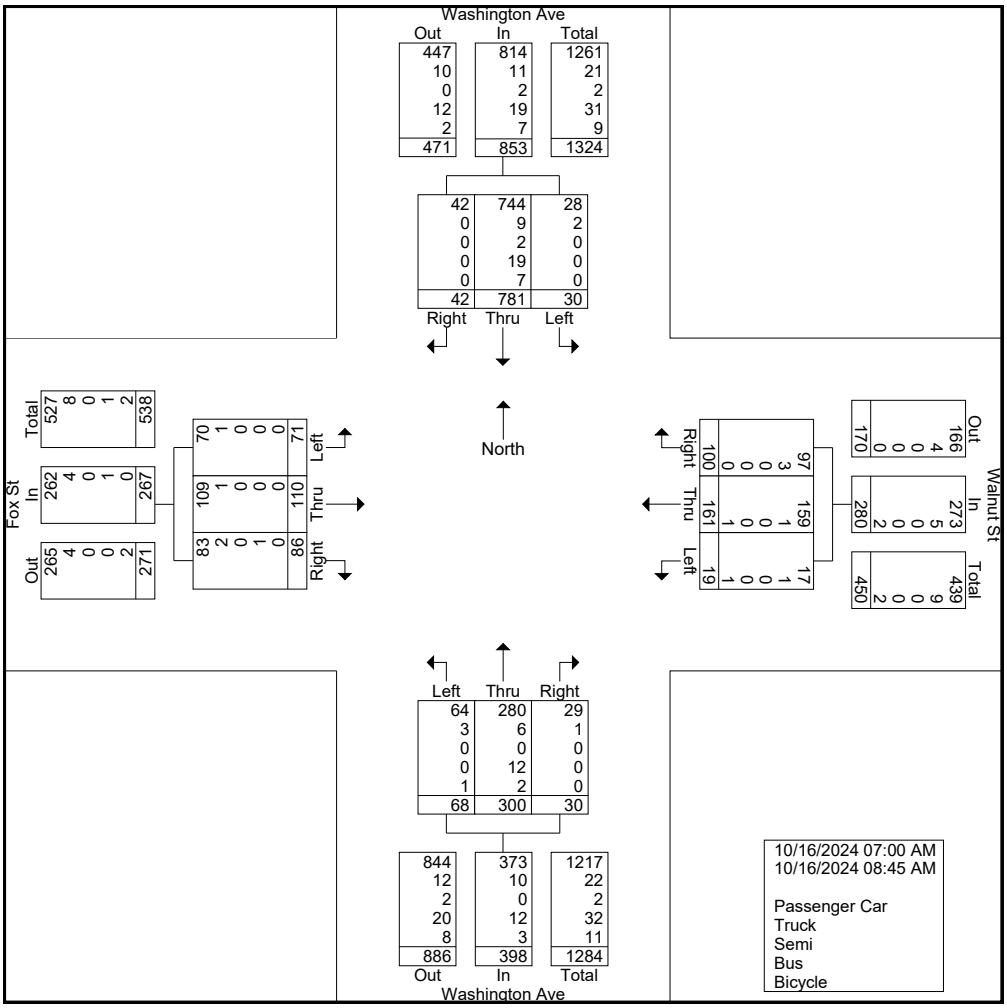
	Washington Ave From North					Walnut St From East					Washington Ave From South					Fox St From West							
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	1	56	5	1	62	13	12	0	0	25	3	25	5	1	33	3	13	7	0	23	2	143	145
07:15 AM	3	73	3	1	79	10	12	3	0	25	2	31	9	1	42	7	13	9	2	29	4	175	179
07:30 AM	13	82	2	2	97	12	24	6	3	42	10	47	9	0	66	10	11	9	2	30	7	235	242
07:45 AM	7	118	2	2	127	21	39	5	0	65	8	53	10	1	71	11	15	7	0	33	3	296	299
Total	24	329	12	6	365	56	87	14	3	157	23	156	33	3	212	31	52	32	4	115	16	849	865
08:00 AM	0	120	3	1	123	15	17	2	0	34	1	33	8	1	42	7	12	8	1	27	3	226	229
08:15 AM	4	108	6	3	118	5	18	2	0	25	1	38	8	0	47	21	19	10	0	50	3	240	243
08:30 AM	5	114	7	0	126	13	25	1	1	39	2	35	6	1	43	17	12	9	2	38	4	246	250
08:45 AM	9	110	2	2	121	11	14	0	2	25	3	38	13	3	54	10	15	12	4	37	11	237	248
Total	18	452	18	6	488	44	74	5	3	123	7	144	35	5	186	55	58	39	7	152	21	949	970

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File Name : Portland Washington, Walnut, Fox 10-16-2024 AM
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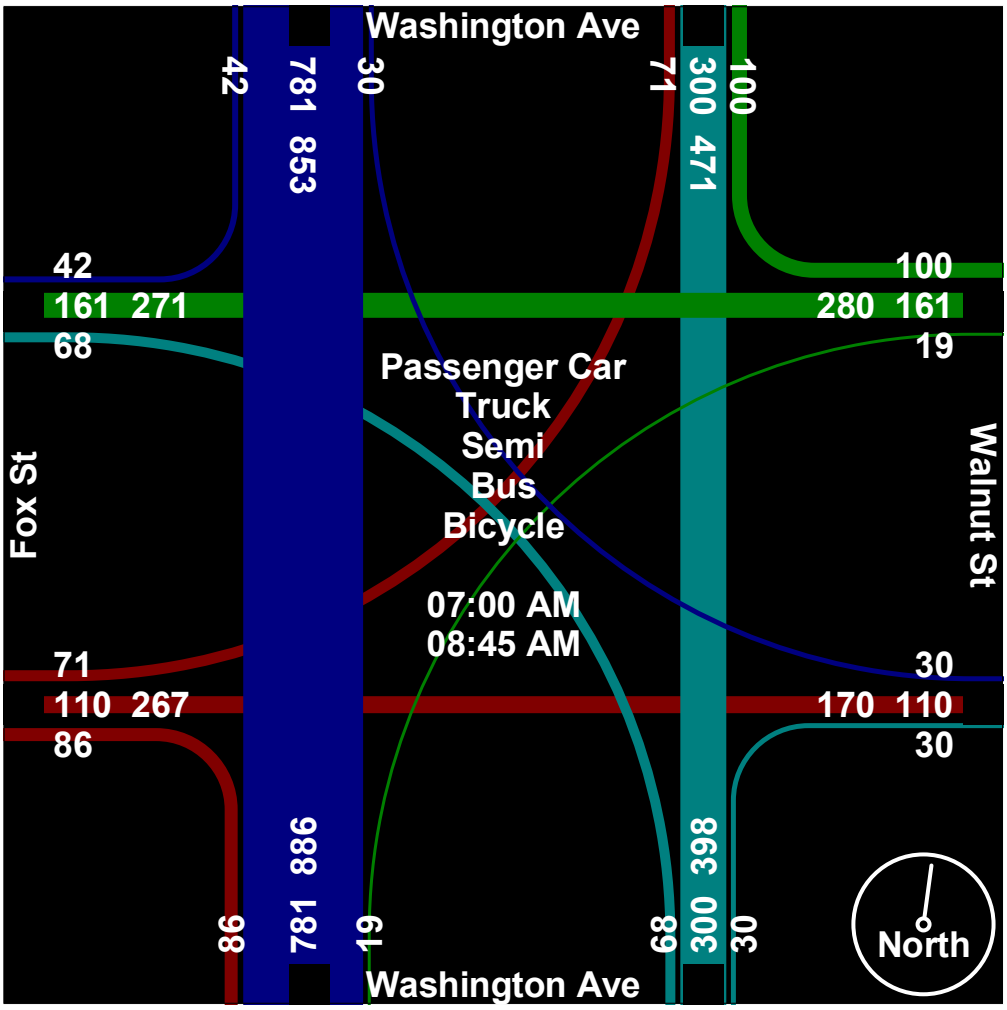
Groups Printed- Passenger Car - Truck - Semi - Bus - Bicycle

	Washington Ave From North					Walnut St From East					Washington Ave From South					Fox St From West							
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Grand Total	42	781	30	12	853	100	161	19	6	280	30	300	68	8	398	86	110	71	11	267	37	1798	1835
Apprch %	4.9	91.6	3.5			35.7	57.5	6.8			7.5	75.4	17.1			32.2	41.2	26.6					
Total %	2.3	43.4	1.7		47.4	5.6	9	1.1		15.6	1.7	16.7	3.8		22.1	4.8	6.1	3.9		14.8	2	98	
Passenger Car	42	744	28		826	97	159	17		279	29	280	64		381	83	109	70		273	0	0	1759
% Passenger Car	100	95.3	93.3	100	95.5	97	98.8	89.5	100	97.6	96.7	93.3	94.1	100	93.8	96.5	99.1	98.6	100	98.2	0	0	95.9
Truck	0	9	2		11	3	1	1		5	1	6	3		10	2	1	1		4	0	0	30
% Truck	0	1.2	6.7	0	1.3	3	0.6	5.3	0	1.7	3.3	2	4.4	0	2.5	2.3	0.9	1.4	0	1.4	0	0	1.6
Semi	0	2	0		2	0	0	0		0	0	0	0		0	0	0	0		0	0	0	2
% Semi	0	0.3	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Bus	0	19	0		19	0	0	0		0	0	12	0		12	1	0	0		1	0	0	32
% Bus	0	2.4	0	0	2.2	0	0	0	0	0	0	4	0	0	3	1.2	0	0	0	0.4	0	0	1.7
Bicycle	0	7	0		7	0	1	1		2	0	2	1		3	0	0	0		0	0	0	12
% Bicycle	0	0.9	0	0	0.8	0	0.6	5.3	0	0.7	0	0.7	1.5	0	0.7	0	0	0	0	0	0	0	0.7



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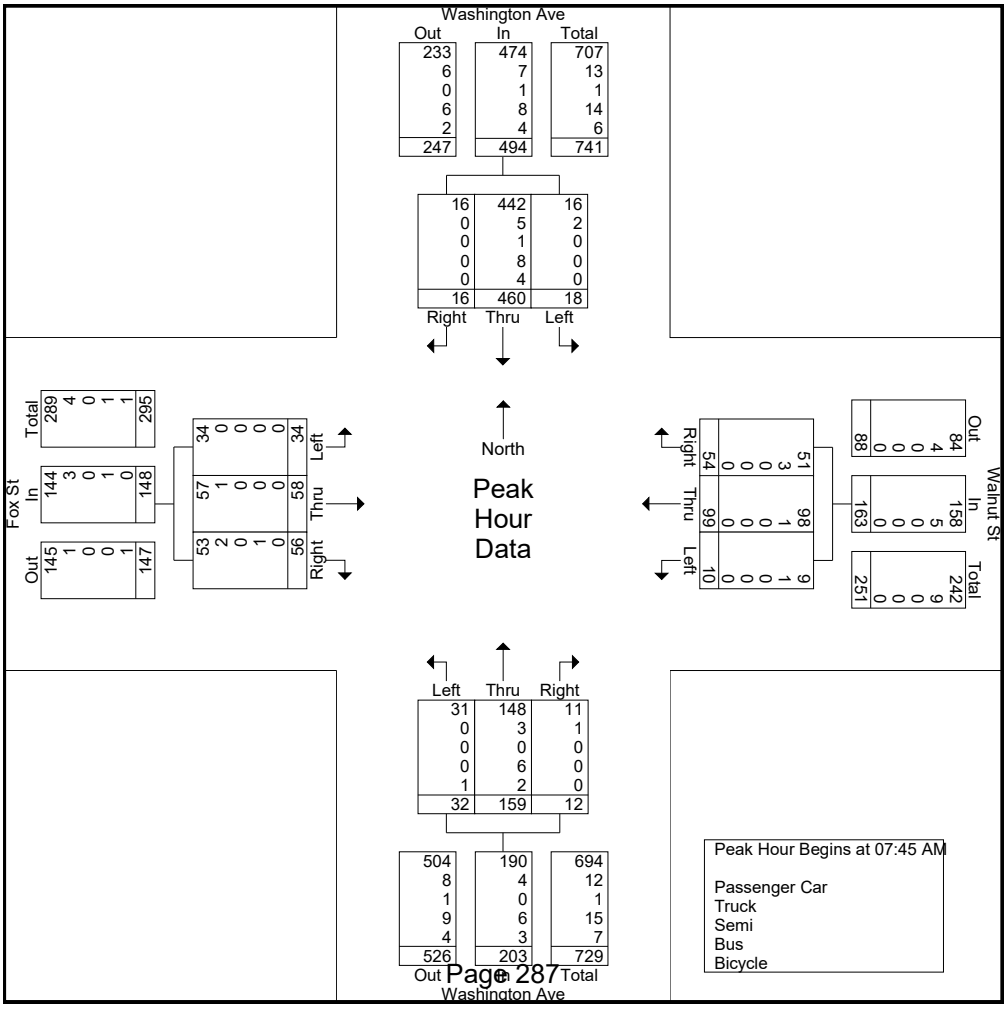
File Name : Portland Washington, Walnut, Fox 10-16-2024 AM
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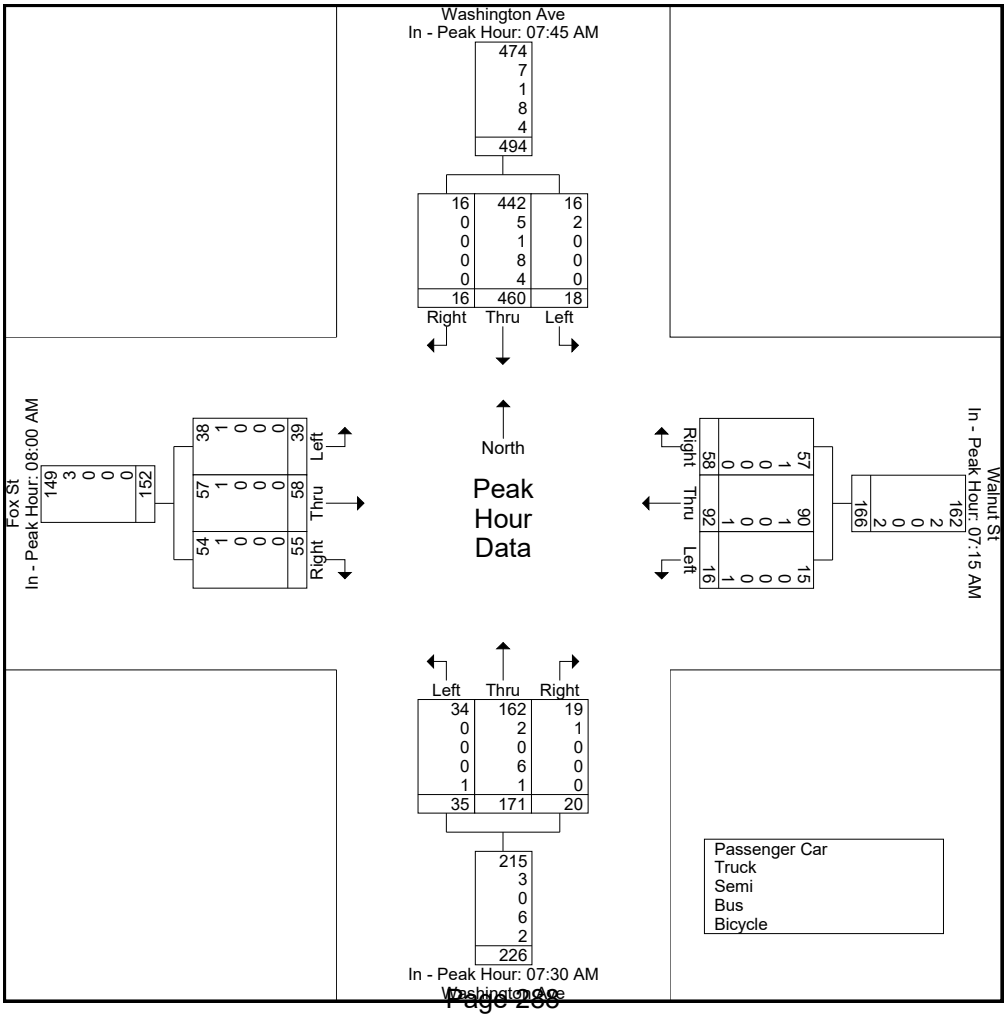
	Washington Ave From North				Walnut St From East				Washington Ave From South				Fox St From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	**7**	118	2	**127**	**21**	**39**	**5**	**65**	**8**	**53**	**10**	**71**	11	15	7	33	**296**
08:00 AM	0	**120**	3	123	15	17	2	34	1	33	8	42	7	12	8	27	226
08:15 AM	4	108	6	118	5	18	2	25	1	38	8	47	**21**	**19**	**10**	**50**	240
08:30 AM	5	114	**7**	126	13	25	1	39	2	35	6	43	17	12	9	38	246
Total Volume	16	460	18	494	54	99	10	163	12	159	32	203	56	58	34	148	1008
% App. Total	3.2	93.1	3.6		33.1	60.7	6.1		5.9	78.3	15.8		37.8	39.2	23		
PHF	.571	.958	.643	.972	.643	.635	.500	.627	.375	.750	.800	.715	.667	.763	.850	.740	.851
Passenger Car	16	442	16	474	51	98	9	158	11	148	31	190	53	57	34	144	966
% Passenger Car	100	96.1	88.9	96.0	94.4	99.0	90.0	96.9	91.7	93.1	96.9	93.6	94.6	98.3	100	97.3	95.8
Truck	0	5	2	7	3	1	1	5	1	3	0	4	2	1	0	3	19
% Truck	0	1.1	11.1	1.4	5.6	1.0	10.0	3.1	8.3	1.9	0	2.0	3.6	1.7	0	2.0	1.9
Semi	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% Semi	0	0.2	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Bus	0	8	0	8	0	0	0	0	0	6	0	6	1	0	0	1	15
% Bus	0	1.7	0	1.6	0	0	0	0	0	3.8	0	3.0	1.8	0	0	0.7	1.5
Bicycle	0	4	0	4	0	0	0	0	0	2	1	3	0	0	0	0	7
% Bicycle	0	0.9	0	0.8	0	0	0	0	0	1.3	3.1	1.5	0	0	0	0	0.7



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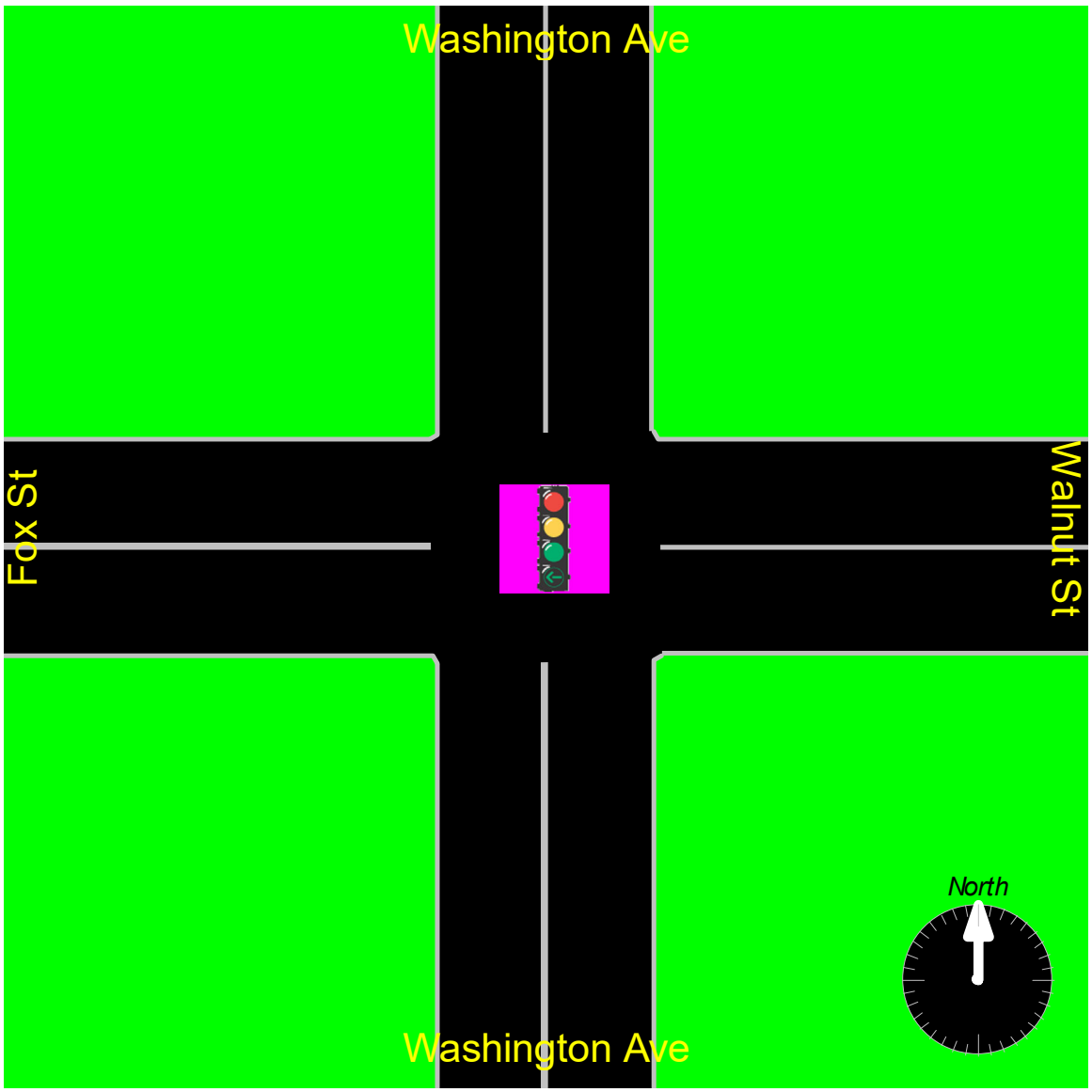
File Name : Portland Washington, Walnut, Fox 10-16-2024 AM
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	Washington Ave From North				Walnut St From East				Washington Ave From South				Fox St From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:45 AM				07:15 AM				07:30 AM				08:00 AM				
+0 mins.	**7**	118	2	**127**	10	12	3	25	**10**	47	9	66	7	12	8	27	
+15 mins.	0	**120**	3	123	12	24	**6**	42	8	**53**	**10**	**71**	**21**	**19**	10	**50**	
+30 mins.	4	108	6	118	**21**	**39**	5	**65**	1	33	8	42	17	12	9	38	
+45 mins.	5	114	**7**	126	15	17	2	34	1	38	8	47	10	15	**12**	37	
Total Volume	16	460	18	494	58	92	16	166	20	171	35	226	55	58	39	152	
% App. Total	3.2	93.1	3.6		34.9	55.4	9.6		8.8	75.7	15.5		36.2	38.2	25.7		
PHF	.571	.958	.643	.972	.690	.590	.667	.638	.500	.807	.875	.796	.655	.763	.813	.760	
Passenger Car	16	442	16	474	57	90	15	162	19	162	34	215	54	57	38	149	
% Passenger Car	100	96.1	88.9	96	98.3	97.8	93.8	97.6	95	94.7	97.1	95.1	98.2	98.3	97.4	98	
Truck	0	5	2	7	1	1	0	2	1	2	0	3	1	1	1	3	
% Truck	0	1.1	11.1	1.4	1.7	1.1	0	1.2	5	1.2	0	1.3	1.8	1.7	2.6	2	
Semi	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
% Semi	0	0.2	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	
Bus	0	8	0	8	0	0	0	0	0	6	0	6	0	0	0	0	
% Bus	0	1.7	0	1.6	0	0	0	0	0	3.5	0	2.7	0	0	0	0	
Bicycle	0	4	0	4	0	1	1	2	0	1	1	2	0	0	0	0	
% Bicycle	0	0.9	0	0.8	0	1.1	6.2	1.2	0	0.6	2.9	0.9	0	0	0	0	



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Washington, Eastern Prom.
October 16, 2024 AM
Sunny
St.Clair Associates

File Name : Portland Washington, Eastern Promenade 10-16-2024 AM
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Start Date : 10/16/2024
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Groups Printed- Passenger Car - Truck - Semi - Bus - Bicycle

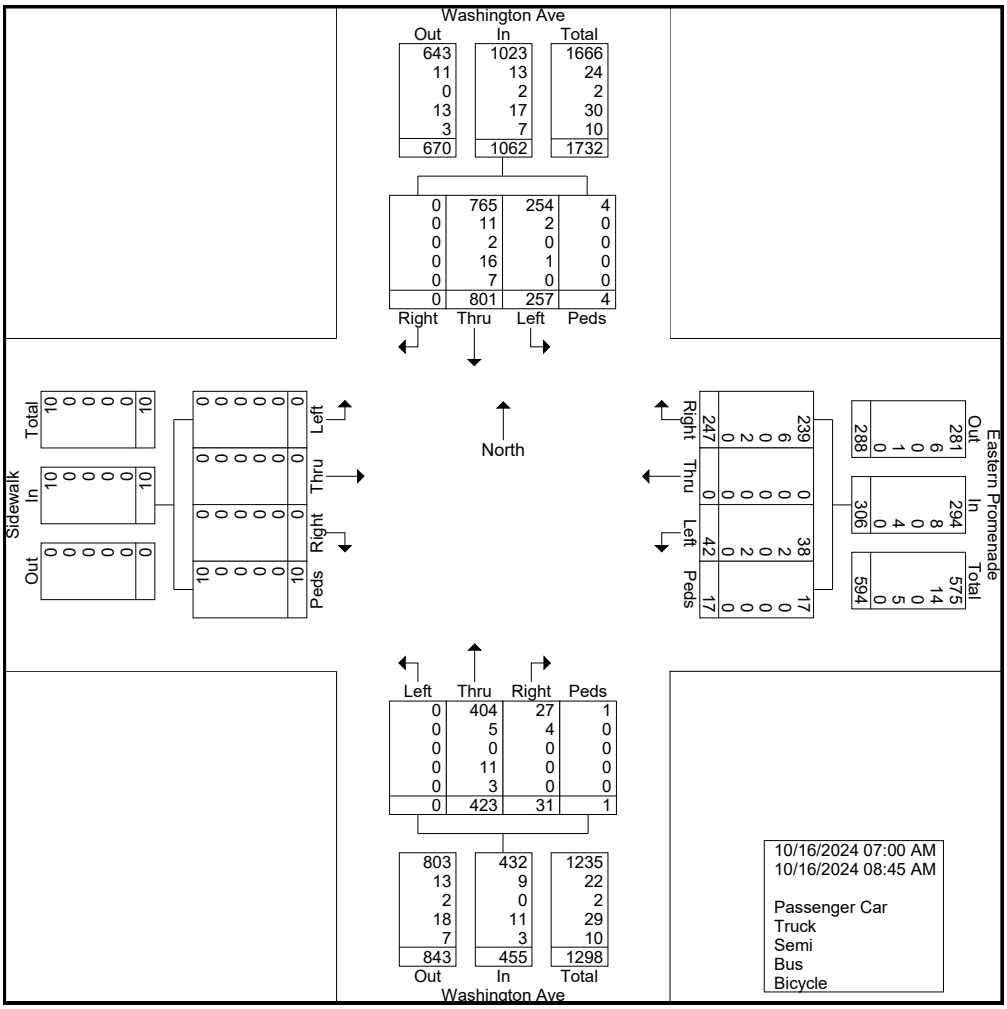
	Washington Ave From North					Eastern Promenade From East					Washington Ave From South					Sidewalk From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	66	33	1	100	22	0	1	3	26	4	38	0	0	42	0	0	0	0	0	168
07:15 AM	0	71	32	0	103	29	0	3	2	34	3	46	0	0	49	0	0	0	1	1	187
07:30 AM	0	79	35	2	116	48	0	16	2	66	7	60	0	0	67	0	0	0	5	5	254
07:45 AM	0	117	32	1	150	45	0	7	2	54	5	87	0	0	92	0	0	0	0	0	296
Total	0	333	132	4	469	144	0	27	9	180	19	231	0	0	250	0	0	0	6	6	905
08:00 AM	0	121	31	0	152	30	0	3	2	35	1	55	0	0	56	0	0	0	2	2	245
08:15 AM	0	117	41	0	158	24	0	1	2	27	4	39	0	0	43	0	0	0	1	1	229
08:30 AM	0	126	28	0	154	27	0	5	2	34	7	45	0	0	52	0	0	0	0	0	240
08:45 AM	0	104	25	0	129	22	0	6	2	30	0	53	0	1	54	0	0	0	1	1	214
Total	0	468	125	0	593	103	0	15	8	126	12	192	0	1	205	0	0	0	4	4	928

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File Name : Portland Washington, Eastern Promenade 10-16-2024 AM
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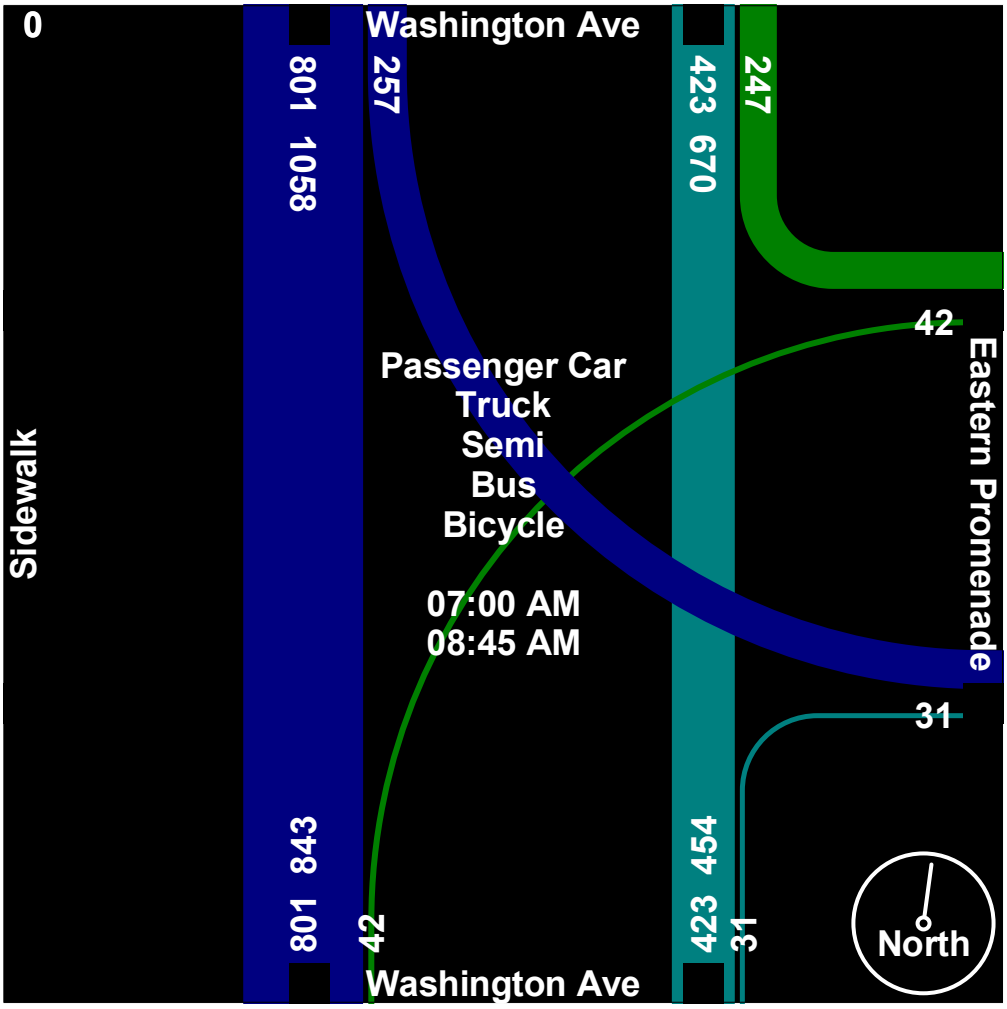
Groups Printed- Passenger Car - Truck - Semi - Bus - Bicycle

	Washington Ave From North					Eastern Promenade From East					Washington Ave From South					Sidewalk From West					
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Grand Total	0	801	257	4	1062	247	0	42	17	306	31	423	0	1	455	0	0	0	10	10	1833
Apprch %	0	75.4	24.2	0.4		80.7	0	13.7	5.6		6.8	93	0	0.2		0	0	0	100		
Total %	0	43.7	14	0.2	57.9	13.5	0	2.3	0.9	16.7	1.7	23.1	0	0.1	24.8	0	0	0	0.5	0.5	
Passenger Car	0	765	254	4	1023	239	0	38	17	294	27	404	0	1	432	0	0	0	10	10	1759
% Passenger Car	0	95.5	98.8	100	96.3	96.8	0	90.5	100	96.1	87.1	95.5	0	100	94.9	0	0	0	100	100	96
Truck	0	11	2	0	13	6	0	2	0	8	4	5	0	0	9	0	0	0	0	0	30
% Truck	0	1.4	0.8	0	1.2	2.4	0	4.8	0	2.6	12.9	1.2	0	0	2	0	0	0	0	0	1.6
Semi	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Semi	0	0.2	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Bus	0	16	1	0	17	2	0	2	0	4	0	11	0	0	11	0	0	0	0	0	32
% Bus	0	2	0.4	0	1.6	0.8	0	4.8	0	1.3	0	2.6	0	0	2.4	0	0	0	0	0	1.7
Bicycle	0	7	0	0	7	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	10
% Bicycle	0	0.9	0	0	0.7	0	0	0	0	0	0	0.7	0	0	0.7	0	0	0	0	0	0.5



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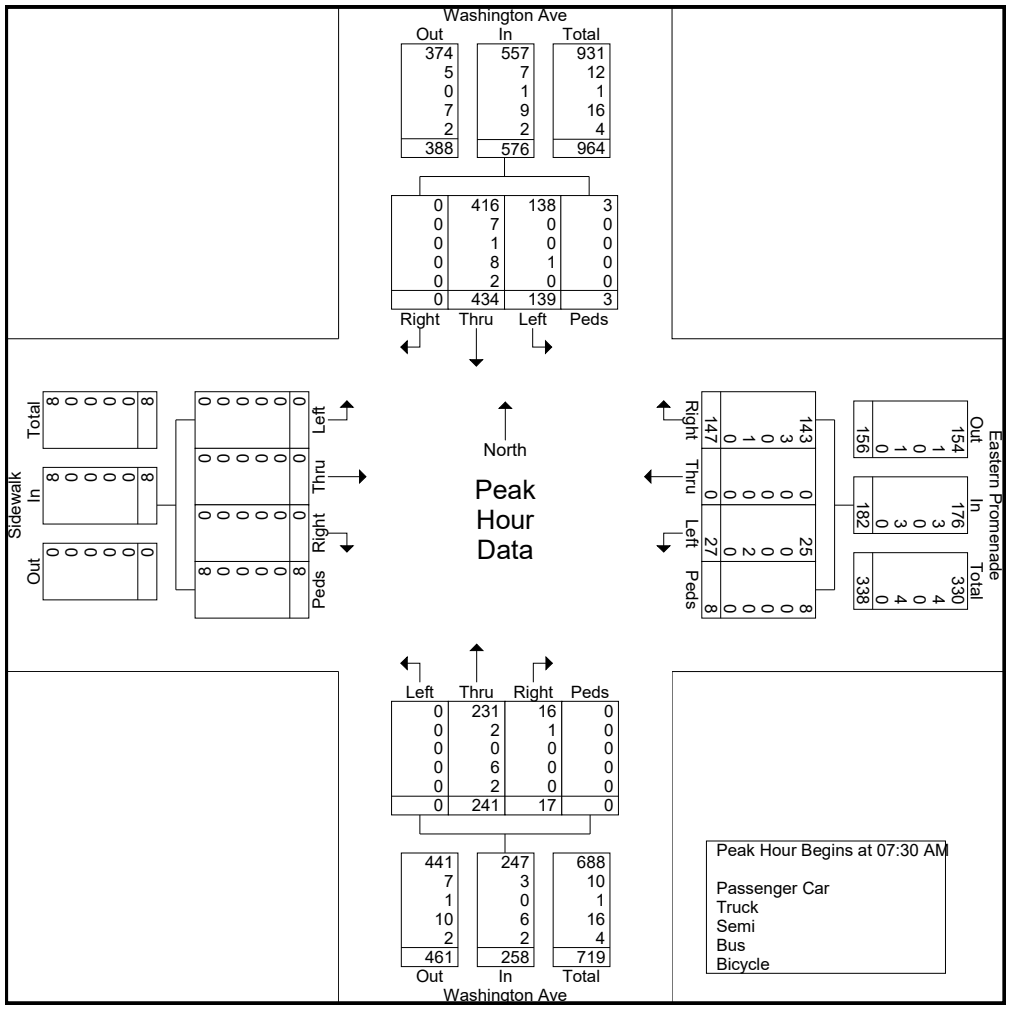
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File Name : Portland Washington, Eastern Promenade 10-16-2024 AM
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	Washington Ave From North					Eastern Promenade From East					Washington Ave From South					Sidewalk From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	79	35	**2**	116	**48**	0	**16**	**2**	**66**	**7**	60	0	0	67	0	0	0	**5**	**5**	254
07:45 AM	0	117	32	1	150	45	0	7	2	54	5	**87**	0	0	**92**	0	0	0	0	0	**296**
08:00 AM	0	**121**	31	0	152	30	0	3	2	35	1	55	0	0	56	0	0	0	2	2	245
08:15 AM	0	117	**41**	0	**158**	24	0	1	2	27	4	39	0	0	43	0	0	0	1	1	229
Total Volume	0	434	139	3	576	147	0	27	8	182	17	241	0	0	258	0	0	0	8	8	1024
% App. Total	0	75.3	24.1	0.5		80.8	0	14.8	4.4		6.6	93.4	0	0		0	0	0	100		
PHF	.000	.897	.848	.375	.911	.766	.000	.422	1.00	.689	.607	.693	.000	.000	.701	.000	.000	.000	.400	.400	.865
Passenger Car	0	416	138	3	557	143	0	25	8	176	16	231	0	0	247	0	0	0	8	8	988
% Passenger Car	0	95.9	99.3	100	96.7	97.3	0	92.6	100	96.7	94.1	95.9	0	0	95.7	0	0	0	100	100	96.5
Truck	0	7	0	0	7	3	0	0	0	3	1	2	0	0	3	0	0	0	0	0	13
% Truck	0	1.6	0	0	1.2	2.0	0	0	0	1.6	5.9	0.8	0	0	1.2	0	0	0	0	0	1.3
Semi	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Semi	0	0.2	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Bus	0	8	1	0	9	1	0	2	0	3	0	6	0	0	6	0	0	0	0	0	18
% Bus	0	1.8	0.7	0	1.6	0.7	0	7.4	0	1.6	0	2.5	0	0	2.3	0	0	0	0	0	1.8
Bicycle	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
% Bicycle	0	0.5	0	0	0.3	0	0	0	0	0	0	0.8	0	0	0.8	0	0	0	0	0	0.4

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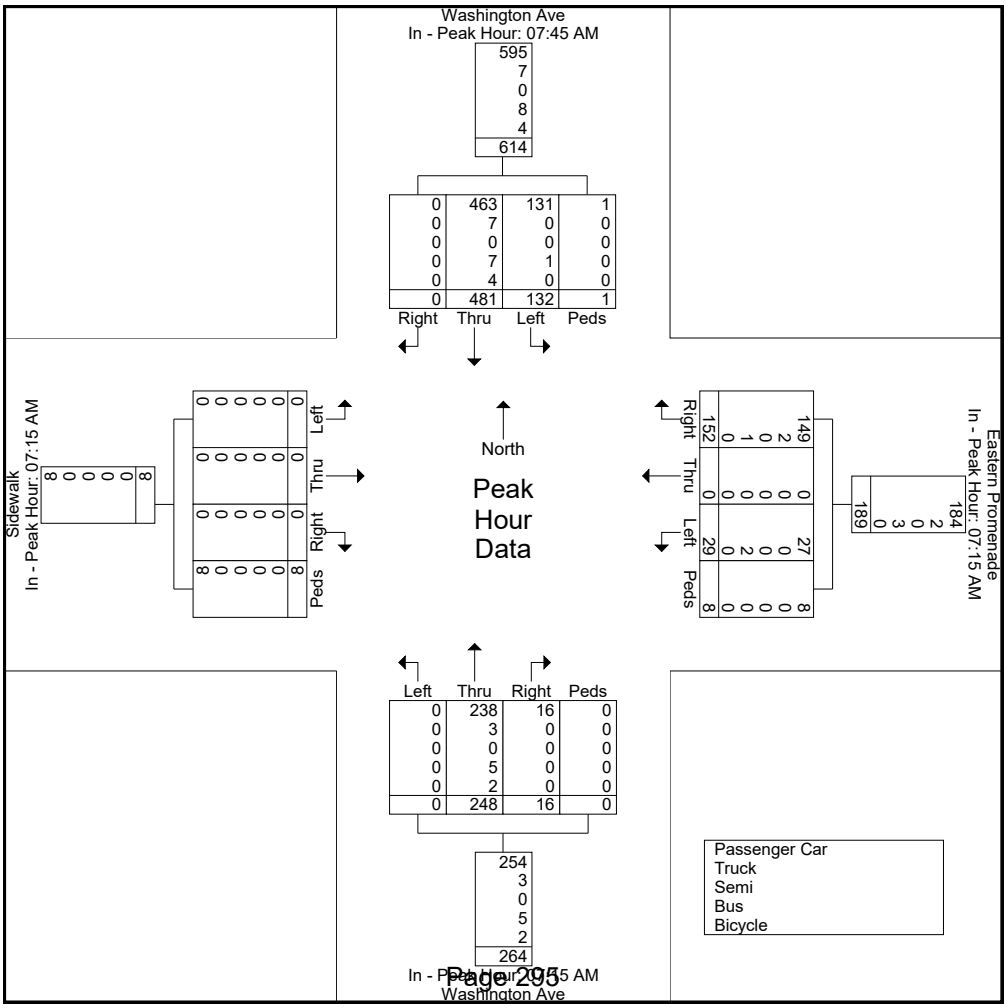


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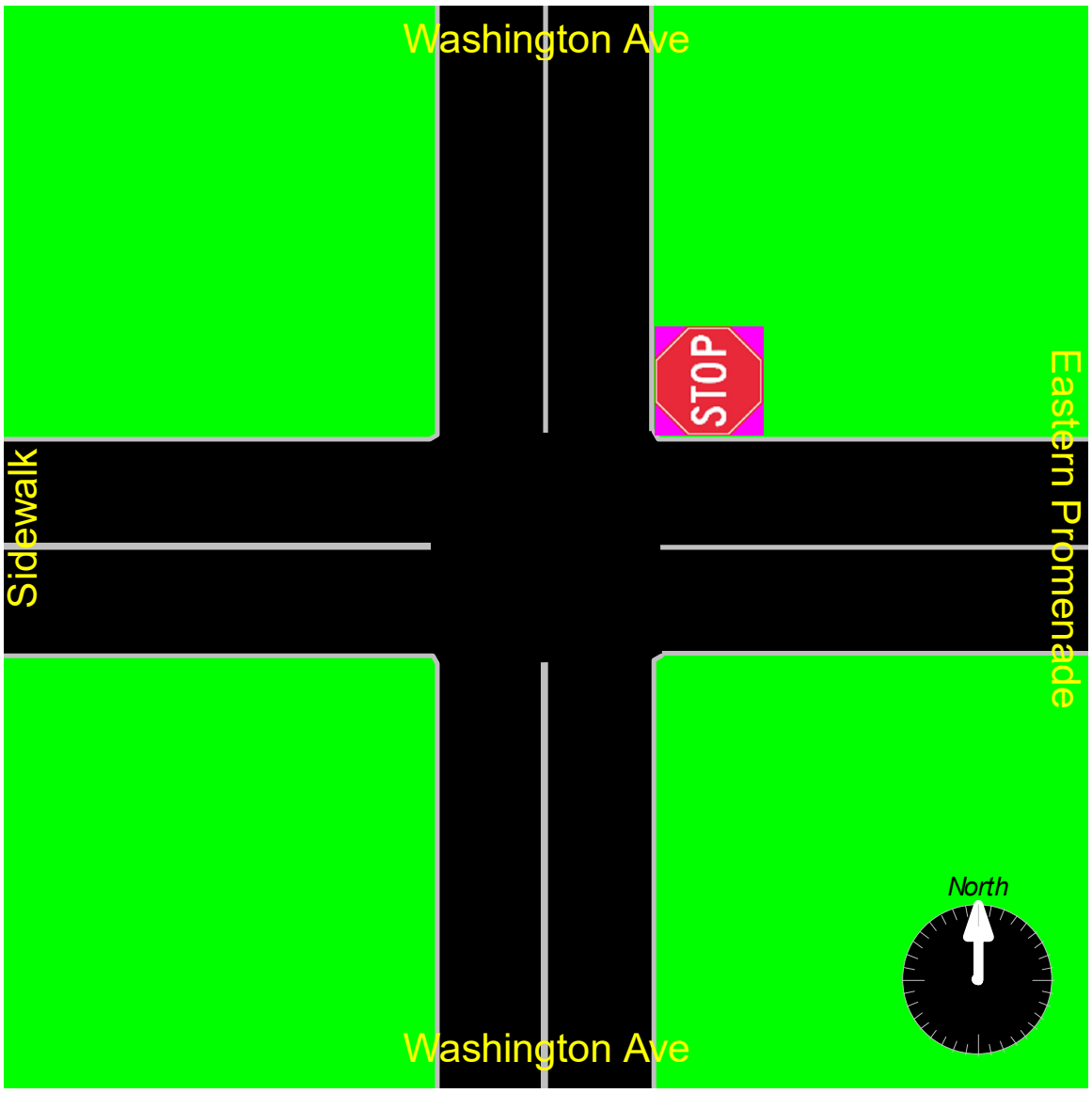
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	Washington Ave From North					Eastern Promenade From East					Washington Ave From South					Sidewalk From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	07:45 AM					07:15 AM					07:15 AM					07:15 AM					
+0 mins.	0	117	32	**1**	150	29	0	3	**2**	34	3	46	0	0	49	0	0	0	1	1	
+15 mins.	0	121	31	0	152	**48**	0	**16**	2	**66**	**7**	60	0	0	67	0	0	0	**5**	**5**	
+30 mins.	0	117	**41**	0	**158**	45	0	7	2	54	5	**87**	0	0	**92**	0	0	0	0	0	
+45 mins.	0	**126**	28	0	154	30	0	3	2	35	1	55	0	0	56	0	0	0	2	2	
Total Volume	0	481	132	1	614	152	0	29	8	189	16	248	0	0	264	0	0	0	8	8	
% App. Total	0	78.3	21.5	0.2		80.4	0	15.3	4.2		6.1	93.9	0	0		0	0	0	100		
PHF	.000	.954	.805	.250	.972	.792	.000	.453	1.000	.716	.571	.713	.000	.000	.717	.000	.000	.000	.400	.400	
Passenger Car	0	463	131	1	595	149	0	27	8	184	16	238	0	0	254	0	0	0	8	8	
% Passenger Car	0	96.3	99.2	100	96.9	98	0	93.1	100	97.4	100	96	0	0	96.2	0	0	0	100	100	
Truck	0	7	0	0	7	2	0	0	0	2	0	3	0	0	3	0	0	0	0	0	
% Truck	0	1.5	0	0	1.1	1.3	0	0	0	1.1	0	1.2	0	0	1.1	0	0	0	0	0	
Semi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Semi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bus	0	7	1	0	8	1	0	2	0	3	0	5	0	0	5	0	0	0	0	0	
% Bus	0	1.5	0.8	0	1.3	0.7	0	6.9	0	1.6	0	2	0	0	1.9	0	0	0	0	0	
Bicycle	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	
% Bicycle	0	0.8	0	0	0.7	0	0	0	0	0	0	0.8	0	0	0.8	0	0	0	0	0	



Traffic Solutions
17 Mountview Drive
Gorham, ME 04038

File Name : Portland Washington, Eastern Promenade 10-16-2024 AM
Site Code : 01016241
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Traffic Solutions
17 Mountview Drive
Gorham, ME 04038

Portland Washington, Walnut, Fox
October 16, 2024 PM
Sunny
St.Clair Associates

File Name : Portland Washington, Walnut Fox 10-16-2024 PM
Site Code : 10172411
Start Date : 10/17/2024
Page No : 1

Groups Printed- Passenger Car - Truck - Semi - Bus - Bicycle

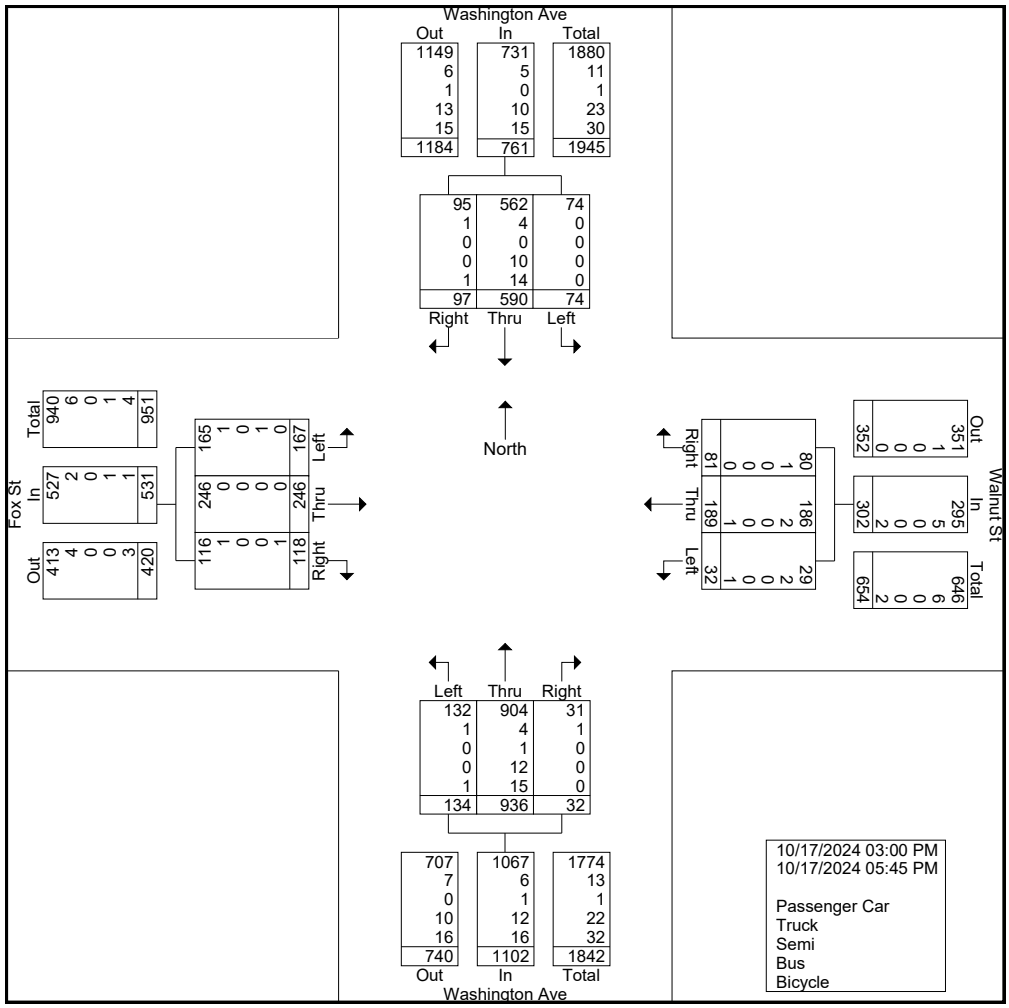
	Washington Ave From North					Walnut St From East					Washington Ave From South					Fox St From West							
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
03:00 PM	7	48	3	5	58	5	10	3	0	18	3	84	7	5	94	9	23	11	0	43	10	213	223
03:15 PM	9	48	8	5	65	8	23	4	2	35	2	83	9	8	94	9	23	9	0	41	15	235	250
03:30 PM	13	52	10	2	75	7	15	1	1	23	5	64	14	2	83	12	18	17	2	47	7	228	235
03:45 PM	12	60	6	4	78	2	24	5	0	31	4	63	18	3	85	13	15	21	1	49	8	243	251
Total	41	208	27	16	276	22	72	13	3	107	14	294	48	18	356	43	79	58	3	180	40	919	959
04:00 PM	12	62	8	0	82	7	15	3	1	25	2	91	16	3	109	8	14	18	2	40	6	256	262
04:15 PM	9	43	7	7	59	5	15	2	4	22	5	99	9	21	113	8	13	17	3	38	35	232	267
04:30 PM	6	53	3	11	62	7	17	3	0	27	2	93	11	18	106	11	34	24	9	69	38	264	302
04:45 PM	8	57	8	4	73	11	14	5	0	30	2	100	11	11	113	8	24	14	2	46	17	262	279
Total	35	215	26	22	276	30	61	13	5	104	11	383	47	53	441	35	85	73	16	193	96	1014	1110
05:00 PM	11	69	7	4	87	8	26	1	0	35	3	89	14	6	106	9	29	9	0	47	10	275	285
05:15 PM	8	50	8	7	66	10	16	3	0	29	4	90	11	7	105	12	23	18	2	53	16	253	269
05:30 PM	2	48	6	6	56	11	14	2	2	27	0	79	14	3	93	19	30	9	5	58	16	234	250
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1
Total	21	167	21	17	209	29	56	6	2	91	7	259	39	16	305	40	82	36	7	158	42	763	805

Traffic Solutions
17 Mountview Drive
Gorham, ME 04038

File Name : Portland Washington, Walnut Fox 10-16-2024 PM
Site Code : 10172411
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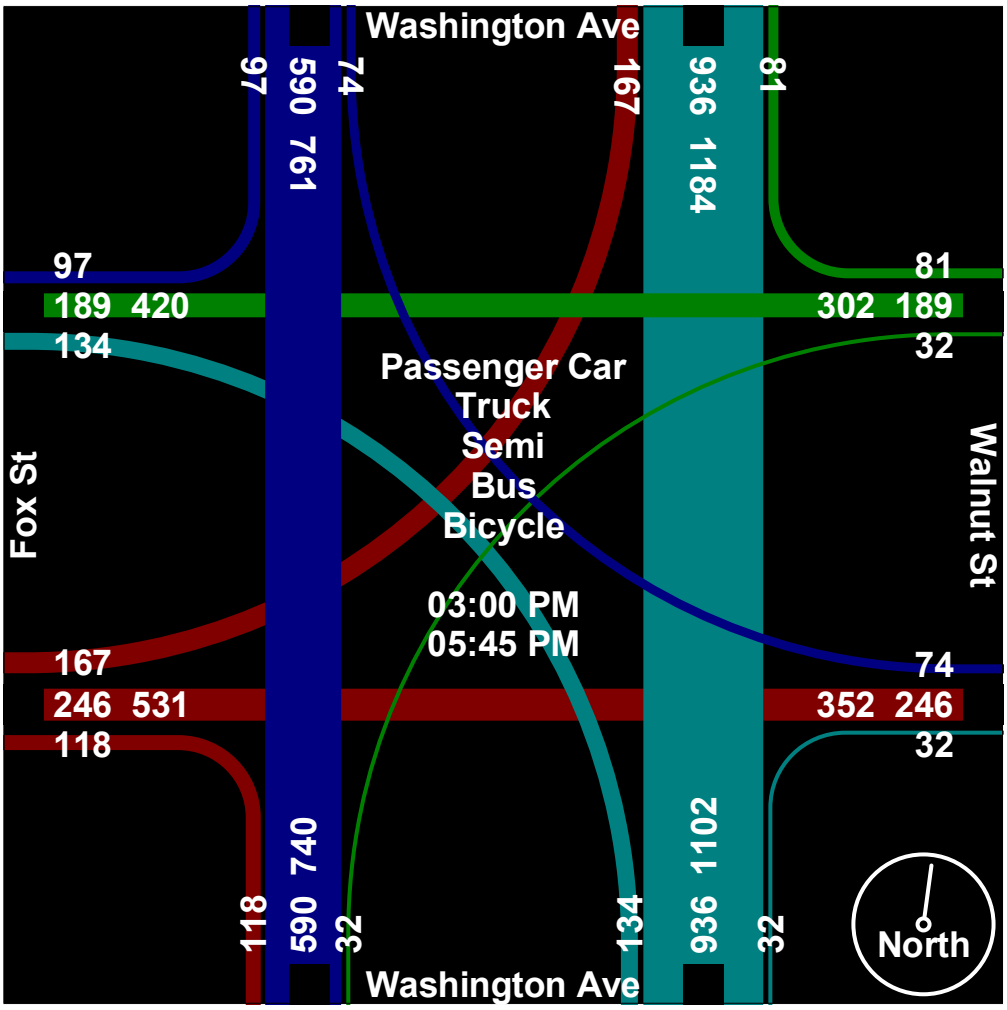
Groups Printed- Passenger Car - Truck - Semi - Bus - Bicycle

	Washington Ave From North					Walnut St From East					Washington Ave From South					Fox St From West							
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Grand Total	97	590	74	55	761	81	189	32	10	302	32	936	134	87	1102	118	246	167	26	531	178	2696	2874
Apprch %	12.7	77.5	9.7			26.8	62.6	10.6			2.9	84.9	12.2			22.2	46.3	31.5					
Total %	3.6	21.9	2.7		28.2	3	7	1.2		11.2	1.2	34.7	5		40.9	4.4	9.1	6.2		19.7	6.2	93.8	
Passenger Car	95	562	74		786	80	186	29		305	31	904	132		1154	116	246	165		553	0	0	2798
% Passenger Car	97.9	95.3	100	100	96.3	98.8	98.4	90.6	100	97.8	96.9	96.6	98.5	100	97.1	98.3	100	98.8	100	99.3	0	0	97.4
Truck	1	4	0		5	1	2	2		5	1	4	1		6	1	0	1		2	0	0	18
% Truck	1	0.7	0	0	0.6	1.2	1.1	6.2	0	1.6	3.1	0.4	0.7	0	0.5	0.8	0	0.6	0	0.4	0	0	0.6
Semi	0	0	0		0	0	0	0		0	0	1	0		1	0	0	0		0	0	0	1
% Semi	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0	0	0
Bus	0	10	0		10	0	0	0		0	0	12	0		12	0	0	1		1	0	0	23
% Bus	0	1.7	0	0	1.2	0	0	0	0	0	0	1.3	0	0	1	0	0	0.6	0	0.2	0	0	0.8
Bicycle	1	14	0		15	0	1	1		2	0	15	1		16	1	0	0		1	0	0	34
% Bicycle	1	2.4	0	0	1.8	0	0.5	3.1	0	0.6	0	1.6	0.7	0	1.3	0.8	0	0	0	0.2	0	0	1.2



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17 Mountview Drive
Gorham, ME 04038

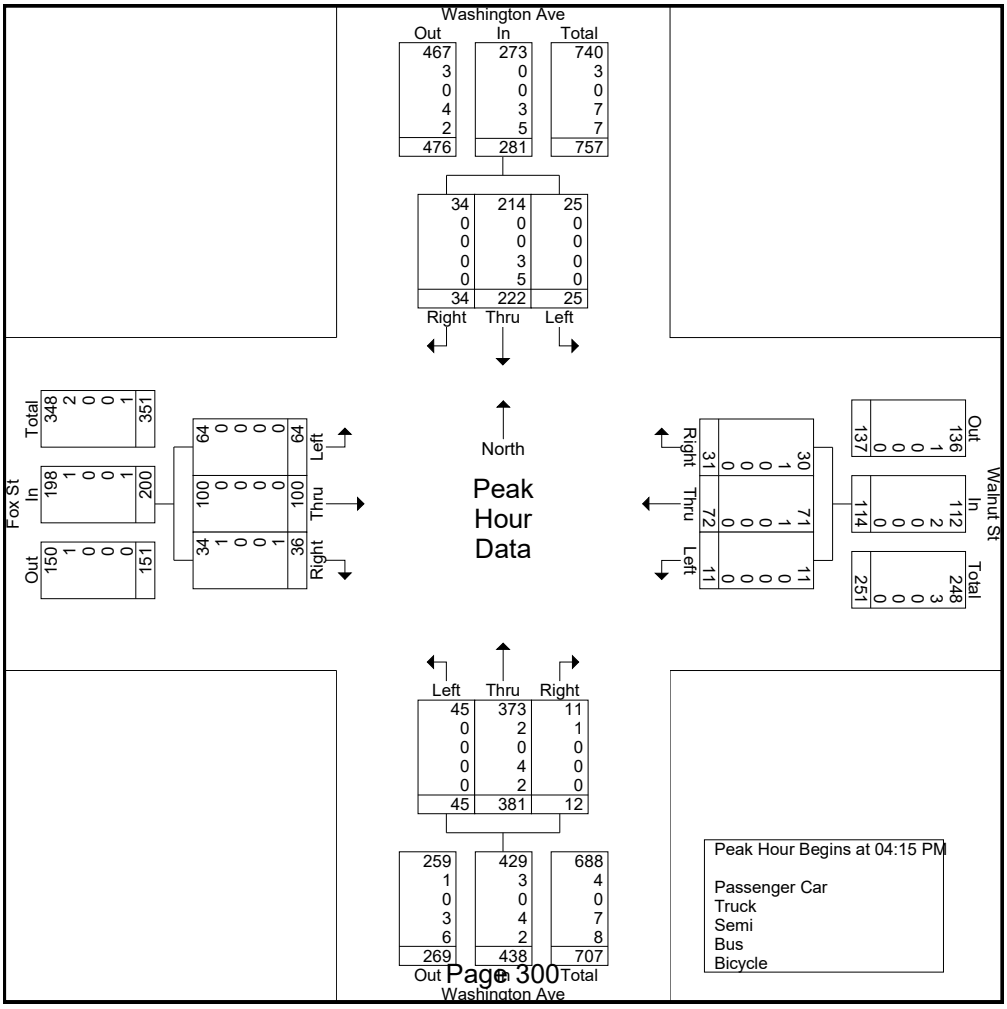
File Name : Portland Washington, Walnut Fox 10-16-2024 PM
Site Code : 10172411
Start Date : 10/17/2024
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Traffic Solutions
17 Mountview Drive
Gorham, ME 04038

File Name : Portland Washington, Walnut Fox 10-16-2024 PM
Site Code : 10172411
Start Date : 10/17/2024
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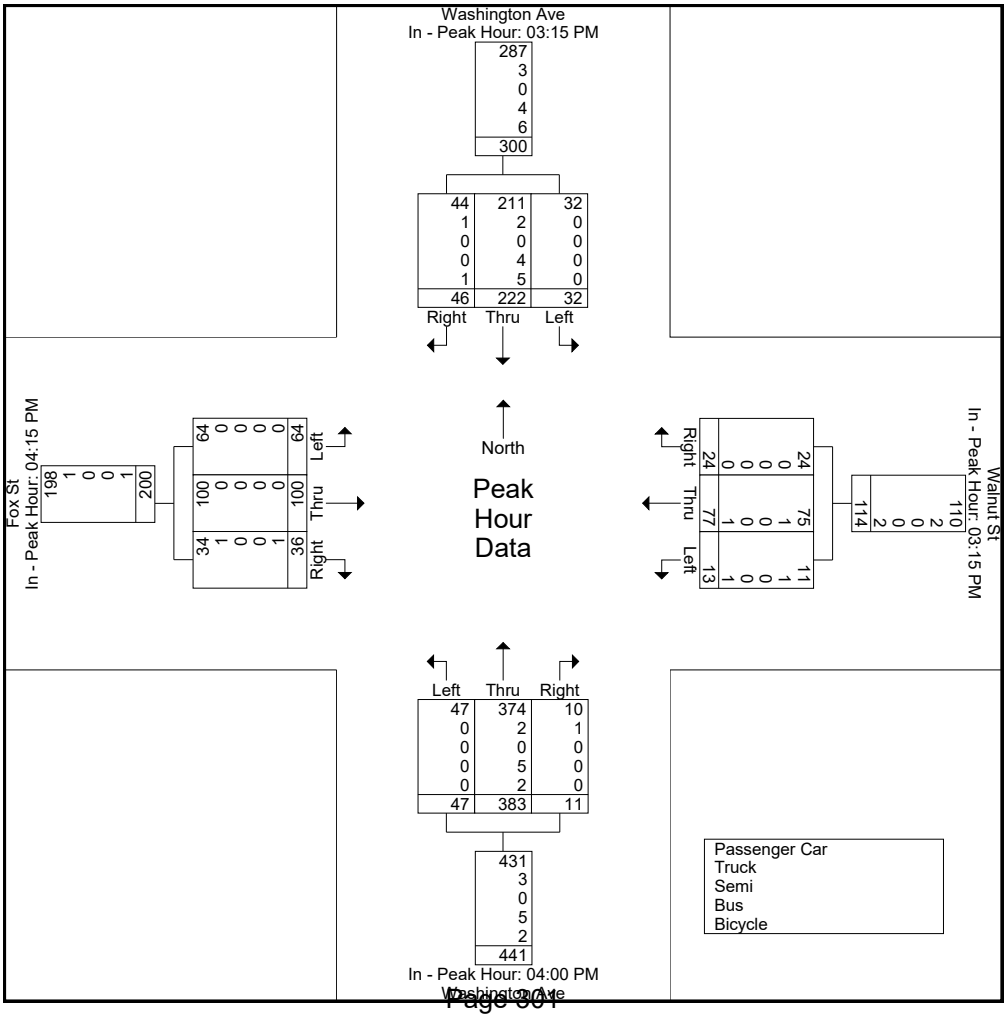
	Washington Ave From North				Walnut St From East				Washington Ave From South				Fox St From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	9	43	7	59	5	15	2	22	**5**	99	9	**113**	8	13	17	38	232
04:30 PM	6	53	3	62	7	17	3	27	2	93	11	106	**11**	**34**	**24**	**69**	264
04:45 PM	8	57	**8**	73	**11**	14	**5**	30	2	**100**	11	113	8	24	14	46	262
05:00 PM	**11**	**69**	7	**87**	8	**26**	1	**35**	3	89	**14**	106	9	29	9	47	**275**
Total Volume	34	222	25	281	31	72	11	114	12	381	45	438	36	100	64	200	1033
% App. Total	12.1	79	8.9		27.2	63.2	9.6		2.7	87	10.3		18	50	32		
PHF	.773	.804	.781	.807	.705	.692	.550	.814	.600	.953	.804	.969	.818	.735	.667	.725	.939
Passenger Car	34	214	25	273	30	71	11	112	11	373	45	429	34	100	64	198	1012
% Passenger Car	100	96.4	100	97.2	96.8	98.6	100	98.2	91.7	97.9	100	97.9	94.4	100	100	99.0	98.0
Truck	0	0	0	0	1	1	0	2	1	2	0	3	1	0	0	1	6
% Truck	0	0	0	0	3.2	1.4	0	1.8	8.3	0.5	0	0.7	2.8	0	0	0.5	0.6
Semi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Semi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bus	0	3	0	3	0	0	0	0	0	4	0	4	0	0	0	0	7
% Bus	0	1.4	0	1.1	0	0	0	0	0	1.0	0	0.9	0	0	0	0	0.7
Bicycle	0	5	0	5	0	0	0	0	0	2	0	2	1	0	0	1	8
% Bicycle	0	2.3	0	1.8	0	0	0	0	0	0.5	0	0.5	2.8	0	0	0.5	0.8



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17 Mountview Drive
Gorham, ME 04038

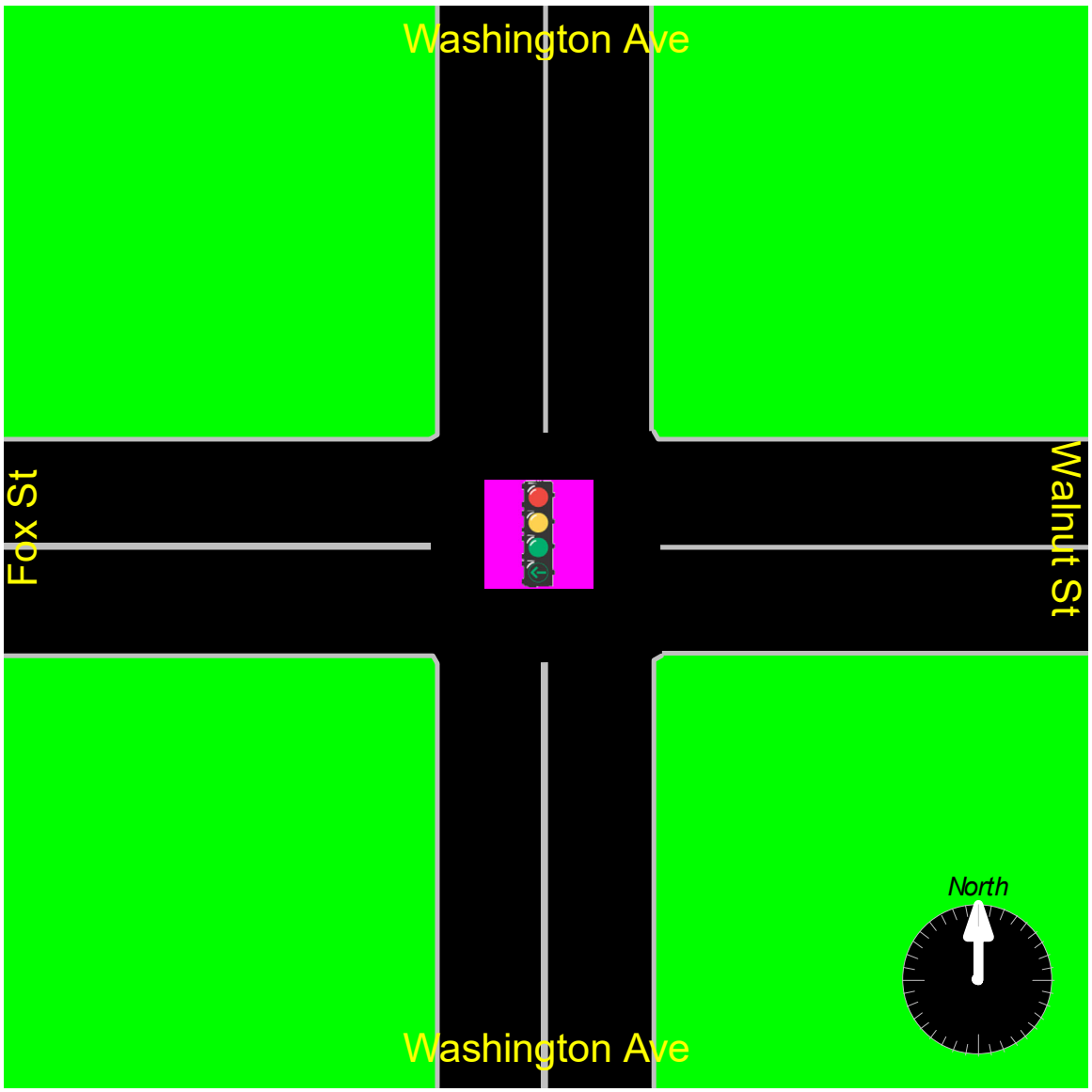
File Name : Portland Washington, Walnut Fox 10-16-2024 PM
Site Code : 10172411
Start Date : 10/17/2024
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	Washington Ave From North				Walnut St From East				Washington Ave From South				Fox St From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	03:15 PM				03:15 PM				04:00 PM				04:15 PM				
+0 mins.	9	48	8	65	**8**	23	4	**35**	2	91	**16**	109	8	13	17	38	
+15 mins.	**13**	52	**10**	75	7	15	1	23	**5**	99	9	**113**	**11**	**34**	**24**	**69**	
+30 mins.	12	60	6	78	2	**24**	**5**	31	2	93	11	106	8	24	14	46	
+45 mins.	12	**62**	8	**82**	7	15	3	25	2	**100**	11	113	9	29	9	47	
Total Volume	46	222	32	300	24	77	13	114	11	383	47	441	36	100	64	200	
% App. Total	15.3	74	10.7		21.1	67.5	11.4		2.5	86.8	10.7		18	50	32		
PHF	.885	.895	.800	.915	.750	.802	.650	.814	.550	.958	.734	.976	.818	.735	.667	.725	
Passenger Car	44	211	32	287	24	75	11	110	10	374	47	431	34	100	64	198	
% Passenger Car	95.7	95	100	95.7	100	97.4	84.6	96.5	90.9	97.7	100	97.7	94.4	100	100	99	
Truck	1	2	0	3	0	1	1	2	1	2	0	3	1	0	0	1	
% Truck	2.2	0.9	0	1	0	1.3	7.7	1.8	9.1	0.5	0	0.7	2.8	0	0	0.5	
Semi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Semi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bus	0	4	0	4	0	0	0	0	0	5	0	5	0	0	0	0	
% Bus	0	1.8	0	1.3	0	0	0	0	0	1.3	0	1.1	0	0	0	0	
Bicycle	1	5	0	6	0	1	1	2	0	2	0	2	1	0	0	1	
% Bicycle	2.2	2.3	0	2	0	1.3	7.7	1.8	0	0.5	0	0.5	2.8	0	0	0.5	



Traffic Solutions
17 Mountview Drive
Gorham, ME 04038

File Name : Portland Washington, Walnut Fox 10-16-2024 PM
Site Code : 10172411
Start Date : 10/17/2024
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Traffic Solutions
17 Mountview Drive
Gorham, ME 04038

Washington, Eastern Prom.
October 16, 2024 PM
Sunny
St.Clair Associates

File Name : Portland Washington, Eastern Promenade 10-16-2024 PM
Site Code : 01016242
Start Date : 10/16/2024
Page No : 1

Groups Printed- Passenger Car - Truck - Semi - Bus - Bicycle

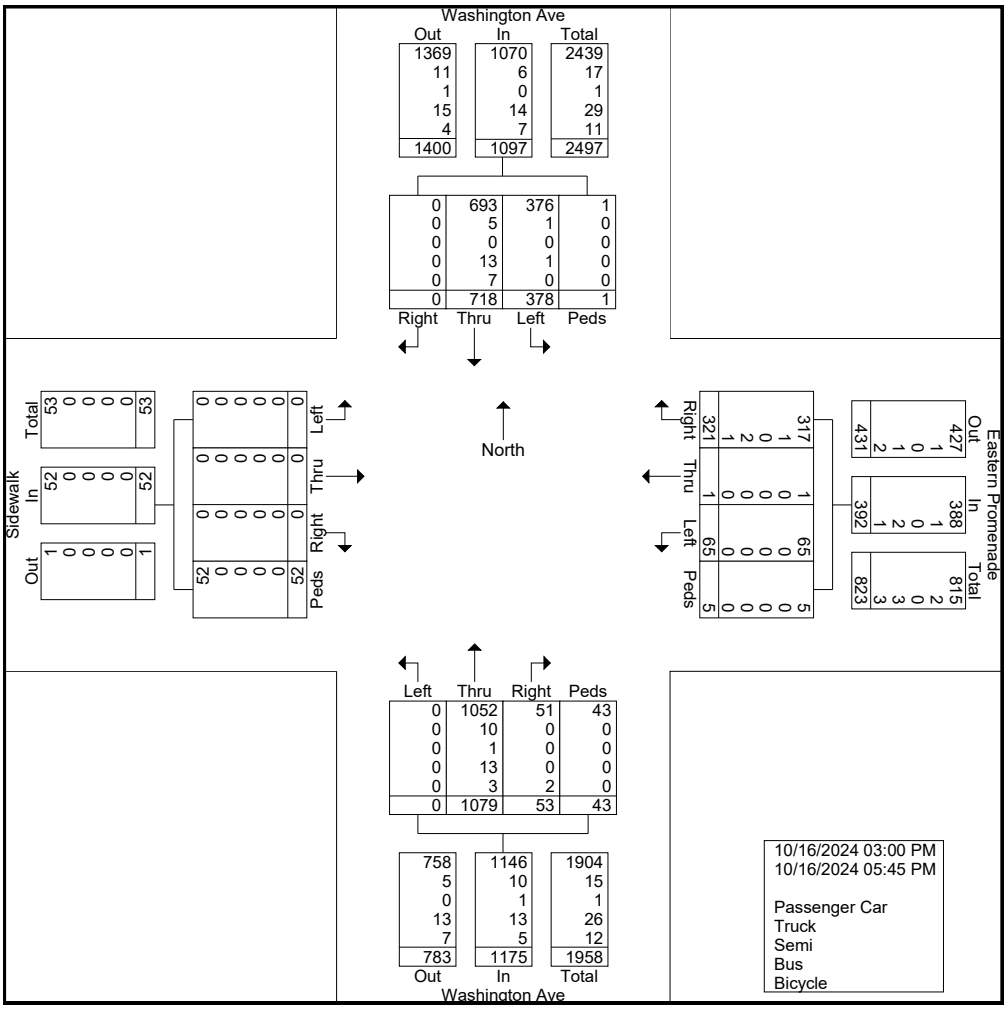
	Washington Ave From North					Eastern Promenade From East					Washington Ave From South					Sidewalk From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	0	45	25	0	70	42	0	7	2	51	7	94	0	0	101	0	0	0	4	4	226
03:15 PM	0	53	18	1	72	15	0	3	0	18	4	82	0	1	87	0	0	0	4	4	181
03:30 PM	0	54	25	0	79	20	0	7	1	28	6	76	0	0	82	0	0	0	0	0	189
03:45 PM	0	66	35	0	101	28	0	7	1	36	4	76	0	0	80	0	0	0	3	3	220
Total	0	218	103	1	322	105	0	24	4	133	21	328	0	1	350	0	0	0	11	11	816
04:00 PM	0	67	26	0	93	13	0	7	0	20	4	101	0	2	107	0	0	0	2	2	222
04:15 PM	0	58	35	0	93	38	0	2	0	40	3	117	0	1	121	0	0	0	12	12	266
04:30 PM	0	55	23	0	78	32	0	4	0	36	2	106	0	1	109	0	0	0	5	5	228
04:45 PM	0	59	44	0	103	21	1	3	1	26	5	95	0	4	104	0	0	0	14	14	247
Total	0	239	128	0	367	104	1	16	1	122	14	419	0	8	441	0	0	0	33	33	963
05:00 PM	0	66	43	0	109	30	0	4	0	34	2	90	0	5	97	0	0	0	0	0	240
05:15 PM	0	55	36	0	91	19	0	6	0	25	3	101	0	7	111	0	0	0	2	2	229
05:30 PM	0	57	36	0	93	36	0	1	0	37	5	85	0	2	92	0	0	0	4	4	226
05:45 PM	0	83	32	0	115	27	0	14	0	41	8	56	0	20	84	0	0	0	2	2	242
Total	0	261	147	0	408	112	0	25	0	137	18	332	0	34	384	0	0	0	8	8	937

Traffic Solutions
17 Mountview Drive
Gorham, ME 04038

File Name : Portland Washington, Eastern Promenade 10-16-2024 PM
Site Code : 01016242
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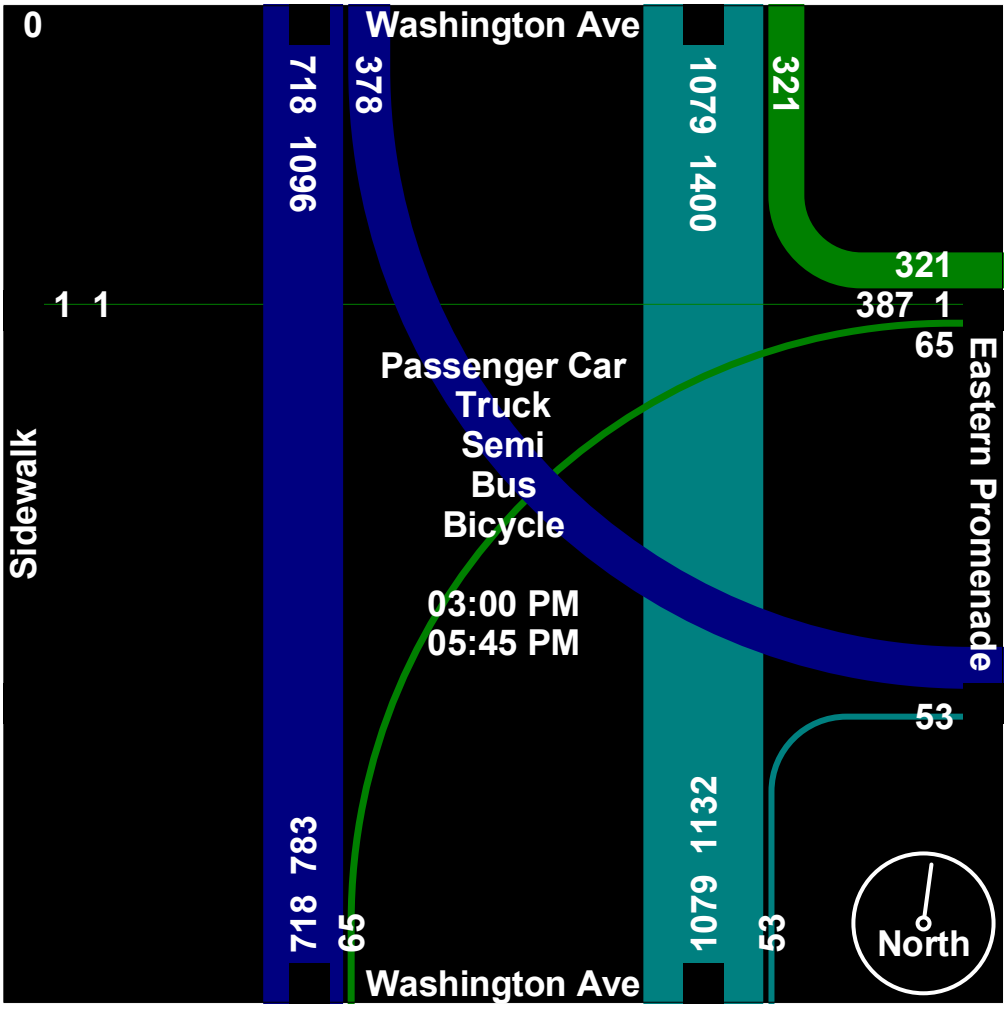
Groups Printed- Passenger Car - Truck - Semi - Bus - Bicycle

	Washington Ave From North					Eastern Promenade From East					Washington Ave From South					Sidewalk From West					
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Grand Total	0	718	378	1	1097	321	1	65	5	392	53	1079	0	43	1175	0	0	0	52	52	2716
Apprch %	0	65.5	34.5	0.1		81.9	0.3	16.6	1.3		4.5	91.8	0	3.7		0	0	0	100		
Total %	0	26.4	13.9	0	40.4	11.8	0	2.4	0.2	14.4	2	39.7	0	1.6	43.3	0	0	0	1.9	1.9	
Passenger Car	0	693	376	1	1070	317	1	65	5	388	51	1052	0	43	1146	0	0	0	52	52	2656
% Passenger Car	0	96.5	99.5	100	97.5	98.8	100	100	100	99	96.2	97.5	0	100	97.5	0	0	0	100	100	97.8
Truck	0	5	1	0	6	1	0	0	0	1	0	10	0	0	10	0	0	0	0	0	17
% Truck	0	0.7	0.3	0	0.5	0.3	0	0	0	0.3	0	0.9	0	0	0.9	0	0	0	0	0	0.6
Semi	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Semi	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0
Bus	0	13	1	0	14	2	0	0	0	2	0	13	0	0	13	0	0	0	0	0	29
% Bus	0	1.8	0.3	0	1.3	0.6	0	0	0	0.5	0	1.2	0	0	1.1	0	0	0	0	0	1.1
Bicycle	0	7	0	0	7	1	0	0	0	1	2	3	0	0	5	0	0	0	0	0	13
% Bicycle	0	1	0	0	0.6	0.3	0	0	0	0.3	3.8	0.3	0	0	0.4	0	0	0	0	0	0.5



Traffic Solutions
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Gorham, ME 04038

File Name : Portland Washington, Eastern Promenade 10-16-2024 PM
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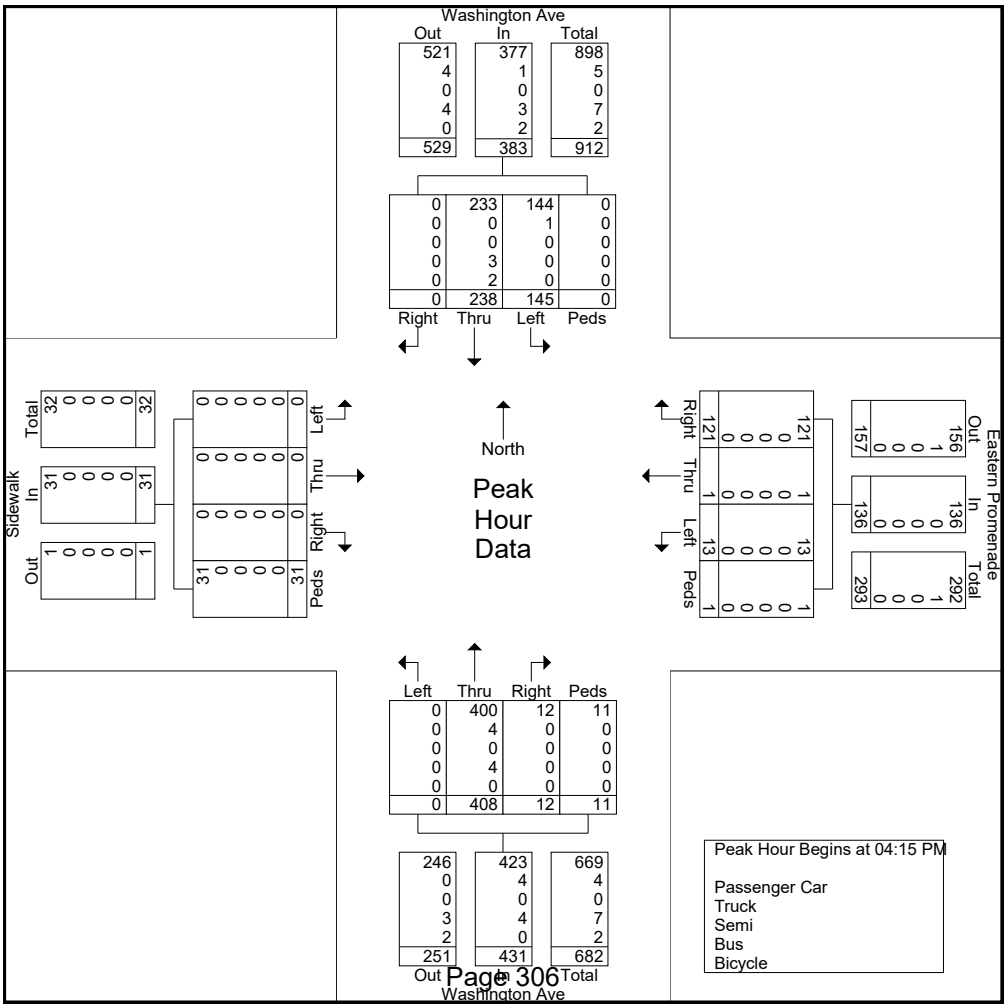


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17 Mountview Drive
Gorham, ME 04038

File Name : Portland Washington, Eastern Promenade 10-16-2024 PM
Site Code : 01016242
Start Date : 10/16/2024
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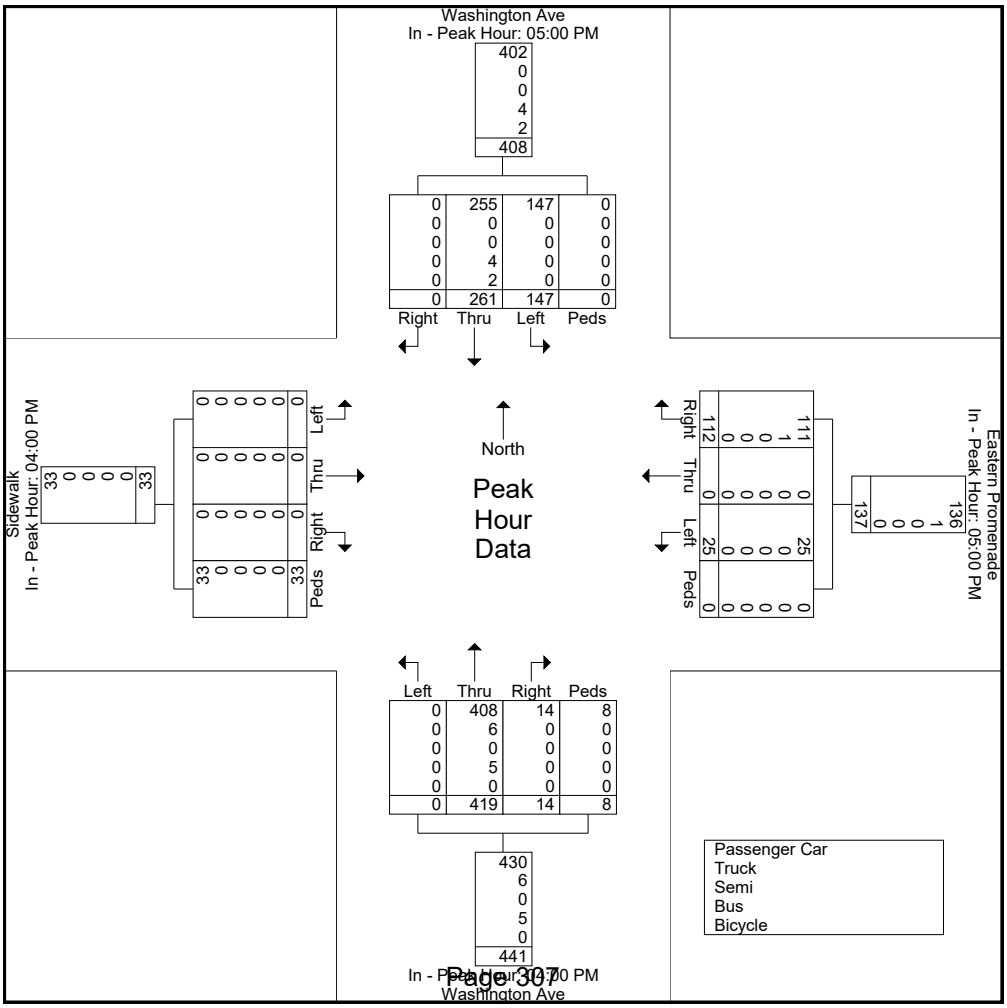
	Washington Ave From North					Eastern Promenade From East					Washington Ave From South					Sidewalk From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	58	35	0	93	**38**	0	2	0	**40**	3	**117**	0	1	**121**	0	0	0	12	12	**266**
04:30 PM	0	55	23	0	78	32	0	**4**	0	36	2	106	0	1	109	0	0	0	5	5	228
04:45 PM	0	59	**44**	0	103	21	**1**	3	**1**	26	**5**	95	0	4	104	0	0	0	**14**	**14**	247
05:00 PM	0	**66**	43	0	**109**	30	0	4	0	34	2	90	0	**5**	97	0	0	0	0	0	240
Total Volume	0	238	145	0	383	121	1	13	1	136	12	408	0	11	431	0	0	0	31	31	981
% App. Total	0	62.1	37.9	0		89	0.7	9.6	0.7		2.8	94.7	0	2.6		0	0	0	100		
PHF	.000	.902	.824	.000	.878	.796	.250	.813	.250	.850	.600	.872	.000	.550	.890	.000	.000	.000	.554	.554	.922
Passenger Car	0	233	144	0	377	121	1	13	1	136	12	400	0	11	423	0	0	0	31	31	967
% Passenger Car	0	97.9	99.3	0	98.4	100	100	100	100	100	100	98.0	0	100	98.1	0	0	0	100	100	98.6
Truck	0	0	1	0	1	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	5
% Truck	0	0	0.7	0	0.3	0	0	0	0	0	0	1.0	0	0	0.9	0	0	0	0	0	0.5
Semi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Semi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bus	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	7
% Bus	0	1.3	0	0	0.8	0	0	0	0	0	0	1.0	0	0	0.9	0	0	0	0	0	0.7
Bicycle	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Bicycle	0	0.8	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2



Traffic Solutions
17 Mountview Drive
Gorham, ME 04038

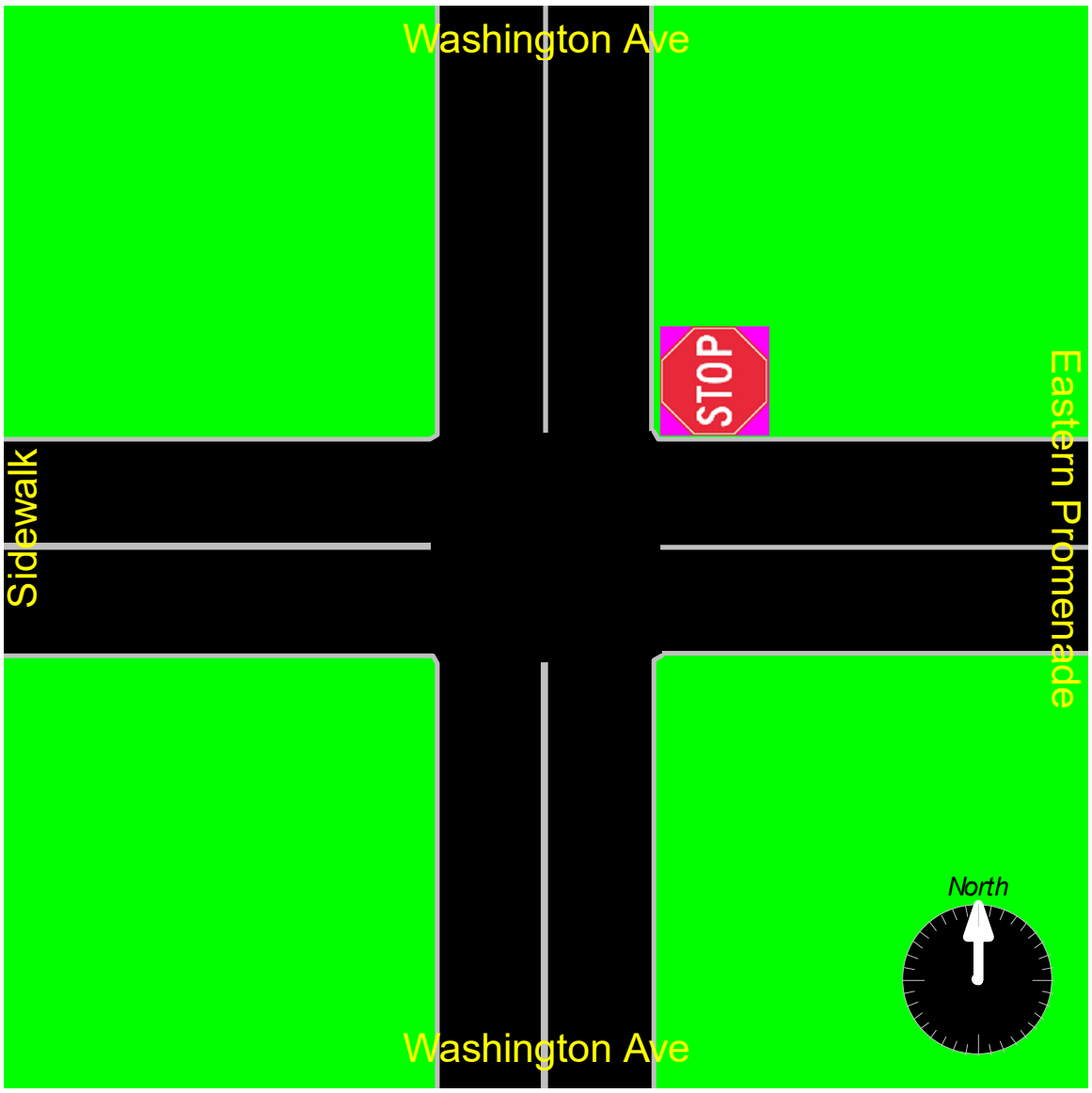
File Name : Portland Washington, Eastern Promenade 10-16-2024 PM
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	Washington Ave From North					Eastern Promenade From East					Washington Ave From South					Sidewalk From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	05:00 PM					05:00 PM					04:00 PM					04:00 PM					
+0 mins.	0	66	**43**	0	109	30	0	4	0	34	4	101	0	2	107	0	0	0	2	2	
+15 mins.	0	55	36	0	91	19	0	6	0	25	3	**117**	0	1	**121**	0	0	0	12	12	
+30 mins.	0	57	36	0	93	**36**	0	1	0	37	2	106	0	1	109	0	0	0	5	5	
+45 mins.	0	**83**	32	0	**115**	27	0	**14**	0	**41**	**5**	95	0	**4**	104	0	0	0	**14**	**14**	
Total Volume	0	261	147	0	408	112	0	25	0	137	14	419	0	8	441	0	0	0	33	33	
% App. Total	0	64	36	0		81.8	0	18.2	0		3.2	95	0	1.8		0	0	0	100		
PHF	.000	.786	.855	.000	.887	.778	.000	.446	.000	.835	.700	.895	.000	.500	.911	.000	.000	.000	.589	.589	
Passenger Car	0	255	147	0	402	111	0	25	0	136	14	408	0	8	430	0	0	0	33	33	
% Passenger Car	0	97.7	100	0	98.5	99.1	0	100	0	99.3	100	97.4	0	100	97.5	0	0	0	100	100	
Truck	0	0	0	0	0	1	0	0	0	1	0	6	0	0	6	0	0	0	0	0	
% Truck	0	0	0	0	0	0.9	0	0	0	0.7	0	1.4	0	0	1.4	0	0	0	0	0	
Semi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Semi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bus	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	
% Bus	0	1.5	0	0	1	0	0	0	0	0	0	1.2	0	0	1.1	0	0	0	0	0	
Bicycle	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Bicycle	0	0.8	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



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APPENDIX B

- **MAINEDOT CRASH DATA**


PORTLAND
EASTERN PROMENADE
Munjoy Hill
East End
Eastern Cemetery
FORT ALLEN PARK
Fish Point
BACK COVE TRAIL
CRF: 2.22
Crashes: 10
CRF: 2.57
Crashes: 12
CRF: 1.55
Crashes: 28
CRF: 1.52
Crashes: 11
CRF: 2.82
Crashes: 15
Scale: 1:9000
600ft

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-Fox St-Walnut St-Cumberland Ave area

REPORT PARAMETERS

Year 2021, Start Month 1 through Year 2023 End Month: 12

Route: **0561238**	Start Node: **63224**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **18909**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0026X**	Start Node: **19042**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18717**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0560766**	Start Node: **18879**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18877**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0560293**	Start Node: **18521**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **18960**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0026S**	Start Node: **18955**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **18717**	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
18922	0561238 - 0.89	Int of CUMBERLAND AV MAYO ST	2	1	0	0	0	0	1	0.0	2.195	0.15	0.46	0.00
												Statewide Crash Rate:	0.15	
19042	0561238 - 1.04	Int of CUMBERLAND AV WASHINGTON AV	9	7	0	0	1	0	6	14.3	4.026	0.58	1.29	0.45
												Statewide Crash Rate:	0.71	
19463	0561238 - 0.98	Int of ANDERSON ST CUMBERLAND AV	2	2	0	0	0	0	2	0.0	2.031	0.33	0.47	0.00
												Statewide Crash Rate:	0.15	
18830	0561238 - 1.15	Int of CUMBERLAND AV SHERIDAN ST	2	2	0	0	0	0	2	0.0	1.896	0.35	0.43	0.00
												Statewide Crash Rate:	0.13	
18873	0561238 - 1.11	Int of CUMBERLAND AV ROMASCO ST	2	0	0	0	0	0	0	0.0	1.446	0.00	0.46	0.00
												Statewide Crash Rate:	0.13	
18909	0561238 - 1.25	Int of CUMBERLAND AV NORTH ST	2	1	0	0	0	0	1	0.0	1.413	0.24	0.46	0.00
												Statewide Crash Rate:	0.13	
18912	0561238 - 0.99	Int of CUMBERLAND AV MONTGOMERY ST	2	1	0	0	1	0	0	100.0	1.719	0.19	0.49	0.00
												Statewide Crash Rate:	0.15	
18915	0561238 - 0.94	Int of CUMBERLAND AV SMITH ST	2	4	0	0	0	1	3	25.0	2.207	0.60	0.46	1.31
												Statewide Crash Rate:	0.15	
18919	0561238 - 0.84	Int of BOYD ST CUMBERLAND AV	2	0	0	0	0	0	0	0.0	2.470	0.00	0.45	0.00
												Statewide Crash Rate:	0.15	
18937	0561238 - 1.01	Int of CLEEVE ST CUMBERLAND AV	2	0	0	0	0	0	0	0.0	1.736	0.00	0.49	0.00
												Statewide Crash Rate:	0.15	
18910	0561238 - 0.87	Int of CUMBERLAND AV, LOCUST ST	2	1	0	0	0	0	1	0.0	2.357	0.14	0.45	0.00
												Statewide Crash Rate:	0.15	
63224	0561238 - 0.80	Int of CUMBERLAND AV FRANKLIN ST	9	14	0	1	2	0	11	21.4	5.842	0.80	1.20	0.67
												Statewide Crash Rate:	0.71	
18941	0026X - 0.19	Int of MADISON ST WASHINGTON AV	2	0	0	0	0	0	0	0.0	3.584	0.00	0.41	0.00
												Statewide Crash Rate:	0.15	
18875	0026X - 0.17	Int of MARION ST, WASHINGTON AV	2	0	0	0	0	0	0	0.0	3.657	0.00	0.41	0.00
												Statewide Crash Rate:	0.15	
18717	0026X - 0.56	Int of WASH AV SB, WASHINGTON AV	2	1	1	0	0	0	0	100.0	3.301	0.10	0.31	0.00
												Statewide Crash Rate:	0.10	
18881	0026X - 0.41	Non Int WASHINGTON AV	2	0	0	0	0	0	0	0.0	3.142	0.00	0.42	0.00
												Statewide Crash Rate:	0.15	
18936	0026X - 0.10	Int of E OXFORD ST EXT, WASHINGTON AV	2	4	0	0	1	1	2	50.0	3.017	0.44	0.43	1.04
												Statewide Crash Rate:	0.15	
18940	0026X - 0.15	Int of MONROE ST WASHINGTON AV	2	1	0	0	0	0	1	0.0	3.359	0.10	0.41	0.00
												Statewide Crash Rate:	0.15	
18879	0026X - 0.28	Int of WALNUT ST, WASHINGTON AV	2	5	0	0	0	0	5	0.0	3.990	0.42	0.40	1.05
												Statewide Crash Rate:	0.15	
18962	0026X - 0.49	Int of EASTERN PROMENADE WASHINGTON AV	2	5	0	0	0	1	4	20.0	3.848	0.43	0.40	1.08
												Statewide Crash Rate:	0.15	
18960	0026X - 0.27	Int of FOX ST WASHINGTON AV	2	3	0	0	0	0	3	0.0	4.109	0.24	0.39	0.00
												Statewide Crash Rate:	0.15	
18831	0560766 - 0.06	Int of SHERIDAN ST WALNUT ST	2	0	0	0	0	0	0	0.0	1.034	0.00	0.50	0.00
												Statewide Crash Rate:	0.13	

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
19459	0560766 - 0.07	0509881 POR,WALNUT ST,POPLAR STREET	2	0	0	0	0	0	0	0.0	0.761	0.00	0.53	0.00
												Statewide Crash Rate:	0.13	
18878	0560766 - 0.12	0509298 POR,WALNUT,NORTH ST.	2	1	0	0	0	0	1	0.0	1.168	0.29	0.48	0.00
												Statewide Crash Rate:	0.13	
18880	0560766 - 0.20	Int of WALNUT ST WILLIS ST	2	0	0	0	0	0	0	0.0	0.291	0.00	0.55	0.00
												Statewide Crash Rate:	0.13	
18877	0560766 - 0.30	Int of EASTERN PROMENADE WALNUT ST	2	0	0	0	0	0	0	0.0	1.061	0.00	0.49	0.00
												Statewide Crash Rate:	0.13	
A18948	0560293 - 0.28	0509368 POR,FOX,HAMMOND ST.	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.13	
18953	0560293 - 0.05	Int of FOX ST N BOYD ST	2	1	0	0	0	0	1	0.0	2.079	0.16	0.42	0.00
												Statewide Crash Rate:	0.13	
18521	0560293 - 0	Int of FOX ST FRANKLIN ST	9	25	0	0	5	3	17	32.0	10.487	0.79	1.08	0.74
												Statewide Crash Rate:	0.71	
18945	0560293 - 0.24	0509365 POR,FOX,N.GREENLEAF ST.	2	0	0	0	0	0	0	0.0	1.419	0.00	0.46	0.00
												Statewide Crash Rate:	0.13	
19466	0560293 - 0.23	Non Int FOX ST	2	0	0	0	0	0	0	0.0	1.533	0.00	0.45	0.00
												Statewide Crash Rate:	0.13	
18929	0560293 - 0.19	0509349 POR,ANDERSON,FOX ST.	2	4	0	0	0	0	4	0.0	2.759	0.48	0.39	1.23
												Statewide Crash Rate:	0.13	
P18946	0560293 - 0.29	Int of FOX ST WINTHROP ST	2	0	0	0	0	0	0	0.0	1.217	0.00	0.48	0.00
												Statewide Crash Rate:	0.13	
18952	0560293 - 0.14	Int of DIAMOND ST FOX ST	2	0	0	0	0	0	0	0.0	2.196	0.00	0.42	0.00
												Statewide Crash Rate:	0.13	
18955	0026S - 1.71	Int of ANDERSON ST WASH AV SB	2	2	0	0	0	0	2	0.0	2.201	0.30	0.34	0.00
												Statewide Crash Rate:	0.10	
Study Years:	3.00	**NODE TOTALS:**		85	1	1	10	6	67	21.2	89.551	0.32	0.35	0.91

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
63224	18919	3115972	0 - 0.04	0561238 - 0.80	0.04	2	1	0	0	0	0	1	0.0	0.00099	338.09	723.71	0.00
Int of CUMBERLAND AV FRANKLIN ST				RD INV 05 61238											Statewide Crash Rate: 208.62		
18910	18919	3129300	0 - 0.03	0561238 - 0.84	0.03	2	3	0	0	0	0	3	0.0	0.00069	1441.13	783.91	1.84
Int of CUMBERLAND AV, LOCUST ST				RD INV 05 61238											Statewide Crash Rate: 208.62		
18910	18922	3118713	0 - 0.02	0561238 - 0.87	0.02	2	0	0	0	0	0	0	0.0	0.00044	0.00	854.37	0.00
Int of CUMBERLAND AV, LOCUST ST				RD INV 05 61238											Statewide Crash Rate: 208.62		
18915	18922	3117967	0 - 0.05	0561238 - 0.89	0.05	2	1	0	0	0	0	1	0.0	0.00105	316.82	712.47	0.00
Int of CUMBERLAND AV SMITH ST				RD INV 05 61238											Statewide Crash Rate: 208.62		
18915	19463	3131702	0 - 0.04	0561238 - 0.94	0.04	2	6	0	0	0	0	4	0.0	0.00081	2455.39	756.68	3.24
Int of CUMBERLAND AV SMITH ST				RD INV 05 61238											Statewide Crash Rate: 208.62		
18912	19463	194577	0 - 0.01	0561238 - 0.98	0.01	2	0	0	0	0	0	0	0.0	0.00018	0.00	880.76	0.00
Int of CUMBERLAND AV MONTGOMERY ST				RD INV 05 61238											Statewide Crash Rate: 208.62		
18912	18937	3130202	0 - 0.02	0561238 - 0.99	0.02	2	0	0	0	0	0	0	0.0	0.00034	0.00	884.51	0.00
Int of CUMBERLAND AV MONTGOMERY ST				RD INV 05 61238											Statewide Crash Rate: 208.62		
18937	19042	3131703	0 - 0.03	0561238 - 1.01	0.03	2	2	0	1	0	0	0	100.0	0.00049	1351.75	837.97	1.61
Int of CLEEVE ST CUMBERLAND AV				RD INV 05 61238											Statewide Crash Rate: 208.62		
18873	19042	194519	0 - 0.07	0561238 - 1.04	0.07	2	2	0	0	0	0	2	0.0	0.00086	772.66	1153.26	0.00
Int of CUMBERLAND AV ROMASCO ST				RD INV 05 61238											Statewide Crash Rate: 371.08		
18830	18873	5080178	0 - 0.04	0561238 - 1.11	0.04	2	0	0	0	0	0	0	0.0	0.00063	0.00	1248.46	0.00
Int of CUMBERLAND AV SHERIDAN ST				RD INV 05 61238											Statewide Crash Rate: 371.08		
18830	18909	5080171	0 - 0.10	0561238 - 1.15	0.10	2	2	0	0	0	0	1	0.0	0.00123	541.82	1052.38	0.00
Int of CUMBERLAND AV SHERIDAN ST				RD INV 05 61238											Statewide Crash Rate: 371.08		
18936	19042	3117968	0 - 0.10	0026X - 0	0.10	2	12	0	0	1	0	11	8.3	0.00288	1388.08	550.95	2.52
Int of E OXFORD ST EXT, WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 208.62		
18936	18940	3120759	0 - 0.05	0026X - 0.10	0.05	2	5	0	0	1	0	3	25.0	0.00148	1126.21	654.40	1.72
Int of E OXFORD ST EXT, WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 208.62		
18875	18940	3106823	0 - 0.02	0026X - 0.15	0.02	2	3	0	0	0	0	2	0.0	0.00073	1362.37	774.44	1.76
Int of MARION ST, WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 208.62		
18875	18941	3131701	0 - 0.02	0026X - 0.17	0.02	2	0	0	0	0	0	0	0.0	0.00071	0.00	779.20	0.00
Int of MARION ST, WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 208.62		
18941	18960	3124003	0 - 0.08	0026X - 0.19	0.08	2	10	0	0	0	0	7	0.0	0.00266	1252.39	562.38	2.23
Int of MADISON ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 208.62		
18879	18960	3123723	0 - 0.01	0026X - 0.27	0.01	2	0	0	0	0	0	0	0.0	0.00039	0.00	869.59	0.00
Int of WALNUT ST, WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 208.62		
18879	18881	3129298	0 - 0.13	0026X - 0.28	0.13	2	6	0	0	0	1	4	20.0	0.00410	487.96	503.49	0.97
Int of WALNUT ST, WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 208.62		
18881	18962	3117966	0 - 0.08	0026X - 0.41	0.08	2	2	0	0	0	0	2	0.0	0.00251	266.07	571.25	0.00
Non Int WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 208.62		
18717	18962	3131691	0 - 0.07	0026X - 0.49	0.07	2	0	0	0	0	0	0	0.0	0.00235	0.00	581.07	0.00
Int of WASH AV SB, WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 208.62		

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
18831	18879	194449	0 - 0.06	0560766 - 0	0.06	2	1	0	0	0	0	1	0.0	0.00057	587.67	1280.19	0.00
Int of SHERIDAN ST	WALNUT ST			RD INV 05 60766											Statewide Crash Rate: 371.08		
18831	19459	194450	0 - 0.01	0560766 - 0.06	0.01	2	0	0	0	0	0	0	0.0	0.00007	0.00	1439.33	0.00
Int of SHERIDAN ST	WALNUT ST			RD INV 05 60766											Statewide Crash Rate: 371.08		
18878	19459	194530	0 - 0.05	0560766 - 0.07	0.05	2	2	0	0	0	0	1	0.0	0.00039	1730.44	1398.10	1.24
0509298 POR,WALNUT,NORTH ST.				RD INV 05 60766											Statewide Crash Rate: 371.08		
18878	18880	194527	0 - 0.08	0560766 - 0.12	0.08	2	0	0	0	0	0	0	0.0	0.00025	0.00	1518.10	0.00
0509298 POR,WALNUT,NORTH ST.				RD INV 05 60766											Statewide Crash Rate: 371.08		
18877	18880	5080188	0 - 0.10	0560766 - 0.20	0.10	2	1	0	0	0	0	0	0.0	0.00022	1509.49	1544.28	0.00
Int of EASTERN PROMENADE	WALNUT ST			RD INV 05 60766											Statewide Crash Rate: 371.08		
18521	18953	5094285	0 - 0.05	0560293 - 0	0.05	2	1	0	0	0	0	1	0.0	0.00103	325.00	1103.16	0.00
Int of FOX ST	FRANKLIN ST			RD INV 05 60293											Statewide Crash Rate: 371.08		
18952	18953	5080207	0 - 0.09	0560293 - 0.05	0.09	2	4	0	0	1	0	1	50.0	0.00181	737.04	952.54	0.00
Int of DIAMOND ST	FOX ST			RD INV 05 60293											Statewide Crash Rate: 371.08		
18929	18952	194603	0 - 0.05	0560293 - 0.14	0.05	2	2	0	0	0	0	2	0.0	0.00102	653.95	1104.89	0.00
0509349 POR,ANDERSON,FOX ST.				RD INV 05 60293											Statewide Crash Rate: 371.08		
18929	19466	194604	0 - 0.04	0560293 - 0.19	0.04	2	3	0	0	0	0	3	0.0	0.00061	1630.79	1256.24	1.30
0509349 POR,ANDERSON,FOX ST.				RD INV 05 60293											Statewide Crash Rate: 371.08		
18945	19466	194628	0 - 0.01	0560293 - 0.23	0.01	2	0	0	0	0	0	0	0.0	0.00015	0.00	1597.80	0.00
0509365 POR,FOX,N.GREENLEAF ST.				RD INV 05 60293											Statewide Crash Rate: 371.08		
18945	18948	194627	0 - 0.04	0560293 - 0.24	0.04	2	0	0	0	0	0	0	0.0	0.00050	0.00	1317.18	0.00
0509365 POR,FOX,N.GREENLEAF ST.				RD INV 05 60293											Statewide Crash Rate: 371.08		
18946	18948	194629	0 - 0.01	0560293 - 0.28	0.01	2	0	0	0	0	0	0	0.0	0.00012	0.00	1599.56	0.00
Int of FOX ST	WINTHROP ST			RD INV 05 60293											Statewide Crash Rate: 371.08		
18946	18960	5080201	0 - 0.06	0560293 - 0.29	0.06	2	3	0	0	0	1	2	33.3	0.00061	1649.05	1259.66	1.31
Int of FOX ST	WINTHROP ST			RD INV 05 60293											Statewide Crash Rate: 371.08		
18717	18955	3106780	0 - 0.10	0026S - 1.71	0.10	2	0	0	0	0	0	0	0.0	0.00162	0.00	638.95	0.00
Int of WASH AV SB, WASHINGTON AV				ST RTE 26S											Statewide Crash Rate: 208.62		
Study Years: 3.00				**Section Totals:**	1.76		72	0	1	3	2	52	8.3	0.03449	695.76	379.35	1.83
				Grand Totals:	1.76		157	1	2	13	8	119	15.3	0.03449	1517.15	505.89	3.00

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
63224	18919	3115972	0 - 0.04	0561238 - 0.80	1	0	0	0	0	1	2021-17259	07/08/2021	0.81	PD
18910	18919	3129300	0 - 0.03	0561238 - 0.84	3	0	0	0	0	3	2022-22670	08/11/2022	0.85	PD
											2022-9212	03/22/2022	0.85	PD
											2022-38905	12/24/2022	0.86	PD
18910	18922	3118713	0 - 0.02	0561238 - 0.87	0	0	0	0	0	0				
18915	18922	3117967	0 - 0.05	0561238 - 0.89	1	0	0	0	0	1	2021-24162	09/11/2021	0.91	PD
18915	19463	3131702	0 - 0.04	0561238 - 0.94	6	0	0	0	0	4	2022-29951	10/15/2022	0.95	PD
											2023-9720	03/29/2023	0.96	PD
											2023-32208	11/03/2023	0.96	PD
											2023-7153	03/04/2023	0.97	
											2022-28379	10/05/2022	0.97	
											2023-7730	03/09/2023	0.97	PD
18912	19463	194577	0 - 0.01	0561238 - 0.98	0	0	0	0	0	0				
18912	18937	3130202	0 - 0.02	0561238 - 0.99	0	0	0	0	0	0				
18937	19042	3131703	0 - 0.03	0561238 - 1.01	2	0	1	0	0	0	2021-35533	12/15/2021	1.02	
											2022-25276	08/31/2022	1.03	A
18873	19042	194519	0 - 0.07	0561238 - 1.04	2	0	0	0	0	2	2021-21224	08/13/2021	1.06	PD
											2023-7972	03/11/2023	1.06	PD
18830	18873	5080178	0 - 0.04	0561238 - 1.11	0	0	0	0	0	0				
18830	18909	5080171	0 - 0.10	0561238 - 1.15	2	0	0	0	0	1	2023-17304	06/18/2023	1.19	
											2022-23251	08/17/2022	1.20	PD
18936	19042	3117968	0 - 0.10	0026X - 0	12	0	0	1	0	11	2023-27818	09/26/2023	0.02	PD
											2022-19694	07/14/2022	0.02	PD
											2023-15628	06/02/2023	0.04	PD
											2023-5646	02/22/2023	0.04	PD
											2022-38908	12/25/2022	0.04	PD
											2022-22552	07/29/2022	0.04	PD
											2021-9622	04/17/2021	0.05	PD
											2023-25792	09/06/2023	0.06	B
											2023-5500	02/18/2023	0.06	PD
											2023-4290	02/08/2023	0.07	PD
											2023-9516	03/27/2023	0.08	PD
											2022-18001	06/28/2022	0.09	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
18936	18940	3120759	0 - 0.05	0026X - 0.10	5	0	0	1	0	3	2021-32542	11/22/2021	0.11	B
											2021-7928	03/26/2021	0.11	PD
											2021-21032	08/12/2021	0.11	PD
											2023-20164	07/17/2023	0.12	
											2021-37690	12/29/2021	0.13	PD
18875	18940	3106823	0 - 0.02	0026X - 0.15	3	0	0	0	0	2	2023-3892	02/05/2023	0.16	
											2022-26999	09/22/2022	0.16	PD
											2021-10543	04/30/2021	0.16	PD
18875	18941	3131701	0 - 0.02	0026X - 0.17	0	0	0	0	0	0				
18941	18960	3124003	0 - 0.08	0026X - 0.19	10	0	0	0	0	7	2022-19719	07/15/2022	0.20	
											2022-33553	11/16/2022	0.20	
											2023-21347	07/26/2023	0.20	PD
											2022-11146	04/15/2022	0.20	PD
											2021-7502	03/24/2021	0.20	PD
											2023-2541	01/25/2023	0.22	PD
											2021-21289	08/16/2021	0.23	PD
											2022-24776	08/31/2022	0.24	PD
											2022-16293	05/10/2022	0.24	PD
											2022-20849	07/25/2022	0.25	
18879	18960	3123723	0 - 0.01	0026X - 0.27	0	0	0	0	0	0				
18879	18881	3129298	0 - 0.13	0026X - 0.28	6	0	0	0	1	4	2022-24580	08/26/2022	0.31	PD
											2022-30661	10/24/2022	0.32	C
											2023-14630	05/23/2023	0.32	PD
											2021-24649	09/16/2021	0.39	PD
											2021-25327	09/22/2021	0.39	PD
											2022-38556	12/22/2022	0.40	
18881	18962	3117966	0 - 0.08	0026X - 0.41	2	0	0	0	0	2	2023-16468	06/12/2023	0.46	PD
											2022-7597	03/07/2022	0.48	PD
18717	18962	3131691	0 - 0.07	0026X - 0.49	0	0	0	0	0	0				
18831	18879	194449	0 - 0.06	0560766 - 0	1	0	0	0	0	1	2021-14575	06/13/2021	0.01	PD
18831	19459	194450	0 - 0.01	0560766 - 0.06	0	0	0	0	0	0				
18878	19459	194530	0 - 0.05	0560766 - 0.07	2	0	0	0	0	1	2021-30484	11/06/2021	0.10	
											2021-14568	06/12/2021	0.10	PD
18878	18880	194527	0 - 0.08	0560766 - 0.12	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
18877	18880	5080188	0 - 0.10	0560766 - 0.20	1	0	0	0	0	0	2023-21255	07/22/2023	0.29	
18521	18953	5094285	0 - 0.05	0560293 - 0	1	0	0	0	0	1	2023-28576	10/02/2023	0.04	PD
18952	18953	5080207	0 - 0.09	0560293 - 0.05	4	0	0	1	0	1	2021-879	01/09/2021	0.07	
											2022-21575	07/31/2022	0.07	
											2023-19343	07/08/2023	0.09	PD
											2023-20452	06/30/2023	0.12	B
18929	18952	194603	0 - 0.05	0560293 - 0.14	2	0	0	0	0	2	2022-20692	07/22/2022	0.18	PD
											2021-17133	07/07/2021	0.18	PD
18929	19466	194604	0 - 0.04	0560293 - 0.19	3	0	0	0	0	3	2021-28754	10/25/2021	0.21	PD
											2021-16867	07/05/2021	0.21	PD
											2023-11848	04/19/2023	0.22	PD
18945	19466	194628	0 - 0.01	0560293 - 0.23	0	0	0	0	0	0				
18945	18948	194627	0 - 0.04	0560293 - 0.24	0	0	0	0	0	0				
18946	18948	194629	0 - 0.01	0560293 - 0.28	0	0	0	0	0	0				
18946	18960	5080201	0 - 0.06	0560293 - 0.29	3	0	0	0	1	2	2022-30165	10/20/2022	0.33	C
											2023-18818	07/03/2023	0.34	PD
											2023-9364	03/24/2023	0.34	PD
18717	18955	3106780	0 - 0.10	0026S - 1.71	0	0	0	0	0	0				
				Totals:	72	0	1	3	2	52				

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	1	0	1	0	1	2	0	0	0	1	1	1	1	2	0	1	0	0	13
MONDAY	0	0	0	1	0	0	0	1	0	1	0	1	1	1	2	0	0	3	1	3	1	1	1	1	0	19
TUESDAY	0	0	0	0	0	0	0	2	1	1	1	1	1	2	1	1	2	1	0	0	0	0	1	0	0	15
WEDNESDAY	0	0	0	0	0	1	1	1	2	1	0	1	5	2	1	1	2	2	4	2	0	2	0	0	0	28
THURSDAY	0	0	0	0	0	1	0	1	0	0	2	1	1	2	0	4	2	4	0	2	2	1	2	0	0	25
FRIDAY	0	0	0	0	0	1	0	2	3	1	3	2	3	1	1	3	3	2	1	1	1	2	2	2	0	34
SATURDAY	2	2	0	0	0	1	0	0	0	0	1	1	3	2	2	0	3	2	1	1	1	0	0	1	0	23
Totals	3	2	0	1	0	4	1	8	6	5	7	8	16	10	7	9	13	15	8	10	7	6	7	4	0	**157**

Vehicle Counts by Type

Unit Type	Total
1-Passenger Car	144
2-(Sport) Utility Vehicle	92
3-Passenger Van	5
4-Cargo Van (10K lbs or Less)	6
5-Pickup	32
6-Motor Home	0
7-School Bus	0
8-Transit Bus	1
9-Motor Coach	0
10-Other Bus	1
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)	3
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	1

Unit Type	Total
23-Bicyclist	2
24-Witness	20
25-Other	17
26-Construction	0
27-Farm Vehicle	0
28-Horse and Buggy	0
Total	**337**

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	20	89	5	0	0	0	114
Ran Off Roadway	6	0	0	0	0	0	6
Failed to Yield Right-of-Way	29	5	0	0	0	0	34
Ran Red Light	5	0	0	0	0	0	5
Ran Stop Sign	0	1	0	0	0	0	1
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	0	0	0	0	0	0	0
Drove Too Fast For Conditions	2	0	0	0	0	0	2
Improper Turn	9	0	0	0	0	0	9
Improper Backing	5	1	0	0	0	0	6
Improper Passing	3	0	0	0	0	0	3
Wrong Way	0	0	0	0	0	0	0
Followed Too Closely	20	2	0	0	0	0	22
Failed to Keep in Proper Lane	10	3	0	0	0	0	13
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	4	0	0	0	0	0	4
Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway	3	0	0	0	0	0	3
Over-Correcting/Over-Steering	1	0	0	0	0	0	1
Other Contributing Action	10	4	0	0	0	0	14
Unknown	1	2	0	0	0	0	3
Total	**130**	**107**	**5**	**0**	**0**	**0**	**242**

Crashes by Apparent Physical Condition And Driver

Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	118	107	5	0	0	2	232
Physically Impaired	1	0	0	0	0	0	1
Emotional(Depressed, Angry, Disturbed, etc.)	0	0	0	0	0	0	0
Ill (Sick)	0	0	0	0	0	0	0
Asleep or Fatigued	1	0	0	0	0	0	1
Under the Influence of Medications/Drugs/Alcohol	7	0	0	0	0	1	8
Other	1	0	0	0	0	0	1
Total	**128**	**107**	**5**	**0**	**0**	**3**	**243**

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	9	0	0	0	0	9
20-24	34	0	0	0	0	34
25-29	45	0	0	0	0	45
30-39	66	0	0	0	0	66
40-49	42	0	0	0	0	42
50-59	26	0	0	0	0	26
60-69	24	0	0	0	0	24
70-79	15	0	0	0	0	15
80-Over	1	0	0	0	0	1
Unknown	52	2	0	1	0	55
Total	**314**	**2**	**0**	**1**	**0**	**317**

Crash Summary II - Characteristics

Most Harmful Event

Most Harmful Event	Total	Most Harmful Event	Total
1-Overturn / Rollover	3	38-Other Fixed Object (wall, building, tunnel, etc.)	1
2-Fire / Explosion	0	39-Unknown	0
3-Immersion	0	40-Gate or Cable	1
4-Jackknife	0	41-Pressure Ridge	0
5-Cargo / Equipment Loss Or Shift	0	**Total**	**296**
6-Fell / Jumped from Motor Vehicle	0		
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	242		
14-Parked Motor Vehicle	44		
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	0		
16-Work Zone / Maintenance Equipment	0		
17-Other Non-Fixed Object	0		
18-Impact Attenuator / Crash Cushion	0		
19-Bridge Overhead Structure	0		
20-Bridge Pier or Support	0		
21-Bridge Rail	0		
22-Cable Barrier	0		
23-Culvert	0		
24-Curb	0		
25-Ditch	0		
26-Embankment	0		
27-Guardrail Face	0		
28-Guardrail End	0		
29-Concrete Traffic Barrier	0		
30-Other Traffic Barrier	0		
31-Tree (Standing)	1		
32-Utility Pole / Light Support	0		
33-Traffic Sign Support	2		
34-Traffic Signal Support	0		
35-Fence	0		
36-Mailbox	0		
37-Other Post, Pole, or Support	1		

Injury Data

Severity Code	Injury Crashes	Number Of Injuries
K	1	1
A	2	2
B	13	14
C	8	12
PD	119	0
Total	**143**	**29**

Road Character

Road Grade	Total
1-Level	127
2-On Grade	24
3-Top of Hill	5
4-Bottom of Hill	1
5-Other	0
Total	**157**

Traffic Control Devices

Traffic Control Device	Total
1-Traffic Signals (Stop & Go)	47
2-Traffic Signals (Flashing)	10
3-Advisory/Warning Sign	0
4-Stop Signs - All Approaches	7
5-Stop Signs - Other	16
6-Yield Sign	1
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	2
13-None	73
14-Other	0
Total	**157**

Light

Light Condition	Total
1-Daylight	103
2-Dawn	0
3-Dusk	3
4-Dark - Lighted	42
5-Dark - Not Lighted	2
6-Dark - Unknown Lighting	2
7-Unknown	5
Total	**157**

Crash Summary II - Characteristics

Crashes by Year and Month

Month	2021	2022	2023	Total
JANUARY	2	3	2	7
FEBRUARY	1	3	4	8
MARCH	3	3	8	14
APRIL	5	3	4	12
MAY	4	3	4	11
JUNE	5	3	5	13
JULY	6	6	7	19
AUGUST	3	8	4	15
SEPTEMBER	5	2	4	11
OCTOBER	6	11	5	22
NOVEMBER	7	1	5	13
DECEMBER	5	4	3	12
Total	**52**	**50**	**55**	**157**

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	55	0	10	21	0	8	0	0	0	0	0	0	0	0	94
Head-on - Sideswipe	1	0	1	1	0	0	0	0	0	0	0	0	0	0	3
Intersection Movement	0	0	11	34	0	5	0	0	0	0	0	0	0	0	50
Pedestrians	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	1	0	5	0	0	0	0	0	0	0	0	0	0	0	6
All Other Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	0	0	0	1	0	1	0	0	0	0	0	0	0	0	2
Other	1	0	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	**58**	**0**	**27**	**58**	**0**	**14**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**157**

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	31	0	0	0	0	0	0	0	0	0	2	33
Dark - Not Lighted	1	0	0	0	0	0	0	0	0	0	1	2
Dark - Unknown Lighting	2	0	0	0	0	0	0	0	0	0	0	2
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	67	0	0	0	0	0	0	0	0	0	1	68
Dusk	2	0	0	0	0	0	0	0	0	0	0	2
Unknown	2	0	0	0	0	0	0	0	0	0	0	2
Cloudy												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	2	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	14	0	0	0	0	0	0	0	0	0	6	20
Dusk	1	0	0	0	0	0	0	0	0	0	0	1
Unknown	2	0	0	0	0	0	0	0	0	0	0	2

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	1	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	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
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	5	5
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	13	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	1	1
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	1	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
TOTAL	**123**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**32**	**157**

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

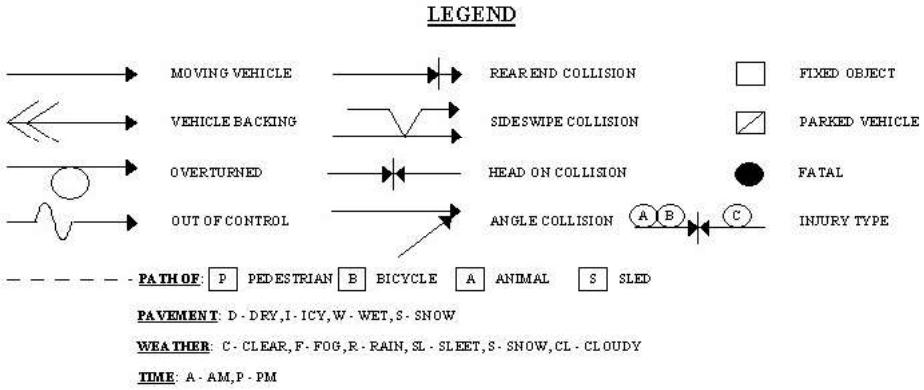
LOW NODE: **18936** HIGH NODE: **19042** REGION: **1** U/R: **URBAN**

DESCRIPTION: **Washington Ave from Oxford St to Cumberland Ave**

RTE # / RD #: **0026X** DATE DRAWN: **7/31/2024** DRAWN BY: **BOB K**

STUDY FROM: **1/10/2021** STUDY TO: **12/31/2023**

CRASH RATE: **1388.08** CRF: **2.51** % INJURY: **8.3** TOTAL CRASHES: **12**



Prepared by Office of Safety & Mobility

RFK3 7-31-24

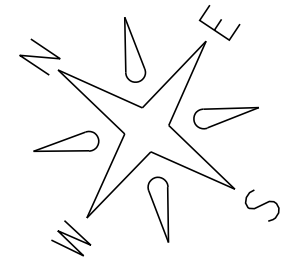
Portland

Link: 18936-19042

Element: 3117968

Study Period: 2021-2023

of Crashes: 12 / CRF: 2.51



18936

#55

#51

Maine Mead Works

#27

7-Eleven

19042

delivery truck opened door hit vehicle passing by

18001 6-28-22 1:48P D/C Other

bike lock posts

22552 7-29-22 10:22P D/C Improper turn

plow truck exiting

5546 2-22-23 6:25A D/C Fail to yield

15628 6-2-23 5:07P D/CL Hit and run

5500 2-18-23 2:00P D/C Unknown

9516 3-27-23 5:20P D/C Unknown

P

38908 12-25-22 7:52P D/C Follow too close

Washington Ave.

Rt 26

B

C

25792 9-6-23 5:29A D/C Fail to keep in lane

9622 4-17-21 1:45P

W/R Improper turn

19694 7-14-22 12:55P D/C

Served to Avoid

garbage truck stopped picking up trash

4290 2-8-23 9:32P D/C Driver inattention

27818 9-26-23 7:25A D/C Unknown

Silly's Restaurant

APPENDIX C

- **PURCHASE & SALE AGREEMENT**

PURCHASE AND SALE AGREEMENT

165 WASHINGTON AVENUE, PORTLAND, MAINE

THIS PURCHASE AND SALE AGREEMENT ("Contract" or "Agreement"), made and entered into as of this ~~31st day of May~~ 1st day of June, 2023 (the "Effective Date"), is by and between **RAYMOND H. WATERHOUSE and ALINA WATERHOUSE,** individuals having an address at 105 Partridge Circle, Portland, Maine 04102 (hereinafter collectively referred to as "Seller"), and **REDFERN PROPERTIES LLC,** a Maine limited liability company having an address at P.O. Box 8816, Portland, Maine 04104, or its assigns (hereinafter referred to as "Buyer").

W I T N E S S E T H

WHEREAS, Seller is the record owner of fee simple title to certain real property situated in Portland, Cumberland County, Maine known as 165 Washington Avenue, Portland, Maine, together with certain improvements constructed thereon including a commercial building, and related amenities, facilities, improvements, and appurtenances thereto; and

WHEREAS, the Seller wishes to sell and convey said real property and improvements to Buyer and Buyer wishes to purchase the same from Seller.

NOW THEREFORE, for and in consideration of the foregoing, the sums of money to be paid hereunder, the mutual covenants herein contained, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto covenant, stipulate and agree as follows:

1. Description of Property to be Conveyed. The property which is to be sold and conveyed by Seller and purchased and accepted by Buyer pursuant to this Contract shall consist of the following:

(a) That certain parcel of land lying and being in Portland, Maine, being the property comprised of a 1.53 +/- acre lot identified by the Portland Assessor as Map 10, Block D, Lot 1 and Map 12, Block F, Lot 2, and described in that certain deed to Seller dated September 14, 2007, and recorded in the Cumberland County Registry of Deeds at Book 25470, Page 272, but excepting premises conveyed to Redfern Munjoy, LLC, by deed recorded in Book 31302, Page 177 of said Registry, and being more particularly described in Exhibit A attached hereto and made a part hereof, including all, rights, privileges, easements, hereditaments and appurtenances thereto, and all right, title and interest of Seller in and to the land lying in the bed of any public street, road or avenue in front of or adjoining said property (hereinafter collectively referred to as the "Land");

(b) All buildings, structures, facilities, fixtures, installations and improvements of every kind and description located in, on, over and under the Land, together with the appurtenances thereto including, without limitation, paved parking areas and various drainage and utility structures and improvements (collectively, the "Improvements"); and

(c) All of Seller's right, title and interest, if any, in and to the following (to the extent assignable and to the extent in the Seller's possession or control) and without warranty or representation: (i) all assignable warranties or guaranties given or made in respect of the Improvements; and (ii) all transferable consents, authorizations, variances or waivers, licenses, permits and approvals from any governmental or quasi-governmental agency, department, board, commission, bureau or other entity or instrumentality solely in respect of the Land or the Improvements (collectively, the "Personal Property").

The Land and Improvements are sometimes referred to herein collectively as the "Real Property." The Real Property and the Personal Property are referred to herein collectively as the "Subject Property".

2. Agreement to Sell and Purchase. Seller hereby agrees to sell and convey the Subject Property to Buyer, upon the terms and subject to the conditions set forth in this Contract. Buyer hereby agrees to purchase and accept the Subject Property from Seller, upon the terms and subject to the conditions set forth in this Contract.

3. Earnest Money Deposit. Within three (3) business days after the Effective Date, Buyer shall deposit the sum of [redacted] as the earnest money deposit (which amount shall hereinafter be referred to as the "Initial Earnest Money Deposit") hereunder with The Boulos Company, whose address is One Canal Plaza, Suite 500, Portland, Maine 04101 (hereinafter referred to as the "Escrow Agent"). So much of the Initial Earnest Money Deposit and the Additional Earnest Money Deposit (as hereinafter defined) as may have from time to time been deposited with Escrow Agent hereunder, and any interest earned thereon, are collectively referred to as the "Deposit". Upon Buyer's written request, and subject to the receipt by Escrow Agent of a completed and executed IRS Form W-9 and any other forms or information reasonably requested by the Escrow Agent, the Deposit will be placed in an interest-bearing account. Any interest accrued or accruing on the Deposit shall be and become part of the Deposit. Escrow Agent shall not be responsible for the amount of interest earned on, or charges on, the Deposit. By its counter-execution of this Agreement, Escrow Agent hereby agrees to hold the Deposit in escrow, subject to disbursement in accordance with the terms and provisions of this Contract. In the event Buyer does not elect to timely terminate this Contract pursuant to the express terms herein, the Deposit shall become non-refundable and shall not be returnable to the Buyer under any circumstances except in the event Seller is not able to provide title to the Subject Property as provided in this Contract, or otherwise defaults hereunder, but such Deposit shall, however, be credited to and considered as payment of part of the total Purchase Price (as defined below) at the time of closing hereunder.

Escrow Agent, may, at its option, require the receipt, release and authorization in writing of all parties before releasing the Deposit or delivering or redelivering documents or property to any party or to third parties. In the event a controversy arises over the Deposit, Escrow Agent, at its sole discretion, may tender the funds into court for settlement, after deducting its attorney's fees, court costs, and escrow fees, if any, which have accrued, including any attorney's fees and court costs relating to the tender into court. Seller and Buyer indemnify and hold harmless Escrow Agent and its agents and representatives from all loss or damage they

may sustain in connection with Escrow Agent's performance of these instructions and do hereby jointly and severally release and waive any claims they may have against Escrow Agent, other than any claims a party may have due to the gross negligence, malfeasance or misconduct of Escrow Agent in the performance of its duties hereunder.

4. Purchase Price and Method of Payment. Subject to credits, adjustments and prorations for which provisions are hereinafter expressly made, the total purchase price to be paid by Buyer to Seller for the Subject Property (the "Purchase Price") shall be [redacted] The Purchase Price shall be paid by Buyer to Seller in the manner and at the times as follows:

(i) The Deposit, to the extent paid by Buyer to Escrow Agent hereunder, shall be credited to Seller and considered as payment of part of the Purchase Price for the Subject Property at the time and upon consummation of the closing of the sale and purchase transaction contemplated in this Contract.

(ii) The balance of the Purchase Price shall be paid to Seller by Buyer by wire transfer or other immediately available funds acceptable to Seller, at the time of closing hereunder, subject to credits, adjustments and prorations as expressly provided herein.

5. Title and Survey.

(a) Title Commitment. Buyer shall obtain from a nationally recognized title company (sometimes referred to herein as the "Title Company") a commitment for owner's title insurance for the Real Property (the "Title Commitment"). Within five (5) days after the Effective Date, Seller shall deliver to Buyer copies of surveys of the Land that Seller may have in its possession or control (collectively, the "Existing Survey"). Buyer may order an update of the Existing Survey, or if no Existing Survey exists, a new survey of the Land; provided, however, Buyer must notify Seller of any material objections to the update of the Existing Survey or the new survey prior to the expiration of the Due Diligence Termination Date (as defined below), otherwise Buyer shall be deemed to have waived any right to object to same and any such inconsistencies shall constitute Permitted Exceptions (as defined below).

(b) Buyer's Review of Title Matters. Buyer shall have until the Due Diligence Termination Date to notify Seller in writing of any objection which Buyer may have to any matters reported or shown in the Title Commitment or the exception documents ("Buyer's Objection Letter"). Any matters reported in or shown by the Title Commitment and not timely objected to by Buyer as provided above shall be deemed to be "Permitted Exceptions". On or before the fifth (5th) business day following receipt of Buyer's Objection Letter, Seller shall elect, by delivering written notice of such election to Buyer and Escrow Agent ("Seller's Response") whether or not to cause the Title Company to remove any matters objected to in Buyer's Objection Letter. If Seller fails to deliver Seller's Response within the time frame set forth above, it shall be deemed to be an election by Seller not to cause Title Company to so remove such objections. Notwithstanding the foregoing, Seller shall be obligated to cure and remove without need for a Buyer's Objection Letter all of the following

title exceptions or encumbrances, if any: (i) the liens of any mortgage; (ii) tax liens for delinquent ad valorem real estate taxes; (iii) mechanics liens, judgment liens or other monetary liens; and (iv) broker's liens ("Seller's Mandatory Cure Items"). Seller shall have until Closing to cure and remove any Seller Mandatory Cure Items. If either (a) Seller elects to cause the Title Company to so remove and, at least one (1) day prior to the Closing (the "Cure Deadline"), Seller is unable to remove any exceptions or matters objected to by Buyer; or (b) Seller elects not to cause Title Company to so remove, then Buyer must elect, by delivering written notice of such election to Seller and Escrow Agent on or before (i) the fifth (5^{th}) business day following Buyer's receipt of Seller's Response, or (ii) if no Seller's Response is received by Buyer, the fifth (5^{th}) business day following the date on which Seller shall have been deemed to have responded, as provided above, or (iii) in the event Seller elects to cause the Title Company to so remove and, prior to the Cure Deadline, Seller is unable to remove any exceptions or matters objected to by Buyer, on or before the Cure Deadline, to: (A) terminate this Agreement (in which case Escrow Agent shall return the Deposit to Buyer, and neither party shall thereafter have any rights or obligations to the others hereunder, other than pursuant to any provision hereof which expressly survives the termination of this Agreement); or (B) proceed to a timely Closing without liability to Seller whereupon such objected to exceptions or matters shall be deemed to be Permitted Exceptions. Seller shall be responsible for removing any exceptions or deficiencies to title which first arise between the date upon which Permitted Exceptions are established ("Permitted Exception Date") and Closing unless created by or with the consent of Buyer.

6. Buyer's Due Diligence.

(a) Seller Deliverables. Seller shall deliver to Buyer within five (5) days of the Effective Date the following, if any (the "Property Documents"): Seller's existing survey(s) and/or title reports with respect to the Subject Property; copies of service contracts or management agreements, any environmental reports (including Phase I or Phase II reports) in Seller's possession or control; floor plans and building specifications, insurance information (including a current certificate of insurance regarding property, casualty and general liability insurance for the Subject Property) and property tax statements for the previous two (2) years; copies of certificate(s) of occupancy and any property condition reports.

Buyer agrees to return the foregoing and all such other documents to Seller, without retaining copies, in the event the closing hereunder does not occur.

(b) Inspection Rights. At all reasonable times from and after the Effective Date, Buyer, its agents and representatives shall be entitled at Buyer's sole cost and expense to make investigations with respect to the compliance of the Real Property and the Improvements with all applicable laws, ordinances, rules and regulations; to review any documents or information Buyer has or may receive with respect to the Subject Property; to review any contracts and agreements affecting the Subject Property; to enter onto the Real Property during normal business hours to conduct such inspections and investigations of the condition of the Property as Buyer deems relevant with respect to the operating systems, structural components, and site conditions of the Real Property and Improvements, and perform Phase I and if necessary, Phase II environmental studies, which may include without limitation drilling and borings and the taking of soil samples. Buyer shall at its own expense restore the Real Property

to as close as reasonably possible to its present condition. All such inspections shall be done by qualified inspectors chosen and paid for by Buyer. Seller agrees to reasonably cooperate with Buyer in connection with Buyer's investigations, and shall grant Buyer access to the Real Property at reasonable times upon reasonable prior notice. Buyer shall indemnify, protect, defend and hold harmless Seller from all claims (including, without limitation, any claim for a mechanic's lien or materialman's lien), causes of action, costs, losses, damages and reasonable attorney's fees incurred by Seller in connection with or arising out of any inspections or investigations carried on, by or on behalf of Buyer pursuant to this Section. The foregoing indemnity shall not apply to any claims (including, without limitation, claims that the Real Property has declined in value) or liabilities to the extent the same arise out of or are incurred in connection with (i) the negligence or willful misconduct of the Seller or their agents, consultants or contractors; (ii) the discovery by Buyer or its agents, consultants or contractors of any or pre-existing conditions on the Real Property; (iii) the release (other than by Buyer, its agents, consultants, employees, contractors or representatives) or discovery by Buyer or presence of any pollutants, hazardous waste, hazardous substance or material located on or about the Real Property, except to the extent that Buyer or its agents, consultants, employees, contractors or representatives have exacerbated such condition; (iv) the results, findings, tests or analyses of Buyer's environmental or other physical investigation of the Real Property; or (v) any disclosure or notification made or given by Buyer or any its agents, consultants or contractors to any governmental agency or other party that is required by law based upon the results, findings, tests or analyses of Buyer's environmental or other physical investigation of the Real Property. The provisions of this Section shall survive the Closing or the earlier termination of this Agreement.

(c) Buyer's Termination Right. Buyer shall have the right at any time on or before ninety (90) days after the Effective Date (the "Due Diligence Termination Date") to terminate this Contract if Buyer determines for any reason that the Property Documents or all or any portion of the Subject Property is not acceptable to Buyer in its sole and absolute discretion. Notwithstanding the foregoing, if Buyer's environmental consultant determines that a Phase II report is warranted, the Due Diligence Termination Date shall be extended for up to an additional period of ninety (90) days provided Buyer gives Seller written notice of its intent to so extend prior to the initial Due Diligence Termination Date, and provided Buyer confirms that it has waived all other due diligence conditions, including title review (subject to any Buyer's Objection Letter that may have been sent). If Buyer exercises its right to extend the Due Diligence Termination Date, said extension shall last until the earlier of (i) five (5) business days after Buyer has received the final results of its Phase II testing; and (ii) ninety (90) days after the original Due Diligence Termination Date. If Buyer delivers a written notice to Seller and Escrow Agent exercising its termination right hereunder ("Buyer's Termination Notice") on or before the Due Diligence Termination Date (as it may be extended), then (a) Escrow Agent shall return the Deposit to Buyer; (b) this Contract shall automatically terminate and be of no further force or effect and neither party shall have any further rights or obligations hereunder, other than pursuant to any provision hereof which expressly survive the termination of this Contract; and (c) Buyer shall, upon Seller's request, deliver to Seller copies of all surveys, environmental and other reports undertaken by Buyer with respect to the Subject Property without any representation or warranty of any kind or nature whatsoever, express or implied, about the accuracy, reliability or usefulness of any information contained therein. If Buyer fails to deliver to Seller and Escrow Agent Buyer's Termination Notice on or before the Due Diligence Termination Date, Buyer shall be deemed to have waived its right to terminate this Contract

pursuant to this Section, and [redacted] of the Deposit shall become non-refundable to Buyer (but applicable to the Purchase Price), except in the event of Seller default or inability or refusal to convey title as provided in this Contract.

7. Approval Contingency. This Contract is contingent upon Buyer obtaining all permits and approvals from the City of Portland (the "City") for its proposed use and occupancy of the Subject Property acceptable to Buyer in its sole and absolute discretion (the "Approvals"). An Approval shall not be deemed to have been "obtained" until it has become final and non-appealable, and any periods for challenge to the same (or any conditions to its final effectiveness) shall have expired. Buyer shall use its best efforts to obtain the Approvals as expeditiously as reasonably possible. Seller shall reasonably cooperate with Buyer in connection with Buyer obtaining the Approvals and agrees to execute and deliver all documents reasonably requested by Buyer, at no cost or liability to Seller. Buyer shall have sixty (60) days from the expiration of the Due Diligence Termination Date (the "Approval Date") to obtain the Approvals. If Buyer has not received its Approvals by the Approval Date, then Buyer shall have the right to extend the Approval Date for up to six (6) additional sixty (60) day periods (each, an "Approval Extension Period"), by giving notice to Seller on or before the Approval Date, as it may be extended, on the follow terms and conditions:

(i) If Buyer exercises the first Approval Extension Period, an additional [redacted] of the Deposit (for a total of [redacted]) shall become non-refundable to Buyer (but applicable to the Purchase Price), except in the event of Seller default or inability or refusal to convey title as provided in this Contract;

(ii) If Buyer exercises the second Approval Extension Period, an additional [redacted] Dollars of the Deposit (for a total of [redacted]) shall become non-refundable to Buyer (but applicable to the Purchase Price), except in the event of Seller default or inability or refusal to convey title as provided in this Contract;

(iii) If Buyer exercises the third Approval Extension Period, an additional [redacted] Dollars of the Deposit (for a total of [redacted]) shall become non-refundable to Buyer (but applicable to the Purchase Price), except in the event of Seller default or inability or refusal to convey title as provided in this Contract;

(iv) If Buyer exercises the fourth Approval Extension Period, an additional [redacted] Dollars of the Deposit (for a total of [redacted] shall become non-refundable to Buyer (but applicable to the Purchase Price), except in the event of Seller default or inability or refusal to convey title as provided in this Contract;

(v) If Buyer exercises the fifth Approval Extension Period, Buyer shall deposit with the Escrow Agent an additional [redacted] Dollar deposit (the "Additional Earnest Money Deposit"), and the Deposit (for a total of [redacted]) shall become non-refundable to Buyer (but applicable to the Purchase

Price), except in the event of Seller default or inability or refusal to convey title as provided in this Contract;

(vi) If Buyer exercises the sixth Approval Extension Period, Buyer shall deposit with the Escrow Agent an additional [redacted] Dollar Additional Earnest Money Deposit, and the Deposit (for a total of [redacted] shall become non-refundable to Buyer (but applicable to the Purchase Price), except in the event of Seller default or inability or refusal to convey title as provided in this Contract.

Such portion of the Deposit that is non-refundable as set forth in Section 6(c) above [redacted] and in subparagraphs 7(i) through (vi) above is hereinafter referred to as the "Non-refundable Deposit". At Seller's request, which may be made at any time and from time to time, Escrow Agent shall release the Non-refundable Deposit available as of the date of Seller's request(s) to Seller to, among other things, pay carrying costs of the Real Property, such as taxes, insurance, utilities etc., provided that Seller at the time they first request a release of the Non-refundable Deposit delivers to Buyer a comfort letter or account statement from a financial institution or investment management firm reflecting that Seller maintains accounts with such financial institution or investment management firm in an amount sufficient to fund Seller's obligation to return to Buyer the Non-refundable Deposit (or so much as has been released to Seller from time to time) pursuant to the terms of this Contract. Buyer hereby authorizes Escrow Agent to release the Non-refundable Deposit to Seller from time to time provided such comfort letter or account statement has been received by Buyer.

The Additional Earnest Money Deposit shall be considered part of the Deposit for all purposes of this Contract. If Buyer does not receive the Approvals on or prior to the Approval Date, as it may be extended, or if Buyer at any time prior to the Approval Date, as it may be extended, determines in its sole and absolute discretion that the Approvals will not be suitable or satisfactory for Buyer's proposed use and occupancy of the Subject Property, then Buyer may terminate this Contract by delivering written notice to Seller and Escrow Agent ("Buyer's Approval Termination Notice") exercising its termination right hereunder on or before the Approval Date, as it may be extended, whereupon (a) Escrow Agent shall return so much of the Deposit that is refundable at that time, if any, to Buyer; (b) release so much of the Deposit that is non-refundable at that time, if any, to Seller; and (c) this Contract shall automatically terminate and be of no further force or effect and neither party shall have any further rights or obligations hereunder, other than pursuant to any provision hereof which expressly survive the termination of this Contract. If Buyer fails to deliver to Seller and Escrow Agent Buyer's Approval Termination Notice on or before the Approval Date, as it may be extended, Buyer shall be deemed to have waived its right to terminate this Contract pursuant to this Section.

8. Conveyance of Subject Property and Personal Property; Delivery Free of Tenants and Occupants. At the time of Closing hereunder, Seller shall convey its fee simple interest and estate in and title to the Subject Property by Quitclaim with Covenant Deed, free and clear of any and all liens, security interests, exceptions or encumbrances arising by or though Seller, other than Permitted Exceptions. Seller shall pay for personal property taxes through the Closing Date (as hereinafter defined). Seller agrees to terminate the tenancy and/or occupancy of the any current tenants or occupants of the Subject Property, and to deliver the Subject Property free and

clear of all personal property, inventory, equipment, free-standing shelving, tenants and occupants. If Seller is unable to provide the Subject Property to Buyer free and clear of personal property, inventory, equipment, free-standing shelving, tenants and occupants, by the Closing Date then Seller shall be deemed in default of this Contract and Buyer shall have the right to terminate this Contract whereupon notwithstanding anything in this Contract to the contrary (a) Escrow Agent shall return the entire Deposit to Buyer; and (b) this Contract shall automatically terminate and be of no further force or effect and neither party shall have any further rights or obligations hereunder, other than pursuant to any provision hereof which expressly survive the termination of this Contract.

9. Closing. The sale and purchase transaction contemplated in this Contract shall be closed, and the Purchase Price paid, on the date that is forty-five (45_days after the Approval Date (as it may be extended) (the "Closing Date"). Purchaser shall notify Seller in writing when all Approvals have been obtained. The following documents and items shall be delivered by Seller and Purchaser at Closing, as applicable:

(a) A Quitclaim Deed with Covenant from Seller in form reasonably acceptable to Seller and Buyer, together with applicable conveyance tax forms.

(b) An Owner's Affidavit executed by Seller in the form provided by the Title Company, provided such requested Affidavit does not expand the liability or representations of Seller hereunder beyond the terms of this Contract.

(c) An Affidavit stating that Seller is a Maine resident, or in the alternative, a Certificate of Exemption, Certificate of Reduction or REW-1 filing form.

(d) An Affidavit of Seller stating that Seller is not a "foreign person" as defined in Section 1445(B)(2) of the Internal Revenue Code of 1986, as amended.

(e) All transferable licenses, permits, certificates, approvals, authorizations, variances and consents held by Seller and issued by governmental and quasi-governmental bodies, officers and authorities in respect to the ownership, occupancy, use and operation of the Subject Property in the possession or control of Seller.

(f) Reserved.

(g) Keys.

(h) Appropriate evidence of authorization reasonably satisfactory to the Title Company regarding the consummation of the transaction contemplated by this Contract.

Seller shall pay the following closing costs (a) any and all costs incurred by Seller in performing its obligations under this Contract, and (b) the cost of recording the discharge of any existing mortgage on the Subject Property and any other documents required to be recorded or filed in order to transfer title as provided herein. Buyer shall pay the following closing costs (a) title search and examination charges, and the premium for the Commitment and Lender's and/or Owner's Title Insurance Policy, if any, to be issued pursuant thereto; (b) the cost of the update to the Survey or a new survey, if any; (c) the cost of the brokerage commission payable to The

Boulos Company, (d) the cost of any inspections or investigations of the Subject Property, (e) the cost of recording the Deed and any mortgages or other recorded documents relating to its purchase of the Subject Property, and (f) all costs associated with Buyer's financing of its acquisition, if applicable, it being understood and agreed that obtaining financing is not a condition to Purchaser's obligations hereunder. Seller and Buyer will each pay one-half of the transfer tax payable with respect to the Purchase Price. Each of the respective parties shall bear its own attorneys' fees.

10. Possession and Risk of Loss. Without limiting the provisions of Section 8 of this Contract, possession of the Subject Property shall be delivered by Seller to Buyer at the time of closing hereunder, free and clear of all tenants and occupants. Risk of Loss shall be on Seller until transfer of Property.

11. Prorations. Prorations shall be made as of the Closing Date as if Buyer were in title for the entire Closing Date. The following shall be prorated and adjusted between Seller and Buyer:

(a) Utilities and Operating Expenses. Water, electricity, sewer, gas, telephone and other utility charges based, to the extent practicable, on final meter readings and final invoices.

(b) Assessments. All assessments, general or special, assessed as of the date hereof shall be prorated as of the Closing Date, with Seller being responsible for any installments of assessments that are due and payable prior to the Closing Date and Buyer being responsible for any installments of assessments that are due and payable on or after the Closing Date. All such assessments assessed after the date hereof shall be the sole responsibility of Buyer.

(c) Taxes. All ad valorem real estate and personal property taxes with respect to the Real Property and the Improvements shall be prorated as of the Closing Date, based on the most currently available final tax bill and on a cash basis for the tax year in which the Closing occurs, regardless of the year for which such taxes are assessed.

(d) Other. Such other items as are customarily prorated in transactions of this nature in the county in which the Project is located shall be ratably prorated.

12. Representations, Warranties and Covenants of Seller.

12.1 Seller hereby makes the following representations and warranties to Buyer:

(a) Seller's execution and delivery and performance of this Contract by the undersigned and the performance of its obligations hereunder, including the closing of the sale and purchase transaction contemplated herein on the terms set forth herein, have been duly authorized and directed by Seller and no further consents or approvals are or shall be required as a condition precedent to the consummation and closing of the sale and purchase transaction contemplated herein except as expressly set forth in this

Contract. Seller has taken all necessary action to authorize the execution, delivery and performance of this Contract and upon the execution and delivery of any document to be delivered by Seller on or prior to the Closing, this Contract and such document shall constitute the valid and binding obligation and agreement of Seller, enforceable against Seller in accordance with its terms.

(b) The performance by the Seller of the terms, covenants and conditions contained herein will not conflict with, constitute an event of default under, any agreement or other instrument to which Seller is a party or by which its properties or assets are bound.

(c) Seller is not a party to any leases, agreements, contracts or licenses affecting the Real Property or any use of the Real Property that would not be terminable at will by Buyer without penalty from and after the Closing.

(d) Seller has not received any written notice from any governmental authority that the Real Property, or the present condition, operation or use thereof, violates any applicable laws, rules, regulations, restrictions, covenants, agreements, site plan approvals, zoning or subdivision regulations or any duly issued variances and Seller has no other actual knowledge of any such violation(s).

(e) Seller has received no written notice that there is any pending judicial, municipal or administrative proceedings affecting the Real Property or in which Seller is a party by reason of Seller's ownership of the Real Property or any portion thereof, including, without limitation, proceedings for or involving collections, condemnations, eminent domain, alleged building code, zoning or environmental violations, or personal injuries or property damage alleged to have occurred on the Real Property or by reason of the condition or use of the Real Property and Seller has no other actual knowledge of any such proceedings.

(f) Seller represents that, after the execution of this Contract and until such time as Closing occurs or the Contract expires without performance, it shall not enter into any leases, encumbrances or other arrangements pertaining to the Real Property which shall not be removed or terminated not later than the Closing.

(g) To the best of Seller's knowledge, the Real Property does not contain and has not contained, any Hazardous Substances, other than in amounts that do not violate any applicable law or regulation. "Hazardous Substances" means and refers to any "hazardous substance" as now or hereafter defined in §101(14) of CERCLA or any regulations promulgated under CERCLA; (ii) any "hazardous waste" as now or hereafter defined in the RCRA or regulations promulgated under RCRA; (iii) any substance regulated by the Toxic Substances Control Act (15 U.S.C. §2601 et seq.); (iv) gasoline, diesel fuel, or other petroleum hydrocarbons; (v) asbestos and asbestos containing materials, in any form, whether friable or non-friable; (vi) polychlorinated biphenyls; (vii) radon gas; (viii) lead paint; (ix) any additional substances or materials which are

now or hereafter classified or considered to be hazardous or toxic under local, state or federal environmental laws.

(h) Seller is the sole owner of good, fee simple, marketable and insurable title to all of the Real Property.

(i) There are no options to purchase or rights of first refusal with respect to all or any part of the Real Property and Seller has entered into no contracts for the sale, pledge, hypothecation, assignment, lease or other transfer of all or any part of the Real Property, other than the existing lease to Northern Burner Supply Co., Inc. or its successor tenant, which will be terminated prior to Closing.

(j) Seller has paid, or will pay at or prior to Closing, all taxes (including all real estate, personal property, sales and use taxes), assessments, charges, fees, levies and impositions associated with the Real Property, coming due prior to the Closing Date for periods prior to the Closing Date. Seller knows of no actual or pending imposition of any assessments for public improvements and, to the best of Seller's knowledge, no such improvements have been constructed or planned that would be paid for by means of assessments upon the Real Property.

(k) Seller has received no notice of any claims, demands, suits, or actions arising out of or relating in any way to any water damage, water intrusion, mold growth or mold infestation occurring in, on or about the Real Property.

Seller shall indemnify, defend and hold Buyer and Buyer's members, managers, partners, officers, shareholders, directors and employees harmless from all claims, demands, liabilities, costs or expenses (including, without limitation, reasonable attorneys' fees) arising from or attributable to any breach by Seller of any of its warranties or representations in this Section 12.1 or elsewhere in this Contract, and the representations and warranties set forth herein and this indemnification shall survive the Closing for a period of twelve (12) months.

12.2 Seller covenants and agrees with Buyer as follows:

(a) From the Effective Date until physical possession of the Real Property has been delivered to Buyer, Seller will keep and maintain all of the Real Property in good order and condition, will not permit any waste with respect thereto and shall operate the Real Property in accordance with its current good faith business practices, provided, however, that nothing herein shall require Seller to continue to lease the Real Property to Northern Burner Supply Co., Inc. until Closing.

(b) From the Effective Date until the Closing Date, Seller shall not enter into any new agreements affecting the Subject Property unless such agreements may be terminated not later than the Closing without penalty.

(c) Between the Effective Date and the Closing Date, Seller shall not grant or permit any new encumbrances on or about the Subject Property.

13. Representations and Warranties of Buyer. Buyer represents, covenants and warrants to and agrees with Seller that Buyer has the legal right, power and authority to enter into this Contract and to perform all of its obligations hereunder, and the execution and delivery of this Contract and the performance by Buyer of its obligations hereunder (i) have been duly authorized by all requisite limited liability company action; and (ii) will not conflict with, or result in a breach of, any of the terms, covenants and provisions of the by-laws or articles of organization of Buyer or any law or any regulation, order, judgment, writ, injunction or decree of any court or governmental authority, or any agreement or instrument to which Buyer is a party or by which it is bound. No further consents or approvals are or shall be required as a condition precedent to the consummation and Closing of the sale and purchase transaction contemplated herein except as expressly set forth in this Contract. Buyer has taken all necessary action to authorize the execution, delivery and performance of this Contract and upon the execution and delivery of any document to be delivered by Buyer on or prior to the Closing, this Contract and such document shall constitute the valid and binding obligation and agreement of Buyer, enforceable against Buyer in accordance with its terms.

14. Default

(a) Buyer Default. In the event of any material default on the part of Buyer under this Contract, the Seller shall be entitled, as its sole remedy hereunder, to either (i) retain the Deposit as consideration for its execution of this Contract and in full settlement of, and as liquidated damages for, any and all claims for damages occasioned by Buyer's default, and this Contract shall terminate, expire, cease and become null and void and, thereafter, all parties hereto shall be relieved of any and all further obligations and liabilities to each other under this Contract, other than as to those obligations which specifically survive the termination of this Contract; (ii) enforce specific performance of Buyer's obligations under this Contract.

(b) Seller Default. In the event of any default on the part of Seller under this Contract, the Buyer, as its sole remedy hereunder, may elect any of the following: (i) enforce specific performance of Seller's obligations under this Contract if the nature of Seller's default has not rendered specific performance unavailable, or (ii) if the nature of Seller's default has rendered specific performance unavailable or in Buyer's sole and absolute discretion not desirable or ineffective as a remedy, Buyer shall receive a return of the entire Deposit and Buyer may seek damages; or (iii) waive the breach, or default or other closing condition and proceed to consummate the transaction contemplated hereby without any adjustment of the Purchase Price in accordance with the provisions of this Agreement; or (iv) terminate this Contract, whereupon neither party hereto shall have any further rights or obligations hereunder (except as expressly set forth herein as surviving termination), and the Escrow Agent shall deliver the entire Deposit to Buyer, and Buyer shall recover from Seller all of Buyer's reasonable out-of-pocket expenses incurred to the date of such termination.

15. Litigation and Attorneys' Fees. In the event it shall be necessary for either party to this Contract to bring suit to enforce any provision hereof or for damages on account of any breach of this Contract, then the prevailing party in such suit shall be entitled to recover from the other party its attorney fees and costs in any such litigation and any appeals therefrom.

16. Time of Essence. It is expressly agreed by the parties hereto that time is of the essence of this Contract and in the performance of all conditions, covenants, requirements, obligations and warranties to be performed or satisfied by either party hereto. Waiver of performance or satisfaction of timely performance or satisfaction of any condition, covenant, requirement, obligation or warranty by one party shall not be deemed to be a waiver of the performance or satisfaction of any other condition, covenant, requirement, obligation or warranty unless specifically consented to in writing. Whenever a date specified herein shall fall on a Saturday, Sunday or legal holiday, the date shall be extended to the next business day.

17. Captions and Paragraph Headings. Captions and paragraph headings contained in this Contract are for convenience and reference only and in no way define, describe, extend or limit the scope or content of this Contract nor the intent of any provision hereof.

18. Notices. Any notice or other communication permitted or required to be given hereunder by one party to the other shall be in writing and shall be either (i) hand delivered, (ii) sent by Federal Express or other overnight delivery service, or (iii) sent by email, to the party entitled or required to receive the same at the address specified below or at such other address as may hereafter be designated in writing by any such party, provided that email notice is permitted as an accommodation only and must be followed immediately by other permitted delivery method hereunder.

TO SELLER:

Raymond H. and Alina Waterhouse
105 Partridge Circle
Portland, Maine 04102
Email: lori@northernburner.com

with a copy to:

Jensen, Baird, Gardner & Henry
10 Free Street
Portland, Maine 04101
Attention: Michael Quinlan
Email: mquinlan@jensenbaird.com

TO BUYER:

Redfern Properties, LLC
P.O. Box 8816
Portland, Maine 04104
Email: jonathan@redfernproperties.com

with a copy to:

Murray, Plumb & Murray
75 Pearl Street
Portland, Maine 04101
Attention: Drew A. Anderson
Email: danderson@mpmlaw.com

TO ESCROW AGENT: The Boulos Company
One Canal Plaza, Suite 500
Portland, Maine 04101
Email: dsigfridson@boulos.com

The respective attorneys for Seller and Buyer are authorized to give notices with the same force and effect as if given by the parties.

19. Governing Law and Binding Effect. This Contract and the interpretation and enforcement of the same shall be governed by and construed in accordance with the laws of the State of Maine and shall be binding upon, inure to the benefit of, and be enforceable by the parties hereto as well as their respective successors, heirs, executors, personal representatives, agents, and assigns.

20. Integrated Contract, Waiver and Modification. This Contract represents the complete and entire understanding and agreement between and among the parties hereto with regard to all matters involved in the purchase and sale transaction contemplated in this Contract and supersedes any and all prior or contemporaneous agreements, whether written or oral. No covenants, agreements, terms, provisions, warranties, statements, representations or undertakings, whether written or oral, made or executed by any party hereto shall be binding on any party hereto, unless specifically set forth or incorporated in this Contract. This Contract may not be modified or amended, nor may any covenant, agreement, condition, requirement, provision, warranty or obligation contained herein be waived, except in writing signed by all parties, or in the event that such modification, amendment or waiver is for the benefit of one or more of the parties hereto and to the detriment of the other or others, then the same must be in writing signed by that party or those parties hereto to whose detriment such modification, amendment or waiver inures.

21. Brokerage. Seller and Buyer hereby acknowledge, represent and warrant to each other that, other than The Boulos Company, who shall be paid by Buyer at Closing pursuant to a separate agreement or agreements, no broker or finder has been employed by either Seller or Buyer in connection with the sale and purchase transaction contemplated in this Contract and that no commission, finder's fee or similar remuneration, by whatever name, is payable by Seller or Buyer or due to any broker or finder in connection with this Contract or the sale and purchase transaction contemplated herein. Seller and Buyer each, respectively, hereby agree to indemnify, defend, save and hold the other harmless from and against the payment of any commissions or fees or claims for commissions or fees as a result of any actions taken or agreements, respectively, made by them with respect to the sale and purchase transaction contemplated in this Contract. The provisions of this Paragraph shall expressly survive any closing or closings hereunder or the termination of this Contract for any reason.

22. Assignment. This Agreement is not assignable by Seller except for the purpose of a like-kind exchange. Buyer shall be entitled to assign its right, title and interest herein to any limited liability company, corporation, partnership or other entity, whether now existing or

hereafter formed, controlled by, controlling or under common control with Buyer (each an "Affiliate"), provided that Redfern Properties, LLC shall remain liable for all obligations of Buyer under this Agreement regardless of any such assignment.

23. Non-Disclosure. Subject at all time to the rights of the parties as set forth in this Contract, unless and until the transaction contemplated hereby is closed, Buyer and Seller shall make no public announcements regarding the terms of this transaction. In any event, Buyer and Seller shall hold all proprietary information obtained by them with respect to each other or the Subject Property in strict confidence and shall not disclose such information to any other person or entity except to the extent necessary to consummate the transaction contemplated hereby.

24. Condemnation. In the event the Subject Property or any material portion or portions thereof shall be taken or condemned or be the subject of a bona fide written threat of condemnation by any governmental authorities or other entity prior to the closing, then the Buyer shall have the option of either (a) terminating this Contract by giving written notice thereof to the Seller, whereupon the Earnest Money Deposit shall be immediately refunded to the Buyer, and this Contract and all rights and obligations created hereunder shall be null and void and of no further force and effect, except as otherwise specified herein, or (b) requiring the Seller to convey the remaining portion or portions of the Subject Property to the Buyer pursuant to the terms and provisions hereof and to transfer and assign to the Buyer at the closing all of the right, title and interest of the Seller in and to any award made or to be made by reason of such condemnation, less amounts expended by Seller in connection therewith prior to such time. The Seller and the Buyer hereby further agree that the Buyer shall have the right to be present in all negotiations with any governmental authorities relating to the Subject Property and to be apprised of the compensation to be paid for any portion or portions thereof condemned by such governmental authorities or other entity.

25. Casualty. Seller will promptly upon receiving actual notice of a casualty, notify Buyer of any fire or other casualty affecting the Subject Property between the date hereof and the Closing. Unless otherwise mutually agreed in writing by Buyer and Seller, as soon as reasonably possible thereafter, subject to Seller's actual receipt of the proceeds, and subject in any event to the terms of any existing mortgage on the Real Property, Seller will commence any necessary repairs as a result of such fire or other casualty, and will provide Buyer with current information concerning insurance coverage therefor (the "Casualty Notice"). Buyer will have the right to terminate this Contract by written notice to Seller within fifteen (15) days following receipt of the Casualty Notice. If Buyer so terminates this Contract then, notwithstanding any provision of this Contract to the contrary, the entire Deposit, other than the portion of the Deposit that has become non-refundable, will be returned to Buyer, and the parties will have no further obligations or liabilities hereunder, except as otherwise expressly provided herein. If Buyer elects not to terminate this Contract, the purchase contemplated herein will be consummated without reduction of the Purchase Price within the later of ten (10) days after the expiration of such fifteen (15) day period or on the Closing Date specified herein, in which event the insurance proceeds will be used for such repairs, to the extent necessary, and Seller will assign transfer and set over to Buyer all of Seller's right, title and interest in and to such insurance proceeds less any amounts actually expended by Seller towards the repair or restoration prior to the date thereof, and Buyer shall receive a credit at Closing in an amount equal to the amount of the insurance deductible under Seller's insurance policy.

26. Execution in Counterparts. This Contract may be executed in counterparts, each of which shall be deemed an original and all such counterparts together shall be deemed to constitute an original instrument. Electronic signatures shall be afforded the full force and effect of original ink signatures.

27. Exchange. At either party's request, the other party shall cooperate to structure the sale of the Subject Property as a tax-deferred exchange under Section 1031 of the Internal Revenue Code, provided that: (a) the requesting party shall reimburse the other party for all resultant additional expenses it pays or incurs, (b) the other party shall not be obligated to take title to any property other than the Subject Property for any period of time, (c) the other party shall not be obligated to execute any notes or mortgages or to incur any liabilities as a result of participating in the exchange, (d) the Closing is not delayed beyond the Closing Date, and (e) the requesting party shall indemnify, defend and hold harmless the other party against claims, costs, loss, or liability arising from or related to the exchange.

[*Signatures appear on following page.*]

IN WITNESS WHEREOF, the parties have caused these presents to be executed as of the day and year first above written.

"SELLER"

Name: Raymond H. Waterhouse

Alina Waterhouse

"BUYER"

Redfern Properties, LLC

By. _____
Name. Jonathan Culley
Its: Member

"ESCROW AGENT"

The Boulos Company

By: _____
Name: Nate Stevens
Its: Designated Broker

EXHIBIT "A"

A certain lot or parcel of land, with the building thereon, situated on the easterly side of Washington Avenue in the City of Portland, County of Cumberland and State of Maine and being further bounded and described as follows:

Beginning at an iron set in the ground on the easterly side of said Washington Avenue at land now or formerly of the City of Portland; thence running North 79° 11' 30" East by land now or formerly of said City of Portland 181.49 feet to an iron set in the ground; thence running South 15° 52' East by Poplar Street Ext. (so called) 213.20' to an iron set in the ground at land now or formerly of Dewer Rich; thence running South 74° 21' West by said Rich land 33.23 feet to an iron set in the ground, thence running South 15° 39' East by said Rich land 64.00 feet to an iron set in the ground; thence running North 74° 21' East by said Rich land 33.47 feet to an iron set in the ground on the westerly line of said Poplar Street Ext. (so called); thence running South 15° 52' East by said Poplar Street Ext. (so called) 63.00 feet to an iron set in the ground; thence running South 74° 21' West 115.91 feet to an iron set in the ground; thence running South 82° 30' West 111.71 feet to an iron set in the ground on the easterly side of said Washington Avenue; thence running North 7° 30' West by the Easterly line of said Washington Avenue 254.40 feet to an angle in the easterly line of said Washington Avenue; thence running North 10° 15' 30" West by the easterly line of said Washington Avenue 88.25 feet to an iron set in the ground at land now or formerly of the City of Portland and said point of beginning.

The triangular strip of land lying northwesterly of Lots no. 10 and 20 on the Little, Weeks & Moody Plan was conveyed by the City of Portland to Equipment Leasing Co., Inc. by deed recorded in Cumberland County Registry of Deeds in Book 2695, Page 281.

Also, excepting all those certain premises conveyed by Raymond H. Waterhouse and Alina Waterhouse to Redfern Munjoy, LLC, by deed dated January 14, 2014, recorded in Book 31302, Page 177.

APPENDIX D

- **SIMTRAFFIC CAPACITY ANALYSIS REPORTS**

Summary of All Intervals

Run Number	1	2	5	6	7	Avg
Start Time	7:55	7:55	7:55	7:55	7:55	7:55
End Time	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	65	65	65	65	65	65
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	1504	1523	1491	1514	1549	1516
Vehs Exited	1507	1520	1486	1515	1551	1516
Starting Vehs	32	33	20	40	29	30
Ending Vehs	29	36	25	39	27	30
Travel Distance (mi)	546	552	546	554	566	553
Travel Time (hr)	30.2	31.4	30.8	31.1	31.0	30.9
Total Delay (hr)	8.5	9.5	9.2	9.1	8.5	8.9
Total Stops	1090	1132	1102	1124	1069	1103
Fuel Used (gal)	21.6	22.1	21.7	21.8	22.3	21.9

Interval #0 Information Seeding

Start Time	7:55
End Time	8:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	8:00
End Time	9:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	5	6	7	Avg
Vehs Entered	1504	1523	1491	1514	1549	1516
Vehs Exited	1507	1520	1486	1515	1551	1516
Starting Vehs	32	33	20	40	29	30
Ending Vehs	29	36	25	39	27	30
Travel Distance (mi)	546	552	546	554	566	553
Travel Time (hr)	30.2	31.4	30.8	31.1	31.0	30.9
Total Delay (hr)	8.5	9.5	9.2	9.1	8.5	8.9
Total Stops	1090	1132	1102	1124	1069	1103
Fuel Used (gal)	21.6	22.1	21.7	21.8	22.3	21.9

3: Fox St/Walnut st & Washington Ave Performance by lane

Lane	NB	NB	SB	SB	NE	NE	SW	SW	All
Movements Served	L	TR	L	TR	LT	R	LT	R	
Denied Del/Veh (s)									0.6
Total Del/Veh (s)	19.1	14.1	7.7	20.8	34.3	11.1	33.5	4.0	20.3

6: Washington Ave & Eastern Prom Performance by lane

Lane	WB	NB	SB	All
Movements Served	LR	TR	LT	
Denied Del/Veh (s)				0.4
Total Del/Veh (s)	10.3	2.2	2.8	3.8

Total Network Performance

Denied Del/Veh (s)	0.8
Total Del/Veh (s)	20.1

Intersection: 3: Fox St/Walnut st & Washington Ave

Movement	NB	NB	SB	SB	NE	NE	SW	SW
Directions Served	L	TR	L	TR	LT	R	LT	R
Maximum Queue (ft)	58	199	54	389	169	109	217	66
Average Queue (ft)	22	82	10	204	58	35	75	41
95th Queue (ft)	54	164	37	327	114	77	147	79
Link Distance (ft)		561		1046	587		1023	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	30		30			90		40
Storage Blk Time (%)	4	21	1	41	4	0	26	3
Queuing Penalty (veh)	9	8	4	8	3	0	16	3

Intersection: 6: Washington Ave & Eastern Prom

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	144	9	216
Average Queue (ft)	60	0	58
95th Queue (ft)	108	5	142
Link Distance (ft)	530	1046	537
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 51

Intersection: 3: Fox St/Walnut st & Washington Ave

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBTL	SWTL	SBL	NBTL	NETL
Maximum Green (s)	10.0	60.0	16.0	10.0	60.0	16.0
Minimum Green (s)	5.0	10.0	10.0	5.0	10.0	10.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	7.1	4.0	11.7	6.5	5.7	11.2
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	65	2	18	80	4	20
Cycles @ Minimum (%)	4	0	40	4	4	52
Cycles Maxed Out (%)	4	2	10	2	6	4
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): -7.8

Number of Complete Cycles : 50

Summary of All Intervals

Run Number	1	2	4	6	7	Avg
Start Time	3:55	3:55	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65	65	65
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	1584	1558	1573	1599	1567	1576
Vehs Exited	1573	1558	1579	1588	1569	1573
Starting Vehs	31	34	32	31	32	31
Ending Vehs	42	34	26	42	30	34
Travel Distance (mi)	573	567	570	577	574	572
Travel Time (hr)	33.5	33.2	33.8	34.0	33.5	33.6
Total Delay (hr)	10.7	10.6	11.1	11.1	10.7	10.8
Total Stops	1229	1205	1249	1230	1215	1225
Fuel Used (gal)	23.2	23.0	23.1	23.2	23.1	23.1

Interval #0 Information Seeding

Start Time	3:55
End Time	4:00
Total Time (min)	5

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	4	6	7	Avg
Vehs Entered	1584	1558	1573	1599	1567	1576
Vehs Exited	1573	1558	1579	1588	1569	1573
Starting Vehs	31	34	32	31	32	31
Ending Vehs	42	34	26	42	30	34
Travel Distance (mi)	573	567	570	577	574	572
Travel Time (hr)	33.5	33.2	33.8	34.0	33.5	33.6
Total Delay (hr)	10.7	10.6	11.1	11.1	10.7	10.8
Total Stops	1229	1205	1249	1230	1215	1225
Fuel Used (gal)	23.2	23.0	23.1	23.2	23.1	23.1

3: Fox St/Walnut st & Washington Ave Performance by lane

Lane	NB	NB	SB	SB	NE	NE	SW	SW	All
Movements Served	L	TR	L	TR	LT	R	LT	R	
Denied Del/Veh (s)									0.7
Total Del/Veh (s)	17.8	21.9	23.5	20.7	33.6	5.5	34.6	7.6	23.1

6: Washington Ave & Eastern Prom Performance by lane

Lane	WB	NB	SB	All
Movements Served	LR	TR	LT	
Denied Del/Veh (s)				0.2
Total Del/Veh (s)	11.5	3.2	4.6	4.8

Total Network Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	23.6

Intersection: 3: Fox St/Walnut st & Washington Ave

Movement	NB	NB	SB	SB	NE	NE	SW	SW
Directions Served	L	TR	L	TR	LT	R	LT	R
Maximum Queue (ft)	54	343	54	282	220	115	132	65
Average Queue (ft)	28	194	23	131	102	35	59	28
95th Queue (ft)	57	307	57	229	184	91	110	70
Link Distance (ft)		561		1046	587		1023	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	30		30			90		40
Storage Blk Time (%)	6	41	5	36	16	0	22	2
Queuing Penalty (veh)	31	22	17	11	7	0	8	1

Intersection: 6: Washington Ave & Eastern Prom

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	129	13	204
Average Queue (ft)	51	0	76
95th Queue (ft)	97	5	161
Link Distance (ft)	530	1046	537
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 98

Intersection: 3: Fox St/Walnut st & Washington Ave

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBTL	SWTL	SBL	NBTL	NETL
Maximum Green (s)	10.0	60.0	16.0	10.0	60.0	16.0
Minimum Green (s)	5.0	10.0	10.0	5.0	10.0	10.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	6.9	2.2	11.2	6.7	4.0	13.3
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	51	0	15	64	0	5
Cycles @ Minimum (%)	0	2	50	2	0	25
Cycles Maxed Out (%)	7	2	4	2	2	27
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): -10.0

Number of Complete Cycles : 45

Summary of All Intervals

Run Number	2	4	5	6	7	Avg
Start Time	7:55	7:55	7:55	7:55	7:55	7:55
End Time	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	65	65	65	65	65	65
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	1656	1646	1559	1662	1674	1639
Vehs Exited	1652	1643	1567	1657	1662	1636
Starting Vehs	28	29	37	31	22	30
Ending Vehs	32	32	29	36	34	33
Travel Distance (mi)	596	586	556	589	593	584
Travel Time (hr)	34.4	34.3	32.5	33.8	34.8	34.0
Total Delay (hr)	10.6	10.9	10.3	10.2	11.1	10.6
Total Stops	1262	1307	1179	1330	1305	1275
Fuel Used (gal)	24.1	24.1	22.6	23.9	24.1	23.8

Interval #0 Information Seeding

Start Time	7:55
End Time	8:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	8:00
End Time	9:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	2	4	5	6	7	Avg
Vehs Entered	1656	1646	1559	1662	1674	1639
Vehs Exited	1652	1643	1567	1657	1662	1636
Starting Vehs	28	29	37	31	22	30
Ending Vehs	32	32	29	36	34	33
Travel Distance (mi)	596	586	556	589	593	584
Travel Time (hr)	34.4	34.3	32.5	33.8	34.8	34.0
Total Delay (hr)	10.6	10.9	10.3	10.2	11.1	10.6
Total Stops	1262	1307	1179	1330	1305	1275
Fuel Used (gal)	24.1	24.1	22.6	23.9	24.1	23.8

3: Fox St/Walnut st & Washington Ave Performance by lane

Lane	NB	NB	SB	SB	NE	NE	SW	SW	All
Movements Served	L	TR	L	TR	LT	R	LT	R	
Denied Del/Veh (s)									0.8
Total Del/Veh (s)	25.4	14.7	8.4	22.2	36.0	11.6	34.7	3.6	21.5

6: Washington Ave & Eastern Prom Performance by lane

Lane	WB	NB	SB	All
Movements Served	LR	TR	LT	
Denied Del/Veh (s)				0.4
Total Del/Veh (s)	11.8	1.1	2.9	3.8

8: Washington Ave & Site Performance by lane

Lane	WB	NB	SB	All
Movements Served	LR	TR	LT	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	11.4	1.3	1.6	2.4

Total Network Performance

Denied Del/Veh (s)	0.9
Total Del/Veh (s)	22.1

Intersection: 3: Fox St/Walnut st & Washington Ave

Movement	NB	NB	SB	SB	NE	NE	SW	SW
Directions Served	L	TR	L	TR	LT	R	LT	R
Maximum Queue (ft)	55	198	54	378	155	111	174	67
Average Queue (ft)	24	82	11	235	64	39	74	42
95th Queue (ft)	55	162	40	373	124	88	137	81
Link Distance (ft)		561		367	587		1021	
Upstream Blk Time (%)				1				
Queuing Penalty (veh)				7				
Storage Bay Dist (ft)	30		30			90		40
Storage Blk Time (%)	5	22	1	42	6	0	29	2
Queuing Penalty (veh)	13	9	4	10	4	0	18	3

Intersection: 6: Washington Ave & Eastern Prom

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	157	17	192
Average Queue (ft)	67	1	59
95th Queue (ft)	125	7	133
Link Distance (ft)	536	620	538
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Washington Ave & Site

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	92	119
Average Queue (ft)	38	13
95th Queue (ft)	70	67
Link Distance (ft)	270	620
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 67

Intersection: 3: Fox St/Walnut st & Washington Ave

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBTL	SWTL	SBL	NBTL	NETL
Maximum Green (s)	10.0	60.0	16.0	10.0	60.0	16.0
Minimum Green (s)	5.0	10.0	10.0	5.0	10.0	10.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	7.0	6.4	11.8	6.9	8.5	11.4
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	62	0	9	77	0	18
Cycles @ Minimum (%)	2	0	44	2	2	44
Cycles Maxed Out (%)	4	9	9	2	14	4
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): -8.9

Number of Complete Cycles : 44

Summary of All Intervals

Run Number	1	2	3	5	7	Avg
Start Time	3:55	3:55	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65	65	65
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	1696	1680	1666	1649	1693	1677
Vehs Exited	1692	1678	1660	1644	1699	1674
Starting Vehs	31	33	34	25	30	32
Ending Vehs	35	35	40	30	24	32
Travel Distance (mi)	600	593	587	589	605	595
Travel Time (hr)	36.2	35.1	34.3	35.4	35.9	35.4
Total Delay (hr)	12.2	11.5	10.9	11.9	11.7	11.6
Total Stops	1363	1327	1260	1352	1323	1321
Fuel Used (gal)	24.8	24.4	23.8	24.1	24.8	24.4

Interval #0 Information Seeding

Start Time	3:55
End Time	4:00
Total Time (min)	5

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	5	7	Avg
Vehs Entered	1696	1680	1666	1649	1693	1677
Vehs Exited	1692	1678	1660	1644	1699	1674
Starting Vehs	31	33	34	25	30	32
Ending Vehs	35	35	40	30	24	32
Travel Distance (mi)	600	593	587	589	605	595
Travel Time (hr)	36.2	35.1	34.3	35.4	35.9	35.4
Total Delay (hr)	12.2	11.5	10.9	11.9	11.7	11.6
Total Stops	1363	1327	1260	1352	1323	1321
Fuel Used (gal)	24.8	24.4	23.8	24.1	24.8	24.4

3: Fox St/Walnut st & Washington Ave Performance by lane

Lane	NB	NB	SB	SB	NE	NE	SW	SW	All
Movements Served	L	TR	L	TR	LT	R	LT	R	
Denied Del/Veh (s)									0.7
Total Del/Veh (s)	15.8	22.7	23.2	18.7	36.7	5.5	34.6	7.1	23.2

6: Washington Ave & Eastern Prom Performance by lane

Lane	WB	NB	SB	All
Movements Served	LR	TR	LT	
Denied Del/Veh (s)				0.2
Total Del/Veh (s)	11.7	1.6	4.2	4.0

8: Washington Ave & Site Performance by lane

Lane	WB	NB	SB	All
Movements Served	LR	TR	LT	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	9.7	2.1	1.9	2.2

Total Network Performance

Denied Del/Veh (s)	0.8
Total Del/Veh (s)	23.8

Intersection: 3: Fox St/Walnut st & Washington Ave

Movement	NB	NB	SB	SB	NE	NE	SW	SW
Directions Served	L	TR	L	TR	LT	R	LT	R
Maximum Queue (ft)	55	425	54	313	242	114	131	65
Average Queue (ft)	28	209	23	134	114	38	59	32
95th Queue (ft)	61	347	54	244	212	103	115	72
Link Distance (ft)		561		367	587		1021	
Upstream Blk Time (%)				0				
Queuing Penalty (veh)				0				
Storage Bay Dist (ft)	30		30			90		40
Storage Blk Time (%)	6	41	5	33	20	0	22	1
Queuing Penalty (veh)	30	22	18	11	9	0	9	1

Intersection: 6: Washington Ave & Eastern Prom

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	133	193
Average Queue (ft)	53	69
95th Queue (ft)	98	150
Link Distance (ft)	536	538
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Washington Ave & Site

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	53	10	121
Average Queue (ft)	21	0	19
95th Queue (ft)	47	7	71
Link Distance (ft)	266	367	620
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 101

Intersection: 3: Fox St/Walnut st & Washington Ave

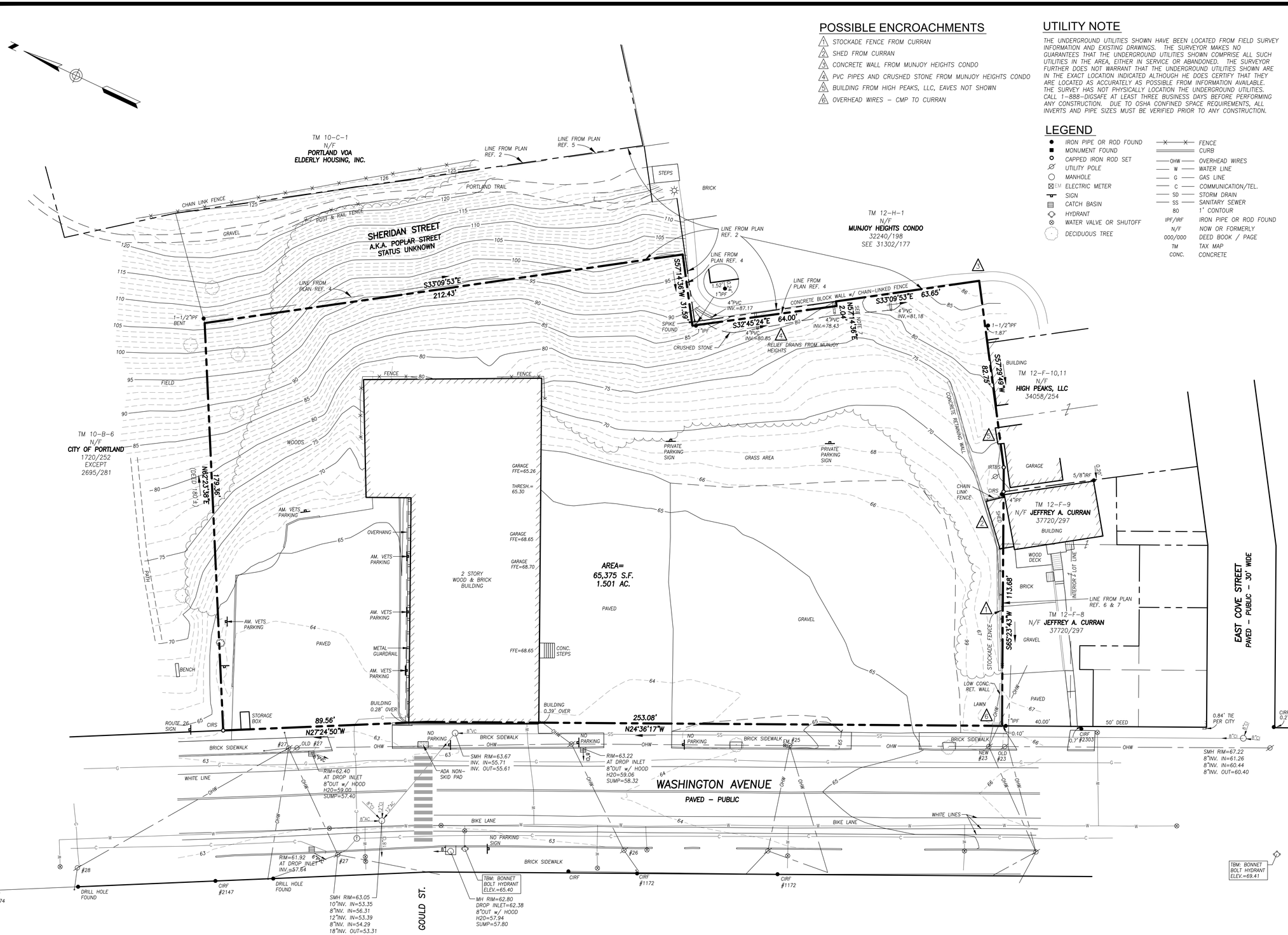
Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBTL	SWTL	SBL	NBTL	NETL
Maximum Green (s)	10.0	60.0	16.0	10.0	60.0	16.0
Minimum Green (s)	5.0	10.0	10.0	5.0	10.0	10.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	6.9	4.4	11.6	6.6	4.6	13.3
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	62	0	22	62	2	7
Cycles @ Minimum (%)	0	2	41	2	0	22
Cycles Maxed Out (%)	4	7	4	2	4	33
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): -9.5

Number of Complete Cycles : 45

APPENDIX E

- **BOUNDARY & TOPOGRAPHIC SURVEY PLAN**
- **SITE PLAN**



SCALE : 1" = 20'

0' 10' 20' 40'

POSSIBLE ENCROACHMENTS

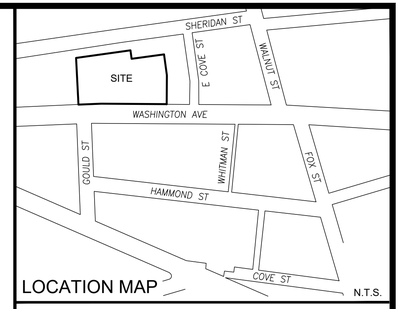
1. STOCKADE FENCE FROM CURRAN
2. SHED FROM CURRAN
3. CONCRETE WALL FROM MUNJOY HEIGHTS CONDO
4. PVC PIPES AND CRUSHED STONE FROM MUNJOY HEIGHTS CONDO
5. BUILDING FROM HIGH PEAKS, LLC, EAVES NOT SHOWN
6. OVERHEAD WIRES – CMP TO CURRAN

UTILITY NOTE

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEY HAS NOT PHYSICALLY LOCATION THE UNDERGROUND UTILITIES. CALL 1-888-DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION. DUE TO OSHA CONFINED SPACE REQUIREMENTS, ALL INVERTS AND PIPE SIZES MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION.

LEGEND

IRON PIPE OR ROD FOUND	FENCE
MONUMENT FOUND	CURB
CAPPED IRON ROD SET	OHW OVERHEAD WIRES
UTILITY POLE	W WATER LINE
MANHOLE	G GAS LINE
EM ELECTRIC METER	C COMMUNICATION/TEL.
SIGN	SD STORM DRAIN
CATCH BASIN	SS SANITARY SEWER
HYDRANT	80 1' CONTOUR
WATER VALVE OR SHUTOFF	IPF/IRF IRON PIPE OR ROD FOUND
DECIDUOUS TREE	N/F NOW OR FORMERLY
	000/000 DEED BOOK / PAGE
	TM TAX MAP
	CONC. CONCRETE



PLAN REFERENCES

1. "PLAN OF PROPERTY OF W.H. BAXTER ESQ. BY ANDERSON BONNELL & CO. JULY 1866" RECORDED IN PLAN BOOK 2 PAGE 54.
2. "PLAN DEPICTING A PROPOSED SUBDIVISION MADE FOR REDFERN MUNJOY, LLC MUNJOY HEIGHTS SHERIDAN STREET, EAST COVE STREET, AND WALNUT STREET PORTLAND, MAINE 12/6/2013 NADEAU LAND SURVEYS" RECORDED IN PLAN BOOK 214 PAGE 48.
3. SUBDIVISION OF LOT 1 ON MUNJOY'S NECK FOR LITTLE, WEEKS AND MOODY DATED FEB. 17, 1802 AND RECORDED IN DEED BOOK 36, PAGE 247.
4. "PLAN OF PROPERTY IN PORTLAND, MAINE MADE FOR DEAD RIVER LEASING, INC. 11-10-1969 H.I. & E.C. JORDAN – SURVEYORS"
5. "LAND TITLE SURVEY FOR VOLUNTEERS OF AMERICA PORTLAND, MAINE 12-18-92 H.I. & E.C. JORDAN – SURVEYORS" REVISED AUG. 29, 1995
6. "BOUNDARY SURVEY AT 163 WASHINGTON AVENUE, PORTLAND, MAINE MADE FOR OWNER OF RECORD JEFFREY A. CURRAN MAY 26, 2021 OWEN HASKELL, INC. JOB NO. 2021-075 P" REVISED 12-18-2022.
7. "PLAN OF PROPERTY OF W.H. BAXTER ESQ. BY ANDERSON BONNELL & CO. JULY 1866" RECORDED IN PLAN BOOK 2, PAGE 56.

GENERAL NOTES

1. OWNER OF RECORD: RAYMOND H. AND ALINA WATERHOUSE, 105 PARTRIDGE CIRCLE, PORTLAND, ME; CUMBERLAND COUNTY REGISTRY OF DEEDS BOOK 25470, PAGE 272.
2. LOCUS IS SHOWN AT LOT 1 IN BLOCK D ON PORTLAND PROPERTY MAP 10.
3. BEARINGS ARE GRID NORTH AS BASED ON CITY MONUMENTS L749-78-3002, CORNER WASHINGTON AVENUE AND NORTH SIDE OF WALNUT STREET, AND T112-18-107, CORNER EAST SIDE OF NORTH STREET AND NORTH SIDE OF WALNUT STREET, AS SURVEYED BY THIS FIRM IN 2014. THESE ARE THE SAME TWO MONUMENTS USED FOR PLAN REFERENCE 2 IN 2013. BOTH OF THESE MONUMENTS HAVE BEEN MOVED OR DISTURBED, APPARENTLY DURING SIDEWALK RECONSTRUCTION SINCE 2014.
4. ELEVATIONS ARE CITY DATUM AS BASED ON PK IN POLE #11, CORNER ANDERSON AND EVERETT STREETS, ELEVATION 12.42 CITY LEVEL BOOK 737, PAGE 77.
5. LINES ALONG CURRAN, HIGH PEAKS, LLC, AND A PORTION OF MUNJOY HEIGHTS CONDO ARE BASED ON DIMENSIONS SHOWN ON PLAN REFERENCE 7.
6. THE EXACT STATUS OF SHERIDAN STREET, FORMERLY KNOWN AS POPLAR STREET, HAS NOT BEEN DETERMINED. IT IS PRESUMED TO HAVE BEEN VACATED AND OWNERSHIP MAY EXTEND TO THE CENTER OF THE PAPER STREET. THE WESTERLY LINE OF SHERIDAN HEREON IS THE SAME AS SHOWN ON PLAN REFERENCE 2. THIS MATCHES REASONABLY WELL WITH THE LINE OF SHERIDAN STREET AS SHOWN ON PLAN REFERENCE 5 BUT NOT WITH THE LINE ON PLAN REFERENCE 4. THIS STREET WAS ORIGINALLY SHOWN ON PLAN REFERENCE 3 IN 1802 WHICH PLAN IS VERY DIFFICULT TO RECREATE.
7. THE SKETCH IN DEED BOOK 31302, PAGE 177, FROM WATERHOUSE TO REDFERN MUNJOY, LLC, DOES NOT INDICATE A JOG IN THE CURRENT EAST LINE OF WATERHOUSE. THE SOUTH SIDE OF THE ORIGINAL WATERHOUSE LAND, ON THE WEST SIDE OF SHERIDAN STREET, ON PLAN REFERENCE 4 HAS A DISTANCE OF 33.47 FEET. THE SAME LINE ON THE RECENT SKETCH HAS A DISTANCE OF 30.00 FEET. THIS SURVEYOR BELIEVES THAT THE LINE OF SHERIDAN STREET ON PLAN REFERENCE 4 IS NOT ACCURATE. A BOUNDARY AGREEMENT WITH MUNJOY HEIGHTS CONDO WOULD RESOLVE ANY CONFLICT.
8. UNDERGROUND UTILITIES MARKED BY PROMARK UTILITY LOCATING, INC. SEWER PIPE SIZES AND MATERIALS FROM CITY GIS.

CERTIFICATE

OWEN HASKELL, INC. HEREBY CERTIFIES THAT THIS PLAN IS BASED ON, AND THE RESULT OF, AN ON THE GROUND FIELD SURVEY AND THAT TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, IT CONFORMS TO THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS CURRENT STANDARDS OF PRACTICE.

JOHN C. SCHWANDA, PLS #1252

7/25/2023
DATE

STATE OF MAINE
JOHN C. SCHWANDA
1252
PROFESSIONAL LAND SURVEYOR

Boundary & Topographic Survey

At

185 Washington Avenue, Portland, Maine

Made for

Acorn Engineering

Owner of Record

Raymond H. & Alina Waterhouse

105 Partridge Circle, Portland, Maine

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

DRAWN BY: NM / JLW	DATE: JULY 25, 2023	JOB NO. 2023-117 P	
CHECKED BY: JCS	SCALE: 1" = 20'	DRWG. NO. 1	

GENERAL NOTES:

1. ALL BRICK SIDEWALK AND VERTICAL GRANITE CURB TO BE REPLACED SHALL BE REBUILT TO CITY OF PORTLAND STANDARD.
2. ALL PAVEMENT STRIPING AND MARKINGS SHALL COMPLY TO CITY OF PORTLAND STANDARDS.
3. ANY ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
4. CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
5. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER FOOT.
6. ALL SITE SIGNAGE TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE AND INSTALL.
7. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SITE LIGHTING, TRASH REMOVAL AND SNOW REMOVAL.
8. CONTRACTOR SHALL VERIFY BOTTOM AND TOP OF CURB ELEVATIONS ALONG BUILDING FRONTAGES PRIOR TO CONSTRUCTION OF THE FOUNDATIONS. CONTACT ENGINEER PRIOR TO CONSTRUCTION IF DISCREPANCIES ARE FOUND.
9. 20% OF PARKING SPACES TO HAVE LEVEL 2 OR GREATER EV CHARGING STATIONS. 50% OF PARKING SPACES TO BE EV READY WITH CONDUITS INSTALLED FOR FUTURE USE.

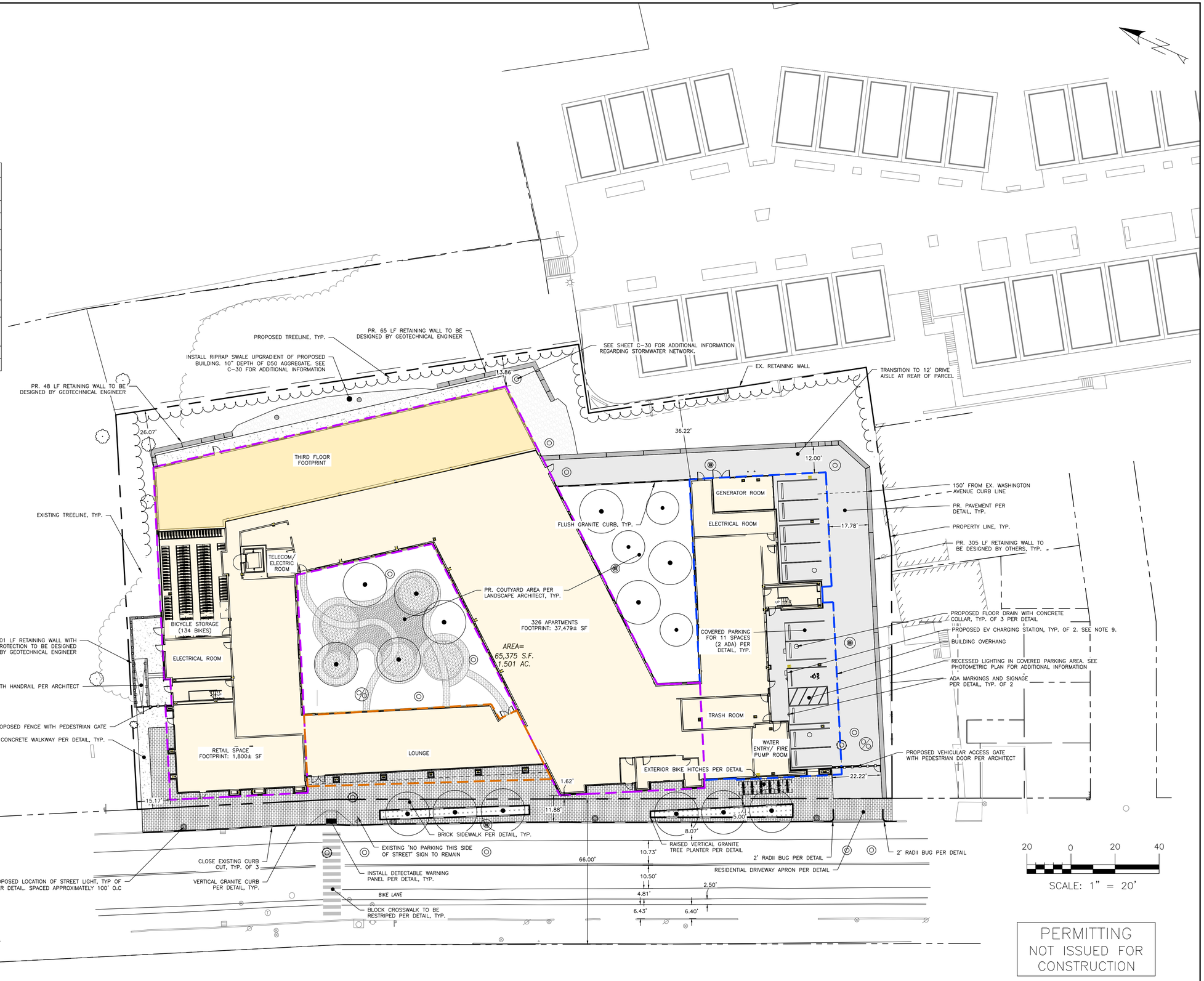
SPACE AND BULK STANDARDS		
ZONING DISTRICT B2B	REQUIRED	PROPOSED
MINIMUM LOT AREA	N/A	65,375 SF
STREET FRONTAGE	N/A	343 FT
BUILD TO ZONE	0–10 FT	1.62 FT
MINIMUM BUILDING LENGTH AS PERCENTAGE OF STREET FRONTAGE	60%	86.8%
MAX BLANK WALL AREA	20 FT	12± FT
MINIMUM REAR YARD SETBACK	NONE (10 FT ONLY WHEN ABUTTING RESIDENTIAL)	13.86 FT
MINIMUM SIDE YARD SETBACK	NONE (5 FT ONLY WHEN ABUTTING RESIDENTIAL)	15.17 FT
MAXIMUM BUILDING HEIGHT	75* FT (50 FT IF WITHIN 15' OF RN1,RN2,RN3,RN4,OS–R,OS–P ZONES)	< 75 FT*
IMPERVIOUS SURFACE RATIO	NONE	–
* SEE AVERAGE GRADE CALCULATION ON C–30		

LEGEND

- FIRST FLOOR FOOTPRINT
- THIRD FLOOR FOOTPRINT
- 3 STORY BUILDING HEIGHT
- 4 STORY BUILDING HEIGHT
- 7 STORY BUILDING HEIGHT

PARKING SUMMARY		
	MAX	PROPOSED
RESIDENTIAL	2 SPACES PER DWELLING UNIT (326 UNITS) = 652 PARKING SPACES	
RETAIL	1 SPACE PER 300 SF OF FLOOR AREA (1,800 SF) = 6 SPACES	
STANDARD (9'X18')	–	9
ADA (8'X18')	–	2
TOTAL SPACES	658 SPACES	11

BICYCLE PARKING SUMMARY		
	MAX	PROPOSED
RESIDENTIAL	1 SPACES PER 2 DWELLING UNITS (326 UNITS) 163 SPACES	
RETAIL	OVER 5,000 SF OF FLOOR AREA ONLY	
INTERIOR	–	–
EXTERIOR		
TOTAL SPACES	163 SPACES	–



PERMITTING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
SITE PLAN	PFH	11/20/24

DRAWING NAME: SITE PLAN

PROJECT NAME: TAVATA – 165 WASHINGTON AVENUE PORTLAND, MAINE, 04101

CLIENT: REDFERN PROPERTIES P.O. BOX 8816, PORTLAND, MAINE 04104

ALL PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

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CIVIL • SURVEY • PLANNING
PO BOX 3437 PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1202_CIVIL
JN:	1202
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE PETER F. HEIL 15318 REGISTERED PROFESSIONAL ENGINEER

DRAWING NO. C-10

Preliminary Transportation Demand Management Plan (TDM)

Prepared For: **Redfern Properties LLC.**

Project: **165 Washington Avenue**
Portland Maine
Proposed Multi-Family & Commercial Space Mixed Use Building

Prepared By: **Barton & Loguidice. LLC.**
383 US Route 1
Suite E, Box 4
Scarborough, Maine, 04074

Traffic Demand Management (TDM) 14-14.6.1 (E)

The following types of development shall design and implement a Transportation Demand Management (TDM) plan:

a. All major site plan triggering development in the B-7 zone.

b. All commercial, institutional, or mixed-use developments of 50,000 square feet or more total floor area.

c. All commercial or institutional uses designed to accommodate 100 or more employees or, for educational institutions, 100 or more students.

The TDM Plan shall comply with the transportation systems and street design standards of the Technical Manual.

A Traffic Demand Management Plan is enclosed.

Transportation Narrative

The proposed project by Redfern Properties LLC, will be a construction of a mixed-use residential and commercial building on the 1.31-acre parcel addressed 165 Washington Avenue in the City of Portland. Of the total acreage, 1.31 acres are developable. The project will construct a 7-floor multi-use building with 326 apartment units, and 1,800sf of retail space on the ground level. Access to the site is provided via a single driveway entrance, which intersects with the eastern side of Washington Avenue 120 feet north of East Cove Street.

The project will provide storage for 163 bicycles and 11 vehicle parking spaces, 2 of which will be signed and striped as handicapped.

Redfern Properties LLC, is a part of the Portland community and has developed several projects within the city, and as such is committed to the City's goals of reducing single occupancy vehicle usage and encouraging and providing opportunities, programs and infrastructure to promote use of other modes of transportation.

Existing

The existing development parcel is occupied by a vacant facility, which formerly housed Northern Burner Supply, a wholesale distributor of heating and electrical supplies. Access to the existing site is provided by two driveway entrances, which intersect with the eastern side of Washington Avenue, both of which will be removed with the development of the project.

Proposed

The proposed will construct a 7-floor multi-use building with 326 apartment units, and 1,800sf of retail space (potential restaurant / market use) on the ground level. Access to the site is provided via a single driveway entrance, which intersects with the eastern side of Washington Avenue, 120 feet north of East Cove Street.

The project will provide eleven (11) vehicle surface parking spaces on-site, two (2) of which will be signed and striped as handicapped and are ADA Van Accessible. The project will also provide two (2) EV charging stations, which will include one of the ADA parking spaces. In addition, at least three (3) parking spaces will be EV ready for potential future use.

Internal and external to the building, one hundred and sixty-three (163) bike racks are provided.

Area / Neighborhood Existing Conditions

The City of Portland has made investments in this area of Portland in recent years. These investments have made the neighborhoods surrounding the proposed development a more welcoming community to other modes of traffic especially pedestrian and bicycle traffic, and has made efforts to provide more complete streets with traffic calming elements to assist with slowing motorized modes of transportation. Recently a project was completed which replaced and widened (in some places) brick sidewalks, added new granite curbing, better defined parking zones on Washington Avenue, narrowed the road in several places, added curb extensions, and removed traffic signals that were not warranted on Washington Avenue at the intersections with Congress Street and Cumberland Avenue.

This area of Portland is known for its many and various restaurants shops and other retail establishments.

Site Access

The location of the project site on Washington Avenue gives vehicular traffic access to regional routes in and out of the greater Portland area as well as to local destinations within Portland. Access to the north on Interstate 295 is provided by heading northbound on Washington Avenue approximately 1,000 ft., which leads directly onto I-295 North.

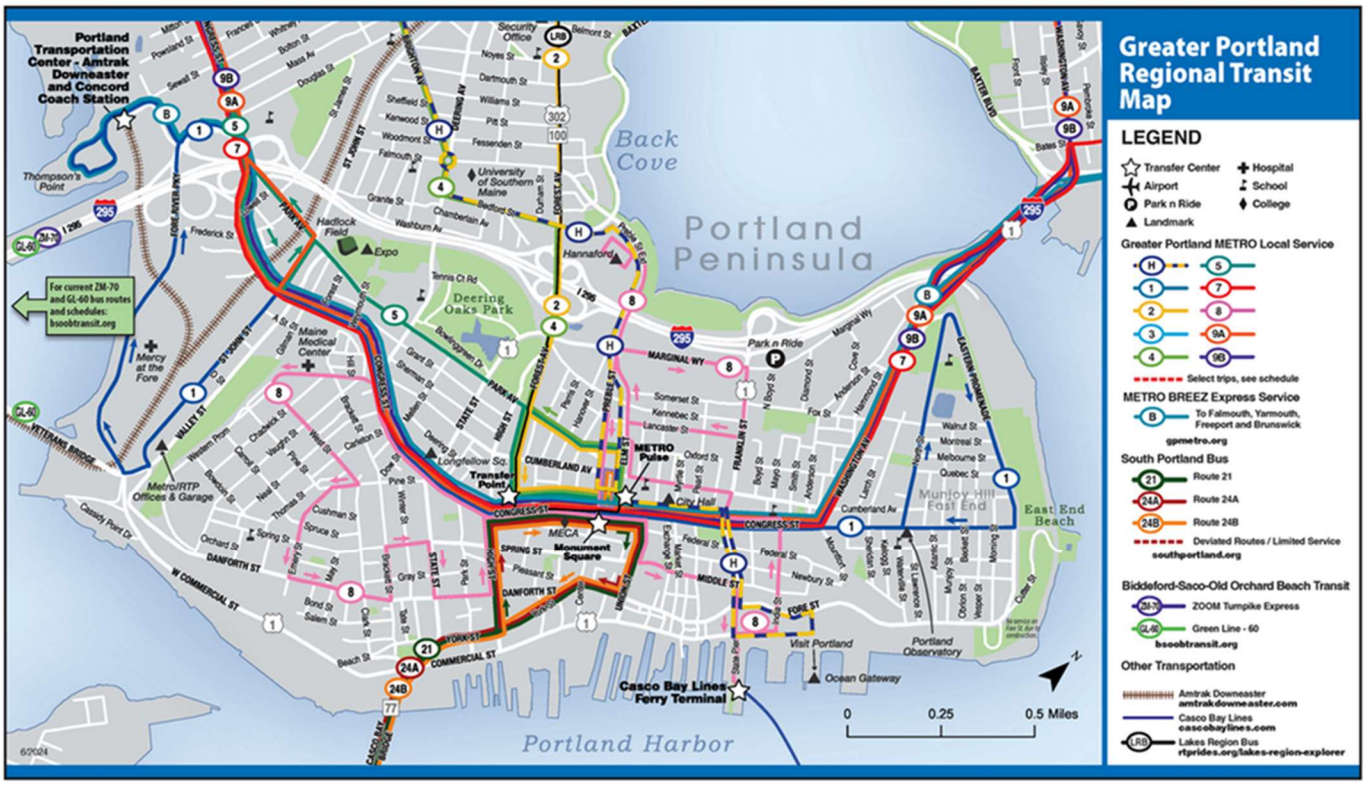
Access to I-295 southbound from the site is provided via Franklin Street, which has access from Washington Avenue using several alternative connecting streets such as Fox Street, Cumberland Avenue and Congress Street.

Access to other local City destinations such as the Eastern Promenade, Old Port, Downtown District, and the City's Transportation Center are also easily access from this neighborhood utilizing Congress Street, Cumberland Avenue, Franklin Street and the Eastern Promenade roadway which intersections Washington Avenue approximately 500 ft. north of our project site.

Transit Access / Connections

This area of Portland and Washington Avenue are well served by public transit. Washington Avenue is currently served by three routes of the Greater Portland Metro routes, 7, 9A, and 9B. In addition, the "B" line of the Metro Breez serves Washington Avenue.

See Transit Route Map below.



Effective June 16, 2024

Further details of the routes are included below:

Metro Route 7 - Provides transportation between Falmouth, Downtown Portland, and the Portland Jetport, DHHS, and Outer Congress Street.

Metro Route 9 (9B & 9B) – Provides the following routes

- Route 9A travels in a clockwise direction from downtown Portland to North Deering.
- Route 9B travels in a counterclockwise direction along the same route.
- Service to all three Portland Public High Schools, Congress Street locations, Westgate, PTC, Stevens Ave, Northgate, West Falmouth, Washington Avenue, and Eastern Prom/Munjoy Hill.

Metro Breez – The Metro Breez provides a route which runs between the Portland Transportation Center, and then to Falmouth, Yarmouth, Freeport and Brunswick, via Fore River Parkway, Congress Street, Washington Avenue and I-295.

These routes also provide access to Transfer Centers along Congress Street at Elm Street (Downtown Transportation Center), Monument Square, and at Forest Avenue, as well as access to the Portland Transportation Center, which provides access to the Downeaster train and Concord Trailways Regional/National Bus service. These Transfer Centers also provide access to the other Metro routes, Metro Pulse, at Elm Street (Downtown Transportation Center), the hub for METRO where bus routes, #2, #4, #5, #7, and the Husky Line begin and end their routes. METRO bus routes #1, #8, and the Biddeford Saco Old Orchard Beach (BSOOB) Transit 60 Green line can be accessed along Congress Street. South Portland Bus routes 21, 24A, and 24B can be accessed along Congress Street. METRO bus route 8 is located along Cumberland Avenue.

See additional detail of Transit Routes in the Metro graphic below.



TDM Coordinator

This development has designated Haynes Johnston, Director of Development, Redfern Properties LLC, to initially serve as the TDM Coordinator. His contact info is:

Haynes Johnston
Redfern Properties LLC.
P.O. Box 8816
Portland, Maine 04104
haynes@redfernproerties.com

Mr. Johnston will actively promote and educate on alternative forms of transportation for both residents and employees. As the Coordinator, he will be responsible for monitoring and updating the TDM Plan. At some point after a property management firm is in place to manage the property for Redfern Properties LLC., Haynes Johnston will designate a staff member from the property management firm to assume the role of TDM Coordinator. When this happens the TDM plan will be updated and a copy submitted to the City. Mr. Johnston will assist the new TDM Coordinator during the transition to both maintain the effectiveness of the plans and to update the new Coordinator on status of existing TDM programs and current initiatives.

Resident, Customer & Employee Survey

The TDM Plan will include a transportation survey prior to implementation and on an annual basis. The survey will consist of questions to gain an understanding of resident/employee commuting means and effectiveness of the TDM strategies. The survey will include questions such as:

1. Vehicle ownership and parking location
2. Mode of transportation (car, bus, walking, taxi/rideshare, bicycle, etc.) to travel to and from the apartment complex.
3. Reason for selected transportation mode
4. Ease of use of selected transportation mode
5. Concerns with using other transportation modes
6. Barriers to vehicle trip reductions such as transit ridership and bicycle use
7. Use of personal vehicles
8. Interest in carpooling to share in transportation expenses.

This survey will be conducted annually for residents of the apartments and employees of the restaurant and will be electronically tabulated. This information will be used to develop specific strategies and adjust the TDM plan as needed.

Parking and Trip Reduction Targets

Trip Generation

As part of the Applicant's traffic study for this development, trip generation was calculated using the ITE Trip Generation Manual 11th Edition. See summary tables below for the expected trip generation. Trip generation for the proposed 326 apartment units and 1,800sf of commercial spaces was determined based on the trip generation rates provided in the 11th edition of the Institute of Transportation Engineers (ITE) *Trip Generation Manual*. The ITE Manual provides numerous land use codes (LUC) and the average volume of site generated trips produced by each category.

Trip generation calculations for the 326 apartment units were prepared using *LUC #221—Multi-Family Housing (Mid-Rise)*, which ITE describes as "*apartments and condominiums located in a building that has between four and 10 floors of living space. Access to individual dwelling units is through an outside building entrance, a lobby, elevator, and set of hallways.*"

Trip generation calculations for the 1,800sf of commercial spaces were prepared using *LUC #932 – High-Turnover (Sit-Down)* *Restaurant*, defined by ITE as "*full-service eating establishments with a typical duration of stay of 60 minutes or less. This restaurant is usually moderately priced, frequently belongs to a restaurant chain, and is commonly referred to as casual dining. Generally the restaurants serve lunch and dinner; they may also be open for breakfast and are sometimes open 24 hours a day.*"

In the *Trip Generation Manual*, for LUC #221 and LUC #932, ITE provides the *Average* trip generation rate, and the *Fitted Curve* trip generation rate. MaineDOT guidelines state that when $R^2 \geq 0.80$, the *Fitted Curve* trip generation rate shall be used. The trip generation calculations for the apartment units and commercial space are provided below in Table 1.1 and Table 1.2:

Table 1.1
ITE Trip Generation Calculations (Dense Multi-Use Urban)

Land Use	Multifamily Housing (Mid-Rise) Not Close to Rail Transit - LUC 221						
Time Period	**Dwelling Units (X)**	**R^2**	**Fitted Curve Equation/ Avg. Rate**	**Trips Generated (T)**	**Distribution Entering / Exiting**	**Enter**	**Exit**
Weekday	326	n/a	2.93	955	50% / 50%	478	477
AM Weekday Peak Hour (Street)	326	0.96	T = 0.25(X) + 5.35	87	15% / 85%	13	74
PM Weekday Peak Hour (Street)	326	0.97	T = 0.29(X) - 6.26	88	73% / 27%	64	24
AM Weekday Peak Hour (Generator)	326	0.69	0.23	75	17% / 83%	13	62
PM Weekday Peak Hour (Generator)	326	0.78	0.24	78	63% / 37%	49	29
Saturday Peak Hour*	326	n/a	0.27	88	50% / 50%	44	44

*ITE does not provide trip distribution for Saturday peak hour. Assumed to be 50/50.

Table 1.2
ITE Trip Generation Calculations (General Urban/Suburban)

Land Use	High-Turnover (Sit-Down) Restaurant - LUC 932					
Time Period	**Sq. Footage (1k)**	**Avg. Trip Generation Rate (Trips Per 1k Sf)**	**Trips Generated**	**Distribution Entering / Exiting**	**Enter**	**Exit**
Weekday	1.8	107.20	193	50% / 50%	97	96
AM Weekday Peak Hour (Street)	1.8	9.57	18	55% / 45%	10	8
PM Weekday Peak Hour (Street)	1.8	9.05	17	61% / 39%	11	6
AM Weekday Peak Hour (Generator)	1.8	13.68	25	57% / 43%	15	10
PM Weekday Peak Hour (Generator)	1.8	16.35	30	51% / 49%	16	14
Saturday Peak Hour	1.8	11.19	21	51% / 49%	11	10

Summarizing the trip generation calculations shown in the preceding tables, Table 1.3, following, provides the trip generation calculations for the proposed development:

Table 1.3
ITE Trip Generation Summary

Time Period	Total Trips	Enter	Exit
Weekday	1148	575	573
AM Weekday Peak Hour (Street)	105	23	82
PM Weekday Peak Hour (Street)	105	75	30
AM Weekday Peak Hour (Generator)	100	28	72
PM Weekday Peak Hour (Generator)	108	65	43
Saturday Peak Hour	109	55	54

The preceding table shows that the proposed multi-use building is expected to generate 105 trips during the AM peak hour of the adjacent street, and 105 trips during the PM peak hour of the adjacent street. During the peak hours of the generator, the site is expected to produce 100 trips in the AM and 108 trips in the PM. During the Saturday peak hour, the development is expected to generate 109 trips.

Net New Trips

MaineDOT Traffic Movement Permit Regulations allow trip generation credits to be taken for on-site uses that are displaced by the development of a site which were operational within the past 10 years. Within the past 10 years, the site was occupied by Northern Burner Supply Company, a heating and air conditioning/HVAC wholesale distributer store. The development was located in a 9,500sf building, which will be removed with the development of the project. The trip generation estimates for Northern Burner Supply Co., which were prepared using ITE's LUC #110 – General Light Industrial, are provided below in Table 1.4:

Table 1.4
ITE Trip Generation Calculations (General Urban /Suburban)

Land Use	General Light Industrial - LUC 110					
Time Period	**Sq. Footage (1k)**	**Avg. Trip Generation Rate (Trips Per 1k Sf)**	**Trips Generated**	**Distribution Entering / Exiting**	**Enter**	**Exit**
Weekday	9.5	4.87	46	50% / 50%	23	23
AM Weekday Peak Hour (Street)	9.5	0.74	7	88% / 12%	6	1
PM Weekday Peak Hour (Street)	9.5	0.65	6	14% / 86%	1	5
AM Weekday Peak Hour (Generator)	9.5	0.91	9	87% / 13%	8	1
PM Weekday Peak Hour (Generator)	9.5	0.80	8	18% / 82%	1	7
Saturday Peak Hour		Closed				

Table 1.4 shows that the site's prior use generated 7 trips during the AM peak hour of the adjacent street and 6 trips during the PM peak hour of the adjacent street. During the AM and PM peak hours of the generator, the site produced 9 trips and 8 trips, respectively.

Taking credit for the site's prior use, Table 1.5, following, presents the net new site trip generation:

Table 1.5
Net New Trip Generation Calculations

Time Period	Proposed Trip Generation			Existing Trip Generation			Net New Trip Generation		
	Total	**Enter**	**Exit**	**Total**	**Enter**	**Exit**	**Total**	**Enter**	**Exit**
Weekday	1148	575	573	-46	-23	-23	1102	552	550
AM Weekday Peak Hour (Street)	105	23	82	-7	-6	-1	98	17	81
PM Weekday Peak Hour (Street)	105	75	30	-6	-1	-5	99	74	25
AM Weekday Peak Hour (Generator)	100	28	72	-9	-8	-1	91	20	71
PM Weekday Peak Hour (Generator)	108	65	43	-8	-1	-7	100	64	36
Saturday Peak Hour	109	55	54	0	0	0	109	55	54

The preceding table shows that the proposed multi-use building is expected to generate 98 net new trips during the AM peak hour of the adjacent street, and 99 net new trips during the PM peak hour of the adjacent street. During the peak hours of the generator, the site is expected to produce 91 net new trips in the AM and 100 net new trips in the PM. During the Saturday peak hour, the development is expected to generate 109 net new trips.

Trip Adjustments

It is assumed that a certain number of trips generated by the proposed apartment units will also visit the proposed restaurant located on the ground floor. We have calculated the internally captured (shared) trips for proposed developments using the approach recommended by the ITE *Trip Generation Handbook*, which recommends using the NCHRP Report 684 methodology. The NCHRP Report 684 determines the internally captured trips between office, retail, restaurant, cinema/entertainment, residential, and hotel land uses.

The NCHRP spreadsheets, *attached in Section A of the appendix*, have been prepared by inputting the net new trips generated by the proposed residential and restaurant uses. The outputs of the spreadsheets are summarized below in Table 1.6:

Table 1.6
NCHRP Report 684 Summary

Time Period	Internal Capture Percentages			External Vehicle Trips		
	Total	Enter	Exit	Total	Enter	Exit
AM Weekday Peak Hour (Street)	4%	12%	2%	94	15	79
PM Weekday Peak Hour (Street)	6%	4%	12%	93	71	22
Saturday Peak Hour	7%	7%	7%	101	51	50

Table 1.6 shows that with the internally captured trips accounted for, the site is expected to produce 94 net new trips in the AM peak hour, 93 net new trips in the PM peak hour, and 101 net new trips in the PM peak hour.

Expected Parking Generation

It should be noted that based on City Ordinance, on-site parking is not required to be provided. However, as part of this TDM Plan, we are estimating parking demand based on the two proposed uses of the site. The uses included 326 units of mid-rise multifamily housing, LUC 221, and a ground level high turnover restaurant, LUC 932. Based on the Institute of Transportation Engineers (ITE) Parking Generation Manual, 5th Edition, we have estimated parking demand for the proposed development.

For LUC 221, we have used the best-fit curve equation (as the $R^2 > 0.80$) for the Dense Multi-Use Urban condition, which is $P = 1.04(X) – 15.22$, with 326 units this corresponds to 324.9 spaces.

For LUC 932, we have used the average rate for a weekday because there was no best-fit equation provided. With the average weekday rate of 6.47 Parking Spaces per 1000 sf of LUC 932, this equates to 11.6 spaces.

However, with this type of development being more of a transit-oriented development in an area of Portland that is heavily serviced by transit services with connections to other transit services it is expected that this development will not as heavily rely on single occupancy vehicles by its residents. In addition, the existing pedestrian and bicycle infrastructure on this area of Washington Avenue will encourage bicycle and pedestrian activity for local and neighborhood trips.

Parking & Trip Rate Reduction Targets

It has been shown that typical reduction rates of up to 10% can be reasonably achieved through implementation of an effective TDM plan. The start of implementing this effective TDM plan will be a thorough initial survey period, gaining information of travel mode splits, and making observations during this time of travel patterns to and from the residential and restaurant portions of the development.

Customize Parking and Trip Reduction Strategies

The strategy to reduce parking and trip demand will be aimed at residents and staff. Resident and staff strategies will seek to reduce employee vehicle trips to the site, especially during normal peak traffic hours. Ridesharing will be coordinated and promoted amongst staff. Information regarding the Metro, Metro Breez, South Portland and the Biddeford, Saco and Old Orchard Beach Transit Service, and a program to discount passes will be made available to residents and staff. As mentioned above bicycle parking will also be provided inside of the building with additional bike racks outside to encourage bicycle commuting.

For residents, strategies will focus on both initially travelling to and from the building for work and pleasure trips, especially those within the greater Portland area. Information will be provided and readily available regarding desirable walking routes to transit and nearby attractions, such as restaurants and shops and other nearby destinations such as the Eastern Promenade and the Old Port.

Education

Transit Maps and Schedules:

The METRO has six (6) bus stops on Washington Avenue with two in close proximity to this project (less than 300 ft north and south). As discussed above there are three Metros line and one Metro Breez line that run on Washington Avenue, which have connections to other transfer centers. Information on routes, schedules, and payment methods for buses will be available for residents via a kiosk and bulletin board in the building lobby. Information will also be posted on the services available at the Portland Transportation Center, which include the Amtrak Downeaster and Concord Coach Bus Lines for intercity and regional service.

Suggestions for the most convenient pedestrian routes to relevant local bus stops will be made available. All intersection crossings along the route have crosswalks and include pedestrian signals at signalized intersections. There is a crosswalk with an RRFB where the Eastern Promenade intersects Washington Avenue and a midblock crosswalk at this site's frontage on Washington Avenue.

Resident and employee orientation will include information related to discount programs for the Metro, Metro Breez, South Portland Bus Service, and Biddeford/Saco/Old Orchard Beach Bus service.

Ridesharing:

The TDM Coordinator will actively promote and coordinate ridesharing amongst residents and employees. This will be done through bulletin boards in the lobby and employee areas, and

employee email lists. Residents and employees who actively rideshare/carpool will be recognized for their efforts on newsletter announcements and/or bulletin board postings in the employee areas.

Monitoring

The TDM Plan will be monitored over time to determine its ongoing effectiveness. The TDM Coordinator will be responsible for this monitoring and making changes as necessary to better meet the TDM goals.

After an initial startup period, the Applicant, through the TDM Coordinator, will submit a status report to the City of Portland containing the following information:

- Occupancy figures for the multifamily housing
- Vehicle ownership of tenants
- Usage / Transaction data for the restaurant use
- Summary and analysis of completed TDM Surveys
- Usage data for TDM programs initiated
- Mode Split by trip type
- Suggestions for improvements to bicycle, pedestrian and transit infrastructure.
- Comparison to previous surveys (after initial survey)
- Proposed changes to TDM Plan (Education, Infrastructure, and Incentive) after each subsequent survey
- Updated TDM usage data from year to year and noted updated programs.

The development may not be at or near full occupancy at opening, an annual report will be filed with the City, however, it will be important to note how the TDM plan is functioning and how effective it is as the project nears full capacity.

Project Specific Standards

Infrastructure

The following onsite infrastructure improvements are currently proposed:

- Bicycle parking racks will be located within the first floor and exterior to the building. Number of spaces (163 total) will meet minimum according to Article 14 of the Land Use Code.
- A TDM kiosk will be provided in the main lobby area of the building, nearby transit stops will be one of thing items noted, there are currently bust stop location north and south for the project on Washington Avenue, both less than.
- A bulletin board or monitor will be provided in the lobby area of the building and one will be provided in the employee area. The employee and public information areas will contain the relevant information to each. The TDM Coordinator will be responsible for keeping material current and available.
- An option for a Monitor in the lobby will be further investigated, for implementing real-time tracking of buses along their routes on Washington Avenue and other adjacent areas of the City.
- Reconstruction of brick sidewalks and granite curbs per the City Technical Standards, as well as adding street lighting long the projects frontage along Washington Avenue.

- Improvements to the existing mid-block crossing along the site's frontage on Washington Avenue, which will include a new ramp and detectable warning field and restriping a bar type crosswalk per City Technical Standards.

Incentives

The following incentives will be provided to residents and employees to encourage their active participation in the TDM plan:

A. Effective Parking "Cash Out": With no parking provided on-site or included in the rent, tenants will be provided with a choice as to whether to pay for a parking space off site. Those who choose not to own their own vehicle will be able to reduce their housing costs through this decoupling of parking cost and rent.

B. Transit Incentives: Research has shown that moving into a new home is a chance for residents to try new transportation options. In order to make sure that new tenants are aware of, and have incentives to try, transit, Redfern will provide new tenants with a $30 credit on the DiriGo app. That app can be used for trips on METRO, BSOOB Transit and/or South Portland Bus Service. This loaded amount will make trying transit very easy and ensure that tenants have loaded the DiriGo app on their phones. This credit will be provided to new tenants for at least five years after building occupancy. Should tenants not own a phone, Redfern will provide them with a DiriGo Pass (formerly a DiriGo TouchPass) loaded with $30.

C. Car and Bike Sharing: While Portland currently does not have a car-sharing vendor, should one become available, Redfern commits to working with the City to provide a car-sharing vehicle nearby. Similarly, Redfern is interested in working with the City and any bike-sharing systems it may have, including assisting with sponsorship of some of the system.

D. Telecommuting: This building will be set-up and wired with the best internet access currently available in this location, to encourage telecommuting as a trip reduction strategy.

Conclusions

This preliminary TDM plan has been prepared in conjunction with Redfern Properties LLC, and will continue to be detailed during the Site Plan Approval process. We anticipate there will be comments from City staff and we look forward to working with the City to arrive at a TDM plan that best fits this type of development and its location within the City of Portland. To that end, this project is supportive of the City's goals of reducing single occupancy usage, increasing transit ridership and increasing pedestrian and bicycle activity.

Jon Howard <jonsellsmaine@gmail.com> Dec 15, 2024, 9:46:28 AM (22 hours ago)

to planningboard@portlandmaine.gov, Taylor Colbeth

Hello,

I live at 218 Washington Ave. There is already very limited parking here and we have a garage spot for each unit. Moving trucks, visitors, etc are often forced to park very far away as it is. This isn't taking into account parking bans that are of course going to occur during the winter months. To approve 300 + units with 20-30 parking spots is absolutely crazy and will not only affect 218 Washington but will affect all of lower Munjoy and Bayside as people will be parking far away and walking across the street near the 295 on ramp! It will also create a nightmare for pedestrians trying to cross a busy Washington Ave - especially come summer and during peak hours of 7-9a and 4-6p. I'm not against growth and additional units but there should be a 1 to 1 ratio for units and parking spots (just like 218 Washington has) In addition there should be an additional 20-30 spots for visitor parking and vendors. This is way too large in an already congested area of Portland.

Thank you,

Jon

Jon Howard | Broker/Owner
MaineLand Real Estate
Scarborough, ME

TAVATA
165 WASHINGTON AVENUE REDEVELOPMENT
REDFERN PROPERTIES
PORTLAND, MAINE

LEGEND

EXISTING

REFER TO THE EXISTING CONDITIONS PLAN FOR ADDITIONAL INFORMATION

PROPOSED

	GREEN SPACE
	UTILITY PAVEMENT CUTS
	STRIPING
ECB	SEDIMENTATION BARRIER
	EDGE OF EX. PAVEMENT
	CURB
	SIGN
	LAMP OR LIGHT POLE
	UTILITY POLE
	GUY WIRE
	WATER VALVE
	FIRE HYDRANT
S	SEWER MANHOLE
	CATCH BASIN
D	DRAIN MANHOLE
UE / UGE	UNDERGROUND ELECTRIC LINE
W / W	UNDERGROUND WATER LINE
64	MINOR CONTOURS (1 FT)
65	MAJOR CONTOURS (5 FT)
G / G	GAS LINE
SD / SD	STORM DRAIN LINE
S / S	SEWER LINE
UD	UNDERDRAIN
	EXISTING/PROPOSED BUILDING
OHE/T/C	OVERHEAD ELECTRICAL/TELEPHONE/CABLE
	PROPERTY LINE
	SETBACKS

UTILITIES

SEWER

DEPARTMENT OF PUBLIC WORKS (DPW)
250 CANCO ROAD
PORTLAND, MAINE 04101
CONTACT: BRAD ROLAND, P.E.
(207) 874-8840

WATER

PORTLAND WATER DISTRICT
225 DOUGLASS STREET
PO BOX 3553
PORTLAND, MAINE 04104
ATTN: MEANS DIVISION
(207) 774-5961

ELECTRIC

CENTRAL MAINE POWER COMPANY (CMP)
162 CANCO ROAD
PORTLAND, MAINE 04103
CONTACT: JAMIE COUGH
(207) 629-1489

TELEPHONE

CONSOLIDATED COMMUNICATIONS
(FORMERLY FAIRPOINT)
45 FOREST AVENUE
PORTLAND, MAINE 04101
CONTACT: PAT MORRISON
(207) 745-9363

CABLE

SPECTRUM CABLE
118 JOHNSON ROAD
PORTLAND, MAINE, 04102
CONTACT: STEVEN HOLMES
(207) 631-1618

NATURAL GAS

UNITIL SERVICE CORP
1075 FOREST AVENUE
PORTLAND, ME 04103
CONTACT: SCOTT CARPENTER
(207) 541-2536

PROJECT TEAM

DEVELOPER

REDFERN PROPERTIES
PORTLAND, MAINE
CONTACT: JONATHAN CULLEY
(207) 261-5302

CIVIL ENGINEER:

ACORN ENGINEERING, INC.
PORTLAND, MAINE
CONTACT: PETER HEIL, P.E.
(207) 775-2655

ARCHITECT

HOLST ARCHITECTURE
PORTLAND, OREGON
CONTACT: LEE JORGENSEN, RA
612-470-1525

SURVEYOR

OWEN HASKELL INC.
FALMOUTH, MAINE
CONTACT: JOHN C. SCHWANDA P.L.S.
(207) 774-0424

ELECTRICAL ENGINEER

TARR ENGINEERING
NEW GLOUCESTER, MAINE
CONTACT: JOHN, W. TARR, P.E.
(207) 212-6022

STRUCTURAL ENGINEER

STRUCTURAL INTEGRITY CONSULTING ENGINEERS, INC.
PORTLAND, MAINE
CONTACT: AARON JONES, P.E.
(207) 774-4614

TRAFFIC ENGINEER

BARTON & LOGUIDICE
SCARBOROUGH, MAINE
CONTACT: JOHN Q. ADAMS, P.E.
(207) 331-6694

GEOTECHNICAL ENGINEER

SUMMIT GEOENGINEERING SERVICES
LEWISTON, MAINE
CONTACT: BILL PETERLEIN, P.E.
(207) 576-3313

ENVIRONMENTAL ENGINEER

TRC
PORTLAND, MAINE
CONTACT: EMILY WASSMER, PG/LG, LSP
(207) 298-0785

GENERAL CONTRACTOR

PENOBSCOT (PGC)
FALMOUTH, MAINE
CONTACT: CLAY MAKER
(207) 236-6390

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VICINITY MAP
SCALE: 1:200

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

CALL BEFORE YOU DIG
1-888-DIG-SAFE
1-888-344-7233

PERMITTING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
SITE PLAN	PFH 11/20/24

DRAWING NAME: COVER SHEET & LEGEND
PROJECT NAME: TAVATA - 165 WASHINGTON AVENUE PORTLAND, MAINE, 04101
CLIENT: REDFERN PROPERTIES P.O. BOX 8816, PORTLAND, MAINE 04104

ACORN ENGINEERING, INC.
THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN AUTHORIZATION FROM ACORN ENGINEERING, INC. AND SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC. FOR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC
PO BOX 221 PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1202_CIVIL
JN:	1202
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE — WILLIAM H. SAVAGE — 11419 — 11/20/24 — LICENSED PROFESSIONAL ENGINEER

STATE OF MAINE — PETER F. HEIL — 15318 — LICENSED PROFESSIONAL ENGINEER — 11/20/24

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 OWEN HASKELL, INC. FOR ACORN ENGINEERING, DATED 7/25/23.
8. SUBSURFACE DATA OBTAINED BY **THE PROJECT GEOTECHNICAL ENGINEER** 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** 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 SURVEY ROCK SURFACE PRIOR TO EXCAVATION AND DEVELOP VOLUME CALCULATIONS TO SHARE WITH THE ENGINEER, ACORN ENGINEERING INC. (ACORN), IF ANY.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRESERVATION OF ALL TREES AND SHRUBS ON THE PROJECT WHICH ARE NOT TO BE REMOVED.
16. 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 THE OWNER AND COORDINATED BY THE CONTRACTOR.

LAYOUT NOTES:

1. MONUMENTS DELINEATING PROPERTY LINES OR RIGHT OF WAYS SHALL NOT BE DISTURBED DURING CONSTRUCTION OPERATIONS. IN THE CASE A MONUMENT IS DISTURBED, AT THE CONTRACTOR'S EXPENSE, THE MONUMENT SHALL BE RESET TO ITS ORIGINAL LOCATION AND ELEVATION BY A LICENSED PROFESSIONAL LAND SURVEYOR.
2. ALL DIMENSIONS ON THE FOLLOWING SHEETS TAKE PRECEDENT OVER SCALED DIMENSIONS. EACH DRAWING WITH A BAR SCALE MEANS THAT THE DRAWING/DETAIL HAS BEEN SCALED AS ACCURATELY AS POSSIBLE, AND THE BAR SCALE IS FOR GENERAL REFERENCE ONLY. IF NO BAR SCALE IS PRESENT, THEN THERE IS NO SCALE TO THAT DRAWING/DETAIL. AT NO TIME SHOULD DRAWINGS BE SCALED FROM. ANY DISCREPANCIES BETWEEN DRAWINGS, DETAILS, SPECIFICATIONS AND THE FIELD CONDITION SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
3. SIGNAGE, STRIPING, AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
4. ALL TRAFFIC CONTROL SIGNS INDICATED ON THE SITE LAYOUT PLAN ARE TO MEET ALL REQUIREMENTS & CONDITIONS OF THE CITY OF PORTLAND, MAINE DEPARTMENT OF TRANSPORTATION AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
5. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A LICENSED PROFESSIONAL LAND SURVEYOR TO PROVIDE A MINIMUM OF TWO TEMPORARY BENCHMARKS WITHIN THE SITE AND TO LOCATE PROPOSED STRUCTURE CORNERS.
6. CONTRACTOR TO ENSURE THAT ACCESS, INCLUDING BUT NOT LIMITED TO WALKWAYS, DRIVEWAYS, AND MAILBOXES ADJACENT TO THE PROJECT REMAIN FUNCTIONAL AND AVAILABLE FOR USE AT ALL TIMES.

PERMITTING NOTES

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF A MAJOR SITE PLAN APPLICATION FROM THE CITY OF PORTLAND, A MAINE DEP STORMWATER LAW APPLICATION UNDER DELEGATED REVIEW BY THE CITY OF PORTLAND, A MAINE DEP CONSTRUCTION GENERAL PERMIT, AND A MDOT TRAFFIC MOVEMENT PERMIT.
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% 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 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 BE 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. THE CLIENT HAS NOT REQUESTED NOR HAS ACORN COMPLETED A PHASE I – ENVIRONMENTAL SITE ASSESSMENT FOR THE PROPERTY.

PERMITTING
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY	DATE
SITE PLAN	PFH	11/20/24

DRAWING NAME: **GENERAL NOTES**

PROJECT NAME: **TAVATA – 165 WASHINGTON AVENUE**
PORTLAND, MAINE, 04101

CLIENT: REDFERN PROPERTIES
P.O. BOX 8816, PORTLAND, MAINE 04104

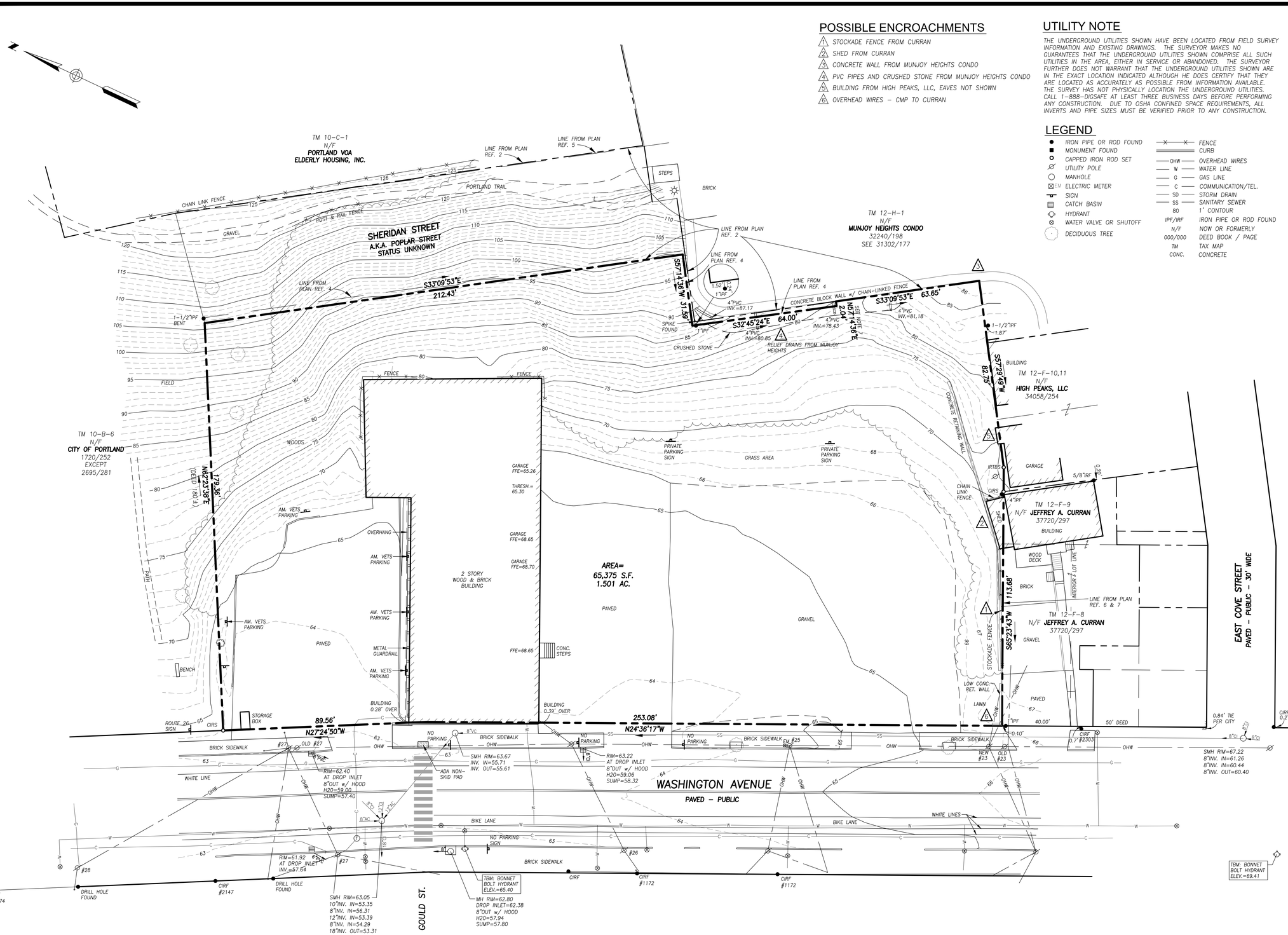
THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS MADE TO THESE PLANS WITHOUT WRITTEN PERMISSION OF ACORN ENGINEERING, INC. SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
ENGINEERING, INC.
ACORN ENGINEERING, INC
70 JOHN ROAD
PO BOX 2375
PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1202_CIVIL
JN:	1202
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER
11/20/24

DRAWING NO.
C-02



POSSIBLE ENCROACHMENTS

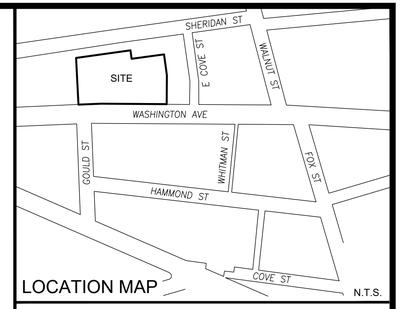
1. STOCKADE FENCE FROM CURRAN
2. SHED FROM CURRAN
3. CONCRETE WALL FROM MUNJOY HEIGHTS CONDO
4. PVC PIPES AND CRUSHED STONE FROM MUNJOY HEIGHTS CONDO
5. BUILDING FROM HIGH PEAKS, LLC, EAVES NOT SHOWN
6. OVERHEAD WIRES – CMP TO CURRAN

UTILITY NOTE

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEY HAS NOT PHYSICALLY LOCATION THE UNDERGROUND UTILITIES. CALL 1-888-DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION. DUE TO OSHA CONFINED SPACE REQUIREMENTS, ALL INVERTS AND PIPE SIZES MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION.

LEGEND

IRON PIPE OR ROD FOUND	FENCE
MONUMENT FOUND	CURB
CAPPED IRON ROD SET	OHW — OVERHEAD WIRES
UTILITY POLE	W — WATER LINE
MANHOLE	G — GAS LINE
EM ELECTRIC METER	C — COMMUNICATION/TEL.
SIGN	SD — STORM DRAIN
CATCH BASIN	SS — SANITARY SEWER
HYDRANT	80 — 1' CONTOUR
WATER VALVE OR SHUTOFF	IPF/IRF — IRON PIPE OR ROD FOUND
DECIDUOUS TREE	N/F — NOW OR FORMERLY
	000/000 — DEED BOOK / PAGE
	TM — TAX MAP
	CONC. — CONCRETE



PLAN REFERENCES

1. "PLAN OF PROPERTY OF W.H. BAXTER ESQ. BY ANDERSON BONNELL & CO. JULY 1866" RECORDED IN PLAN BOOK 2 PAGE 54.
2. "PLAN DEPICTING A PROPOSED SUBDIVISION MADE FOR REDFERN MUNJOY, LLC MUNJOY HEIGHTS SHERIDAN STREET, EAST COVE STREET, AND WALNUT STREET PORTLAND, MAINE 12/6/2013 NADEAU LAND SURVEYS" RECORDED IN PLAN BOOK 214 PAGE 48.
3. SUBDIVISION OF LOT 1 ON MUNJOY'S NECK FOR LITTLE, WEEKS AND MOODY DATED FEB. 17, 1802 AND RECORDED IN DEED BOOK 36, PAGE 247.
4. "PLAN OF PROPERTY IN PORTLAND, MAINE MADE FOR DEAD RIVER LEASING, INC. 11-10-1969 H.I. & E.C. JORDAN – SURVEYORS"
5. "LAND TITLE SURVEY FOR VOLUNTEERS OF AMERICA PORTLAND, MAINE 12-18-92 H.I. & E.C. JORDAN – SURVEYORS" REVISED AUG. 29, 1995
6. "BOUNDARY SURVEY AT 163 WASHINGTON AVENUE, PORTLAND, MAINE MADE FOR OWNER OF RECORD JEFFREY A. CURRAN MAY 26, 2021 OWEN HASKELL, INC. JOB NO. 2021-075 P" REVISED 12-18-2022.
7. "PLAN OF PROPERTY OF W.H. BAXTER ESQ. BY ANDERSON BONNELL & CO. JULY 1866" RECORDED IN PLAN BOOK 2, PAGE 56.

GENERAL NOTES

1. OWNER OF RECORD: RAYMOND H. AND ALINA WATERHOUSE, 105 PARTRIDGE CIRCLE, PORTLAND, ME; CUMBERLAND COUNTY REGISTRY OF DEEDS BOOK 25470, PAGE 272.
2. LOCUS IS SHOWN AT LOT 1 IN BLOCK D ON PORTLAND PROPERTY MAP 10.
3. BEARINGS ARE GRID NORTH AS BASED ON CITY MONUMENTS L749-78-3002, CORNER WASHINGTON AVENUE AND NORTH SIDE OF WALNUT STREET, AND T112-18-107, CORNER EAST SIDE OF NORTH STREET AND NORTH SIDE OF WALNUT STREET, AS SURVEYED BY THIS FIRM IN 2014. THESE ARE THE SAME TWO MONUMENTS USED FOR PLAN REFERENCE 2 IN 2013. BOTH OF THESE MONUMENTS HAVE BEEN MOVED OR DISTURBED, APPARENTLY DURING SIDEWALK RECONSTRUCTION SINCE 2014.
4. ELEVATIONS ARE CITY DATUM AS BASED ON PK IN POLE #11, CORNER ANDERSON AND EVERETT STREETS, ELEVATION 12.42 CITY LEVEL BOOK 737, PAGE 77.
5. LINES ALONG CURRAN, HIGH PEAKS, LLC, AND A PORTION OF MUNJOY HEIGHTS CONDO ARE BASED ON DIMENSIONS SHOWN ON PLAN REFERENCE 7.
6. THE EXACT STATUS OF SHERIDAN STREET, FORMERLY KNOWN AS POPLAR STREET, HAS NOT BEEN DETERMINED. IT IS PRESUMED TO HAVE BEEN VACATED AND OWNERSHIP MAY EXTEND TO THE CENTER OF THE PAPER STREET. THE WESTERLY LINE OF SHERIDAN HEREON IS THE SAME AS SHOWN ON PLAN REFERENCE 2. THIS MATCHES REASONABLY WELL WITH THE LINE OF SHERIDAN STREET AS SHOWN ON PLAN REFERENCE 5 BUT NOT WITH THE LINE ON PLAN REFERENCE 4. THIS STREET WAS ORIGINALLY SHOWN ON PLAN REFERENCE 3 IN 1802 WHICH PLAN IS VERY DIFFICULT TO RECREATE.
7. THE SKETCH IN DEED BOOK 31302, PAGE 177, FROM WATERHOUSE TO REDFERN MUNJOY, LLC, DOES NOT INDICATE A JOG IN THE CURRENT EAST LINE OF WATERHOUSE. THE SOUTH SIDE OF THE ORIGINAL WATERHOUSE LAND, ON THE WEST SIDE OF SHERIDAN STREET, ON PLAN REFERENCE 4 HAS A DISTANCE OF 33.47 FEET. THE SAME LINE ON THE RECENT SKETCH HAS A DISTANCE OF 30.00 FEET. THIS SURVEYOR BELIEVES THAT THE LINE OF SHERIDAN STREET ON PLAN REFERENCE 4 IS NOT ACCURATE. A BOUNDARY AGREEMENT WITH MUNJOY HEIGHTS CONDO WOULD RESOLVE ANY CONFLICT.
8. UNDERGROUND UTILITIES MARKED BY PROMARK UTILITY LOCATING, INC. SEWER PIPE SIZES AND MATERIALS FROM CITY GIS.

CERTIFICATE

OWEN HASKELL, INC. HEREBY CERTIFIES THAT THIS PLAN IS BASED ON, AND THE RESULT OF, AN ON THE GROUND FIELD SURVEY AND THAT TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, IT CONFORMS TO THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS CURRENT STANDARDS OF PRACTICE.

JOHN C. SCHWANDA, PLS #1252

7/25/2023
DATE

STATE OF MAINE
JOHN C. SCHWANDA
1252
PROFESSIONAL LAND SURVEYOR

Boundary & Topographic Survey

At

185 Washington Avenue, Portland, Maine

Made for

Acorn Engineering

Owner of Record

Raymond H. & Alina Waterhouse

105 Partridge Circle, Portland, Maine

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

DRAWN BY: NM / JLW	DATE: JULY 25, 2023	JOB NO. 2023-117 P	
CHECKED BY: JCS	SCALE: 1" = 20'	DRWG. NO. 1	

GENERAL NOTES:

1. EXISTING ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
2. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTOR SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" TO DEMONSTRATE PROPER DISPOSAL OF ALL MATERIALS.
3. SITE DEMOLITION SHALL NOT OCCUR UNTIL PROPER ABATEMENT PROCEDURES HAVE OCCURRED. ABATEMENT, IF NECESSARY, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE POTENTIAL CONFLICT WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
5. ALL CONSTRUCTION SIGNAGE IS TEMPORARY AND WILL BE REMOVED AT PROJECT COMPLETION. FINAL SIGNAGE WORDING AND PLACEMENT LOCATION TO BE ACCEPTED BY THE CITY.
6. SEDIMENT BARRIERS TO BE PLACED DIRECTLY ON THE FRONT AND SIDE PROPERTY LINES, DOWN GRADIENT OF THE PROPOSED PROJECT WORK PER DETAIL; FENCES ARE OFFSET OF THE PROPERTY LINES AS SHOWN ON THE PLAN FOR CLARITY PURPOSES AND DO NOT NECESSARILY DEPICT THE PHYSICAL LOCATION.
7. CONTRACTOR SHALL PLACE CATCH BASIN INLET PROTECTION ON CATCH BASINS AND FIELD INLETS DOWN-GRADIENT OF ALL NON-STABILIZED SURFACES, PER DETAIL.
8. DEMOLITION PLAN IS NOT INCLUSIVE OF ALL EXISTING ITEMS TO BE REMOVED AS PART OF SITE CONSTRUCTION INCLUDING BUT NOT LIMITED TO LANDSCAPING, UTILITIES, WORK WITHIN THE ROW, ETC. ALL DEMOLITION WORK SHALL BE IN ACCORDANCE WITH THE CITY OF PORTLAND REGULATIONS.
9. CONTRACTOR TO BE RESPONSIBLE FOR PROVIDING OFF-SITE PARKING TO EMPLOYEES; ON-SITE PARKING WILL NOT BE PROVIDED OR GUARANTEED. CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING THE APPROPRIATE PERMITS FROM THE CITY FOR CLOSING ANY ON-STREET PARKING SPACES DURING THE CONSTRUCTION PERIOD.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR SNOW REMOVAL ALONG CONSTRUCTION FENCE AND GATE.
11. CONTRACTOR TO SUBMIT A DEWATERING PLAN FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS PRIOR TO THE PRE-CONSTRUCTION MEETING, DURING THE BUILDING PERMIT APPLICATION PROCESS, OR PRIOR TO ADVANCED SITE WORK. CONTACT THE DEPARTMENT OF PUBLIC WORKS FOR ADDITIONAL INFORMATION AND CURRENT REGULATIONS.

TM 10-C-1
N/F
PORTLAND VOA
ELDERLY HOUSING, INC.

TM 12-H-1
N/F
MUNJOY HEIGHTS CONDO
32240/198
SEE 31302/177

TM 12-F-10,11
N/F
HIGH PEAKS, LLC
34058/254

TM 12-F-9
N/F JEFFREY A. CURRAN
37720/297

TM 12-F-8
N/F JEFFREY A. CURRAN
37720/297

TM 10-B-6
N/F
CITY OF PORTLAND
1720/252
EXCEPT
2695/281

WASHINGTON AVENUE
PAVED - PUBLIC

AREA=
65,375 S.F.
1.501 AC.

EXISTING TREELINE TO REMAIN, TYP.
EXISTING FENCE TO BE REMOVED, TYP.
SEE LANDSCAPE PLANS FOR TREE REMOVALS
EXISTING TREE TO BE REMOVED, TYP.
EXISTING BUILDING TO BE DEMOLISHED, TYP.
EXISTING CURB TO BE REMOVED, TYP.
EXISTING SIGNS TO BE REMOVED
EXISTING SEWER MAIN TO BE REMOVED. SEE SHEET C-30 FOR ADDITIONAL INFORMATION
EXISTING UTILITY POLES ALONG PROJECT FRONTAGE TO BE REMOVED. IF REPLACEMENT IS NECESSARY COORDINATE GUY WIRE LOCATION WITH CMP, TYP. (OF 6). SEE C-20 FOR ADDITIONAL INFORMATION
EXISTING BRICK SIDEWALK AND VERTICAL GRANITE CURB TO BE REMOVED AND REPLACED/RESET PER SHEET C-30
INSTALL CATCH BASIN INLET PROTECTION PER DETAIL, TYP.
EXISTING OVERHEAD WIRES TO BE RELOCATED, SEE C-20 FOR ADDITIONAL INFORMATION
EXISTING SUBSURFACE TELECOMMUNICATIONS CONDUIT TO BE ABANDONED IN PLACE, TYP.
INSTALL CATCH BASIN INLET PROTECTION PER DETAIL, TYP.
EXISTING SUBSURFACE TELECOMMUNICATIONS MANHOLE TO BE ABANDONED IN PLACE, TYP.
EXISTING HYDRANT TO REMAIN
EXISTING SMH TO BE REMOVED
EXISTING 'NO PARKING' SIGN TO BE REMOVED
EXISTING UTILITY POLE TO BE REMOVED IN COORDINATION WITH CMP
EXISTING PAVEMENT TO BE REMOVED, TYP.
EXISTING CATCH BASIN TO BE REMOVED AND REPLACED. INSTALL INLET PROTECTION BEFORE AND AFTER
RETIRE EXISTING WATER SERVICE PER PWD STANDARDS
EXISTING OVERHEAD WIRE TO BE REMOVED
BIKE LANE
EXISTING SEWER MAIN TO BE REMOVED. SEE SHEET C-30 FOR ADDITIONAL INFORMATION
EXISTING GAS MAIN TO REMAIN, TYP
EXISTING WATER MAIN TO REMAIN, TYP
EXISTING SUBSURFACE TELECOMMUNICATIONS CONDUIT TO BE ABANDONED IN PLACE, TYP.
PROPOSED TREELINE, TYP.
EXISTING TREELINE TO BE REMOVED, TYP.
EXISTING SIGNS TO BE REMOVED
EXISTING UTILITY POLE TO BE REMOVED IN COORDINATION WITH CMP
EXISTING FENCE TO BE REMOVED, TYP.
EXISTING STRUCTURE TO BE REMOVED. OWNER TO COORDINATE WITH LAND OWNER PRIOR TO START OF CONSTRUCTION. CONTRACTOR TO COORDINATE WITH STRUCTURAL ENGINEER
EXISTING RETAINING WALL TO BE REMOVED 131 LF. CONTRACTOR TO COORDINATE WITH GEOTECHNICAL ENGINEER
EXISTING GRAVEL TO BE REMOVED, TYP.
CONSTRUCTION ENTRANCE PER DETAIL, TYP.
EROSION CONTROL BERM INSTALLED AT DOWN GRADIENT EDGE OF SITE PER DETAIL, TYP.
CONSTRUCTION FENCING, TYP.
EXISTING 'NO PARKING' SIGN TO BE REMOVED
EXISTING RETAINING WALL TO BE REMOVED 20 LF
EXISTING OVERHEAD WIRES TO BE RELOCATED, SEE C-20 FOR ADDITIONAL INFORMATION
EXISTING UTILITY POLE TO BE REMOVED IN COORDINATION WITH CMP
EXISTING STREET TREE TO BE REMOVED
EXISTING OVERHEAD WIRES TO BE RELOCATED, SEE C-20 FOR ADDITIONAL INFORMATION
PROPOSED SAWCUT TYP. PER DETAIL
EXISTING UTILITY POLE TO BE REMOVED IN COORDINATION WITH CMP

INV.=87.17
INV.=80.85
INV.=78.43
INV.=81.18
RIM=62.40 AT DROP INLET 8"OUT w/ HOOD H20=59.08 SUMP=57.40
RIM=61.92 AT DROP INLET INV.=57.64
RIM=63.22 AT DROP INLET 8"OUT w/ HOOD H20=59.06 SUMP=58.32
MH RIM=62.80 DROP INLET=62.38 8"OUT w/ HOOD H20=57.94 SUMP=57.80
SMH# RIM=67.22 8"INV. IN=61.26 8"INV. IN=60.44 8"INV. OUT=60.40
TBM: BONNET BOLT HYDRANT ELEV.=65.40
TBM: BONNET BOLT HYDRANT ELEV.=69.41

20 0 20 40
SCALE: 1" = 20'

PERMITTING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
SITE PLAN	PFH 11/20/24

DRAWING NAME: CONSTRUCTION MANAGEMENT PLAN
PROJECT NAME: TAVATA – 165 WASHINGTON AVENUE PORTLAND, MAINE, 04101
CLIENT: REDFERN PROPERTIES P.O. BOX 8816, PORTLAND, MAINE 04104

ACORN ENGINEERING, INC.
ENGINEERING, INC.
PROFESSIONAL ENGINEERING AND LAND SURVEYING
PO BOX 8816, PORTLAND, MAINE 04104
(207) 775-2655

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN AUTHORIZATION FROM ACORN ENGINEERING, INC. AND SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

FILE:	1202_CIVIL
JN:	1202
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER
11/20/24

DRAWING NO.
C-03

GENERAL NOTES:

1. ALL BRICK SIDEWALK AND VERTICAL GRANITE CURB TO BE REPLACED SHALL BE REBUILT TO CITY OF PORTLAND STANDARD.
2. ALL PAVEMENT STRIPING AND MARKINGS SHALL COMPLY TO CITY OF PORTLAND STANDARDS.
3. ANY ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
4. CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
5. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER FOOT.
6. ALL SITE SIGNAGE TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE AND INSTALL.
7. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SITE LIGHTING, TRASH REMOVAL AND SNOW REMOVAL.
8. CONTRACTOR SHALL VERIFY BOTTOM AND TOP OF CURB ELEVATIONS ALONG BUILDING FRONTAGES PRIOR TO CONSTRUCTION OF THE FOUNDATIONS. CONTACT ENGINEER PRIOR TO CONSTRUCTION IF DISCREPANCIES ARE FOUND.
9. 20% OF PARKING SPACES TO HAVE LEVEL 2 OR GREATER EV CHARGING STATIONS. 50% OF PARKING SPACES TO BE EV READY WITH CONDUITS INSTALLED FOR FUTURE USE.

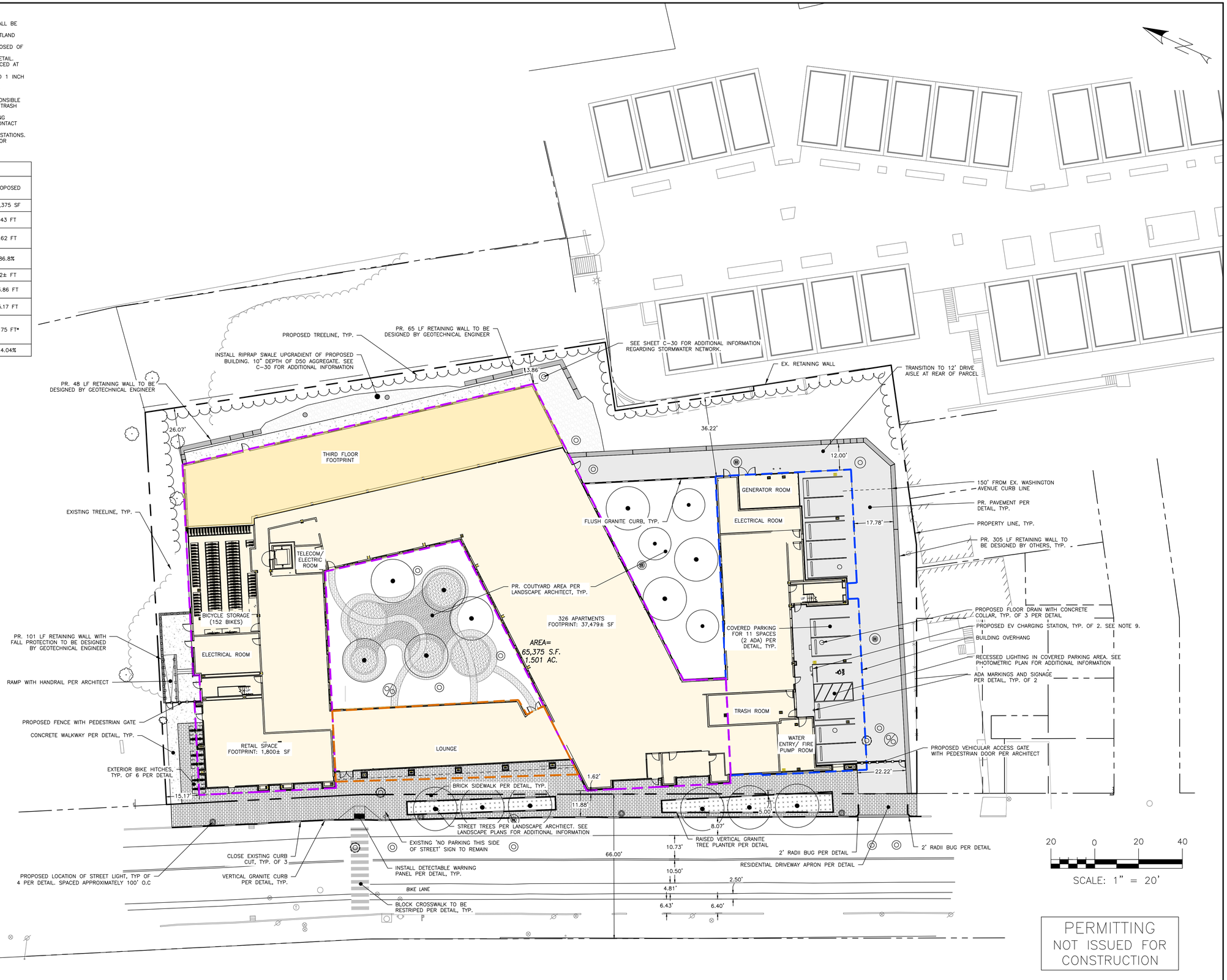
SPACE AND BULK STANDARDS		
ZONING DISTRICT B2B	REQUIRED	PROPOSED
MINIMUM LOT AREA	N/A	65,375 SF
STREET FRONTAGE	N/A	343 FT
BUILD TO ZONE	0–10 FT	1.62 FT
MINIMUM BUILDING LENGTH AS PERCENTAGE OF STREET FRONTAGE	60%	86.8%
MAX BLANK WALL AREA	20 FT	12± FT
MINIMUM REAR YARD SETBACK	NONE (10 FT ONLY WHEN ABUTTING RESIDENTIAL)	13.86 FT
MINIMUM SIDE YARD SETBACK	NONE (5 FT ONLY WHEN ABUTTING RESIDENTIAL)	15.17 FT
MAXIMUM BUILDING HEIGHT	75* FT (50 FT IF WITHIN 15' OF RN1,RN2,RN3,RN4,OS–R,OS–P ZONES)	< 75 FT*
IMPERVIOUS SURFACE RATIO	NONE	64.04%

LEGEND

- FIRST FLOOR FOOTPRINT
- THIRD FLOOR FOOTPRINT
- 3 STORY BUILDING HEIGHT
- 4 STORY BUILDING HEIGHT
- 7 STORY BUILDING HEIGHT

PARKING SUMMARY		
	MAX	PROPOSED
RESIDENTIAL	2 SPACES PER DWELLING UNIT (326 UNITS) = 652 PARKING SPACES	
RETAIL	1 SPACE PER 300 SF OF FLOOR AREA (1,800 SF) = 6 SPACES	
STANDARD (9'X18')	–	9
ADA (8'X18')	–	2
TOTAL SPACES	658 SPACES	11

BICYCLE PARKING SUMMARY		
	MIN	PROPOSED
RESIDENTIAL	1 SPACES PER 2 DWELLING UNITS (326 UNITS) 163 SPACES	
RETAIL	OVER 5,000 SF OF FLOOR AREA ONLY	
INTERIOR	–	152
EXTERIOR		12
TOTAL SPACES	163 SPACES	164



PERMITTING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
SITE PLAN	PFH	11/20/24

DRAWING NAME: SITE PLAN

PROJECT NAME: TAVATA – 165 WASHINGTON AVENUE PORTLAND, MAINE, 04101

CLIENT: REDFERN PROPERTIES P.O. BOX 8816, PORTLAND, MAINE 04104

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CIVIL ENGINEERING
PO BOX 3437 PORTLAND, MAINE 04104
(207) 775–2655

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DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS



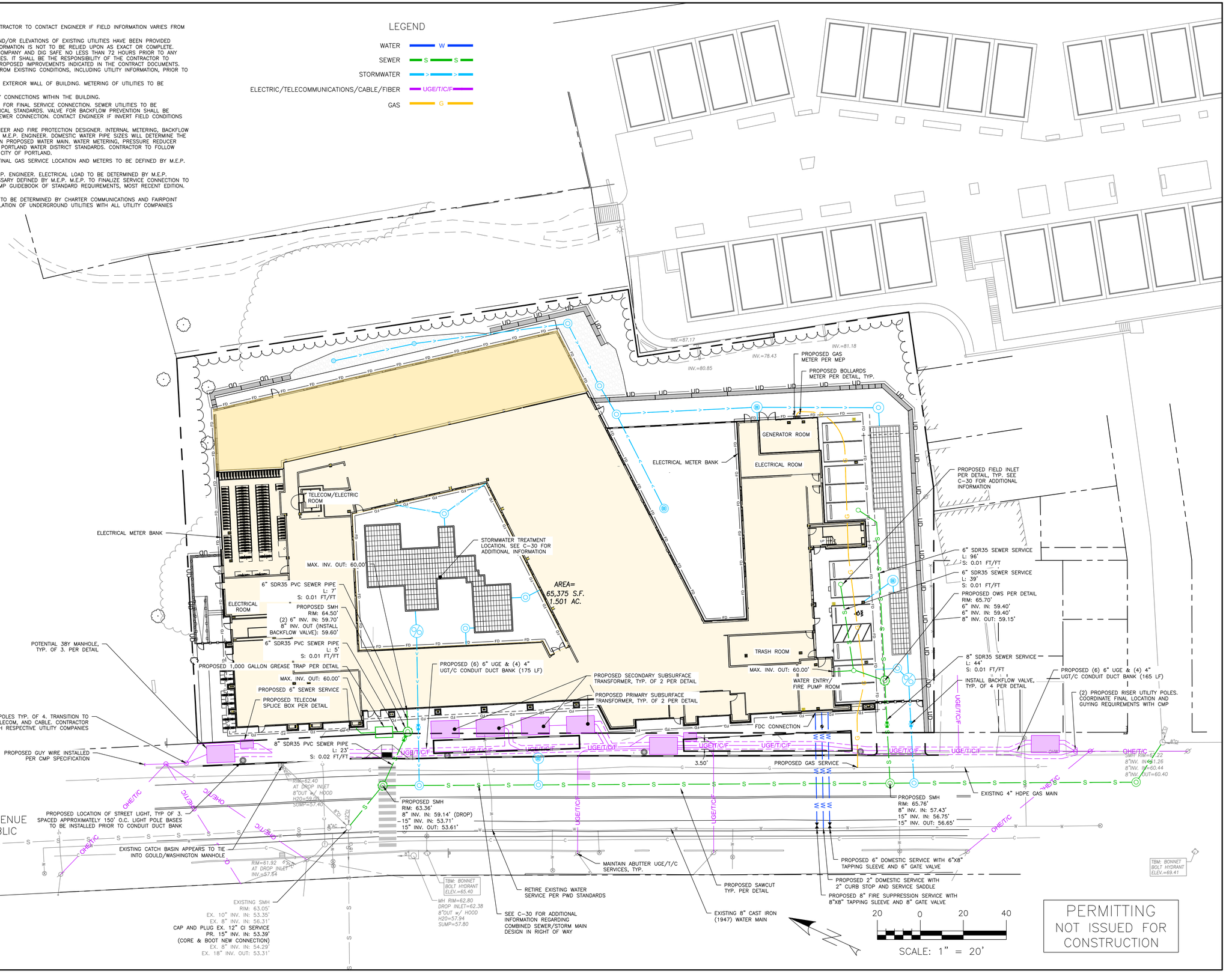
DRAWING NO.
C-10

GENERAL NOTES:

1. LOCATION OF PROPOSED CONNECTIONS ARE APPROXIMATE. CONTRACTOR TO CONTACT ENGINEER IF FIELD INFORMATION VARIES FROM INFORMATION ON PLANS.
2. CONTRACTOR IS TO BE CAUTIONED THAT CERTAIN LOCATIONS AND/OR ELEVATIONS OF EXISTING UTILITIES HAVE BEEN PROVIDED THROUGH UTILITY COORDINATION OR OTHER OBSERVATIONS. INFORMATION IS NOT TO BE RELIED UPON AS EXACT OR COMPLETE. CONTRACTOR TO FIELD VERIFY AND COORDINATE WITH UTILITY COMPANY AND DIG SAFE NO LESS THAN 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF ALL UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS INDICATED IN THE CONTRACT DOCUMENTS. CONTRACTOR TO NOTIFY ENGINEER OF ANY DIFFERENTIATIONS FROM EXISTING CONDITIONS, INCLUDING UTILITY INFORMATION, PRIOR TO ANY CHANGES.
3. FOR ALL UTILITIES, ACORN ENGINEERING DESIGN LIMITS END AT EXTERIOR WALL OF BUILDING. METERING OF UTILITIES TO BE COMPLETED BY M.E.P. UNLESS SPECIFIED OTHERWISE.
4. CONTRACTOR TO COORDINATE WITH ARCHITECT ON FINAL UTILITY CONNECTIONS WITHIN THE BUILDING.
5. SEWER UTILITIES: CONTRACTOR TO COORDINATE WITH ARCHITECT FOR FINAL SERVICE CONNECTION. SEWER UTILITIES TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF PORTLAND TECHNICAL STANDARDS. VALVE FOR BACKFLOW PREVENTION SHALL BE INSTALLED WITHIN THE THE PROPERTY LINES FOR EACH CITY SEWER CONNECTION. CONTACT ENGINEER IF INVERT FIELD CONDITIONS VARY FROM DESIGN.
6. WATER UTILITIES: FINAL PIPE SIZING PROVIDED BY M.E.P. ENGINEER AND FIRE PROTECTION DESIGNER. INTERNAL METERING, BACKFLOW PREVENTION, AND PRESSURE REDUCERS TO BE COMPLETED BY M.E.P. ENGINEER. DOMESTIC WATER PIPE SIZES WILL DETERMINE THE FINAL WATER METERING OPTIONS. METER MAY BE SMALLER THAN PROPOSED WATER MAIN. WATER METERING, PRESSURE REDUCER AND BACKFLOW PREVENTION TO BE IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT STANDARDS. CONTRACTOR TO FOLLOW METERING GUIDELINES OF THE PORTLAND WATER DISTRICT AND CITY OF PORTLAND.
7. GAS UTILITIES: PROJECT GAS LOAD, GAS UTILITY DESIGN, AND FINAL GAS SERVICE LOCATION AND METERS TO BE DEFINED BY M.E.P. AND IN ACCORDANCE WITH UNITIL.
8. ELECTRIC UTILITIES: ELECTRIC DESIGN TO BE FINALIZED BY M.E.P. ENGINEER. ELECTRICAL LOAD TO BE DETERMINED BY M.E.P. ENGINEER. METER LOCATION AND TRANSFORMER SIZE, IF NECESSARY DEFINED BY M.E.P. M.E.P. TO FINALIZE SERVICE CONNECTION TO BUILDING. ALL ELECTRIC CONSTRUCTION SHALL CONFORM TO CMP GUIDEBOOK OF STANDARD REQUIREMENTS, MOST RECENT EDITION. DESIGN SUBJECT TO FINAL APPROVAL FROM CMP.
9. CABLE AND TELEPHONE PULLBOXES AND PEDESTAL LOCATIONS TO BE DETERMINED BY CHARTER COMMUNICATIONS AND FAIRPOINT PRIOR TO CONSTRUCTION. CONTRACTOR TO COORDINATE INSTALLATION OF UNDERGROUND UTILITIES WITH ALL UTILITY COMPANIES INVOLVED.

LEGEND

WATER — W —
SEWER — S — S —
STORMWATER — > — > —
ELECTRIC/TELECOMMUNICATIONS/CABLE/FIBER — UGE/T/C/F —
GAS — G —



PERMITTING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
SITE PLAN	PFH 11/20/24

DRAWING NAME: UTILITY PLAN

PROJECT NAME: TAVATA – 165 WASHINGTON AVENUE PORTLAND, MAINE, 04101

CLIENT: REDFERN PROPERTIES
P.O. BOX 8816, PORTLAND, MAINE 04104

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ACORN ENGINEERING, INC.
70 CENTER STREET, PORTLAND, MAINE 04104
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(207) 775-2655

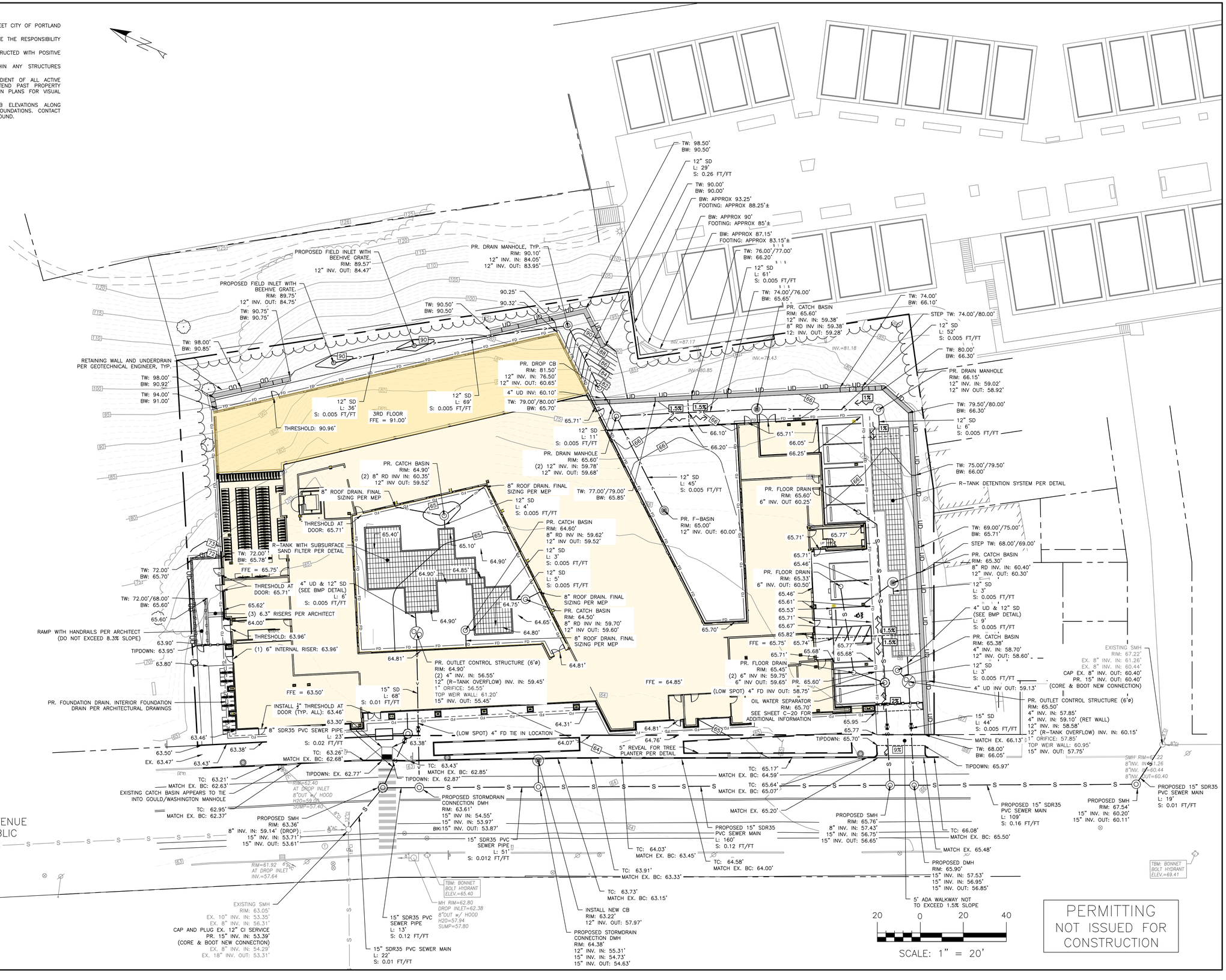
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JN:	1202
SCALE:	AS NOTED
DESIGNED BY:	PFH
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CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER
11/20/24

DRAWING NO.
C-20

GENERAL NOTES:

1. ALL WORK WITHIN THE CITY STREET RIGHT OF WAY SHALL MEET CITY OF PORTLAND TECHNICAL MANUAL STANDARDS.
2. DESIGN OF TEMPORARY SOIL RESTRAINT MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR IF NECESSARY FOR CONSTRUCTION.
3. CONTRACTOR SHALL ENSURE THAT UNDERDRAINS ARE CONSTRUCTED WITH POSITIVE OUTLET TO PROPOSED CONNECTIONS.
4. CATCH BASIN INLET PROTECTION TO BE INSTALLED WITHIN ANY STRUCTURES DOWNGRADIENT OF ACTIVE CONSTRUCTION.
5. SEDIMENTATION BARRIERS ARE TO BE INSTALLED DOWNGRADIENT OF ALL ACTIVE CONSTRUCTION WORK PER DETAIL. BARRIERS TO NOT EXTEND PAST PROPERTY LINES; BARRIERS SHOWN OFFSET FROM PROPERTY LINES ON PLANS FOR VISUAL PURPOSES ONLY.
6. CONTRACTOR SHALL VERIFY BOTTOM AND TOP OF CURB ELEVATIONS ALONG BUILDING FRONTAGES PRIOR TO CONSTRUCTION OF THE FOUNDATIONS. CONTACT ENGINEER PRIOR TO CONSTRUCTION IF DISCREPANCIES ARE FOUND.



PERMITTING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
SITE PLAN	PFH 11/20/24

DRAWING NAME: GRADING & DRAINAGE PLAN

PROJECT NAME: TAVATA – 165 WASHINGTON AVENUE PORTLAND, MAINE, 04101

CLIENT: REDFERN PROPERTIES P.O. BOX 8816, PORTLAND, MAINE 04104

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ENGINEERING • SURVEYING
PO BOX 3257 • PORTLAND, MAINE 04104
(207) 775-2655

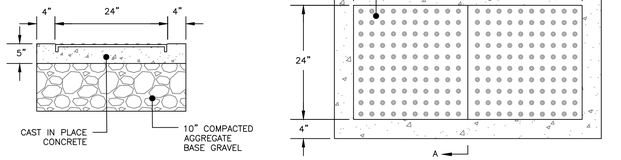
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CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
C-30

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.



SECTION A–A

PLAN VIEW

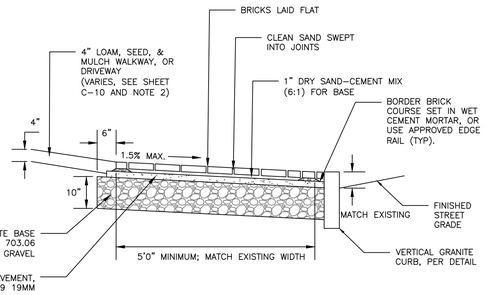
SIDEWALK RAMP DETECTABLE WARNING PANEL
NOT TO SCALE

NOTES:

1. BRICKS TO BE USED:

   NEW CONSTRUCTION:
   4"X8" PINE HALL PATHWAY PAVER BRICK; MFG. BY PINE HALL BRICK CO., MADISON, NORTH CAROLINA. LACHANCE ITEM #193623;. PINE HALL PATHWAY PAVER BRICK.

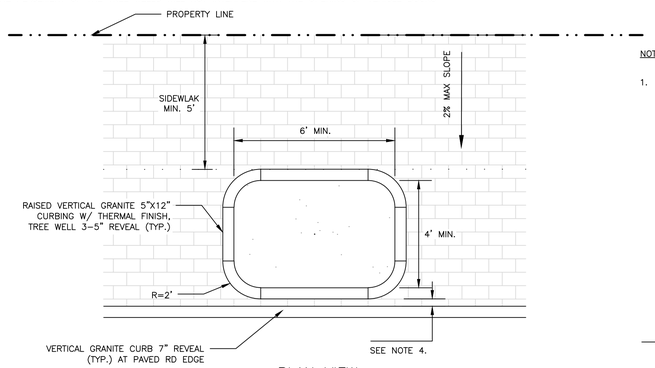
   REPAIR/MAINTENANCE TO EXISTING BRICK SIDEWALKS:
   VERMONT BACKER SUPPLIED BY GAGNE AND SONS SPECIFICATION NUMBER: "VERMONT PAVER BRICK", ITEM NUMBER #VBBB
2. INSTALL BRICK FLUSH UP TO BUILDING, PAVEMENT, STAIRS, CONCRETE SURFACES, CURB OR LANDSCAPED AREAS.



BRICK SIDEWALK WITH BITUMINOUS BASE DETAIL
NOT TO SCALE

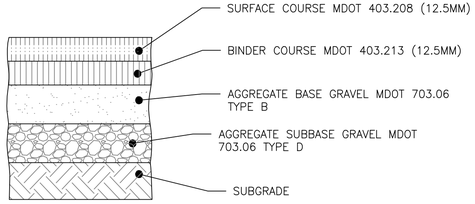
NOTES:

1. ALL TREE WELLS SHALL COMPLY WITH CITY TECHNICAL STANDARDS AND MUST BE APPROVED BY THE CITY ARBORIST
2. FINAL PLACEMENT LOCATION OF THE GRANITE CURB TREE WELL SHALL BE APPROVED BY DPW AND SHALL CONSIDER SIDEWALK WIDTH, STREET PARKING STATUS, ABOVE AND BELOW GROUND UTILITIES AND OTHER OBSTRUCTIONS
3. SIDEWALK MATERIAL POLICY. SEE SIDEWALK CONSTRUCTION DETAILS IN SECTION 1 OF THE TECHNICAL MANUAL
4. RAISED CURB TREE WELL OFFSETS FROM THE CURB LINE SHALL TAKE THE LOCATION OF ON–STREET PARKING INTO ACCOUNT. WHERE ADJACENT TO ON–STREET PARKING AND SIDEWALK WIDTH ALLOWS, A MINIMUM OFFSET OF 2 FEET IS PREFERRED, UNLESS IT CAN BE DEMONSTRATED THAT THE PLACEMENT OF THE TREE WELLS WILL NOT INTERFERE WITH THE OPENING OF VEHICLE DOORS



PLAN VIEW

TREEWELL IN SIDEWALK
NOT TO SCALE



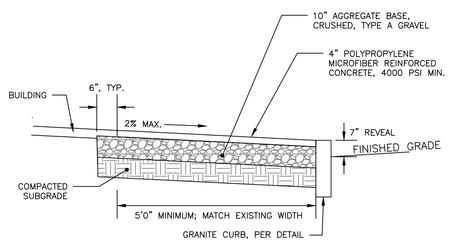
NOTES:

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
2''	SURFACE COURSE MDOT 403.208 (12.5mm)
3''	BINDER COURSE MDOT 403.208 (12.5mm)
3"	AGGREGATE BASE GRAVEL MDOT 703.06 TYPE A
18"	AGGREGATE SUBBASE GRAVEL MDOT 703.06 TYPE D

CITY OF PORTLAND ARTERIAL BITUMINOUS PAVEMENT PROFILE
NOT TO SCALE

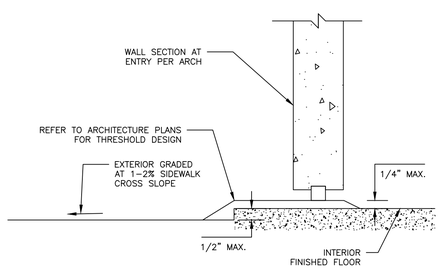
1. AT A MINIMUM, TESTING SHALL CONSIST OF ENTRAINED AIR AND SLUMP TESTS ON SITE PRIOR TO POURING THE SIDEWALKS. ENTRAINED AIR TESTS SHALL BE DONE IN ACCORDANCE WITH AASHTO T152. TEST FIRST TWO LOADS AND EVERY THIRD LOAD THEREAFTER PROVIDED CONSISTENT RESULTS ARE ACHIEVED.
2. SLABS SHALL BE PLACED ALTERNATELY 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.
3. 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.
4. 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.
5. ANY MATCHING INTO EXISTING SIDEWALKS SHALL BE DONE SO WITH A CLEAN VERTICAL FACE CONNECTION.
6. 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.
7. 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.
8. GENERAL CONTRACTOR TO COLLECT DELIVERY SLIPS AND TRANSFER TO THE OWNER.
9. REFER TO CITY OF PORTLAND CONCRETE SPECIFICATIONS SECTION 608 FOR MORE INFORMATION.



REINFORCED CONCRETE SIDEWALK
NOT TO SCALE

NOTES:

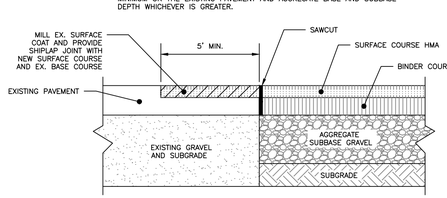
1. THIS DETAIL REPRESENTS A TYPICAL CONDITION TO MITIGATE WATER INTRUSION. REFER TO THE ARCHITECTURAL PLANS FOR SPECIFICATION AND THRESHOLD DESIGN. CONTACT ENGINEER WITH ANY DISCREPANCIES



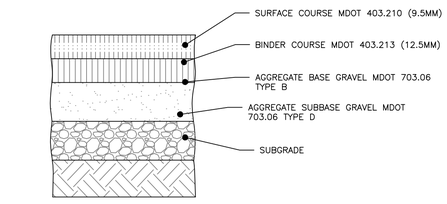
TYPICAL THRESHOLD DETAIL
NOT TO SCALE

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



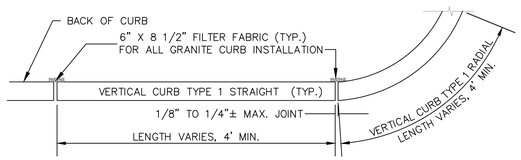
NOTES:

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.

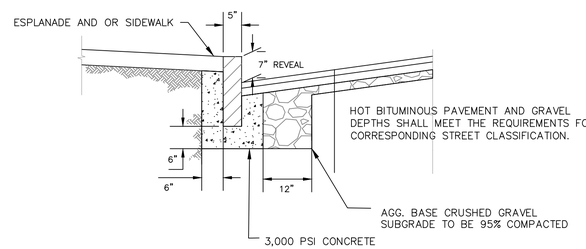
	THICKNESS OF LAYERS
STANDARD	LAYERS
1–1/2''	SURFACE COURSE MDOT 403.210 (9.5mm)
2''	BINDER COURSE MDOT 403.208 (12.5mm)
3"	AGGREGATE BASE GRAVEL MDOT 703.06 TYPE A
15"	AGGREGATE SUBBASE GRAVEL MDOT 703.06 TYPE D

PRIVATE PAVEMENT PROFILE
NOT TO SCALE

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

PERMITTING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
SITE PLAN	PFH 11/20/24

DRAWING NAME: SITE DETAILS – 1

PROJECT NAME: TAVATA – 165 WASHINGTON AVENUE PORTLAND, MAINE, 04101

CLIENT: REDFERN PROPERTIES P.O. BOX 8816, PORTLAND, MAINE 04104

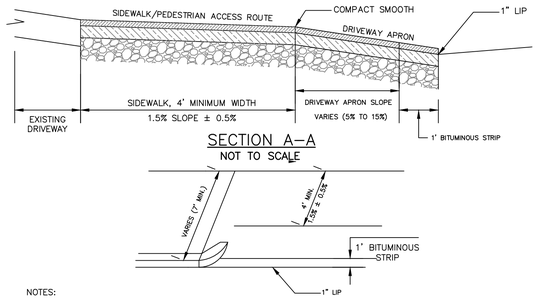
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SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE — PETER F. HEIL — 15318 — LICENSED PROFESSIONAL ENGINEER — 11/20/24

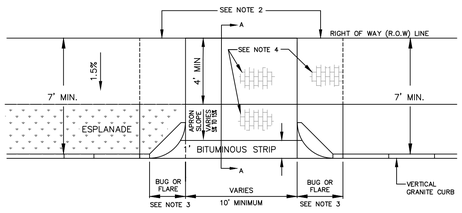
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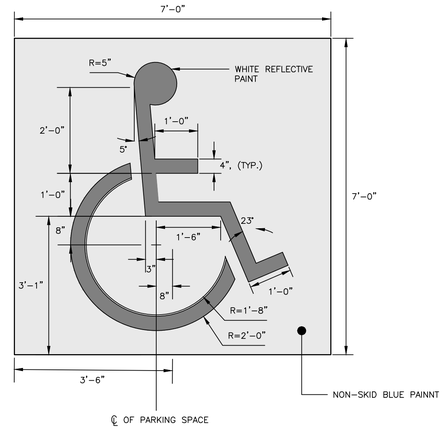
SECTION A–A
NOT TO SCALE

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. 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.



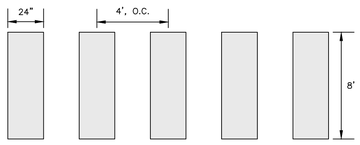
STANDARD RESIDENTIAL DRIVEWAY APRON LAYOUT
NOT TO SCALE



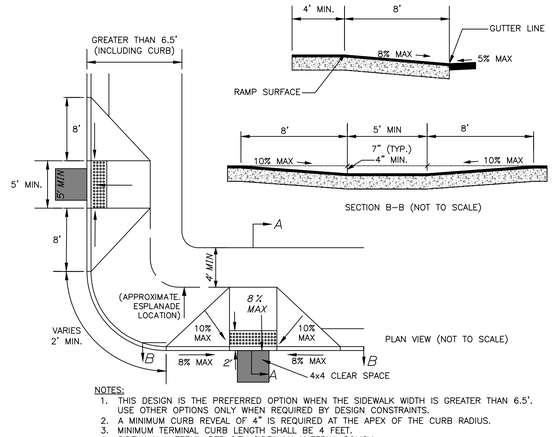
INTERNATIONAL BARRIER FREE SYMBOL
NOT TO SCALE

NOTE:

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



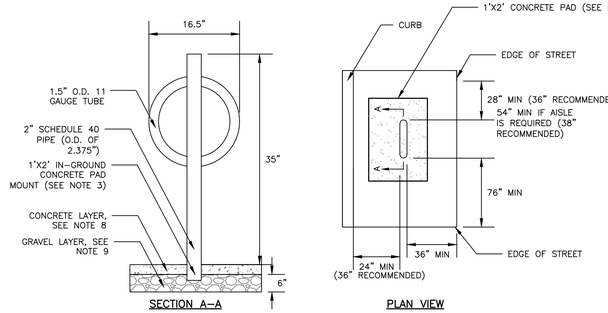
NOTES:

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.

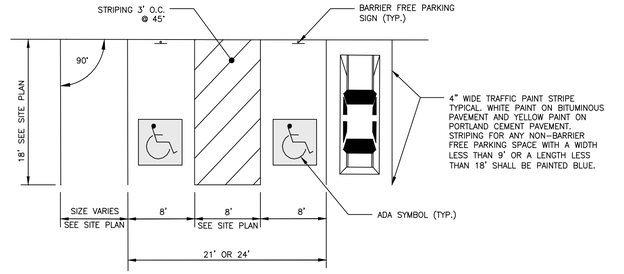
PERPENDICULAR ADA RAMP – SIDEWALK WIDTH GREATER THAN 6.5' WIDE WITH OR WITHOUT ESPLANADE
NOT TO SCALE

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.



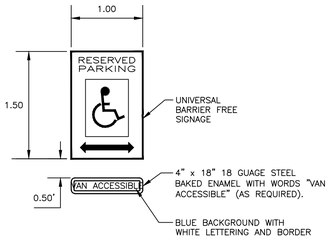
DERO BIKE HITCH
NOT TO SCALE



PARKING SPACE DIMENSIONS
NOT TO SCALE

NOTES:

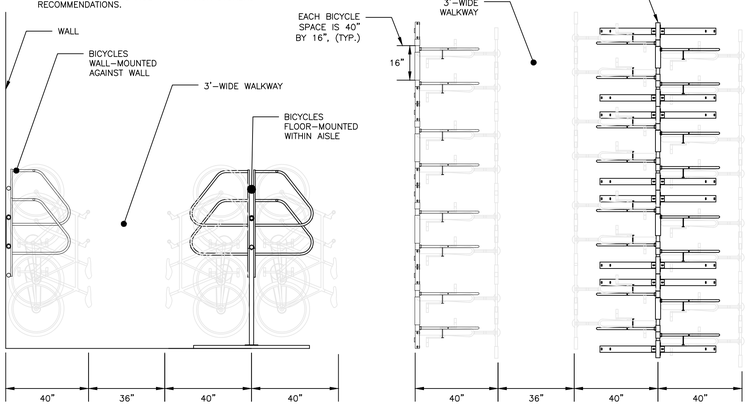
1. ALL ASPECTS OF RESERVED PARKING SIGN CONSTRUCTION SHALL BE IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION
2. SIGN SHALL BE CONSTRUCTED AS SIGN R7–8 UNDER THE "PARKING AND STANDING SIGNS AND PLAQUES" (R7 SERIES) WITHIN THE MANUAL ON UNIFORM TRAFFIC CONTROL 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.



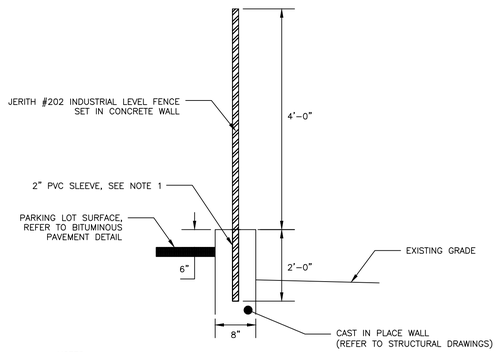
BARRIER FREE PARKING SIGN
NOT TO SCALE

NOTES:

1. FINAL LOCATION OF INTERIOR BICYCLE RACKS SHALL CONFORM TO ALL ARCHITECTURAL DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER AND ARCHITECT WITH ANY DISCREPANCIES.
2. BICYCLE MOUNT SHALL BE ULTRA SPACE SAVER AS MANUFACTURED BY DERO, OR APPROVED EQUAL.
3. BICYCLES SHALL BE WALL MOUNTED OR FLOOR MOUNTED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.



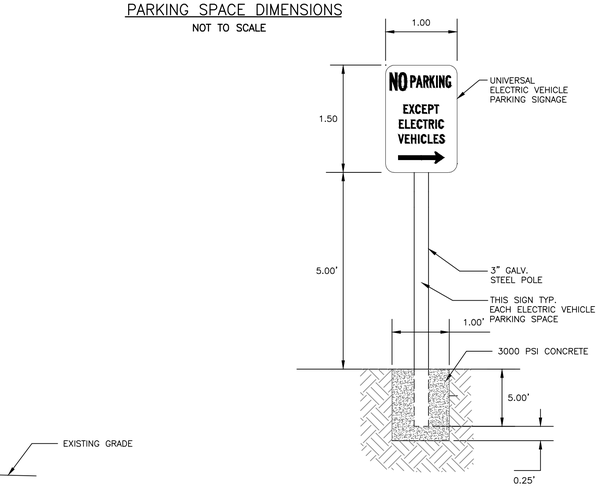
BICYCLE RACK INTERIOR
NOT TO SCALE



NOTES:

1. 8' SECTION OF FENCE SHALL BE A 4' TALL ASSEMBLY
2. RECOMMENDED SUPPLIER FOR FENCE ASSEMBLY TO BE MAIN LINE FENCE OR AN APPROVED EQUAL.

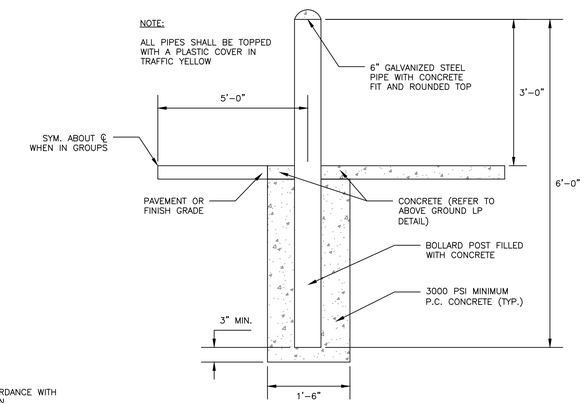
FENCE INSTALLED ON CAST IN PLACE (CIP) RETAINING WALL DETAIL
NOT TO SCALE



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 R7–111 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



PIPE BOLLARD
NOT TO SCALE

PERMITTING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
SITE PLAN	PFH 11/20/24

DRAWING NAME: SITE DETAILS – 2

PROJECT NAME: TAVATA – 165 WASHINGTON AVENUE PORTLAND, MAINE, 04101

CLIENT: REDFERN PROPERTIES P.O. BOX 8816, PORTLAND, MAINE 04104

ACORN ENGINEERING, INC.

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND UNAUTHORIZED MODIFICATIONS OR USE OF THESE PLANS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

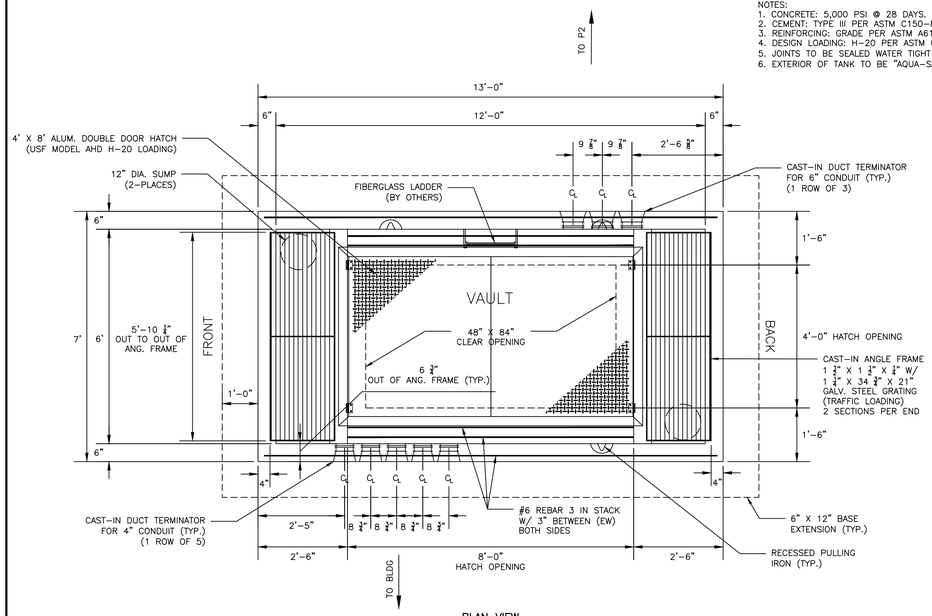
ACORN ENGINEERING, INC.
53 ROYAL RIVER, YARMOUTH, MAINE 04104
PO BOX 3375, PORTLAND, MAINE 04104
(207) 775–2655

FILE:	1202_CIVIL
JN:	1202
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

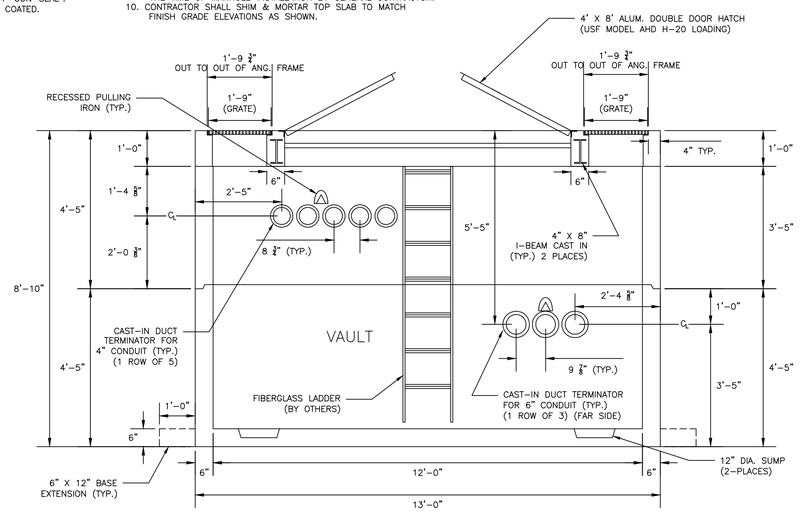
STATE OF MAINE PETER F. HEIL 15318 LICENSED PROFESSIONAL ENGINEER 11/20/24

DRAWING NO. C-41

NOTES:
1. CONCRETE: 5,000 PSI @ 28 DAYS.
2. CEMENT: TYPE III PER ASTM C150–81.
3. REINFORCING: GRADE PER ASTM A615.
4. DESIGN LOADING: H–20 PER ASTM C–478.
5. JOINTS TO BE SEALED WATER TIGHT WITH "CON–SEAL".
6. EXTERIOR OF TANK TO BE "AQUA–SAFE" COATED.
7. ALL PRECAST SECTIONS AND BASES SHALL HAVE THE DATE OF MANUFACTURE AND THE NAME OF THE MANUFACTURER MARKED ON THE INSIDE WALL.
8. LADDER PROVIDED AND INSTALLED BY OTHERS.
9. IDENTIFICATION TAGS FOR CABLES IN VAULT SHALL BE SET AT THE TIME OF MANHOLE INSTALLATION BY GENERAL CONTRACTOR.
10. CONTRACTOR SHALL SHIM & MORTAR TOP SLAB TO MATCH FINISH GRADE ELEVATIONS AS SHOWN.

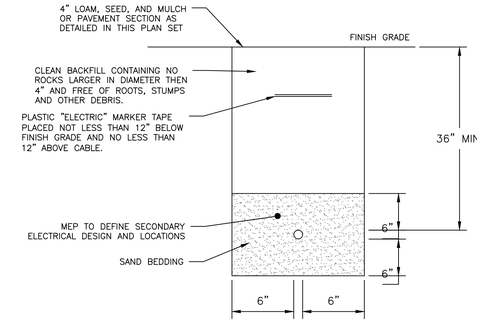


PLAN VIEW



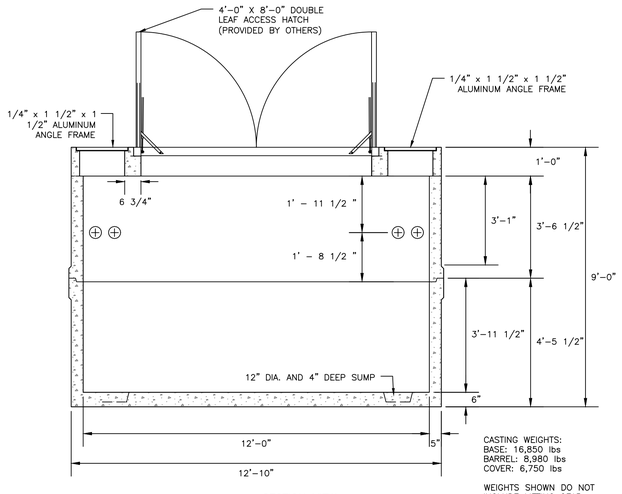
SECTION VIEW

SIDEWALK ELECTRICAL VAULT DETAIL
NOT TO SCALE



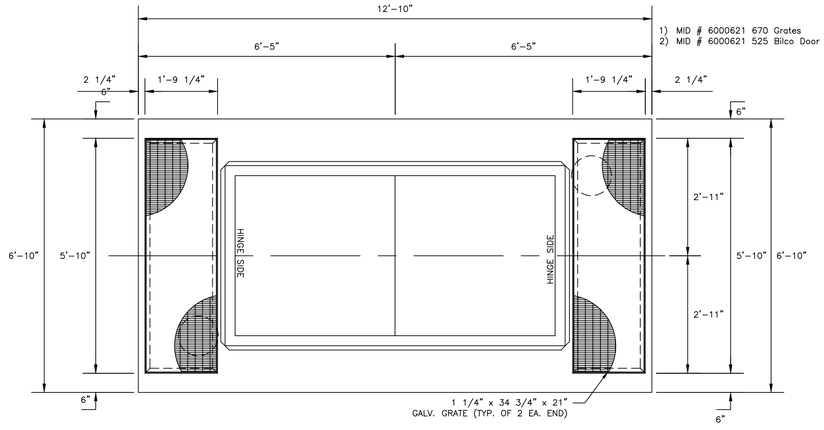
SECONDARY ELECTRICAL TRENCH
NOT TO SCALE

NOTES:
1) VAULT SHALL BE DESIGNED TO WITHSTAND H–20 WHEEL LOADING WITH 6" OF OVERBURDEN. THE DESIGN SHALL ALSO COMPLY WITH THE STRENGTH REQUIREMENTS OF NATIONAL ELECTRICAL SAFETY CODE SECTION 323A. PROVIDE SHOP DRAWINGS STAMPED BY A STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER UPON REQUEST.
2) JOINTS SEALED WITH ASPHALT.
3) MOUNTINGS FOR CABLE RACKS ETC. CAST IN WALL BY FURTHER PLANS OR FIELD LOCATED.
4) MANHOLE SHALL BE SET ON A SUITABLE GRAVEL BASE.
5) CABLES ARE TO BE RACKED ALONG ONE WALL ONLY.
6) OPTION OF USING 8" THICK WALLS TO OFFSET ANY LOAD FACTORS, SOILS OR OTHER FACTORS SPECIFIC TO SITE.



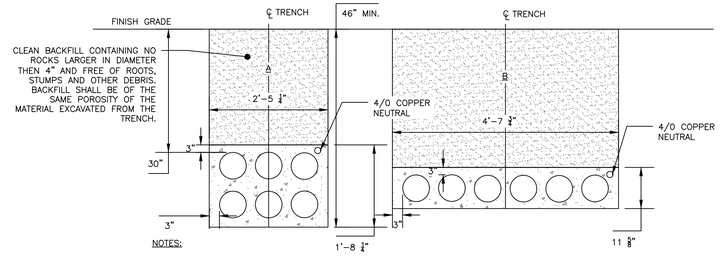
SECTION VIEW

NOTES:
1) CONCRETE: 5,000 PSI AFTER 28 DAYS.
2) JOINTS TO BE SEALED WITH CONSEAL CS102 JOINT SEALANT.
3) KNOCKOUTS EXTEND 4" INTO THE WALL WITH SIDES SLOPED @ 45 DEGREES PROVIDING A BELL TYPE OPENING; KNOCKOUTS SHOULD BE FREE OF ANY REINFORCING.
4) REINFORCING: DESIGNED FOR H–20 LOADING.
5) HATCH & GALV. GRATING PROVIDED BY OTHERS.
6) HATCH DOORS SHALL BE COATED WITH AN ANTI–SKID SURFACE HAVING A MINIMUM COEFFICIENT OF FRICTION OF 0.6 AND BE LISTED AS SLIP RESISTANT BY THE UNDERWRITERS LABORATORIES.



PLAN VIEW

SECONDARY CABLE VAULT DETAIL
NOT TO SCALE



NOTES:
1. "A" WILL BE USED FOR MAJORITY OF INSTALLATION. DUCT BANK WILL NEED TO BE DEEPER AND NARROWER NEAR MANHOLES.
2. "B" WILL BE USED AS NEEDED. DUCT BANK WILL NEED TO BE WIDER AND SHALLOWER.
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.
5. ALL CONSTRUCTION TO BE IN COMPLIANCE WITH CMP'S CONSTRUCTION STANDARDS AND THE LATEST EDITION OF THE NATIONAL ELECTRICAL SAFETY CODE.
6. ALL 90 DEGREE BENDS SHALL BE GALVANIZED LONG SWEEP BENDS. CONDUIT BELL ENDS REQUIRED AT SPLICE BOXES, TRANSFORMER BASES, AND SWITCH CABINETS.
7. CONDUITS SHALL BE PROPERLY PITCHED TO DRAIN INTO TRANSFORMER FOUNDATIONS, MANHOLES, OR SPLICE BOXES. THREE INCHES PER 100 FEET MINIMUM SLOPE. IF CONDUITS SLOW TOWARD THE RISER POLE, A COMPANY APPROVED DRAINAGE BOX AT THE RISER BASE SHALL BE INSTALLED.
8. INSTALL 1" (OR MULE TAPE) PULLING LINE IN EACH CONDUIT.
9. INSTALL 4/0 CU NEUTRAL IN CONDUIT DUCT BANK.
10. INSTALL CONDUIT SPACERS

PRIMARY POWER CONDUIT DUCT BANK
NOT TO SCALE

PERMITTING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
SITE PLAN	PFH	11/20/24

DRAWING NAME: UTILITY DETAILS – 1

PROJECT NAME: TAVATA – 165 WASHINGTON AVENUE PORTLAND, MAINE, 04101

CLIENT: REDFERN PROPERTIES P.O. BOX 8816, PORTLAND, MAINE 04104

ACORN ENGINEERING, INC.
THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND SHALL NOT BE USED BY THE OWNER OR OTHERS AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
ACORN ENGINEERING, INC.
PO BOX 3257 PORTLAND, MAINE 04104
(207) 775–2655

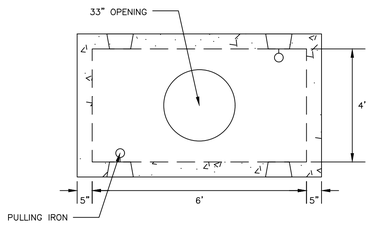
FILE:	1202_CIVIL
JN:	1202
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
C-42

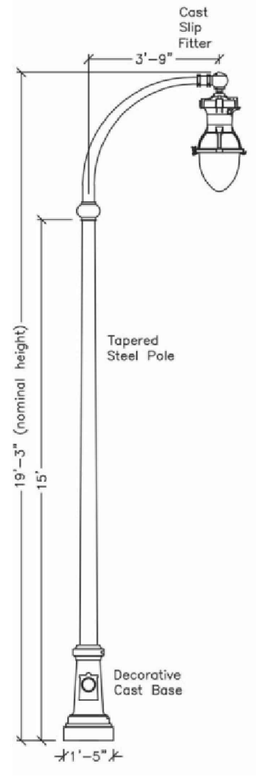
NOTES:

1. SPLICE BOX SHALL BE DESIGNED TO WITHSTAND H20 LOADING WITH 6" OF OVERBURDEN. THE DESIGN SHALL ALSO COMPLY WITH NATIONAL ELECTRICAL SAFETY CODE SECTION 323A. PROVIDE SHOP DRAWINGS STAMPED BY A STATE OF MAINE REGISTERED PROFESSIONAL ENGINEERING UPON REQUEST.
2. FOR USE WITH 32" COVER MARKED CMP CO., S/C62-1830 (MIN. ONE COURSE OF BRICK TO GRADE.)
3. SPLICE BOX AND SLAB SHALL BE SET ON A SUITABLE GRAVEL BASE.



PLAN VIEW

CMP 4' X 6' SPLICE BOX
NOT TO SCALE



LUMINAIRE
Holophane Esplanade LED II
Model:
ESL2-P20S-30K-AS-CMC-TG3-S-P7-NL2X2-BHDF13-200CMC
or Spring City Columbia Series
Model: ALMCLU-LE080/EVX/X2-30-CR3-GR14-LACLB-FED-CU
Pendant mount, cast aluminum housing with stainless steel hardware. Dropped refractor shall be thermal resistant borosilicate glass. Internal reflector and prismatic diffuser shall provide an IES Type IV distribution pattern. LED 3000K color temperature.

BRACKET ARM
Holophane OUC Roadway Arm
Model: OUC 6063-T6
or Spring City Columbia Arm
Model: AARCLA-1S-51-53-TN2.38/7.00-CU
Aluminum crossarm with a post-top fitting for a 3 1/2" by 8" tenon. Single Arm 45° Oriented 180 degrees.

SLIP FITTER
Holophane Boston Harbor Series
Model: BHLF-200-SCA/AS
2 3/8" O.D. with swivel cast fitter.

LIGHTING POLE
Holophane
Model: CM17CSB-CA-RAL6012
or Spring City Cambridge Series
Model: SSHSM-G11-7.00-15.00-TN3.50/8.00-CU
Smooth, tapered steel pole smooth shaft rated for a 90mph wind load with a 1.3 gust factor. Provide four hot-dipped galvanized steel L-type anchor bolts. Lighting pole shall be hot dip galvanized prior to powdercoat paint.

DECORATIVE BASE
Holophane Cambridge Series
Model: CM17CSB
or Spring City Cambridge Series
Model: DWBCMB-17-CU
Decorative clamshell cast aluminum base. Hardware shall be stainless steel.

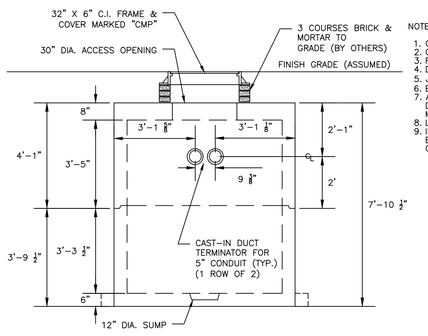
DIMENSIONS
Overall Height = 19' 3"
Pole Height = 15' 0"
Base Diameter = 17" to 18"

FINISH
Black (standard)

APPLICATION
Stree/sidewalk lighting. Decorative fixture not needed on same side of street as existing cobrahead fixtures.
Spacing: 80' - 100' on center
Place in furnishing zone overhang towards street; where fixture conflicts with overhead utilities, may be placed on back of sidewalk.

PENINSULA MEDIUM STREET LIGHT
NOT TO SCALE

PLAN VIEW



FRONT ELEVATION VIEW

NOTES:
1. CONCRETE: 5,000 PSI @ 28 DAYS.
2. CEMENT: TYPE III PER ASTM C150-81.
3. REINFORCING: GRADE 60 PER ASTM A615.
4. DESIGN LOADING: H-20 PER ASTM C-478.
5. JOINTS TO BE SEALED WATER TIGHT WITH "CON-SEAL".
6. EXTERIOR OF TANK TO BE "AQUA-SAFE" COATED.
7. ALL PRECAST SECTIONS AND BASES SHALL HAVE THE DATE OF MANUFACTURE AND THE NAME OF THE MANUFACTURER MARKED ON THE INSIDE WALL.
8. LADDER PROVIDED AND INSTALLED BY OTHERS.
9. IDENTIFICATION TAGS FOR CABLES IN MANHOLE SHALL BE SET AT THE TIME OF MANHOLE INSTALLATION BY OTHERS.

SECTION VIEW

BACK ELEVATION VIEW

DESCRIPTION	WEIGHT	QUANTITY
3'-9 1/2" BASE	16,202 LBS	1
3'-11" TOP	18,892 LBS	1

PRECAST CONCRETE 38Y MANHOLE DETAIL
NOT TO SCALE

SCHEDULE		
HEIGHT OF POLE	MIN DIAMETER	MIN EMBEDMENT
<20'	18"	5'
20'-40'	2'	6'
>40'	3'	8'

REVEALS	
APPLICATIONS	REVEAL
STREET/SIDEWALK	4"
OTHER PED HARDSCAPE	FLUSH
PEDESTRIAN LAWN/MULCH	4"
PARKING AREAS (OPEN TRAFFIC)	24"-36"

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

PERMITTING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
SITE PLAN	PFH 11/20/24

DRAWING NAME: UTILITY DETAILS – 2
PROJECT NAME: TAVATA – 165 WASHINGTON AVENUE PORTLAND, MAINE, 04101
CLIENT: REDFERN PROPERTIES P.O. BOX 8816, PORTLAND, MAINE 04104

ACORN ENGINEERING, INC.

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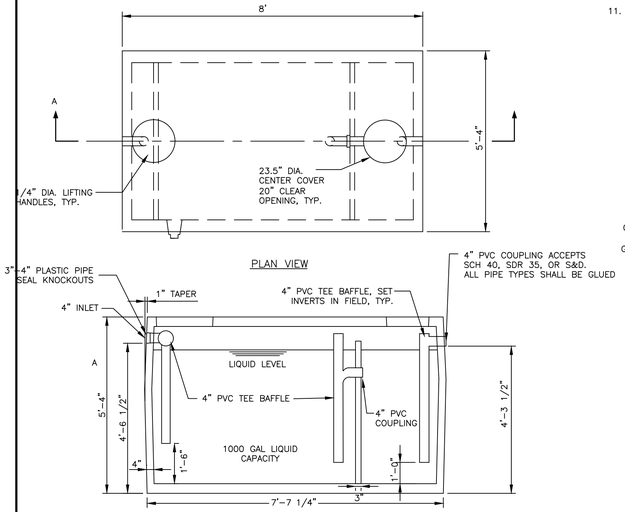
ACORN ENGINEERING, INC.
ELIOT, MAINE 04092
PO BOX 3422
(207) 775-2655

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SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

PETER F. HEIL 15318 LICENSED PROFESSIONAL ENGINEER STATE OF MAINE

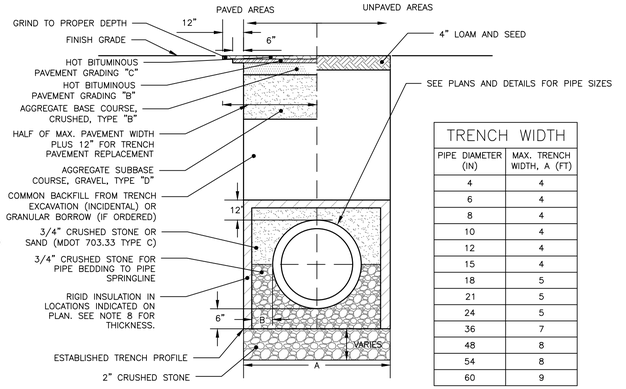
DRAWING NO.
C-43

NOTES:
1. CONCRETE: 4000 PSI AFTER 28 DAYS WITH 4–6% ENTRAINED AIR.
2. ALL JOINTS WITH BUTYL RUBBER SEALANT.
3. EXCAVATION MUST BE AT LEAST 12" WIDER & LONGER THAN TANK SIZE
4. TOTAL STRUCTURE WEIGHT =9,200 LBS
5. INSTALL APPROPRIATE RISER SECTIONS OVER INSPECTION & CLEANOUT OPENINGS TO BRING COVERS TO GRADE.
6. SHALL MEET AMERICAN CONCRETE 1,000 GALLON GREASE TRAP, OR EQUIV.
7. TANK PENETRATIONS ARE INTEGRALLY CAST.
8. TANKS SHOULD BE PUMPED AS NEEDED.
9. ACCESS COVERS TO BRING COVER ACCESS TO GRADE.
10. TANKS CAN BE VACUUM TESTED BY MANUFACTURER AT ADDITIONAL COST.



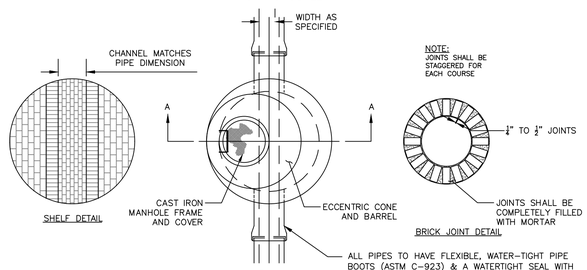
1,000 GALLON GREASE TRAP DETAIL
NOT TO SCALE

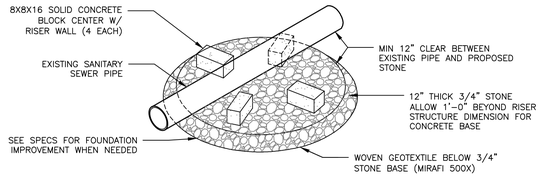
DESIGN NOTES:
1. ANY ALTERNATE TRENCHING METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY.
2. ALL CONSTRUCTION METHODS SHALL CONFORM TO THE CITY OF PORTLAND TECHNICAL STANDARDS FIGURE II–2.
3. BRACING & SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. WHERE APPLICABLE, PERFORATIONS IN STORM DRAIN (PERF. SD) SHALL BE ORIENTED UP.
5. ALL STORM DRAINS SHALL BE PVC SDR 35 MIN PS–46 RATING OR OR IN ACCORDANCE WITH CITY OF PORTLAND TECHNICAL MANUAL , SECTION 2 – SANITARY SEWER AND STORM DRAIN – PART 2.5.2
6. IN PAVED AREAS, DEPTHS OF GRAVEL AND HOT MIX ASPHALT PAVEMENT SHALL MATCH THE GREATER OF EXISTING CONDITIONS OR THE REQUIREMENTS FOR THE CORRESPONDING STREET CLASSIFICATION.
7. THIS DETAIL SHALL BE APPLIED ONLY TO PIPE TRENCHES WITHIN OF THE CITY OF PORTLAND R.O.W.
8. STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2" RIGID INSULATION. OTHER UTILITIES: ADD 2" OF RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.
9. DEPTH OF BITUMINOUS PAVEMENT AND AGGREGATE COURSES SHALL BE DETERMINED BY STREET CLASSIFICATION.
10. DIMENSION B SHALL BE SUFFICIENT TO ALLOW CRUSHED STONE BEDDING TO BE PLACED AND COMPACTED UNDER THE HAUNCHES OF THE PIPE; BUT IN ALL CASES DIMENSION B SHALL BE AT LEAST 9".
11. DIMENSION A IS THE MAXIMUM WIDTH ALLOWED FOR CALCULATING PAY QUANTITIES UNDER GRANULAR BORROW, CRUSHED STONE, STRUCTURAL EARTH EXCAVATION, AND STRUCTURAL ROCK EXCAVATION. DIMENSION A SHALL BE BASED ON PIPE DIAMETER D, AS SET FORTH IN THE TABLE BELOW.



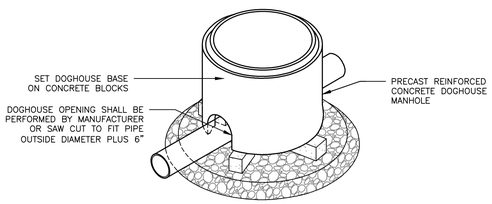
TRENCH WIDTH	
PIPE DIAMETER (IN)	MAX. TRENCH WIDTH, A (FT)
4	4
6	4
8	4
10	4
12	4
15	4
18	5
21	5
24	5
36	7
48	8
54	8
60	9

CITY OF PORTLAND TYPICAL PIPE TRENCH DETAIL WITHIN RIGHT–OF–WAY
NOT TO SCALE

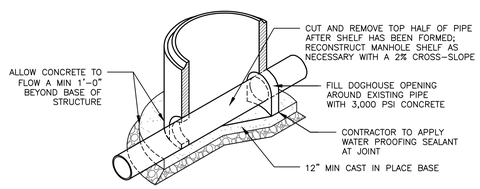




BASE ISOMETRIC VIEW



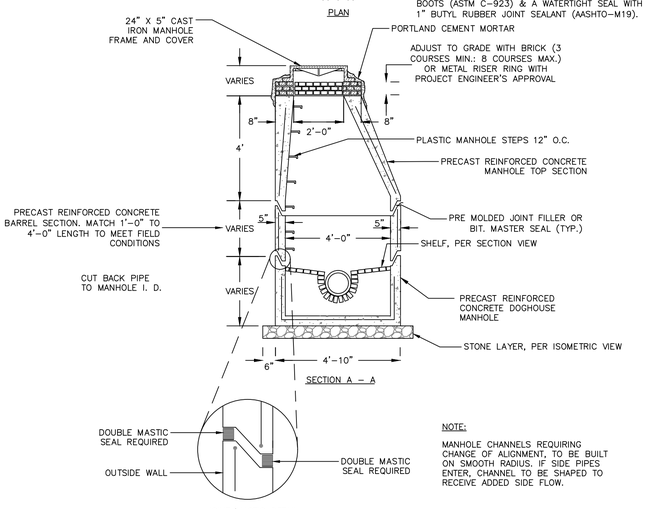
RISER ISOMETRIC VIEW



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.

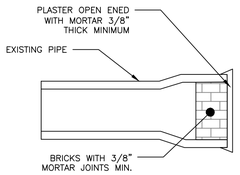
DOGHOUSE MANHOLE DETAIL
NOT TO SCALE



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.

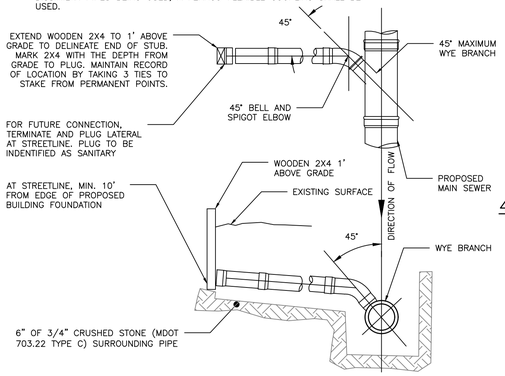
NOTES:
1. UNLESS OTHERWISE SPECIFIED, CONCRETE SHALL BE 4000 PSI @28 DAYS.
2. RECONSTRUCT INTERIOR MANHOLE INVERT AS NECESSARY TO ACCOMMODATE NEW PIPE.
3. THIS DETAIL IS INTENDED TO PROVIDE ADDITIONAL INFORMATION TO THE CONTRACTOR IN REGARDS TO THE CONNECTION OF THE DOGHOUSE MANHOLE BASE TO THE EXISTING 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. THE MATERIAL SHALL BE MINWAX FIBROUS BRUSH COAT MADE BY THE MINWAX COMPANY, NEW YORK, NEW YORK; TREMCO 121 FOUNDATION COATING, MADE BY THE TREMCO MANUFACTURING COMPANY, CLEVELAND, OHIO; INERTOL NO–7 MADE BY INERTOL COMPANY, NEWARK, NEW JERSEY; CAMGER SUPERSEAL WATER–PROOFING CONCRETE COATING PPS–922–2, MADE BY THE CAMGER COATING SYSTEMS, INC., NORFOLK, MASSACHUSETTS OR APPROVED EQUAL.
8. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48–CLASS 35.

PRECAST CONCRETE MANHOLE – CITY OF PORTLAND
NOT TO SCALE



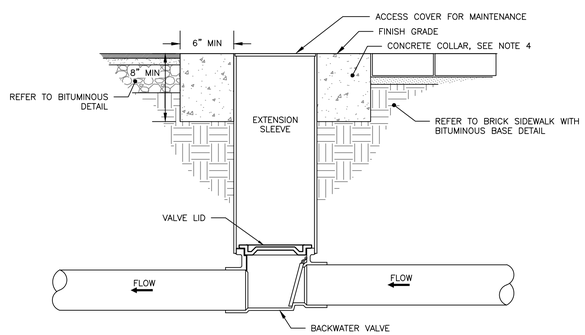
DESIGN NOTES:
1. IT IS ASSUMED THAT THE EXISTING PIPE IS OF VITRIFIED CLAY CONSTRUCTION. USE CAP OR PLUG FOR PVC PIPE

MASONRY PLUG
NOT TO SCALE



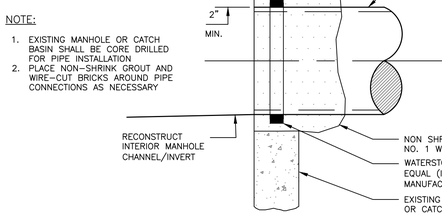
NOTES:
1. LOCATION WITH WARNING TAPE SHALL BE INSTALLED OVER CENTERLINE OF PIPE AT A MAXIMUM OF 24 INCHES BELOW FINISH GRADE.
2. SITE CONTRACTOR TO COORDINATE CONNECTION OF SEWER LATERAL TO STRUCTURE PLUMBING WITH ARCHITECTURAL CONTRACTOR.
3. CONNECTION OF PROPOSED SEWER LATERAL TO STRUCTURE PLUMBING SHOULD INCORPORATE USE OF SIMILAR PIPE MATERIALS. IN THE CASE OF DISSIMILAR PIPES BEING USED, A FERNCO FLEXIBLE COUPLING SHALL BE USED.

SEWER TEE/WYE CONNECTION DETAIL
NOT TO SCALE



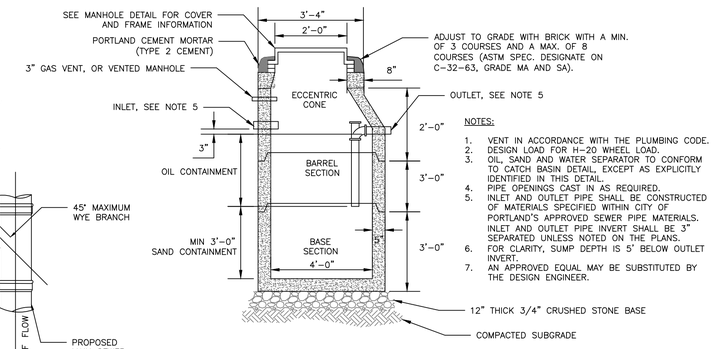
NOTES:
1. BACKFLOW VALVE TO BE PROVIDED BY AGRI DRAIN CORPORATION OR AN APPROVED EQUAL.
2. VALVE TO BE INSTALLED TO MANUFACTURER'S SPECIFICATIONS AND COMPLY WITH RULES AND REGULATIONS AS OUTLINED IN SECTION 2 OF THE CITY OF PORTLAND TECHNICAL MANUAL.
3. VALVE SHALL BE INSTALLED WITH A VALVE BOX AND COVER 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



NOTE:
1. EXISTING MANHOLE OR CATCH BASIN SHALL BE CORE DRILLED FOR PIPE INSTALLATION
2. PLACE NON–SHRINK GROUT AND WIRE–CUT BRICKS AROUND PIPE CONNECTIONS AS NECESSARY

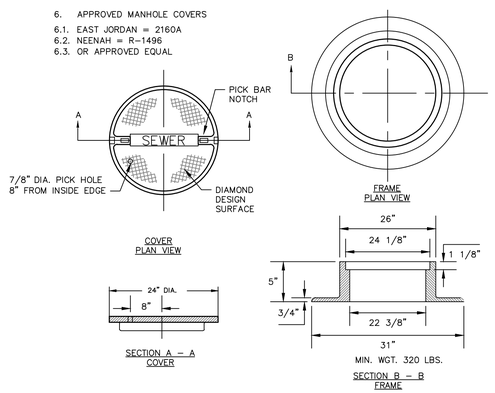
NEW PIPE TO EXISTING STRUCTURE CONNECTION DETAIL
NOT TO SCALE



NOTES:
1. VENT IN ACCORDANCE WITH THE PLUMBING CODE.
2. DESIGN LOAD FOR H–20 WHEEL LOAD.
3. OIL, SAND AND WATER SEPARATOR TO CONFORM TO CATCH BASIN DETAIL, EXCEPT AS EXPLICITLY IDENTIFIED IN THIS DETAIL.
4. PIPE OPENINGS CAST IN AS REQUIRED.
5. INLET AND OUTLET PIPE SHALL BE CONSTRUCTED OF MATERIALS SPECIFIED WITHIN CITY OF PORTLAND'S APPROVED SEWER PIPE MATERIALS. INLET AND OUTLET PIPE INVERT SHALL BE 3" SEPARATED UNLESS NOTED ON THE PLANS.
6. FOR CLARITY, SUMP DEPTH IS 5' BELOW OUTLET INVERT.
7. AN APPROVED EQUAL MAY BE SUBSTITUTED BY THE DESIGN ENGINEER.

4'–0" DIAMETER PRECAST OIL AND WATER SEPARATOR
NOT TO SCALE

NOTES:
1. ALL 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

PERMITTING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR: SITE PLAN — BY: PFH — DATE: 11/20/24

DRAWING NAME: UTILITY DETAILS – 3
PROJECT NAME: TAVATA – 165 WASHINGTON AVENUE PORTLAND, MAINE, 04101
CLIENT: REDFERN PROPERTIES P.O. BOX 8816, PORTLAND, MAINE 04104

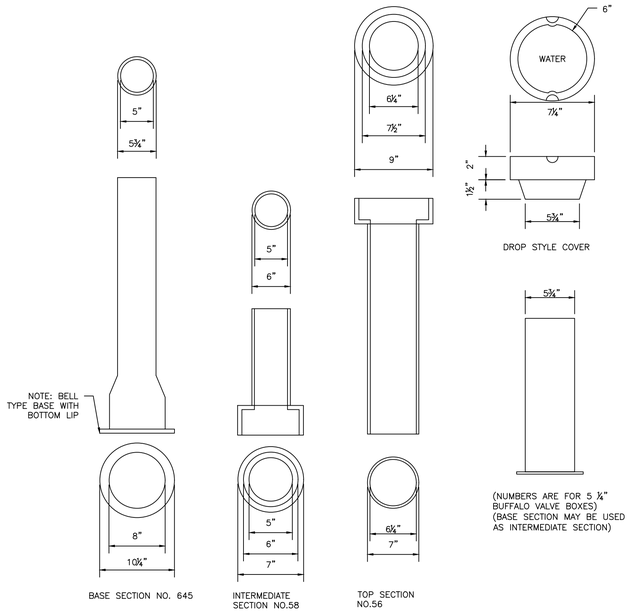
ACORN ENGINEERING, INC.
ACORN ENGINEERING, INC
70 FARM VIEW DRIVE, NEW GLOUCESTER, MAINE 04104
PO BOX 2332, (207) 775–2655

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FILE: 1202_CIVIL
JN: 1202
SCALE: AS NOTED
DESIGNED BY: PFH
DRAWN BY: ZMS
CHECKED BY: WHS

STATE OF MAINE — PETER F. HEIL — 15318 — LICENSED PROFESSIONAL ENGINEER — 11/20/24

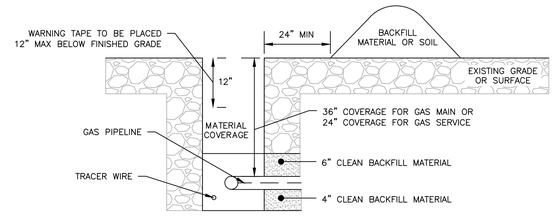
DRAWING NO.
C-44



VALVE BOX & COVER
NOT TO SCALE

NOTES:

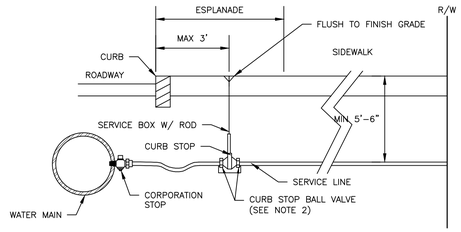
1. INSTALL MAINS WITH A MINIMUM OF 36" OF COVER AND SERVICES WITH A MINIMUM OF 24" OF COVER. EXCEPTIONS MAY BE MADE WITHIN SLATE AND FEDERAL CODES WITH THE PRIOR APPROVAL OF THE OPERATIONS CENTER MANAGER. INSTALL PLASTIC PIPE WITH SLACK SO EXTERNAL LOADING OR THERMAL CONTRACTION WILL NOT PLACE UNNECESSARY 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.



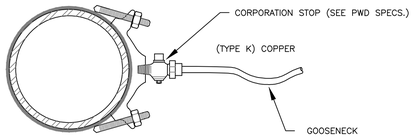
NATURAL GAS MAIN/SERVICE TRENCH DETAIL
NOT TO SCALE

NOTES:

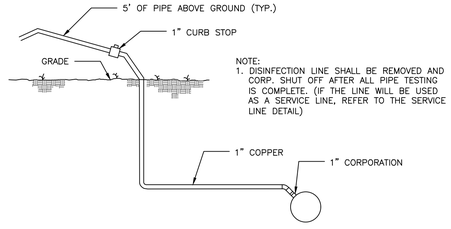
1. ALL MATERIALS AND INSTALLATION PROCEDURES MUST COMPLY WITH PORTLAND WATER DISTRICT (PWD) SPECIFICATIONS.
2. CURB STOP BALL VALVE TO BE MADE OF COPPER OR BRASS UNLESS OTHERWISE NOTED BY THE PORTLAND WATER DISTRICT.
3. SERVICE LINE TO BE MADE OF TYPE K COPPER.
4. CONCRETE BLOCKING SHALL BE ADDED TO 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.



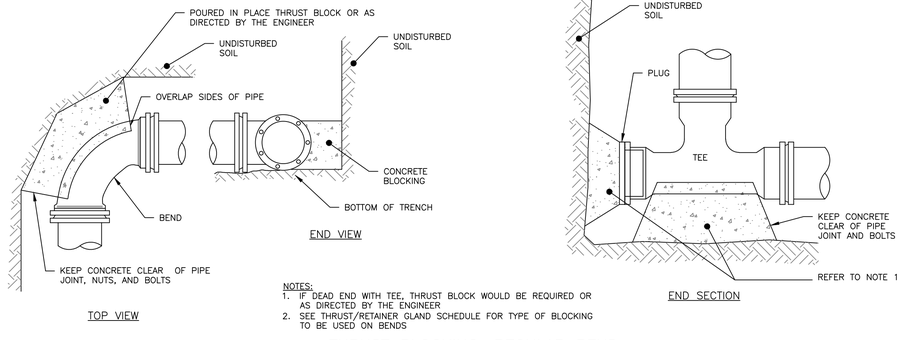
TYPICAL SERVICE CONNECTION
NOT TO SCALE



SERVICE SADDLE: 2" C.C. THREAD
NOT TO SCALE

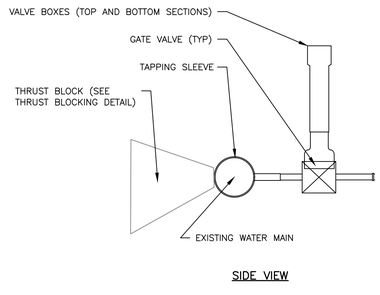


DISINFECTION LINE DETAIL
NOT TO SCALE



NOTES:
1. IF DEAD END WITH TEE, THRUST BLOCK WOULD BE REQUIRED OR AS DIRECTED BY THE ENGINEER
2. SEE THRUST/RETAINER GLAND SCHEDULE FOR TYPE OF BLOCKING TO BE USED ON BENDS

THRUST BLOCKING: REGULAR BEND
NOT TO SCALE

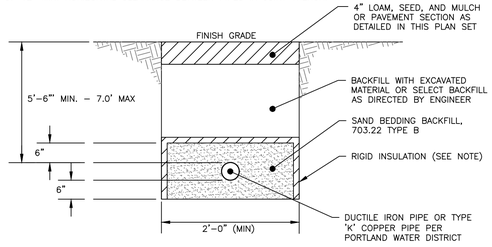


SIDE VIEW

TAPPING SLEEVE AND VALVE
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

PERMITTING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR: SITE PLAN — BY: PFH — DATE: 11/20/24

DRAWING NAME: UTILITY DETAILS – 4

PROJECT NAME: TAVATA – 165 WASHINGTON AVENUE PORTLAND, MAINE, 04101

CLIENT: REDFERN PROPERTIES P.O. BOX 8816, PORTLAND, MAINE 04104

ACORN ENGINEERING, INC.
ACORN ENGINEERING, INC.
PO BOX 3257 PORTLAND, MAINE 04104
(207) 775-2655

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND SHALL NOT BE USED BY THE OWNER OR OTHERWISE, FOR ANY PROJECT OTHER THAN THE SPECIFIED PROJECT, WITHOUT THE WRITTEN CONSENT OF ACORN ENGINEERING, INC. ANY SUCH MODIFICATION OR REUSE WITHOUT SUCH WRITTEN PERMISSION SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

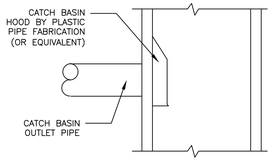
FILE: 1202_CIVIL
JN: 1202
SCALE: AS NOTED
DESIGNED BY: PFH
DRAWN BY: ZMS
CHECKED BY: WHS

STATE OF MAINE — PETER F. HEIL — 15318 — LICENSED PROFESSIONAL ENGINEER

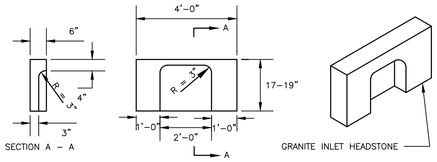
DRAWING NO.
C-45

NOTES:

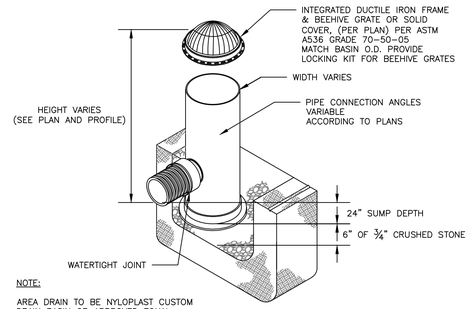
1. INSTALL CATCH BASIN HOODS IN ALL CATCH BASINS OR DRAINAGE MANHOLES.
2. PREFERRED STYLE DESIGNED TO ELIMINATE CEMENTING OF THE TRAP.
3. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION REQUIREMENTS



CATCH BASIN HOOD DETAIL
NOT TO SCALE



4' GRANITE HEADSTONE FOR CATCH BASIN INLET
NOT TO SCALE



NOTE:

AREA DRAIN TO BE NYLOPLAST CUSTOM DRAIN BASIN OR APPROVED EQUAL.

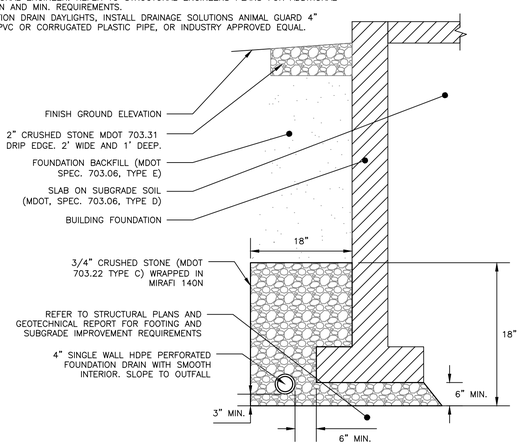
BEEHIVE DRAIN DETAIL
NOT TO SCALE

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 ⅞" DIAMETER DRILLED PICK HOLE LOCATED 8" FROM THE CENTER OF THE COVER.
5. ALL SANITARY MANHOLE COVERS SHALL HAVE "SEWER" CAST INTO THE COVER. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
6. ALL MANHOLE RISERS SHALL BE ETHERIDGE 24" OR APPROVAL EQUAL.
7. SEWER BRICK SHALL CONFORM TO ASTM SPEC. DESIGNATE ON C-32-63, GRADE MA AND SA.
8. ALL SANITARY MANHOLES SHALL HAVE A WATERPROOFING COATING APPLIED TO THE EXTERIOR SURFACE.
9. CATCH BASIN FRAMES FOR TYPE A4 CATCH BASIN CURB INLETS SHALL BE ETHERIDGE DR5A OR APPROVED EQUAL.
10. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48-CLASS 35.
11. EXISTING MANHOLES, CATCH BASINS, FRAMES, AND COVERS SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.
12. ALL CATCH BASIN OUTLETS SHALL BE INSTALLED WITH A CASCO TRAP PER DETAIL.

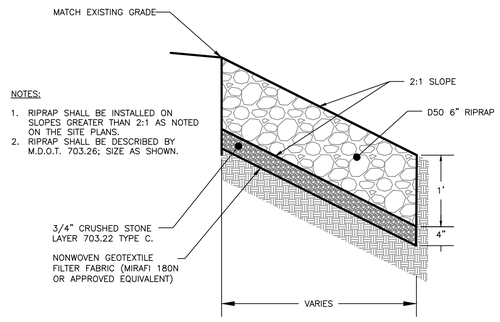
GENERAL NOTES FOR MANHOLES AND CATCH BASINS

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.



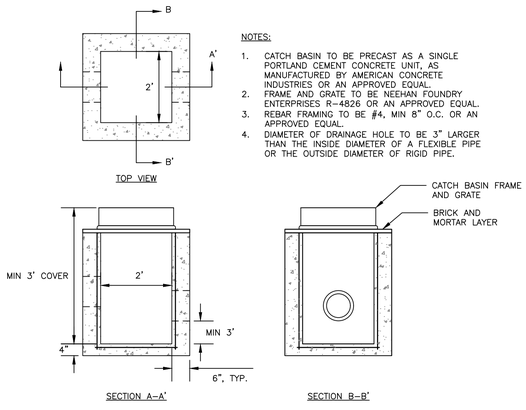
FOUNDATION DRAIN DETAIL
NOT TO SCALE



NOTES:

1. RIPRAP SHALL BE INSTALLED ON SLOPES GREATER THAN 2:1 AS NOTED ON THE SITE PLANS.
2. RIPRAP SHALL BE DESCRIBED BY M.D.O.T. 703.26; SIZE AS SHOWN.

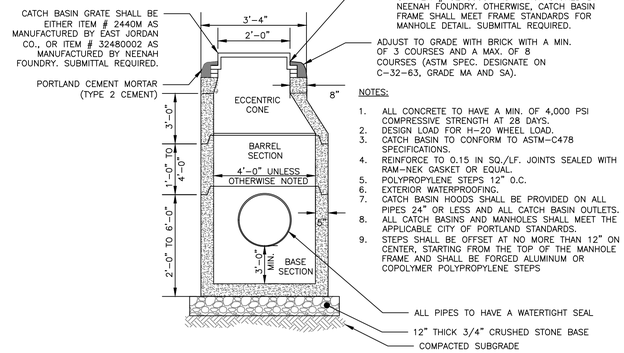
RIPRAP CROSS-SECTION
NOT TO SCALE



NOTES:

1. CATCH BASIN TO BE PRECAST AS A SINGLE PORTLAND CEMENT CONCRETE UNIT, AS MANUFACTURED BY AMERICAN CONCRETE INDUSTRIES OR AN APPROVED EQUAL.
2. FRAME AND GRATE TO BE NEEHAN FOUNDRY ENTERPRISES R-4826 OR AN APPROVED EQUAL.
3. REBAR FRAMING TO BE #4, MIN 8" O.C. OR AN APPROVED EQUAL.
4. DIAMETER OF DRAINAGE HOLE TO BE 3" LARGER THAN THE INSIDE DIAMETER OF A FLEXIBLE PIPE OR THE OUTSIDE DIAMETER OF RIGID PIPE.

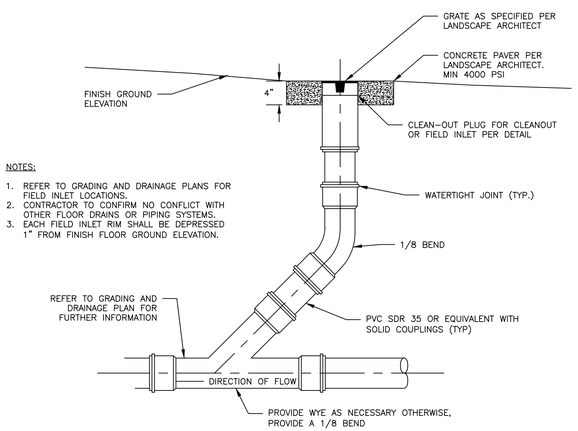
'TYPE F' PRECAST CATCH BASIN
NOT TO SCALE



NOTES:

1. 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

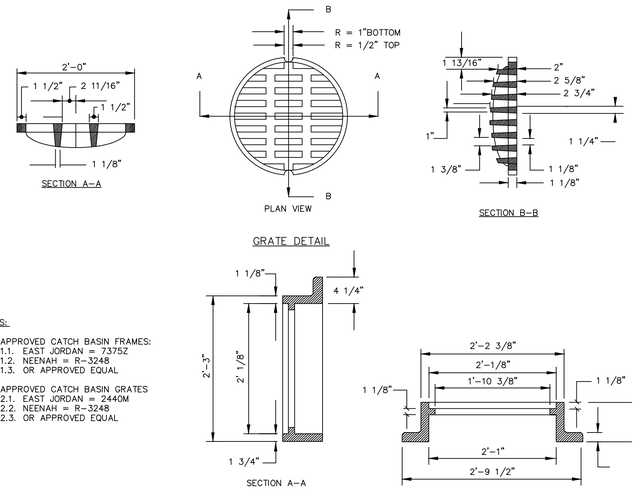
PRECAST CATCH BASIN/ DRAINAGE MANHOLE
NOT TO SCALE



NOTES:

1. REFER TO GRADING AND DRAINAGE PLANS FOR FIELD INLET LOCATIONS.
2. CONTRACTOR TO CONFIRM NO CONFLICT WITH OTHER FLOOR DRAINS OR PIPING SYSTEMS.
3. EACH FIELD INLET RIM SHALL BE DEPRESSED 1" FROM FINISH FLOOR GROUND ELEVATION.

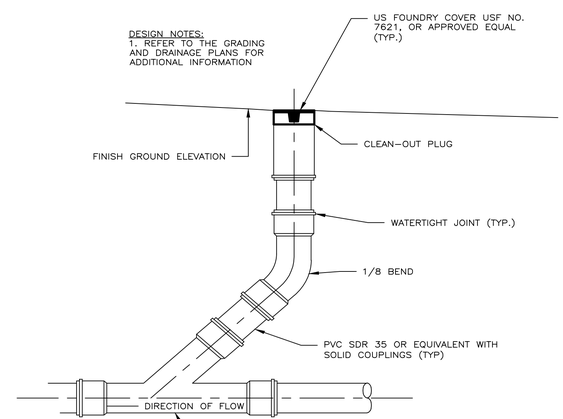
FIELD INLETS IN THE TRAVEL WAY
NOT TO SCALE



NOTES:

1. APPROVED CATCH BASIN FRAMES:
   1.1. EAST JORDAN = 7375Z
   1.2. NEENAH = R-3248
   1.3. OR APPROVED EQUAL
2. APPROVED CATCH BASIN GRATES
   2.1. EAST JORDAN = 2440M
   2.2. NEENAH = R-3248
   2.3. OR APPROVED EQUAL

CATCH BASIN FRAME & GRATE
NOT TO SCALE



CLEANOUT DETAIL
NOT TO SCALE

PERMITTING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
SITE PLAN	PFH 11/20/24

DRAWING NAME: DRAINAGE DETAILS - 1

PROJECT NAME: TAVATA - 165 WASHINGTON AVENUE PORTLAND, MAINE, 04101

CLIENT: REDFERN PROPERTIES P.O. BOX 8816, PORTLAND, MAINE 04104

ACORN ENGINEERING, INC. ENGINEERING

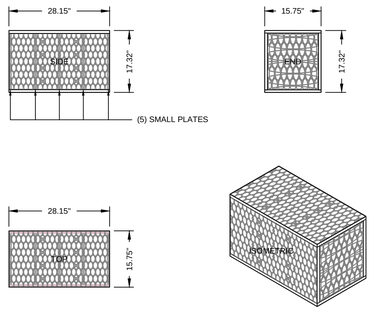
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ACORN ENGINEERING, INC.
FREEPORT, MAINE 04104
PO BOX 340
(207) 775-2655

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JN:	1202
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. NEIL
15318
LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
C-46

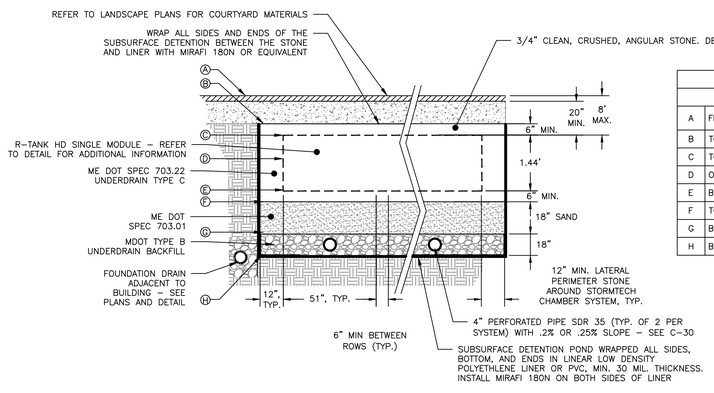


R-TANK HD SINGLE MODULE

NOT TO SCALE

NOTES:

1. REFER TO THE MAINE DEP TECHNICAL DESIGN MANUAL SECTION 7.3 FOR ADDITIONAL DESIGN DETAILS.
2. COMPACT SAND LAYER IN 6" LIFTS TO 92% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557



SCHEDULE		
ITEM		ELEVATION
A	FINISHED GRADE	SEE SHEET C-30
B	TOP OF CRUSHED STONE	62.50'
C	TOP OF R-TANKS	61.50'
D	OVERFLOW INVERT	60.50'
E	BOTTOM OF R-TANKS	60.06'
F	TOP OF SAND	59.56'
G	BOTTOM OF SAND	58.06'
H	BOTTOM OF SYSTEM	56.56'

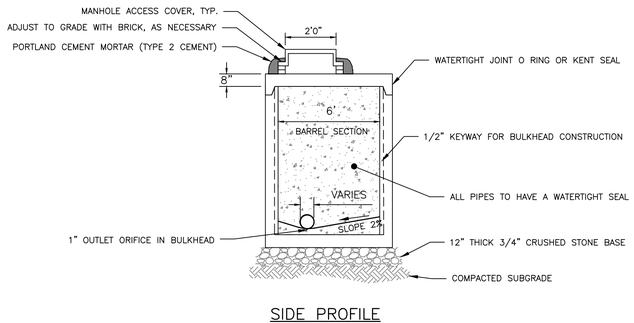
UNDERDRAINED SUB-SURFACE SAND FILTER TYPICAL CROSS SECTION

NOT TO SCALE

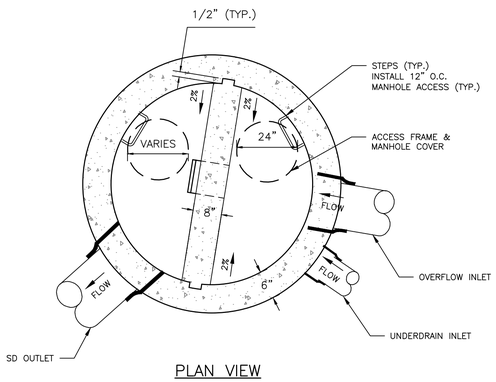
NOTES:

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 0.12 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-44.

SCHEDULE		
ITEM	DIMENSION/ELEVATION	
	USSF	R-TANK IN DRIVEAISLE
SD OUTLET	15"/56.45'	15"/57.75'
WATER QUALITY VERT. ORIFICE DRILLED IN BULKHEAD	1"/56.45'	1"/57.75'
WATER QUANTITY VERT. ORIFICE DRILLED IN BULKHEAD	NONE	NONE
TOP WEIR WALL OVERFLOW	61.20'	60.95'
BMP OVERFLOW INLET	15"/59.45'	12"/60.15'
UNDERDRAIN INLET	56.55'	57.85'



SIDE PROFILE



PLAN VIEW

OUTLET CONTROL STRUCTURE

NOT TO SCALE

PERMITTING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
SITE PLAN	PFH	11/20/24

DRAWING NAME: **DRAINAGE DETAILS - 2**

PROJECT NAME: **TAVATA - 165 WASHINGTON AVENUE PORTLAND, MAINE, 04101**

CLIENT: REDFERN PROPERTIES
P.O. BOX 8816, PORTLAND, MAINE 04104

ACORN ENGINEERING, INC.

THE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY REUSE OF THESE PLANS BY OTHERS OR, OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

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FILE:	1202_CIVIL
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SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER
STATE OF MAINE

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 SILTATION FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED DOWN GRADIENT OF ANY DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL PERMANENT STABILIZATION IS ACHIEVED. THE SILT FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED PER THE DETAILS PROVIDED IN THE PLAN SET AND INSPECTED BEFORE AND IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. REPAIRS SHALL BE MADE IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE FENCE LINE OR BERM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THE FENCE OR BERM, THE BARRIER SHALL BE REPLACED WITH A STONE CHECK DAM.

1.1.3 HAY MULCH INCLUDING HYDRO SEEDING IS INTENDED TO PROVIDE COVER FOR DENUDED OR SEEDED AREAS UNTIL REVEGETATION IS ESTABLISHED. MULCH PLACED BETWEEN APRIL 15TH AND NOVEMBER 1ST ON SLOPES OF LESS THAN 15 PERCENT SHALL BE COVERED BY FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. MULCH PLACED BETWEEN NOVEMBER 1ST AND APRIL 15TH ON SLOPES EQUAL TO OR STEEPER THAN 8 PERCENT AND EQUAL TO OR FLATTER THAN 2:1 SHALL USE MATS OR FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.

1.1.4 AT ANY TIME OF THE YEAR, ALL SLOPES STEEPER 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 WASHINGTON AVENUE SHALL BE SWEPT TO CONTROL MUD AND DUST FROM THE CONSTRUCTION SITE AS NECESSARY. ADD ADDITIONAL STONE TO THE STABILIZED CONSTRUCTION ENTRANCE TO MINIMIZE THE TRACKING OF MATERIAL OFF THE SITE AND ONTO THE SURROUNDING ROADWAYS.

1.1.6 DURING DEMOLITION, CLEARING AND GRUBBING OPERATIONS, STONE CHECK DAMS SHALL BE INSTALLED AT ANY AREAS OF CONCENTRATED FLOW. THE MAXIMUM HEIGHT OF THE CHECK DAM SHALL NOT EXCEED 2 FEET. THE CENTER OF THE CHECK DAM SHALL BE 6 INCHES BELOW THE OUTER EDGES OF THE DAM. THE CONTRACTOR SHALL MULCH THE SIDE SLOPES AND INSTALL STONE CHECK DAMS FOR ALL NEWLY EXCAVATED DITCH LINES WITHIN 24 HOURS OF THEIR CREATION.

1.1.7 SILT FENCE STAKE SPACING SHALL NOT EXCEED 6 FEET UNLESS THE FENCE IS SUPPORTED WITH 14 GAUGE WIRE IN WHICH CASE THE MAXIMUM SPACING SHALL NOT EXCEED 10 FEET. THE SILT FENCE SHALL BE "TOED" INTO THE GROUND.

1.1.8 STORMDRAIN INLET PROTECTION SHALL BE PROVIDED TO STORMDRAINS THROUGH THE USE OF ANY OF THE FOLLOWING: HAY BALE DROP INLET STRUCTURES, SILT FENCE DROP INLET SEDIMENT FILTER, GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER, OR CURB INLET SEDIMENT FILTER. BARRIERS SHALL BE INSPECTED AFTER EVERY RAINFALL EVENT AND REPAIRED AS NECESSARY. SEDIMENTS SHALL BE REMOVED WHEN ACCUMULATION HAS REACHED ½ THE DESIGN HEIGHT.

1.1.9 DUST CONTROL SHALL BE ACCOMPLISHED BY THE USE OF ANY OF THE FOLLOWING: WATER, CALCIUM CHLORIDE, STONE, OR AN APPROVED MDEP PRODUCT. DUST CONTROL SHALL BE APPLIED AS NEEDED TO ACCOMPLISH DUST CONTROL.

1.1.10 TEMPORARY LOAM, SEED, AND MULCHING SHALL BE USED IN AREAS WHERE NO OTHER EROSION CONTROL MEASURE IS USED. APPLICATION RATES FOR SEEDING ARE PROVIDED AT THE END OF THIS REPORT.

1.1.11 STOCKPILES SHALL BE STABILIZED WITHIN 7 DAYS OF FORMATION UNLESS A SCHEDULED RAIN EVENT OCCURS PRIOR TO THE 7 DAY WINDOW, IN WHICH CASE THE STOCKPILE SHALL BE STABILIZED PRIOR TO THE RAIN EVENT. METHODS OF STABILIZATION SHALL BE MULCH, EROSION CONTROL MIX, OR EROSION CONTROL BLANKETS/MATS. SILT FENCE OR A WOOD WASTE COMPOST FILTER BERM SHALL BE PLACED DOWNHILL OF ANY SOIL STOCKPILE LOCATION.

1.1.12 FOR DISTURBANCE BETWEEN NOVEMBER 1 AND APRIL 15, PLEASE REFER TO WINTER STABILIZATION PLAN IN THIS REPORT AND THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR FURTHER INFORMATION.

1.1.13 IT IS OF THE UTMOST IMPORTANCE THAT STORMWATER RUNOFF AND POTENTIAL SEDIMENT FROM THE CONSTRUCTION SITE BE DIVERTED AROUND THE PROPOSED UNDERDRAINS UNTIL THE TRENCH IS BACKFILLED.

1.2 PERMANENT EROSION CONTROL MEASURES

THE FOLLOWING PERMANENT EROSION CONTROL MEASURES ARE INTENDED FOR POST DISTURBANCE AREAS OF THE PROJECT.

1.2.1 ALL DISTURBED AREAS DURING CONSTRUCTION, NOT SUBJECT TO OTHER PROPOSED CONDITIONS, SHALL RECEIVE A MINIMUM 4" OF LOAM AND SHALL BE LIMED, AND MULCHED.
EROSION CONTROL BLANKETS OR MATS SHALL BE PLACED OVER THE MULCH IN AREAS NOTED IN PARAGRAPH 4.2 OF THIS REPORT.

1.2.2 ALL STORMWATER DEVICES SHALL BE INSTALLED AND TRIBUTARY AREAS STABILIZED PRIOR RECEIVING STORMWATER.

1.2.3 REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.

2.0 EROSION AND SEDIMENTATION CONTROL PLAN

2.1 THE EROSION AND SEDIMENTATION CONTROL PLAN IS INCLUDED WITHIN THE PLAN SET.

3.0 DETAILS AND SPECIFICATIONS

3.1 EROSION CONTROL DETAILS AND SPECIFICATIONS ARE INCLUDED IN THE PLAN SET.

4.0 STABILIZATION PLAN FOR WINTER CONSTRUCTION

WINTER CONSTRUCTION CONSISTS OF EARTHWORK DISTURBANCE BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15. IF A CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15, THEN THE SITE SHALL BE PROTECTED WITH OVER–WINTER STABILIZATION. ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MIX, EROSION CONTROL MATS, RIPRAP, OR GRAVEL BASE ON A ROAD SHALL BE CONSIDERED OPEN.

THE CONTRACTOR SHALL LIMIT THE WORK AREA TO AREAS THAT WORK WILL OCCUR IN DURING THE SUBSEQUENT 15 DAYS AND SO THAT IT CAN BE MULCHED ONE DAY PRIOR TO A SNOW EVENT. THE CONTRACTOR SHALL STABILIZE WORK AREAS PRIOR TO OPENING ADDITIONAL WORK AREAS TO MINIMIZE AREAS WITHOUT EROSION CONTROL MEASURES.

THE FOLLOWING MEASURES SHALL BE IMPLEMENTED DURING WINTER CONSTRUCTION PERIODS:

4.1 SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES OR SILT FENCES.

4.2 MULCHING

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1,000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75–LBS./1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCH THICKNESS. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW SHALL BE REMOVED DOWN TO A ONE–INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA SHALL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WHEN THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. AFTER NOVEMBER 1ST, MULCHING AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

4.3 SOIL STOCKPILING

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR–INCH LAYER OF EROSION CONTROL MIX. THIS SHALL BE DONE WITHIN 24 HOURS OF STOCKING AND RE–ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL.

4.4 SEEDING

BETWEEN THE DATES OF OCTOBER 15TH AND APRIL 1ST, LOAM OR SEED SHALL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS NOT BEEN LOAMED, FINAL GRADING WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED.

DORMANT SEEDING MAY BE PLACED PRIOR TO THE PLACEMENT OF MULCH OR EROSION CONTROL BLANKETS. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4" OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS/1,000 S.F. ALL AREAS SEEDED DURING THE WINTER SHALL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 75% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

4.5 OVER WINTER STABILIZATION OF DISTURBED SOILS

BY SEPTEMBER 15TH, ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15% SHALL BE SEEDED AND MULCHED. IF THE DISTURBED AREAS ARE NOT STABILIZED BY THIS DATE, THEN ONE OF THE FOLLOWING ACTIONS SHALL BE TAKEN TO STABILIZE THE SOIL FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION – BY OCTOBER 1ST, SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3LBS PER 1,000 S.F., LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 LBS PER 1,000 S.F., AND ANCHOR THE MULCH WITH PLASTIC NETTING. MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 1ST, THEN MULCH THE AREA FOR OVER–WINTER PROTECTION.
- STABILIZE THE SOIL WITH SOD – STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
- STABILIZE THE SOIL WITH MULCH – BY NOVEMBER 15TH, MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 LBS PER 1,000 S.F. ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, ANCHOR THE MULCH WITH NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

4.6 OVER WINTER STABILIZATION OF DISTURBED SLOPES

ALL STONE–COVERED SLOPES SHALL BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15TH. ALL SLOPES TO BE VEGETATED SHALL BE SEEDED AND MULCHED BY SEPTEMBER 1ST. A SLOPE IS CONSIDERED A GRADE GREATER THAN 15%. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1ST, THEN ONE OF THE FOLLOWING ACTION SHALL BE TAKEN TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS – BY OCTOBER 1ST THE DISTURBED SLOPE SHALL BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 LBS PER 1,000 S.F. AND THEN INSTALL EROSION CONTROL MATS OR ANCHORED MULCH OVER THE SEEDING. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE SLOPE BY NOVEMBER 1ST, THEN THE CONTRACTOR SHALL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX OR WITH STONE RIPRAP.
- STABILIZE THE SOIL WITH SOD – THE DISTURBED SLOPE SHALL BE STABILIZED WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE CONTRACTOR SHALL NOT USE LATE–SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 3H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
- STABILIZE THE SOIL WITH EROSION CONTROL MIX – EROSION CONTROL MIX SHALL BE PROPERLY INSTALLED BY NOVEMBER 15TH. THE CONTRACTOR SHALL NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 2H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
- STABILIZE THE SOIL WITH STONE RIPRAP – PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15TH. A REGISTERED PROFESSIONAL ENGINEER SHALL BE HIRED TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

5.0 INSPECTION AND MAINTENANCE

A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT PERIODIC VISUAL INSPECTIONS OF INSTALLED EROSION CONTROL MEASURES. THE FREQUENCY OF INSPECTION SHALL OCCUR AT LEAST ONCE EVERY TWO WEEKS, AS WELL AS AFTER A "STORM EVENT". A "STORM EVENT" SHALL CONSIST 0.5 INCHES OF RAIN WITHIN A 24 HOUR PERIOD. THE FOLLOWING EROSION AND SEDIMENT CONTROL – BEST MANAGEMENT PRACTICES (BMP'S) SHALL INSPECTED IN THE MANNER AS DESCRIBED.

5.1 SEDIMENT BARRIERS

HAY BALE BARRIERS, SILT FENCES AND FILTER BERMS SHALL BE INSPECTED AND REPAIRED FOR THE FOLLOWING IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHALL BE REPLACED WITH A TEMPORARY CHECK DAM. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE–HALF THE HEIGHT OF THE BARRIER. FILTER BERMS SHOULD BE RESHAPED AS NEEDED. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHOULD BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.

5.2 STABILIZED STONE CONSTRUCTION ENTRANCES

THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. WHEN THE CONTROL PAD BECOMES INEFFECTIVE, THE STONE SHALL BE REMOVED ALONG WITH THE COLLECTED SOIL MATERIAL AND REDISTRIBUTED ON SITE IN A STABLE MANNER. THE ENTRANCE SHOULD THEN BE RECONSTRUCTED. THE CONTRACTOR SHALL SWEEP OR WASH PAVEMENT AT EXITS, WHICH HAVE EXPERIENCED MUD–TRACKING ON TO THE PAVEMENT OR TRAVELED WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS.

5.3 MULCHED AREAS

ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR RILL EROSION. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED. NETS MUST BE INSPECTED AFTER RAIN EVENTS FOR DISLOCATION OR FAILURE. IF WASHOUTS OR BREAKAGE OCCUR, RE–INSTALL THE NETS AS NECESSARY AFTER REPAIRING DAMAGE TO THE SLOPE. WHERE MULCH IS USED IN CONJUNCTION WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE. REPAIR AS NEEDED.

5.4 DUST CONTROL

WHEN TEMPORARY DUST CONTROL MEASURES ARE USED, REPETITIVE TREATMENT SHALL BE APPLIED AS NEEDED TO ACCOMPLISH CONTROL.

5.5 STORMWATER APPURTENANCES

ALL UNDERDRAINS, STORM DRAINS, AND CATCH BASINS NEED TO BE OPERATING EFFECTIVELY AND FREE OF DEBRIS.

5.6 EROSION AND SEDIMENTATION CONTROL INSPECTIONS:

ACORN ENGINEERING HAS PERSONNEL QUALIFIED TO CONDUCT EROSION AND SEDIMENTATION CONTROL INSPECTIONS. FOR FURTHER INFORMATION CONTACT:

CONTACT: PETER HEIL, PE
TELEPHONE: (207) 775–2655

QUALIFICATIONS:

Ø MAINE PROFESSIONAL ENGINEERING LICENSE #15318
Ø MAINE DEP – CERTIFIED IN MAINTENANCE & INSPECTION OF STORMWATER BMP'S CERT
Ø MAINE DEP – CERTIFIED THIRD–PARTY INSPECTOR
Ø 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. PRIORITIZE THE DOWNHILL SIDE TO CONTAIN RUNOFF WITHIN THE SITE WHILE PROVIDING AN ENGINEERED OUTLET WITH SILTATION BARRIER TO THE MUNICIPAL STORMWATER SYSTEM WITHIN WASHINGTON AVENUE.
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 SEEDING PLAN

7.1 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.

7.2 SEEDBED PREPARATION

FERTILIZER SHALL BE APPLIED TO THE SITE AT A RATE OF 13.8 POUNDS PER 1,000 SQUARE FEET. THE COMPOSITION OF THE FERTILIZER SHALL BE 10–10–10 (N–P205–K20) OR EQUIVALENT.

LIMESTONE SHALL BE APPLIED TO THE SITE AT A RATE OF 138 POUNDS PER 1,000 SQUARE FEET.

7.3 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

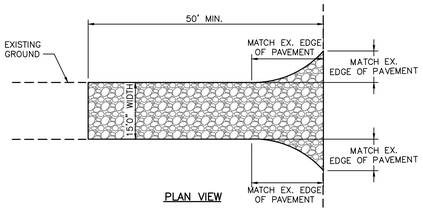
SEED	LBS / ACRE
KENTUCKY BLUEGRASS	20.00
CREEPING RED FESCUE	20.00
PERENNIAL RYEGRASS	4.80
TOTAL	44.8 LBS/ACRE

7.4 MULCHING

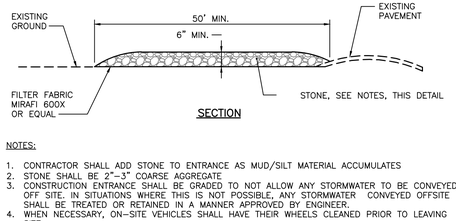
MULCH SHALL BE HARDWOOD AND APPLIED AT A RATE OF 70 LBS – 90 LBS PER 1,000 SQUARE FEET. THE MULCH SHALL BE INSTALLED AT A MINIMUM DEPTH OF 4 INCHES. THE SEEDED AREA SHALL BE MULCHED IMMEDIATELY AFTER SEED IS APPLIED. MULCHING DURING THE WINTER SEASON SHALL BE DOUBLE THE NORMAL AMOUNT. REFER TO DETAIL FOR MORE INFORMATION.

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.



PLAN VIEW



SECTION

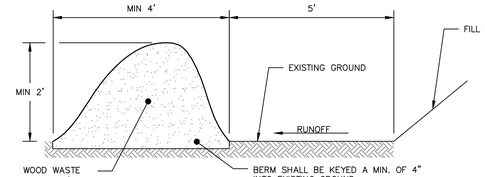
NOTES:

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

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. 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.
4. DURING PERIODS OF WINTER CONSTRUCTION (NOV. 15 THROUGH APRIL 15), THE CONTRACTOR SHALL INSTALL EROSION CONTROL MIX BERMS IN LIEU OF SILT FENCE.



EROSION CONTROL MIX BERM DETAIL
NOT TO SCALE

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 SO

R-TANK QUANTITIES

TRAFFIC LOAD	HS-20
# OF HD SINGLE R-TANKS	443
# OF HD SINGLE R-TANK ACCESS MODULES (OPEN END PLATE)	70
# OF HD SINGLE R-TANK ACCESS MODULES (SOLID END PLATE)	8
TOTAL SYSTEM STORAGE	3,990 CF
R-TANK STORAGE VOLUME	2,200 CF
STONE STORAGE VOLUME (40% VOID RATIO)	1,790 CF
STONE BED FOOTPRINT	2,307 SF
STONE QUANTITY	166 CY
N080 NON-WOVEN GEOTEXTILE TANK WRAP	494 SY
N080 NON-WOVEN GEOTEXTILE EXCAVATION WRAP	1,485 SY
30 MIL. PVC LINER (EXCAVATION)	687 SY
30 MIL PVC LINER TREAT. ROW WRAP	58 SY
8 OZ. NON-WOVEN GEOTEXTILE TREAT. ROW PROTECTION	117 SY
S300 WOVEN GEOTEXTILE TREAT. ROW BASE FABRIC	67 SY
INSPECTION PORTS (12")	13
GEOTEXTILE PIPE BOOTS (12")	39
30 MIL. PVC PIPE BOOTS (8" | 12")	(2 | 13)
STORMRING CPS (12")	5

R-TANK ELEVATIONS

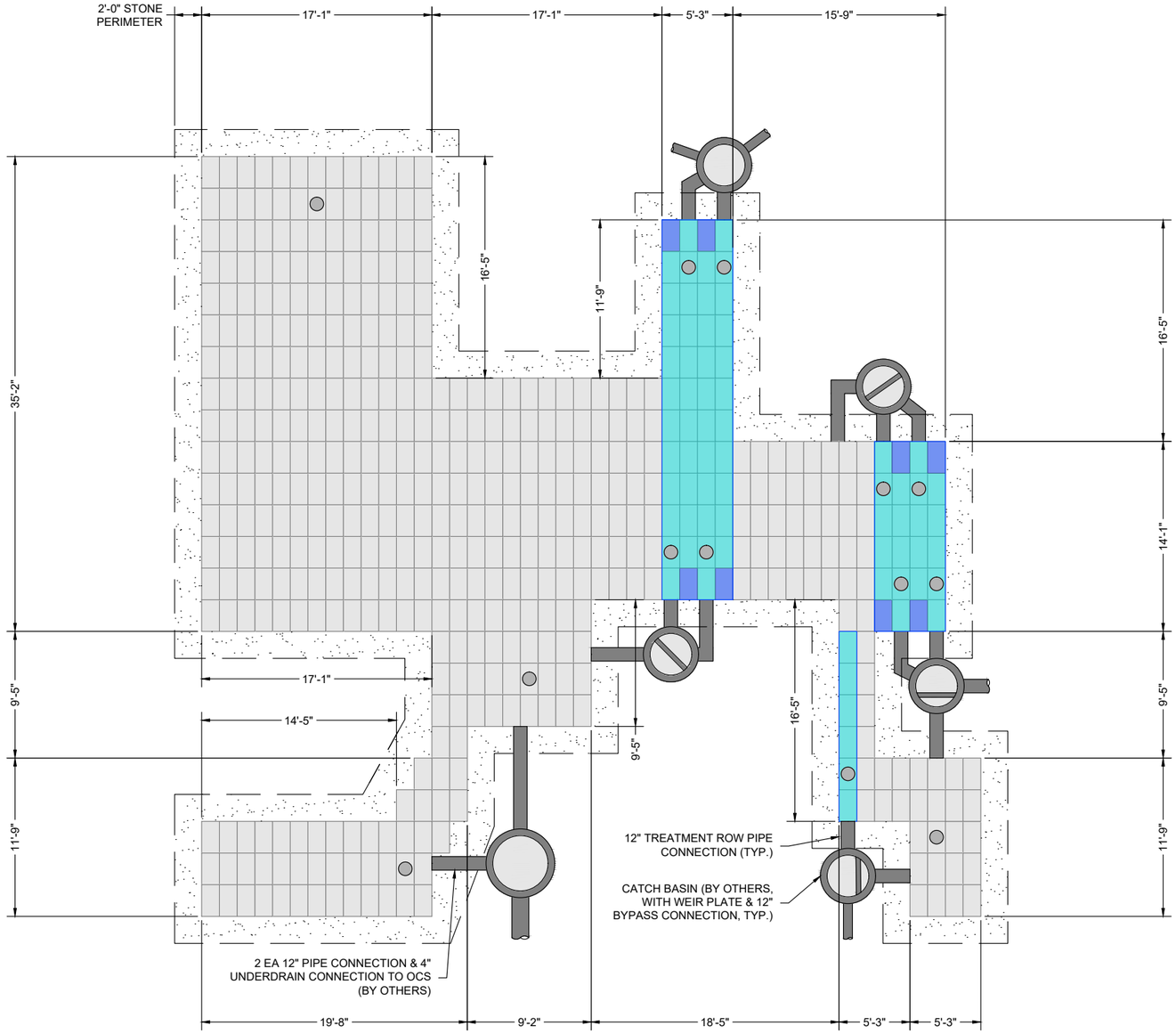
DESCRIPTION	ELEVATION
BASE INV.	59.56
TANK INV.	60.06
TOP OF TANK	61.50
GEOGRID	62.50
MIN. ALLOW. FINAL GRADE	63.17
MAX. ALLOW. FINAL GRADE	68.49

LEGEND

- R-TANK HD SINGLE UNITS
- R-TANK HD SINGLE ACCESS UNITS
- R-TANK HD SINGLE ACCESS UNITS WITH SOLID END PLATE
- EXCAVATION PERIMETER
- PERIMETER BACKFILL
- INSPECTION PORT
- PIPE CONNECTION

NOTES & DISCLAIMERS

1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. BACKFILL, GEOTEXTILE, AND/OR LINER QUANTITIES ARE APPROXIMATIONS BASED ON DIMENSIONS SHOWN.
3. PRE-TREATMENT DEVICES ARE RECOMMENDED UP-STREAM OF ALL INFLOW CONNECTIONS. LEAF GUARDS SHOULD BE INSTALLED ON ANY DOWNSPOUT CONNECTIONS. CONTRACTOR AND ENGINEER ARE RESPONSIBLE ON ENSURING THE LAST UP-STREAM STRUCTURE IS ADEQUATE TO CONTAIN THE NECESSARY TREATMENT DEVICE.
4. CONSULTANT DRAWINGS ARE BEING RELIED UPON AS BEING ACCURATE IN DEPICTING SITE CONDITIONS, THAT THEY SATISFY ANY LOCAL BUILDING CODE REQUIREMENTS, AND THAT THEY ACCURATELY DEPICT SUBSURFACE CONDITIONS.
5. FERGUSON SUPPLIES THE PRODUCTS ONLY AND TAKES NO RESPONSIBILITY FOR INSTALLATION AND HAS NO ROLE IN THE INSTALLATION OF THE PRODUCTS.
6. R-TANK SYSTEMS ARE NOT DESIGNED TO SUPPORT LOADS FROM BUILDINGS, RETAINING WALLS, ETC. THEREFORE, THE ENGINEER OF RECORD MUST COORDINATED WITH THE PROPER DISCIPLINES TO ENSURE NO STRUCTURAL LOADS ARE IMPARTED UPON THE SYSTEM AND ANY INFILTRATION FROM THE SYSTEM HAS BEEN ACCOUNTED FOR IN FOUNDATION DESIGN.
7. TREES NOT PERMITTED ON TOP OF R-TANK SYSTEM
8. ENGINEER OF RECORD, OR LANDSCAPE ARCHITECT, TO CONFIRM R-TANK MODULES TO BE INSTALLED OUTSIDE CRZ OF NEARBY TREES
9. EXCAVATION GEOTEXTILE FABRIC & IMPERMEABLE LINER QTY ACCOMODATE FULL SAND FILTER DEPTH. BACKFILL QTY REPRESENTS BACKFILL REQUIRED FOR R-TANK SYSTEM ONLY



COURTYARD SYSTEM

DATE	INITIALS	DESCRIPTIONS

DISTRIBUTED BY:

R-Tank

MODULAR STORMWATER STORAGE SYSTEM

0 15' 30'

SYSTEM LAYOUT
165 WASHINGTON AVE REDEVELOPMENT
PORTLAND, ME

DRAWN BY: BMK
DATE: 11/20/2024
SHEET NO.: 2 of 8

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO FERGUSON WATERWORKS BY THE DESIGN ENGINEER, CONTRACTOR, OR OTHER PROJECT REPRESENTATIVE. THE ENGINEER OF RECORD SHALL REVIEW AND APPROVED THAT THE DEPICTED LAYOUT AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE REGULATIONS AND PROJECT SPECIFIC REQUIREMENTS.

R-TANK QUANTITIES

TRAFFIC LOAD	HS-20
# OF HD DOUBLE R-TANKS	314
TOTAL SYSTEM STORAGE	4,135 CF
R-TANK STORAGE VOLUME	2,592 CF
STONE STORAGE VOLUME (40% VOID RATIO)	1,543 CF
STONE BED FOOTPRINT	1,524 SF
STONE QUANTITY	143 CY
N080 NON-WOVEN GEOTEXTILE TANK WRAP	351 SY
N080 NON-WOVEN GEOTEXTILE EXCAVATION WRAP	902 SY
30 MIL. PVC LINER	408 SY
INSPECTION PORTS (12")	4
GEOTEXTILE PIPE BOOTS (12")	9
30 MIL. PVC PIPE BOOTS (8" | 12")	(1 | 3)
STORMRING CPS (12")	2

R-TANK ELEVATIONS

DESCRIPTION	ELEVATION
BASE INV.	57.88
TANK INV.	58.38
TOP OF TANK	61.20
GEOGRID	62.20
MIN. ALLOW. FINAL GRADE	62.87
MAX. ALLOW. FINAL GRADE	68.19

LEGEND

R-TANK HD DOUBLE UNITS

INSPECTION PORT

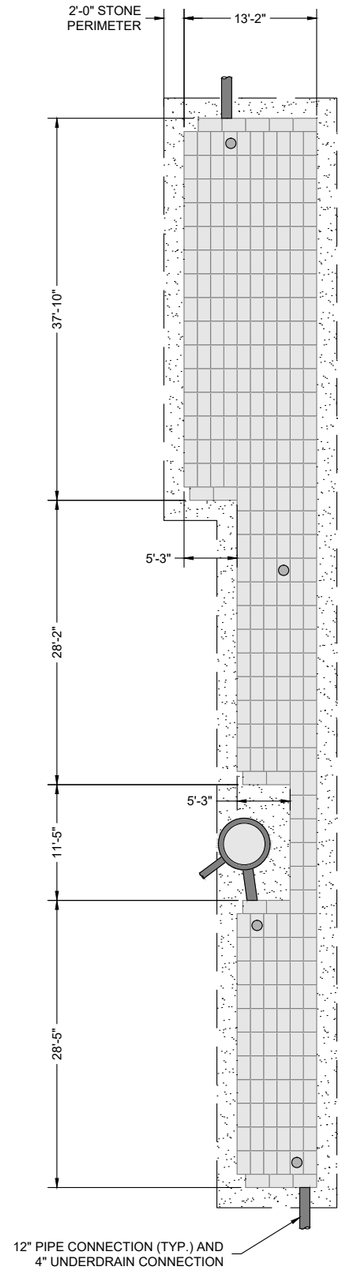
PIPE CONNECTION

EXCAVATION PERIMETER

PERIMETER BACKFILL

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7. TREES NOT PERMITTED ON TOP OF R-TANK SYSTEM
8. ENGINEER OF RECORD, OR LANDSCAPE ARCHITECT, TO CONFIRM R-TANK MODULES TO BE INSTALLED OUTSIDE CRZ OF NEARBY TREES



PARKING LOT SYSTEM

DATE	INITIALS	DESCRIPTIONS

DISTRIBUTED BY:

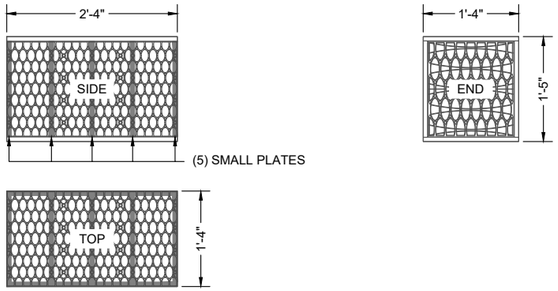
R-Tank
MODULAR STORMWATER STORAGE SYSTEM

0 15' 30'

SYSTEM LAYOUT
165 WASHINGTON AVE REDEVELOPMENT
PORTLAND, ME

DRAWN BY: BMK
DATE: 11/20/2024
SHEET NO.: 3 of 8

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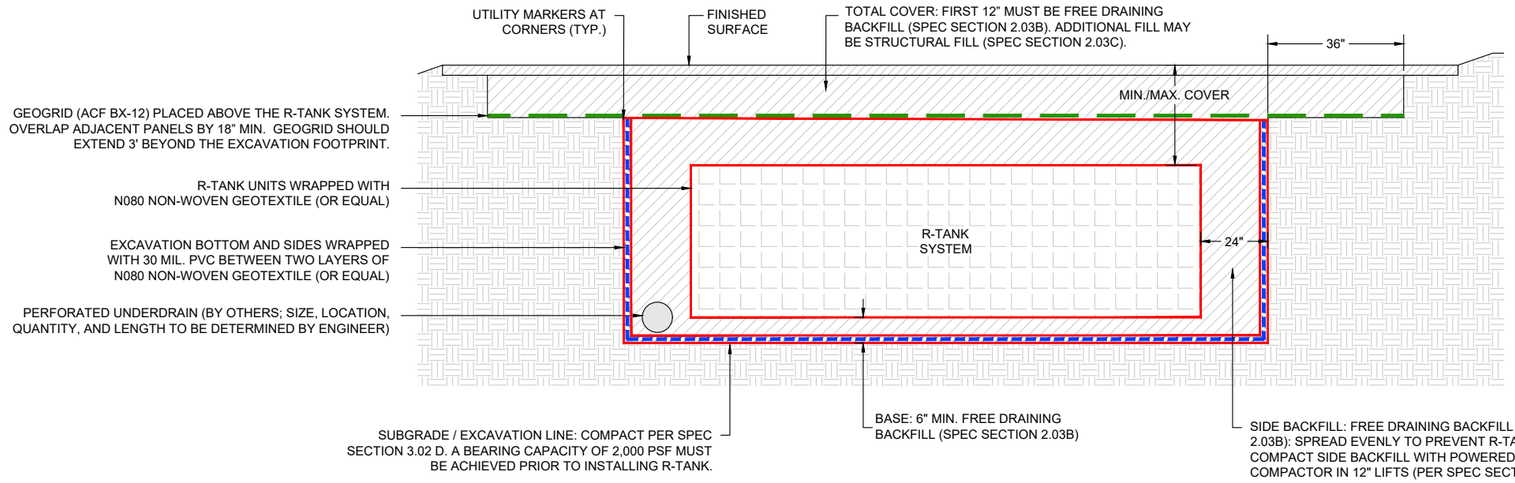
MODULE DATA

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 = 17.32 IN. (440 MM)	COVER REQUIREMENTS
TANK VOLUME = 4.44 CF	**MATERIAL:**
STORAGE VOLUME = 4.22 CF	100% RECYCLED POLYPROPYLENE
VOID INTERNAL VOLUME: 95%	**SMALL PLATES REQUIRED:**
VOID SURFACE AREA: 90%	5/SEGMENT, 5/MODULE

SINGLE R-TANK^{HD} - MODULE DETAIL

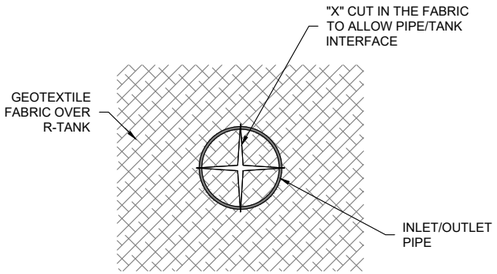
R-TANK UNIT LOAD RATING					
UNIT TYPE	**COMPRESSION STRENGTH**	**NON-VEHICULAR MIN. COVER***	**HS-20 MIN. COVER***	**HS-25 MIN. COVER***	**MAX. COVER***
HD	33.4 PSI	12"	20"	24"	6.99'
* MINIMUM AND MAXIMUM COVER ARE MEASURED FROM THE TOP OF THE R-TANK UNIT TO THE TOP OF THE FINISHED SURFACE.					

NOTES:
1. INSTALLATIONS PER THIS DETAIL MEET GUIDELINES OF HL-93 LOADING PER THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
2. FOR INFILTRATION APPLICATIONS, 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 FOOTPRINT. THE ENGINEER OF RECORD IS RESPONSIBLE FOR ASSESSING THE BEARING CAPACITY OF THE SUBGRADE, AND BASE.
3. FOR INSTALLATIONS IN LANDSCAPED AREAS, THE INSTALLATION OF TREES IS PROHIBITED ABOVE THE R-TANK UNITS. PLEASE CONTACT YOUR LOCAL FERGUSON WATERWORKS REPRESENTATIVE FOR MORE INFORMATION.
4. THE R-TANK SYSTEM IS NOT DESIGNED TO SUPPORT LOADS FROM BUILDINGS OR STRUCTURES. THEREFORE, THE ENGINEER OF RECORD MUST COORDINATE WITH THE PROPER DISCIPLINES TO ENSURE NO STRUCTURAL LOADS ARE IMPARTED UPON THE SYSTEM AND ANY INFILTRATION FROM THE SYSTEM HAS BEEN ACCOUNTED FOR IN THE FOUNDATION DESIGN.



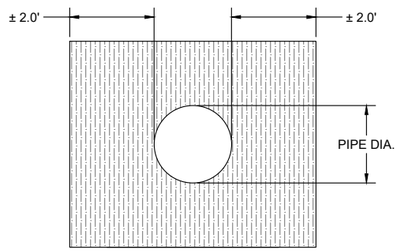
R-TANK SECTION VIEW

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.

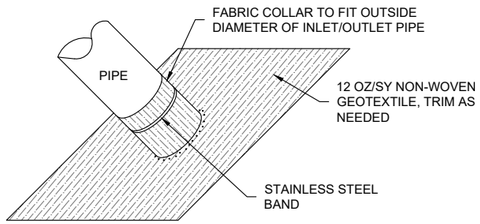


END VIEW OF PIPE/FABRIC CONNECTION

NOTE:
- PIPE BOOTS ARE AVAILABLE IN THE FOLLOWING STANDARD SIZES: 8" | 12" | 15" | 18" | 24".
- LARGER SPECIAL ORDER, CUSTOM SIZES ARE AVAILABLE.

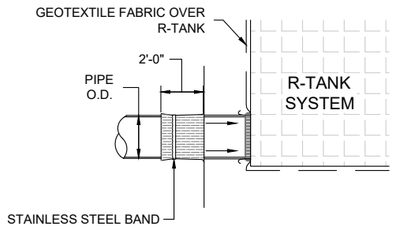


FRONT VIEW OF GEOTEXTILE BOOT

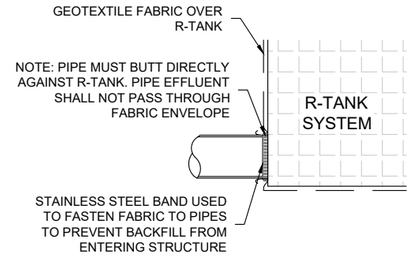


GEOTEXTILE BOOT

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

DATE	INITIALS	DESCRIPTIONS

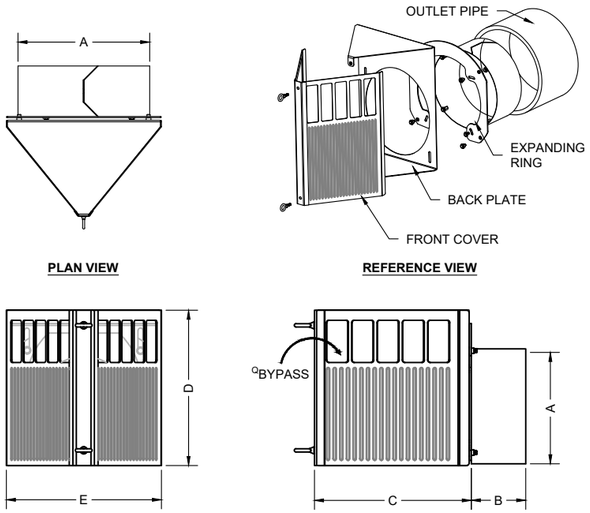
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R-Tank
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SYSTEM DETAILS
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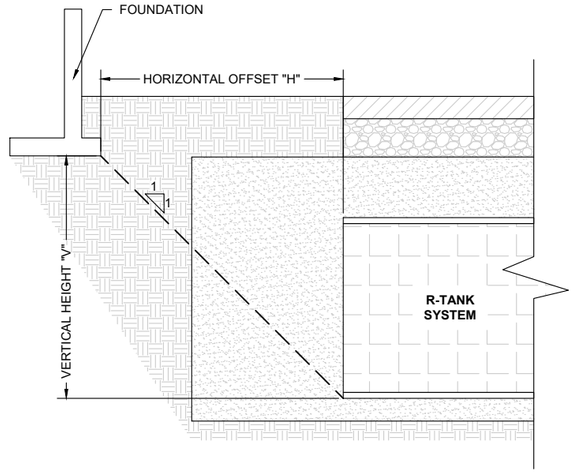
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PART NUMBER	NOMINAL PIPE DIA.	EXPANDING COLLAR DIA. (A)		STUB LENGTH (B)	CPS DEPTH (C)	CPS HEIGHT (D)	CPS WIDTH (E)
		MIN.	MAX.				
SCA6-1	6"	5.63"	6.50"	6.00"	10.00"	10.13"	10.13"
SCA8-1	8"	7.50"	8.50"	6.00"	13.00"	11.88"	11.38"
SCA10-1	10"	9.50"	10.50"	8.00"	13.50"	13.50"	13.25"
SCA12-1	12"	11.38"	12.63"	8.00"	15.50"	15.38"	15.38"
SCA15-1	15"	14.25"	15.50"	8.00"	15.50"	21.38"	18.38"
SCA18-1	18"	17.38"	18.63"	8.00"	15.75"	28.00"	21.38"
SCA24-1	24"	23.25"	24.50"	9.00"	17.00"	40.00"	28.38"

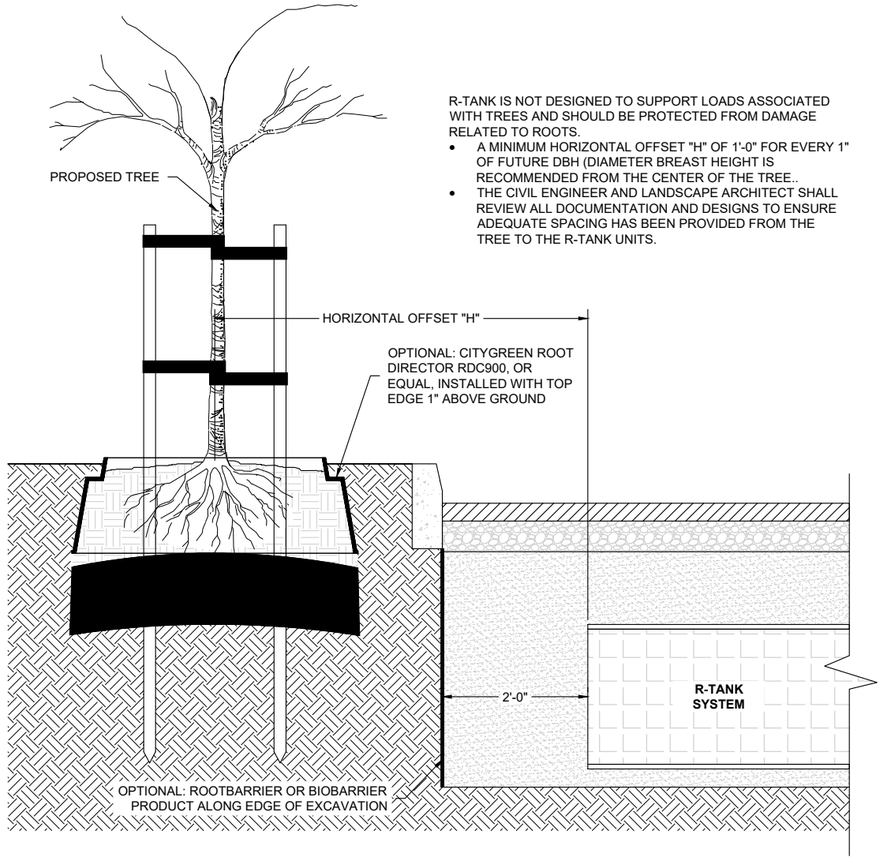
STORMRING CPS PRETREATMENT DETAIL



R-TANK IS NOT DESIGNED TO SUPPORT STRUCTURAL LOADS ASSOCIATED WITH BUILDINGS, RETAINING WALLS OR OTHER STRUCTURES.

- THE CIVIL ENGINEER AND STRUCTURAL ENGINEER SHALL REVIEW ALL DOCUMENTATION AND DESIGNS TO ENSURE NO STRUCTURAL LOADS ARE APPLIED BY THE STRUCTURE ON THE R-TANK UNITS. IT IS RECOMMENDED THAT ALL R-TANK UNITS BE INSTALLED ABOVE THE ELEVATION OF ANY SUBSURFACE STRUCTURAL ELEMENTS SUCH AS FOOTERS. IF THIS CANNOT BE ACHIEVED, IT RECOMMENDED THAT A MINIMUM 1:1 ZONE OF INFLUENCE, SITE SPECIFIC SOILS MAY REQUIRE GREATER SEPARATION DISTANCE, BE MAINTAINED BETWEEN THE STRUCTURAL ELEMENT AND THE UNITS.
- THE STRUCTURAL ENGINEER AND GEOTECHNICAL ENGINEER SHALL REVIEW ALL DOCUMENTATION AND DESIGNS TO ENSURE PROPER STABILITY OF STRUCTURAL ELEMENTS DURING SATURATED SOIL CONDITIONS POTENTIALLY CAUSED BY THE PROXIMITY OF INFILTRATION FACILITIES TO THE STRUCTURAL ELEMENTS.

R-TANK - MINIMUM OFFSET DETAIL



R-TANK IS NOT DESIGNED TO SUPPORT LOADS ASSOCIATED WITH TREES AND SHOULD BE PROTECTED FROM DAMAGE RELATED TO ROOTS.

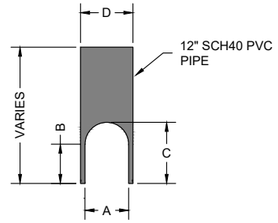
- A MINIMUM HORIZONTAL OFFSET "H" OF 1'-0" FOR EVERY 1" OF FUTURE DBH (DIAMETER BREAST HEIGHT IS RECOMMENDED FROM THE CENTER OF THE TREE..
- THE CIVIL ENGINEER AND LANDSCAPE ARCHITECT SHALL REVIEW ALL DOCUMENTATION AND DESIGNS TO ENSURE ADEQUATE SPACING HAS BEEN PROVIDED FROM THE TREE TO THE R-TANK UNITS.

R-TANK - TREE OFFSET DETAIL

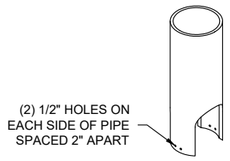
NOTES
1. THE INSPECTION PORT IS USED IN THE ACCESS MODULE TO INSPECT THE LEVEL OF SEDIMENT ACCUMULATION AND PERFORM ROUTINE MAINTENANCE.
2. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION DURING THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER. FLUSH AS NEEDED.
3. R-TANK^{HD}, R-TANK^{SD}, R-TANK^{UD} AND R-TANK^{XD} MAY BE USED IN TRAFFIC APPLICATIONS. SEE TRAFFIC LOADING DETAIL FOR MINIMUM & MAXIMUM COVER REQUIREMENTS.
4. 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 INSPECTION PORT DIMENSIONS				
UNIT TYPE	**DOGHOUSE BOTTOM WIDTH ("A")**	**DOGHOUSE VERTICAL LENGTH ("B")***	**DOGHOUSE OPENING HEIGHT ("C")**	**PORT DIAMETER ("D")**
HD	10"	9"	14"	12"
SD	10"	3"	8"	12"
UD	8"	7"	12"	10"
XD	10"	VARIES**	VARIES**	12"

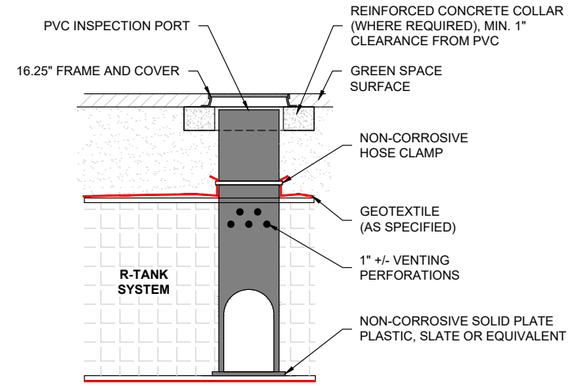
* PORTS ARE SUPPLIED WITH A STANDARD DOGHOUSE LENGTH OF 9". THE OPENING LENGTH SHALL BE REDUCED IN THE FIELD TO CORRESPOND WITH THE SPECIFIED PRODUCT TYPE.
** VERTICAL HEIGHTS VARY BASED ON THE STACKING HEIGHT OF THE XD SYSTEM. THE TOP OF ANY OPENING SHOULD NOT EXCEED THE TOP OF THE STACK HEIGHT.



FRONT VIEW OF INSPECTION PORT



ISOMETRIC PORT



R-TANK TYPICAL VEHICULAR LOAD RATED INSPECTION PORT

DATE	INITIALS	DESCRIPTIONS

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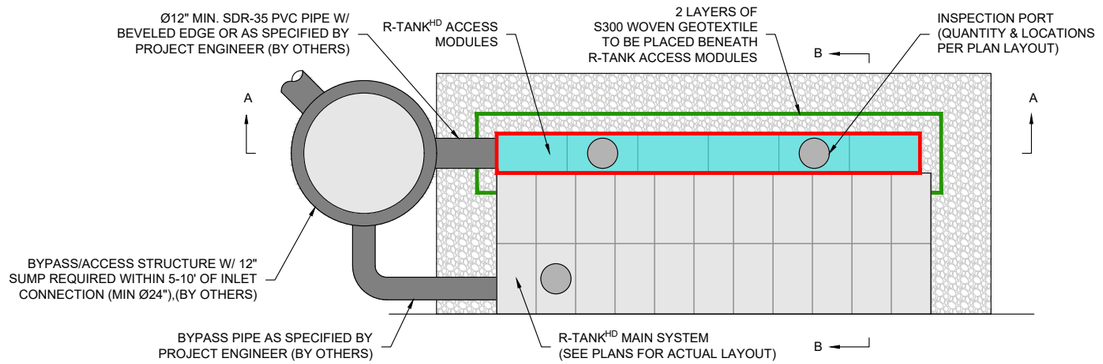
R-Tank
MODULAR STORMWATER STORAGE SYSTEM

SYSTEM DETAILS
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PORTLAND, ME

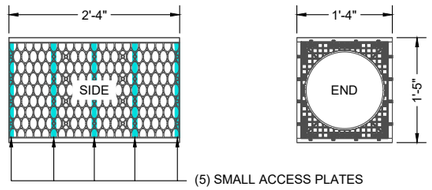
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DATE: 11/20/2024
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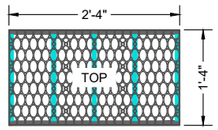
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NOTE: TREATMENT ROW DETAILS ARE PROVIDED FOR ILLUSTATION PURPOSES ONLY. EXACT SIZE, SECTION, AND LOCATION SHALL BE DETERMINED BY THE LAYOUT PLANS AND DETAIL SHEETS.

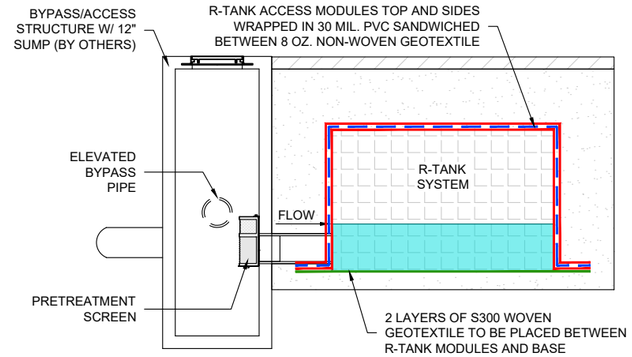


R-TANK^{HD} TREATMENT ROW PLAN VIEW

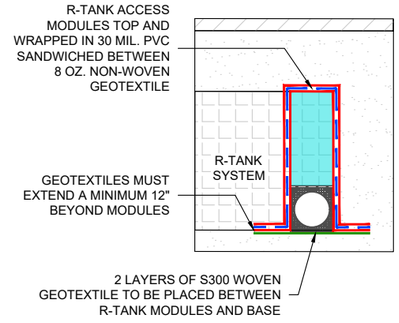




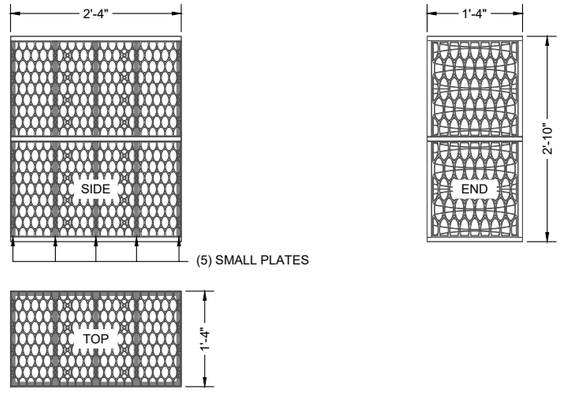
SINGLE R-TANK^{HD} - ACCESS MODULE DETAIL
(FOR MODULE DATA, SEE STANDARD MODULE DETAIL)



R-TANK TREATMENT ROW SECTION A-A



R-TANK TREATMENT ROW SECTION B-B

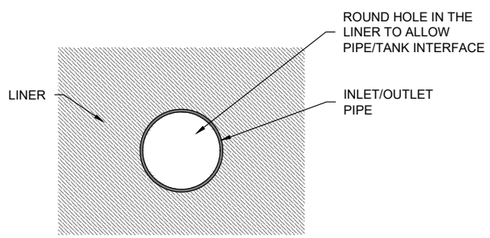


MODULE DATA

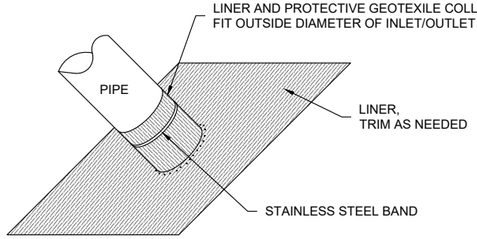
GEOMETRY:	**LOAD RATING:**
LENGTH = 28.15 IN. (715 MM)	33.4 PSI, (MODULE ONLY)
WIDTH = 15.75 IN. (400 MM)	HS20/HS25 - SEE SPEC FOR
HEIGHT = 33.86 IN. (860 MM)	COVER REQUIREMENTS
TANK VOLUME = 8.69 CF	**MATERIAL:**
STORAGE VOLUME = 8.25 CF	100% RECYCLED POLYPROPYLENE
VOID INTERNAL VOLUME: 95%	**SMALL PLATES REQUIRED:**
VOID SURFACE AREA: 90%	5/SEGMENT, 10/MODULE

DOUBLE R-TANK^{HD} - MODULE DETAIL

CUT A ROUND HOLE IN THE LINER ENVELOPE AND GEOTEXTILE PROTECTION FABRIC THAT IS SLIGHTLY LARGER THAN THE PIPE.

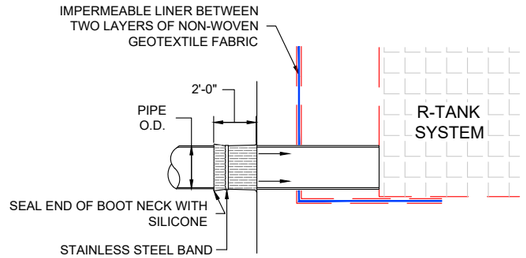


END VIEW OF PIPE/LINER CONNECTION

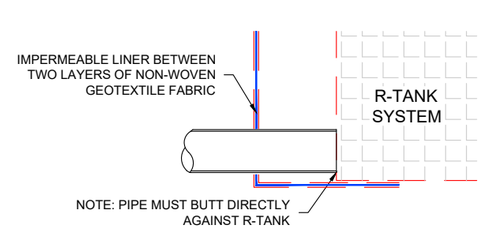


LINER BOOT W/ PROTECTIVE GEOTEXTILE FABRIC LAYER

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 LINER BOOT



SIDE VIEW OF PIPE/LINER CONNECTION

R-TANK TYPICAL EXCAVATION INLET/OUTLET W/ LINER PIPE BOOT DETAIL

DATE	INITIALS	DESCRIPTIONS

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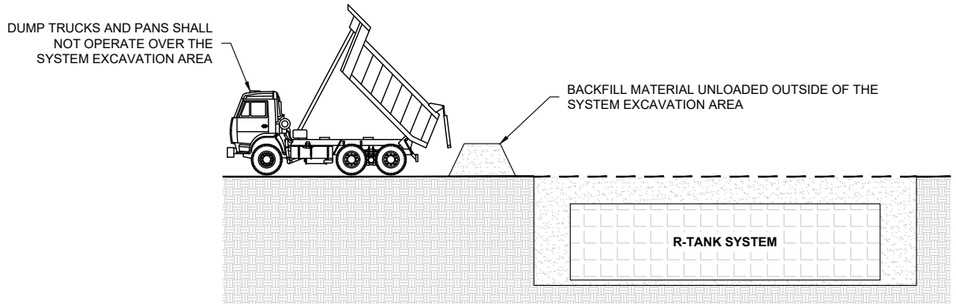
SYSTEM DETAILS
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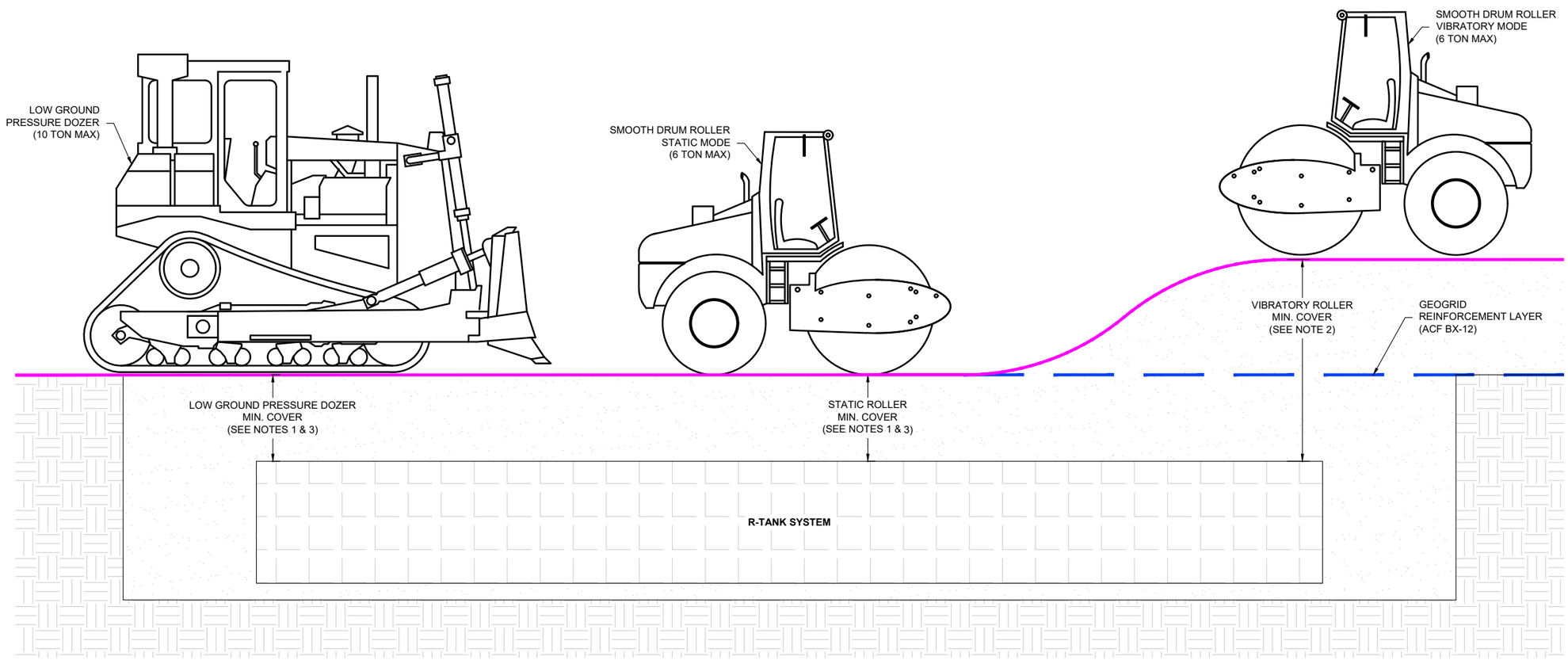
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R-TANK CONSTRUCTION EQUIPMENT RECOMMENDATIONS				
UNIT TYPE	**COMPRESSION STRENGTH**	**10 TON LOW GROUND PRESSURE DOZER MIN. COVER**	**6 TON SMOOTH DRUM STATIC ROLLER MIN. COVER**	**6 TON SMOOTH DRUM VIBRATORY ROLLER MIN. COVER**
HD	33.4 PSI	12" (SEE NOTE 1, 2 & 3)	12" (SEE NOTE 1, 2 & 3)	24" (SEE NOTE 2)
SD	42.9 PSI	12" (SEE NOTE 1, 2 & 3)	12" (SEE NOTE 1, 2 & 3)	24" (SEE NOTE 2)

NOTES:
1. FOLLOWING PLACEMENT OF SIDE BACKFILL, A UNIFORM 12" LIFT OF THE FREELY DRAINING MATERIAL (SPEC SECTION 2.03 B1) 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. AFTER THE GEOGRID IS INSTALLED OVER THE INITIAL LAYER, THE GRADED AGGREGATE BASE MATERIALS CAN BE PUSHED OUT (MAX MACHINE SIZE IS 10 TON LGP DOZER OR SMALLER) IN A SINGLE LIFT AND STATIC ROLLED BY A MACHINE WITH A MAX GROSS VEHICLE WEIGHT OF 6 TONS. 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.



DUMP TRUCK DETAIL



R-TANK HD OR SD CONSTRUCTION EQUIPMENT COVER DETAIL - VEHICULAR TRAFFIC

DATE	INITIALS	DESCRIPTIONS

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CONSTRUCTION EQUIPMENT COVER DETAIL
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R-TANK SPECIFICATION

PART 1 - GENERAL

1.01 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-Tank system and all related products per the manufacturer's installation guidelines.
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.

1.02 QUALITY CONTROL

A. All materials shall be manufactured in ISO certified facilities.
B. Installation Contractor shall demonstrate knowledge and experience in the installation of subsurface storage system. A pre-installation conference shall be performed per section 1.05.
C. Installation Personnel: Performed only by skilled workers with experience in 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.

1.03 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.

1.04 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 should 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. Do not build on frozen ground or wet, saturated or muddy subgrade.

1.05 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.

1.06 PROJECT CONDITIONS

A. Coordinate installation for 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.
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 plates assembled to form a 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^{SD} VALUE	R-Tank^{UD} VALUE	R-Tank^{XD} VALUE
Void Area	Volume available for water storage	95%	95%	95%	90%
Surface Void Area	Percentage of exterior available for infiltration	90%	90%	90%	90%
Vertical Compressive Strength	ASTM D 2412 / ASTM F 2418	33.4 psi	42.9 psi	134.2 psi	240.2 psi
Lateral Compressive Strength	ASTM D 2412 / ASTM F 2418	22.4 psi	28.9 psi	N/A	N/A
HS-20 Minimum Cover	Cover required to support HS-20 loads	20"	18"	12" (STONE BACKFILL)	6"
HS-25 Minimum Cover	Cover required to support HS-25 loads	24"	19"	15" (STONE BACKFILL)	6"
Maximum Cover	Maximum allowable cover depth	< 7 feet	< 10 feet	5 feet	16.7 feet
Unit Weight	Weight of plastic per cubic foot of tank	3.62 lbs/cf	3.96 lbs / cf	4.33 lbs / cf	7.55 lbs / cf
Rib Thickness	Thickness of load-bearing members	0.18 inches	0.18 inches	N/A	N/A
Service Temperature	Safe temperature range for use	-14 – 167° F	-14 – 167° F	-14 – 167° F	-14 to 185° F

C. Supplier: Ferguson Waterworks; visit www.fergusongss.com for more information.

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.
   2. Infiltration Applications: When water must infiltrate/exfiltrate through the geotextile as a function of the system design, a woven monofilament shall be used.
B. Geogrid. For installations subject to traffic loads and/or when required by project plans, install geogrid to reinforce backfill above the R-Tank system. Geogrid is not always required for R-TankUD 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 and above 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). 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.
      b. Top backfill material (from top of module to bottom of pavement base or 12" maximum) must be consistent with side backfill.
   2. Non-Vehicular 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 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. Where a geotextile wrap is specified, install the specified fabric along the excavated surfaces while removing wrinkles so material lays flat. Overlap geotextile a minimum 12" or as recommended by manufacturer. Use tape, special adhesives, sandbags or other ballast to secure overlaps. As geotextiles can be damaged by extreme heat, smoking is not permissible on/near the geotextile, and tools using a flame to tack the overlaps, such as propane torches, are prohibited.
B. 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") or as shown on the plans. Native subgrade soils or other materials may be used if determined to meet the requirements of 2.03 A and are accepted by the owner's engineer.
   1. Standard Applications: Static roll or otherwise compact bedding materials until they are firm and unyielding.
   2. Infiltration Applications: Bedding materials shall be prepared in accordance with the contract documents.
B. Outline the footprint of the R-Tank system on the excavation floor using spray paint or chalk line to ensure a 2' perimeter is available around the R-Tank system for proper compaction of backfill.

3.04 INSTALLATION OF THE R-TANKS

A. Where a geotextile wrap is specified on the stone base, cut strips to length and install in excavation, removing wrinkles so material lays flat. Overlap geotextile a minimum 12" or as recommended by manufacturer. Use tape, special adhesives, sandbags or other ballast to secure overlaps. As geotextiles can be damaged by extreme heat, smoking is not permissible on/near the geotextile, and tools using a flame to tack the overlaps, such as propane torches, are prohibited.
B. Where an impervious liner (for containment) is specified, install the liner per manufacturer's recommendations and the contract documents. The R-Tank units shall be separated from impervious liner by a non-woven geotextile fabric installed accordance with Section 3.04A.
C. Install R-Tank modules by placing side by side, in accordance with the design drawings. No lateral connections are required. It is advisable to use a string line to form square corners and straight edges along the perimeter of the R-Tank system. The modules are to be oriented as per the design drawing with required depth as shown on plans.
   1. For LD, HD, and SD installations, the large side plate of the tank should be placed on the perimeter of the system. This will typically require that the two ends of the tank area will have a row of tanks placed perpendicular to all other tanks. If this is not shown in the construction drawings, it is a simple field adjustment that will have minimal effect on the overall system footprint. Refer to R-Tank Installation Guide for more details
   2. For UD installations, there is no perpendicular end row required.
D. Wrap the R-Tank top and sides in specified geotextile. Cut strips of geotextile so that it will cover the sides and top, encapsulating the entire system to prevent backfill entry into the system. Overlap geotextile 12" or as recommended by manufacturer. Take great care to avoid damage to geotextile (and, if specified, impervious liner) during placement.
E. Identify locations of inlet, outlet and any other penetrations of the geotextile (and optional liner). These connections should be installed flush (butted up to the R-Tank) and the geotextile fabric shall be cut to enable hydraulic continuity between the connections and the R-Tank units. These connections shall be secured using pipe boots with stainless steel pipe clamps. Support pipe in trenches during backfill operations to prevent pipe from settling and damaging the geotextile, impervious liner (if specified) or pipe. Connecting pipes at 90 degree angles facilitates construction, unless otherwise specified. Ensure end of pipe is installed snug against R-Tank system.
F. Install Inspection and Maintenance Ports in locations noted on plans. At a minimum one maintenance port shall be installed within 10' of each inlet & outlet connection, and with a maximum spacing of one maintenance port for every 2,500 square feet. Install all ports as noted in the R-Tank Installation Guide.
G. If required, install ventilation pipes and vents as specified on drawings to provide ventilation for proper hydraulic performance. The number of pipes and vents will depend on the size of the system. Vents are often installed using a 90 degree elbow with PVC pipe into a landscaped area with 'U" bend or venting bollard to inhibit the ingress of debris. A ground level concrete or steel cover can be used.

3.05 BACKFILLING OF THE R-TANK UNITS

A. Backfill and fill with recommended materials as follows:
   1. Place freely draining backfill materials (Section 2.03 B) around the perimeter in lifts with a maximum thickness of 12". Each lift shall be placed around the entire perimeter such that each lift is no more than 24" higher than the side backfill along any other location on the perimeter of the R-Tank system. No fill shall be placed over top of tanks until the side backfill has been completed.
   2. Each lift shall be compacted at the specified moisture content to a minimum of 95% of the Standard Proctor Density until no further densification is observed (for self-compacting stone materials). The side lifts must be compacted with walk behind compaction equipment. Even when "self-compacting" backfill materials are selected, a walk behind vibratory compactor must be used.
   3. Take care to ensure that the compaction process does not allow the machinery to come into contact with the modules due to the potential for damage to the geotextile and R-Tank units.
   4. No compaction equipment is permissible to operate directly on the R-Tank modules.
   5. Top Backfill: Only low pressure track vehicles shall be operated over the R-Tank system during construction. Dump Trucks and Pans shall not be operated within the R-Tank system footprint at any time. Heavy equipment should unload in an area adjacent to the R-Tank system and the material should be moved over the system using tracked equipment with an operating weight of less than 10 tons.
      a. Typical Applications: Install a 12" (or as shown on plans) lift of freely draining material (Section 2.03 B) over the R-Tank Units, maintaining 12" between equipment tracks and R-Tank System. 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.
      b. Shallow Applications (< 18" total cover): Install top backfill in accordance with plans.
   6. If required, install a geogrid as shown on plans. Geogrid shall extend a minimum of 3 feet beyond the limits of the excavation wall.
   7. Following placement and compaction of the initial cover, subsequent lifts of structural fill (Section 2.03 C) shall be placed at the specified moisture content and compacted to a minimum of 95% of the Standard Proctor Density and shall cover the entire footprint of the R-Tank system. During placement of fill above the system, unless otherwise specified, a uniform elevation of fill shall be maintained to within 12" across the footprint of the R-Tank system. Do not exceed maximum cover depths listed in Table 2.01 B.
   8. Place additional layers of geotextile and/or geogrid at elevations as specified in the design details. Each layer of geosynthetic reinforcement placed above the R-Tank system shall extend a minimum of 3 feet beyond the limits of the excavation wall.
B. 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).
C. Place surfacing materials, such as groundcovers (no large trees), or paving materials over the structure with care to avoid displacement of cover fill and damage to surrounding areas.
D. Backfill depth over R-Tank system must be within the limitations shown in the table in Section 2.01 B. If the total backfill depth does not comply with this table, contact engineer or manufacturer's representative for assistance.

3.06 MAINTENANCE REQUIREMENTS

A. A routine maintenance effort is required to ensure proper performance of the R-Tank system. The Maintenance program should be focused on pretreatment systems. Ensuring these structures are clean and functioning properly will reduce the risk of contamination of the R-Tank system and stormwater released from the site. Pre-treatment systems shall be inspected yearly, or as directed by the regulatory agency and by the manufacturer (for proprietary systems). Maintain as needed using acceptable practices or following manufacturer's guidelines (for proprietary systems).
B. All inlet pipes and Inspection and/or Maintenance Ports in the R-Tank system will need to be inspected for accumulation of sediments at least quarterly through the first year of operation and at least yearly thereafter.
C. If sediment has accumulated to the level noted in the R-Tank Maintenance Guide or beyond a level acceptable to the Owner's engineer, the R-Tank system should be flushed.
D. All inspection and maintenance activities should be performed in accordance with the R-Tank Operation, Inspection & Maintenance Manual.

DATE	INITIALS	DESCRIPTIONS

DISTRIBUTED BY:

R-Tank

MODULAR STORMWATER STORAGE SYSTEM

R-TANK SPECIFICATION
165 WASHINGTON AVE REDEVELOPMENT
PORTLAND, ME

DRAWN BY: BMK
DATE: 11/20/2024
SHEET NO.: 8 of 8

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO FERGUSON WATERWORKS BY THE DESIGN ENGINEER, CONTRACTOR, OR OTHER PROJECT REPRESENTATIVE. THE ENGINEER OF RECORD SHALL REVIEW AND APPROVED THAT THE DEPICTED LAYOUT AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE REGULATIONS AND PROJECT SPECIFIC REQUIREMENTS.

PLANT SCHEDULE

ID	BOTANICAL NAME	COMMON NAME	QTY	SIZE
DECIDUOUS TREES				
AC	AMELANCHIER CANADENSIS	SERVICEBERRY 'LUSTRE'	10	10'–12'
BN	BETULA NIGRA	RIVER BIRCH	10	3" CAL.
GTS	GLADITSIA TRIACANTHOS SP.	HONEYLOCUST 'SKYLINE'	6	3" CAL.
MS	MAGNOLIA STELLATA	STAR MAGNOLIA	2	3" CAL.
QRF	QUERCUS ROBOR 'FASTIGIATA'	COLUMNAR OAK	3	3" CAL.

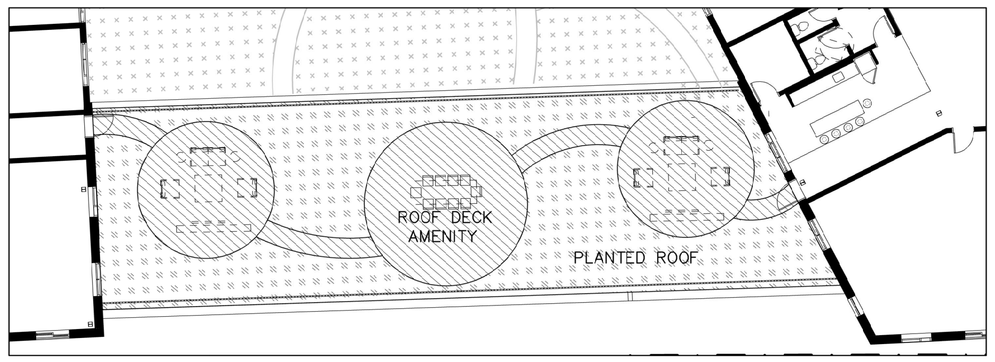
SYMBOLS LEGEND

HARDSCAPE

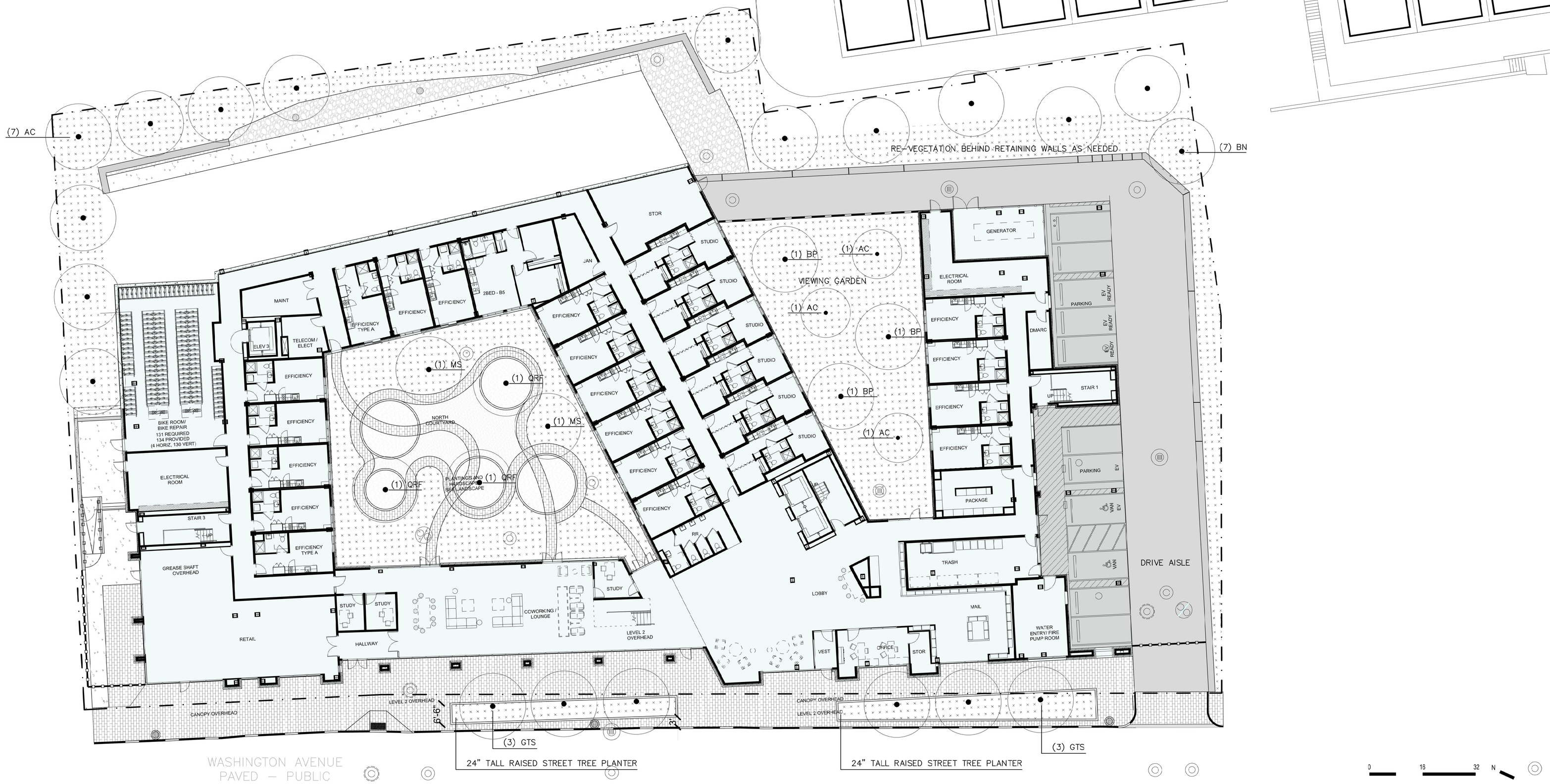
- PINEHALL BRICK PAVING (PER CITY STANDARDS)
- DECK BY ARCH.
- BIT. CONC. PAVING
- DECOMPOSED GRANITE (5/8")
- DECOMPOSED GRANITE (3/8") W/ FLUSH CURB

PLANTS

- PROPOSED DECIDIOUS TREE
- PROPOSED RAISED STREET TREE PLANTER 36" MIN. SOIL DEPTH
- PERENNIAL PLANTING BED
- PLANTED PERENNIALS (ROOF GARDEN)



2 / L1.0 4TH FLOOR ROOF DECK AMENITY 'BRIDGE' (SEE ARCH. DWG X0.04)
1"=16'-0"



1 / L1.0 COURTYARDS AND STREETSCAPE
1"=16'-0"

0 16 32 N

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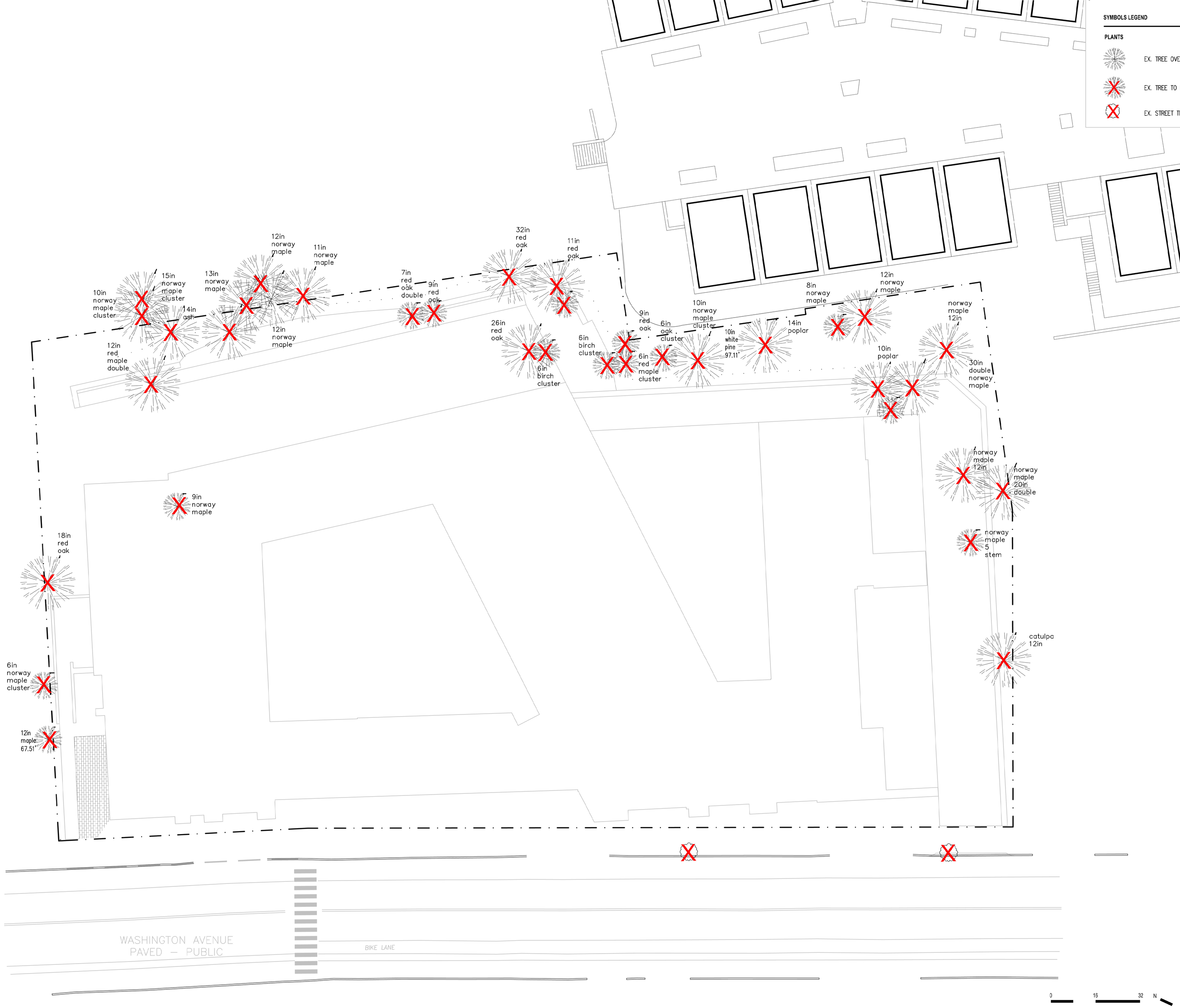
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LANDSCAPE PLAN

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SYMBOLS LEGEND

PLANTS

- EX. TREE OVER 10" CAL. TO REMAIN
- EX. TREE TO BE REMOVED
- EX. STREET TREE TO BE REMOVED

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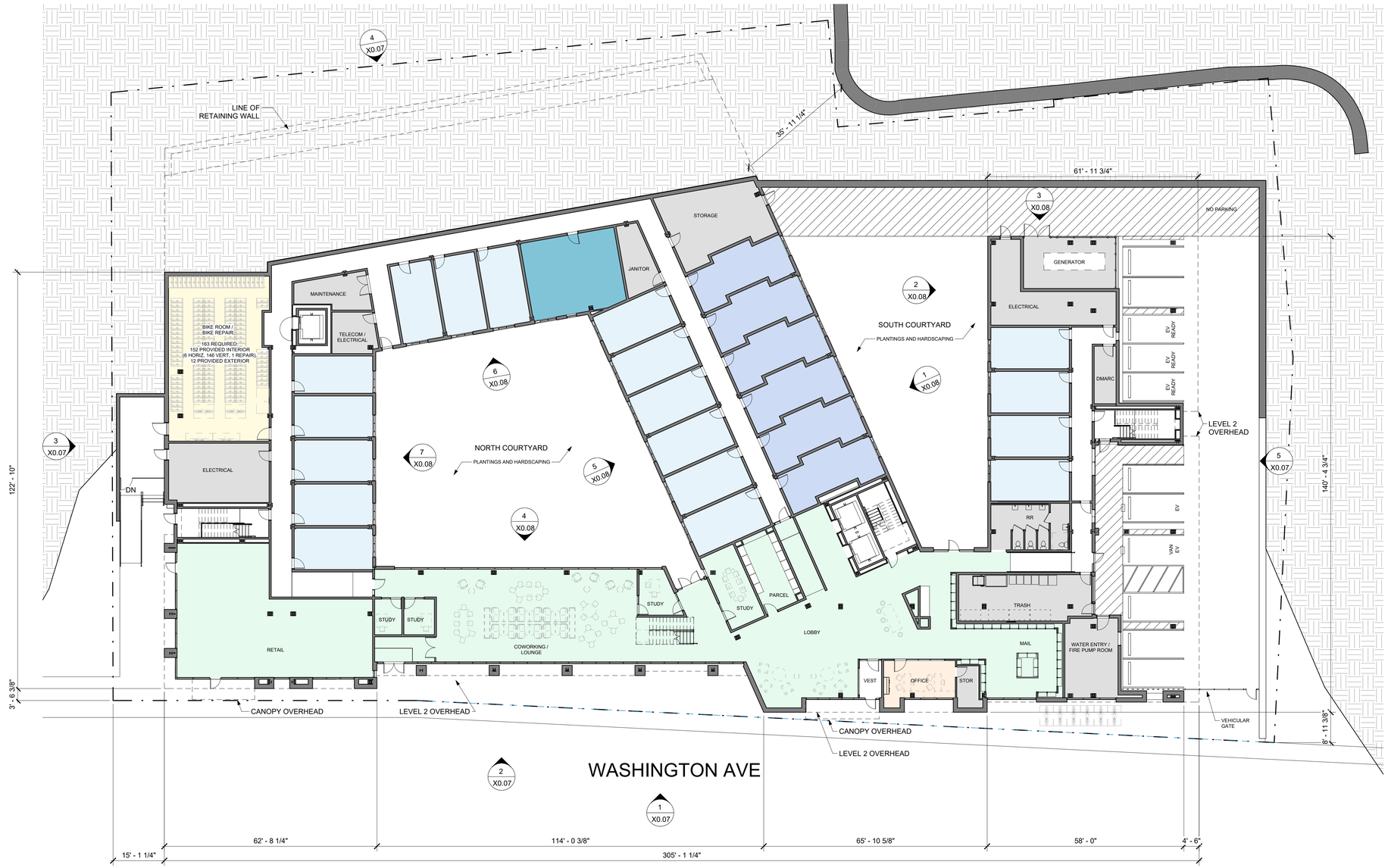
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TREE REMOVAL PLAN

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LEGEND

- EFFICIENCY UNIT
- STUDIO UNIT
- 1 BED UNIT
- 2 BED UNIT
- OFFICE
- AMENITY SPACES
- BIKE PARKING
- MECH / B.O.H.

1 X0.01 LEVEL 01 FLOOR PLAN
1/16" = 1'-0"

PROJECT NORTH

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LEVEL 01 FLOOR PLAN

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LEGEND

- EFFICIENCY UNIT
- STUDIO UNIT
- 1 BED UNIT
- 2 BED UNIT
- OFFICE
- AMENITY SPACES
- BIKE PARKING
- MECH / B.O.H.

1 X0.02 LEVEL 02 FLOOR PLAN
1/16" = 1'-0"

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LEVEL 02 FLOOR PLAN

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LEGEND

- EFFICIENCY UNIT
- STUDIO UNIT
- 1 BED UNIT
- 2 BED UNIT
- OFFICE
- AMENITY SPACES
- BIKE PARKING
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1 X0.03 LEVEL 03 FLOOR PLAN
1/16" = 1'-0"

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LEVEL 03 FLOOR PLAN

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LEGEND

- EFFICIENCY UNIT
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- 2 BED UNIT
- OFFICE
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1 X0.04 LEVEL 04 FLOOR PLAN
1/16" = 1'-0"

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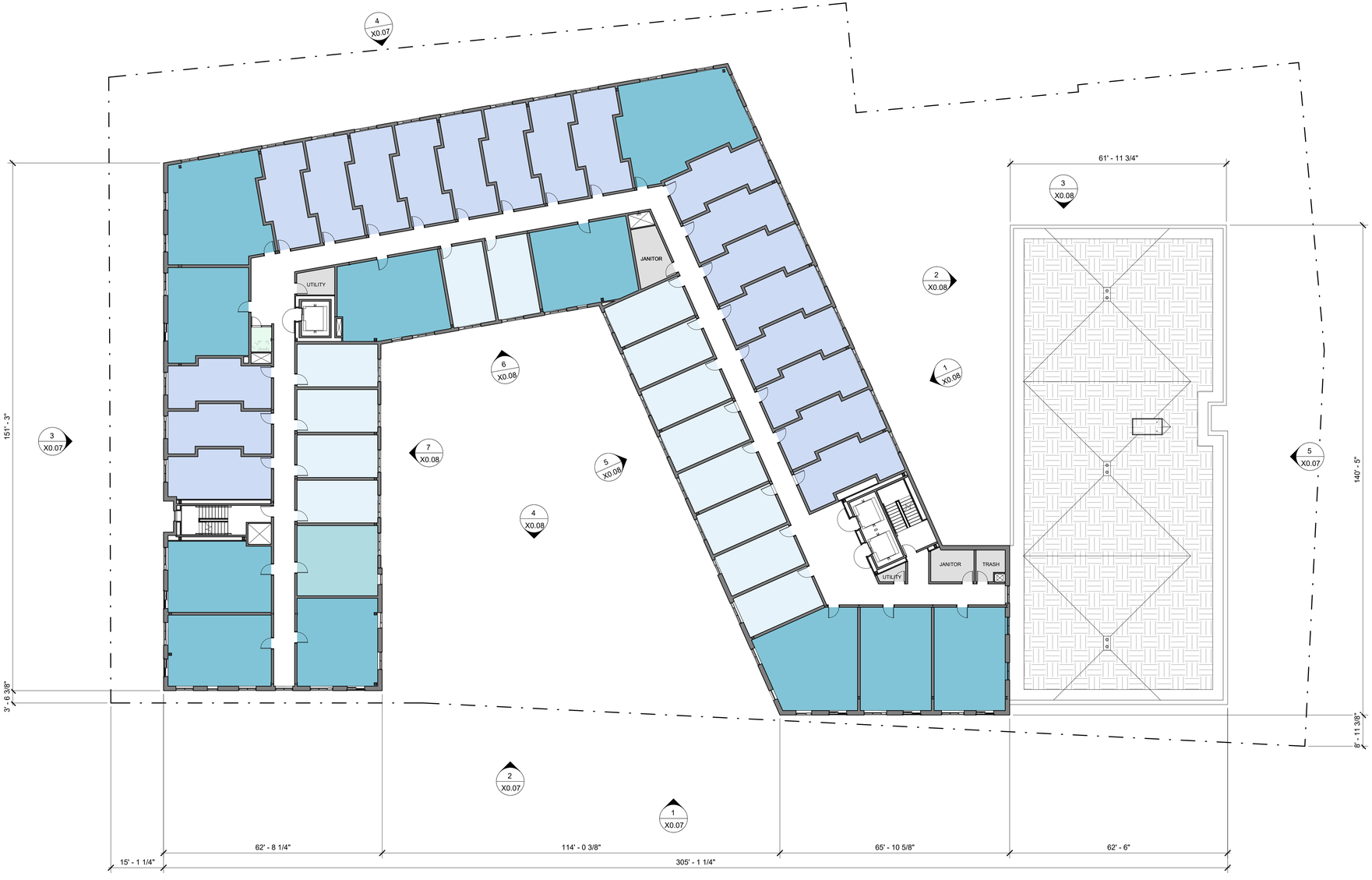
LEVEL 04 FLOOR PLAN

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- 2 BED UNIT
- OFFICE
- AMENITY SPACES
- BIKE PARKING
- MECH / B.O.H.

1 X0.05 LEVEL 05-07 FLOOR PLAN
1/16" = 1'-0"

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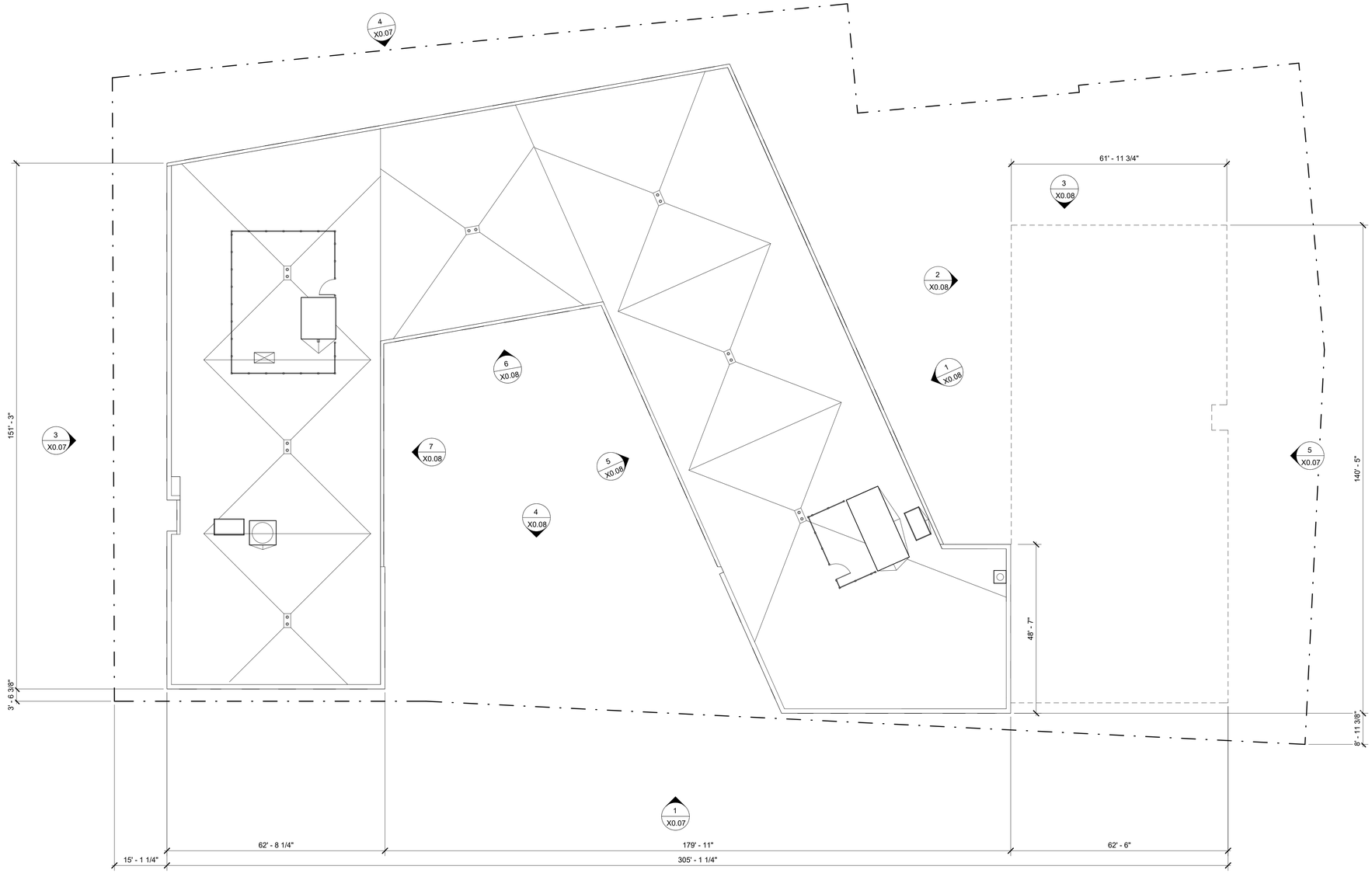
LEVEL 05-07
FLOOR PLAN

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1 X0.06 ROOF PLAN
1/16" = 1'-0"

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ROOF PLAN

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5 X0.07 BUILDING ELEVATION - SOUTH
1/16" = 1'-0"



4 X0.07 BUILDING ELEVATION - EAST @ NORTH WING
1/16" = 1'-0"



3 X0.07 BUILDING ELEVATION - NORTH
1/16" = 1'-0"



2 X0.07 BUILDING ELEVATION - WEST @ CENTER BAR
1/16" = 1'-0"



1 X0.07 BUILDING ELEVATION - WEST
1/16" = 1'-0"

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EXTERIOR ELEVATION

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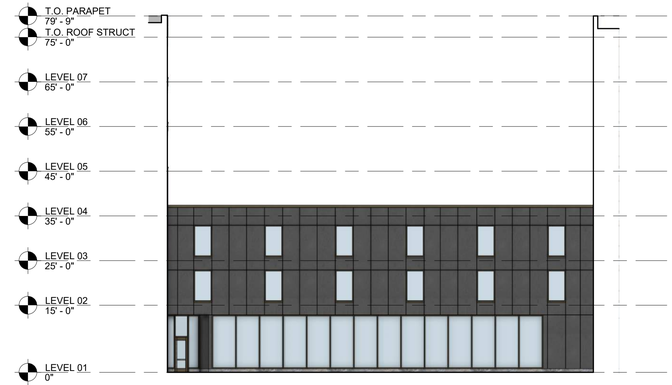
7 X0.08 BUILDING ELEVATION - NORTH COURTYARD - NORTH
1/16" = 1'-0"



6 X0.08 BUILDING ELEVATION - NORTH COURTYARD - EAST
1/16" = 1'-0"



5 X0.08 BUILDING ELEVATION - NORTH COURTYARD - SOUTH
1/16" = 1'-0"



4 X0.08 BUILDING ELEVATION - NORTH COURTYARD - WEST
1/16" = 1'-0"



3 X0.08 BUILDING ELEVATION - EAST @ SOUTH WING
1/16" = 1'-0"



2 X0.08 BUILDING ELEVATION - SOUTH COURTYARD - SOUTH
1/16" = 1'-0"



1 X0.08 BUILDING ELEVATION - SOUTH COURTYARD - NORTH
1/16" = 1'-0"

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EXTERIOR ELEVATION

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To: Chair Mazer and Members of the Portland Planning Board
From: Natasha Kypfer, Senior Planner
Date: January 24, 2025
Subject: Institutional Overlay Zone, Map and Text Amendment: UNE
Project ID: ZN-003059-2024
Meeting Date: January 28, 2025

I. INTRODUCTION

The University of New England (UNE) has submitted a zoning map and text amendment application that proposes to amend the existing Institutional Overlay Zone (IOZ) regulations to allow UNE to pursue the creation of an IOZ, as an identified major City educational institution, resulting in a change to the underlying zoning of the entire site to B-2, *Community Business* and the adoption of a new IOZ for the subject property. This effort facilitates a formalized growth management process for the institution, and looks ahead to the anticipation of future development on UNE's campus, including proposed housing, academic building(s), and athletic facilities.

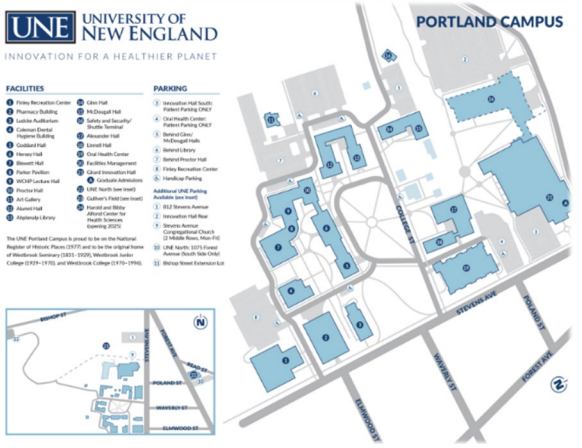


Figure 1: Image of the UNE campus map, provided by the applicant.

In the process of designating the IOZ, the Planning Board is tasked with reviewing the proposal and its associated components, chiefly: 1) the Institutional Development Plan (IDP), a proactive planning document utilized to guide the anticipated growth for the institution, and 2) the Regulatory Framework, which establishes zoning requirements intended to facilitate future growth as outlined in the IDP. The Board reviews these documents for consistency against the standards found within Section 8.5 of the Land Use Code, resulting in a recommendation to the City Council to adopt the IOZ boundaries and the Regulatory Framework.

The first Planning Board Workshop on this item, held on November 12, 2024, served as an initial introduction to the project. It focused on the purpose and components of an IOZ, provided an overview of the UNE Portland campus as it exists today and its envisioned future growth, and offered a forum for the Board and the public to provide initial feedback on the IOZ boundaries and associated dimensional and design standards. For a complete summary of the project to date, please refer to the memo, packet materials, and workshop recording prepared for the item's first workshop here. This subsequent memorandum is principally focused on an overview of changes made to the dimensional standards based on Board, City staff, and the public's comments, as well as providing an opportunity to focus on the proposed Regulatory Framework language.

The Planning and Urban Development Department mailed 191 notices advertising this meeting to property owners within 100 feet of the site. A legal advertisement ran in the January 16, 2025 and the January 17, 2025 editions of the *Portland Press Herald*.

Applicant: University of New England, Alan Thibeault
Representatives: Woodard & Curran, Caitlin Suhr
Bernstein Shur, Mary Costigan
Sewall Infrastructure, Diane Morabito

II. THE PURPOSE AND COMPONENTS OF AN IOZ

Section 8.5.1 of the Land Use Code describes the Institutional Overlay Zone (IOZ) designation as a regulatory mechanism, available solely to the five major medical and higher educational institutions within Portland, wherein an improved regulatory structure can be sought in order to best facilitate a consistent, predictable, and clear growth management process. The five institutions are: Maine Medical Center, Mercy Hospital, the University of Southern Maine, the University of New England, and The Roux Institute at Northeastern University. Maine Med piloted the first IOZ back in 2017, with Roux following suit in 2022, therefore making UNE the third institution to pursue an IOZ. The Land Use Code requires the following three components as part of the IOZ submission:

- The *Institutional Development Plan* (*IDP*) serves as a background document, or master plan, which is developed specifically by the eligible institution, intended to guide development over the life cycle of the plan through its short-, medium-, and long-term growth. The IDP is intended to function as a stand-alone document, and is envisioned as a fundamental component to the IOZ itself. The IDP gets approved by the Planning Board, and is subject to meeting the content and review standards listed under Section 8.5.4, C&D.

- The *Regulatory Framework*, once written and finalized, lives within the Land Use Code itself, serving as the ordinance requirements for the institution, and evolving from the IDP. The regulatory framework establishes the parameters to allow each institution to grow as envisioned in the IDP, yet also serves to formalize requirements, guidelines, and performance measures that address the major ramifications of institutional growth and change. The regulatory framework gets adopted into the Land Use Code by the City Council.

- The *IOZ Zoning Map* depicts the boundaries of an institution's IOZ, and is a geographic element intended as an amendment to the City's official zoning map. The IOZ zoning map gets adopted by the City Council.

III. PROJECT SITE DATA

Property Size	72± acres
Property Address	716 Stevens Avenue
Existing Zoning	R-3, R-5, B-2, I-M, and I-H
Existing Use	UNE Portland Campus
Proposed Zoning	B-2, Community Business

IV. BACKGROUND AND EXISITING CONDITIONS

The University of New England serves as Maine's largest private university, with campuses here in Portland, in Biddeford, in Tangier, Morocco, as well as online. The IOZ application is exclusively for the Portland campus. Beginning as the Westbrook Seminary in 1831, today the campus occupies a roughly 72-acre, triangular shaped site (see Figure 2), situated within the Deering Center area, a suburban neighborhood west of downtown Portland. UNE's campus includes the College of Dental Medicine, the Westbrook College of Health Professions, the College of Graduate and Professional Studies, Innovation Hall, and other fixtures like the Oral Health Center and Dental Hygiene Center clinics, and the UNE Art Gallery and Maine Women Writers Collection.

The campus is composed of 25 separate buildings, 11 parking areas, and has a historic core located in the southeastern portion of the campus, centered around a campus quad. Further, UNE's Portland campus includes one of the locally designated historic districts within the City, the Westbrook College Historic District. With regard to the surrounding campus context, Warren Avenue, Bishop Street Extension, and Bishop Street are to the north; Stevens Avenue is to the east; and the Evergreen Cemetery and Central Maine Power Utility Corridor are positioned

to the south. Within the campus vicinity are several privately-owned residential properties situated along College Street (see Figure 1). Additionally, three parcels are located proximate to the campus proper but not directly on-site, include: UNE North at 1075 Forest Avenue, 798 Stevens Avenue, and 812 Stevens Avenue.

UNE initially began the pursuit towards an IOZ back in 2021, holding meetings with the Planning and Urban Development Department, and other City stakeholders, as well as various neighborhood groups and members of the public as they began formulating their IDP document. That previous work helped to inform the application submittal you are reviewing before you tonight. Materials from the previous workshop before the Planning Board can be found here: January 25, 2022.

V. NOVEMBER 12, 2024 WORKSHOP: PRELIMINARY REVIEW & APPLICANT UPDATES

At the November 12, 2024 workshop, the Planning Board indicated support for the creation of the IOZ by UNE, and through discussions, highlighted several areas that deserved further study. In response, the applicant team provided revisions with their resubmission, which are detailed below:

A. APPROPRIATENESS OF THE B-2, COMMUNITY BUSINESS ZONE

In tandem with the IOZ application, the applicant has requested that the subject property be rezoned from an existing mix of R-3, R-5, B-2, I-M, and I-H to: B-2, Community Business zone. The IOZ, as proposed, is consistent with the B-2 purpose statement as found in Table 5-D of the Land Use Code (and included below), and as detailed by the applicant, "changing the underlying zoning entirely to B-2 will more accurately reflect the current uses within the campus and complement the surrounding zoning." When comparing the existing zoning mix of R-3, R-5, I-H, I-M, and B-2 with the B-2 zone, the most notable distinction in terms of use standards are that post-secondary schools are allowed by right in the B-2 zone, but are not a permitted use in the R-3, I-M, or I-H, and are a conditional use in the R-5. Staff agrees that the current campus programming and institutional use best aligns with a change of the underlying zoning of the entire campus, to that of B-2.

> From LUC Section 5.4, Table 5-D, the purpose of the B-2 zone is: *To provide appropriate locations for the development and operation of community centers offering a mixture of commercial uses, housing, and services serving the adjoining neighborhoods and the larger community. The variety, sites, and intensity of the permitted commercial uses in the B-2 zone are intended to be greater than those permitted in the B-1/B-1b zones. The zone provides a broad range of goods and services with a mixture of large and small buildings, such as grocery stores, shops and services located in major shopping centers and along arterial streets. Such establishments should be readily accessible by automobile, by pedestrians and by bicycle. Development in the B-2 zone should relate to the surrounding neighborhoods by design, orientation, and circulation patterns. The zone should provide locations for moderate to high-density housing in urban neighborhoods along arterials.*

B. UPDATES TO THE HEIGHT MAP

In light of the adoption of Recode, effective December 4, 2024, and in response to comments from the Board, Staff, and the public, UNE made significant revisions to their IOZ height map, by: plotting three Open Space areas (i.e. effectively 'no build areas' or 0-foot maximum height zones) and aligning the three outparcels along Forest and Stevens Avenues with the B-2 maximum height of 75-feet (in addition to the areas not within either the Open Space, or the two areas marked with 85-feet maximum height allowances). These changes are depicted in Figures 2 and 3 below. Staff suggests the areas depicted as proposed open space on the height map be considered by the applicant to rezone as Open Space Preservation (OS-P), to further demonstrate UNE's prioritization of preserving and protecting a critical natural resource area within the City.



Figure 2: Rendering of previous Height Overlay Map, provided by the applicant with their 11/08/2024 submittal.



Figure 3: Rendering of current Open Space and Maximum Height Map, provided by the applicant with their 12/20/2024 submittal.

C. UPDATES TO DESIGN IMPACT CONSIDERATIONS

Based on feedback at the November Planning Board workshop, and Staff suggestions within the first round of review comments (*see* Attachment 1), UNE has revised and/or added additional renderings to the Design chapter of the IDP. First, in Figure 4 below, the rendering provides a raised perspective along Stevens Avenue which now includes spot elevation figures (in feet) to better delineate the height of current and future development on campus. Additionally, Figure 5, provides a rendering of the view along Mayfield Street, illustrating the height of potential future development, which the Board received abutter concerns regarding via during public comment at the workshop.



Figure 4: Rendering showing current & future development with spot elevations identified, provided by the applicant.

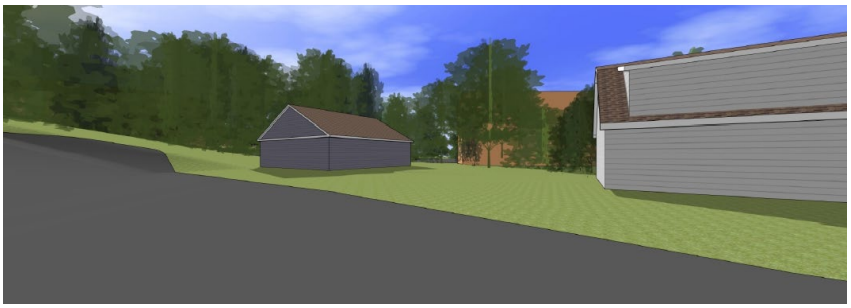


Figure 5: Rendering showing the view from Mayfield Street, provided by the applicant.

VI. STAFF REVIEW

Attached to this memo, are both the first and second round of review comments generated by the City (*see* Attachments 1 & 2), providing a summary matrix which demonstrates the status of the requirements, and sub-requirements, of the IDP and Regulatory Framework. As further evidenced in the tables below, the applicant team has provided all of the necessary requirements within each document.

A. REVIEW OF INSTITUTIONAL DEVELOPMENT PLAN

A primary function of the IDP is to identify future development projects which may be developed in future years, and in accordance with IOZ regulations, endeavors to categorize them into short-, medium-, and longer-term priorities. Section 8.5.4.B details the planning horizon which the IDP is poised to address, suggesting "... a clear outline of the anticipated or potential growth and change of the eligible institution for the short- to medium-term (e.g. 1-5 and 5-10 years respectively), as well as a conceptual growth plan for the long-term (e.g. 10 years or more)". The IDP itself is subject to a multitude of distinct review standards, each of which are intended to ensure that the document contains the necessary information to provide a sensible illustration of what campus growth will look like. Table 1 below was created to provide a quick glimpse of each content category, listing whether or not the required information has been provided, and where within the IDP document the materials can be found.

TABLE 1: Section 8.3.4.C, Required Content of the Institutional Development Plan (IDP)			
	Content Category	**Provided**	**Resource**
1.	Context Information: Mission, vision, or purpose statement	✓	Provided as Chapter 1, on Pages 4-6. *UNE's mission, vision, and core values are identified.*
2.	Context Information: Relevant baseline data	✓	Provided as Chapter 1, on Pages 7-22.
3.	Context Information: Baseline characteristics of the existing campus & context of UNE	✓	Provided as Chapter 1, on Pages 22-27.
4.	Context Information: Summary of public involvement	✓	Provided as Chapter 1, on Pages 27-28. *The information is provided here, and supplemented by the neighborhood meeting packets included as Attachments H and I to this memo.*
5.	Assessment of future institutional growth & change	✓	Provided as Chapter 2, on Pages 29-36.

6.	Analysis and associated plans for: Transportation & Access	✓	Material provided as Chapter 3, on Pages 37-53.
7.	Analysis and associated plans for: Environment	✓	Material provided as Chapter 4, on Pages 54-70.
8.	Analysis and associated plans for: Infrastructure	✓	Material provided as Chapter 5, on Pages 71-74.
9.	Analysis and associated plans for: Design	✓	Material provided as Chapter 6, on Pages 75-84.
10.	Analysis and associated plans for: Neighborhood Engagement	✓	Material provided as Chapter 7, on Pages 85-93.

B. REVIEW OF REGULATORY FRAMEWORK

Stemming from the IDP, the proposed regulatory framework works to codify the institutional use(s) and related activities in line with UNE's stated mission to: *prepare students to thrive in a rapidly changing world and, in so doing, to improve the health of people, communities, and our planet*. UNE provided initial regulatory framework text (Attachment E), however, Planning staff lead the redrafting (Attachment 3). This is due to the Regulatory Framework language eventual adoption and inclusion within the ordinance, under Section 8 of the Land Use Code. Table 2 below was created to provide a quick glimpse of each content category, listing whether or not the required information has been provided, and an overview of content details.

TABLE 2: Section 8.3.5.D, Required Content of the Regulatory Framework			
	Content Category	**Provided**	**Content Details**
1.	Zoning boundary of the IOZ	✓	Figure 6, shown below, identifies the zoning boundary clearly in the form of a map displaying the overlay zone, and a table, included within the IDP, lists all properties, identified by both CBL and address.
2.	Phasing and schedules	✓	UNE shall file monitoring reports every five (5) years with the Planning Authority, and at the time of submission of future site plan applications, UNE shall identify any required updates to the IDP, to allow the document to remain current.
3.	Uses	✓	Subsequent to the permitted uses in the B-2, Community Business zone, the IOZ will also allow the following uses by right: • Laboratory and research facilities • Off-street parking
4.	Dimensional requirements	✓	Subsequent to the dimensional standards of the underlying zone, the IOZ will also permit: • Transition zones to extend twenty-five feet (25') from the lot boundary and, within transition zones, the maximum building height shall be fifty feet (50'), as depicted by the UNE IOZ Height Map, Figure 3 provided above in the memo.

			• Maximum building heights for new principal buildings in the IOZ shall be governed by the UNE IOZ Height Map, Figure 3 provided above in the memo.
5.	Transportation	✓	TDM and parking strategies are highlight in this section.
6.	Environment	✓	UNE's approach to the inclusion of open space and preservation of environmentally-sensitive areas.
7.	Mitigation measures	✓	A broad approach to identified mitigation measures are included here.
8.	Design	✓	The Regulatory Framework provides five (5) standard of design for the IOZ.
9.	Neighborhood integration	✓	Thresholds and strategies for neighborhood engagement are summarized here.
10.	Monitoring	✓	As noted above under 2., the applicant will prepare and file monitoring reports with the City every five (5) years.

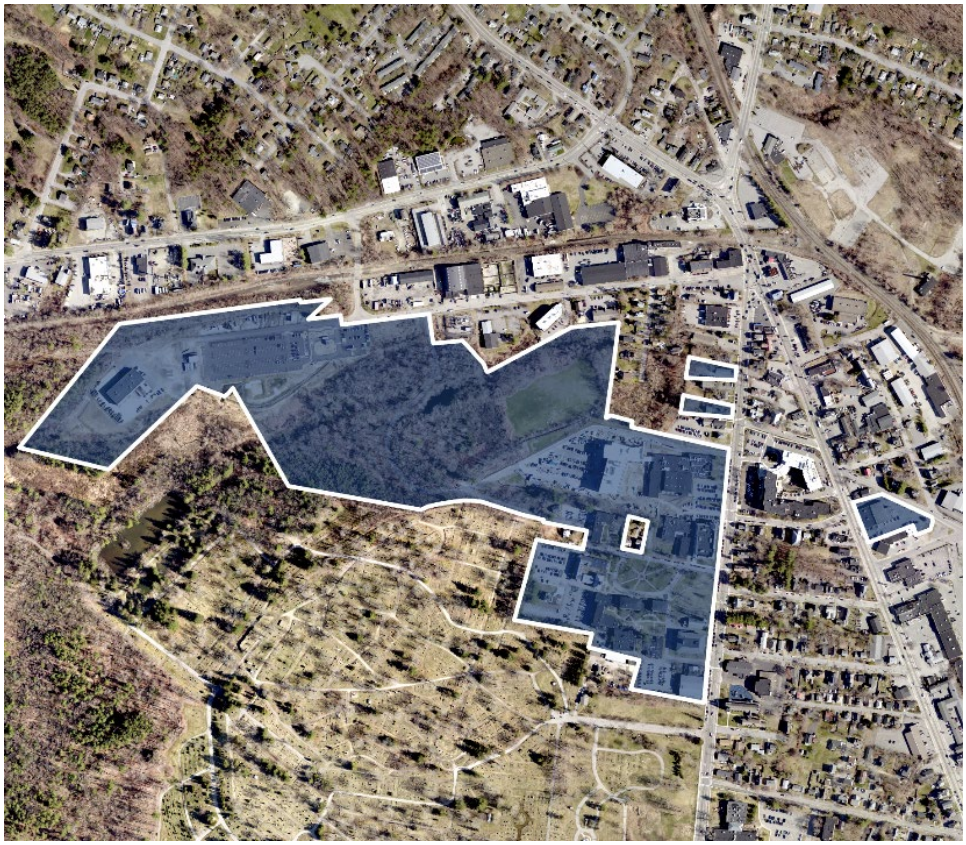


Figure 6: A map displaying the UNE IOZ boundaries, created by the City.

C. REVIEW OF REZONING TO B-2 COMMUNITY BUSINESS ZONE

This application requests that the City rezone UNE's campus from RN-1, RN-3, B-2, I-M, and I-H all to B-2 Community Business, in order to create a uniform underlying zoning framework for the university. As detailed in the application, only the B-2 zone permits post-secondary schools by-right (definition included below), with this use being conditional in the RN-3, and not permitted within the other zones

found within the campus. Rezoning the campus to B-2 would permit a range of activities and uses to be developed across the entire UNE Portland campus, and would provide a significantly more predictable permitting pathway for the University to grow as outlined in their draft IDP.

> From LUC Section 3, Post-secondary school is: *A facility for postsecondary higher learning that grants associate or bachelor's degrees. The institution may also have research facilities and/or professional schools that grant master and doctoral degrees. Post-secondary schools may also include additional uses as part of the principal use, such as dormitories, cafeterias, restaurants, retail sales, indoor or outdoor recreational facilities, preschool facilities, and similar uses.*

In looking at the zoning context, UNE is located just south of Morrill's Corner, which is anchored by a cluster of properties zoned TOD-1 Transit Neighborhood zone, which allows a diverse array of uses, and permits higher intensity development, to support high-frequency transit activity in this location. South of Morrill's Corner along Steven's Avenue, the zoning transitions from TOD-1 to B-2 Community Business, with various commercial, institutional (including outparcels owned and operated by UNE), and residential uses located on these properties. Immediately across from UNE's core campus is a large parcel zoned RN-5, which is the site of Park Danforth; a large-scale senior assisted living facility. The zoning then transitions to RN-3 along the east side of Stevens Avenue as one moves towards Deering Center, and these properties feature a mixture of small- and mid-scale residential development, a childcare facility (The Children's Center), a private school (St. Brigid School) and St. Joseph's Catholic Church. Beyond these properties, the zoning again transitions to B-1 Neighborhood Business and RN-5 at the site of the former St. Joseph's Convent, which has since been converted into age-restricted housing with additional on-site amenities and other commercial leased space. Along the west side of Steven's Avenue, property is predominantly zoned OS-R, which encompasses Evergreen Cemetery.

In assessing the appropriateness of the B-2 use and dimensional provisions, Staff would note that the B-2 is generally more permissive than the current RN-1 and RN-3 zones, which constitute the majority of the University's land area, and all of the core upper campus area. As noted previously, the RN-3 zone does permit post-secondary schools as a conditional use, however the dimensional restrictions for the RN-3 are geared towards small-scale residential development, and not well-suited for larger-scale institutional development. For example, building heights are limited to 35 feet, and lot coverage is limited to 50% for non-residential uses. The B-2 meanwhile permits building heights of up to 75 feet, and allows for more intensive development, with a requirement that just 10% of the lot be landscaped open space. From a use perspective, the B-2 zone permits a wide variety of different uses as detailed in Table 6-C in the Land Use Code, with a mixture of residential, institutional, commercial and light-industrial uses. These permitted uses encompass the vast majority of uses anticipated to occur at UNE's campus, as indicated within the IDP under their 10± development plan, including: student housing via a new residence hall, an athletic facility, as well as future academic buildings and renovation/expansions to existing academic buildings.

Consistency with *Portland's Plan 2030*:
Portland's Plan 2030 establishes a goal of having the City support sustainable growth in our community's educational institutions, noting the fact that such institutions are central to workforce development, employment, and the health of the local and regional economy. *Portland's Plan 2030* also establishes a goal of having the City's educational institutions incorporated into Portland's urban fabric through the use of high-quality design, through the management of impacts, through community partnerships, and innovative planning.

Discussion:
In reviewing this application, Staff are generally supportive of the proposed rezoning to B-2 Community Business, particularly given the fact that the University is simultaneously pursuing the establishment of a campus-specific institutional overlay zone. The IOZ helps to ensure that the form of future development is compatible within its context, and seeks to mitigate potential impacts to nearby residential and open-space areas. As previously highlighted, the UNE Portland campus is situated just south of Morrill's Corner, and is located in close proximity to other properties that are zoned B-2. The zone would establish a uniform set of use and dimensional standards that are suitable to a University, and which allow for development at a scale compatible with the surrounding neighborhood. The scale of potential future development is further controlled by campus-specific height and setback requirements proposed as part of the IOZ, which provide substantial buffers around the periphery of the campus, and which restrict building heights within the proposed transition zones.

D. PROMPTS FOR FURTHER BOARD DISCUSSION

Based upon the above analysis, Staff seeks to highlight a few topics that merit further study, and suggests that these items be considered for the Board to discuss tonight at the second workshop:

- Height – Staff encourages the Board's feedback with regard to the revisions made to the height map (Figure 3), specifically:
    - The inclusion of two 85-foot areas wherein future development has been identified.
    - Staff is looking for more information in support of the applicant's request to increase allowable building heights to 85 feet in these two locations. This may include: basic programming information, or additional information on site constraints that would necessitate taller structures.
    - Staff would also recommend that the area mapped for 75 feet between the proposed residential development and open space area/25 transition zone be reduced in height further and either mapped as additional open space, or mapped as transition zone. This area abuts numerous homes along Mayfield Street. Minimizing activity in this location and reducing building heights would curtail numerous potential impacts to these abutters, including noise, light, and visual impacts.

- Open Space – Staff acknowledges and appreciates UNE's firmer commitment to reducing impact to the sensitive Capisic Brook Watershed resource area, as evidence by the mapping of three dedicated open spaces within the IOZ (*see* Figure 3), however as noted previously, Staff encourages the applicant to consider rezoning the areas to OS-P and seeks the Board's feedback on the appropriateness of this, and the extent of the identified area(s).
    - Staff is looking for additional information from the applicant with regard to the exact geographical areas that are proposed to be set aside, as well as the basis for these designations.
    - Staff suggests the applicant consider what types of development restrictions should be included as part of the Regulatory Framework language in support of the open space designation. For example, are the areas proposed to be entirely conserved or would they allow for passive recreation, or the inclusion of minimal programming?

- Regulatory Framework – This workshop offers the Board and the public the first opportunity to explore at the proposed document (Attachment 3), therefore Staff encourages any

additions, deletions, or revisions to the Regulatory Framework as drafted, specifically of the content categories as laid out in Table 2 above.

I. PUBLIC COMMENT

The Planning and Urban Development Department has received no written public comment at the time of publication of this memo.

II. NEXT STEPS

- Address Planning staff and Board comments through a resubmittal
- Prepare for the Planning Board public hearing, to be scheduled

VII. ATTACHMENTS

Staff Attachments

1. City Review Comments Round 1, October 17, 2024
2. City Review Comments Round 2, January 17, 2025
3. Proposed Regulatory Framework Text, January 2025

Applicants Submittal

A. Cover Letter
B. Checklist – Map and Text Amendment
C. Right, Title, & Interest
D. Institutional Development Plan, Revised
E. Regulatory Framework, Revised
F. Proposed Map Amendment
G. Vicinity Map
H. Neighborhood Meeting #1 Certification Packet, June 13, 2024
I. Neighborhood Meeting #2 Certification Packet, October 30, 2024
J. Response to City Comments Round 1, December 20, 2024

Project Review Comments: Round 1
Comments Distributed on: October 17, 2024

Att. 1

Project Title: University of New England Institutional Overlay Zone (UNE IOZ)
Project File No.: ZN-003059-2024
Project Address: 716 Stevens Avenue
Project Planner: Natasha Kypfer, Senior Planner

Dear Caitlin Suhr, Alan Thibeault, and Mary Costigan:

We have completed our initial review of your application (ZN-003059-2024), a Map and Text Amendment, proposing a new Institutional Overlay Zone (IOZ) for the University of New England (UNE) at approximately 684 Stevens Avenue, proposed to be zoned: B-2 Community Business. This development triggers review by the Planning Board and City Council, and is subject to the following regulations: Amendments – Article 1.10 and Institutional Overlay (IOZ) – Article 8.5.

An overview of the City's review can be viewed in the below worksheet(s) and review comments.

Next Steps
Please review all feedback and reach out to me, as the lead project review manager, if you have any questions. We will look forward to our upcoming meeting, scheduled for Tuesday, October 22nd at 11AM. Further, we have preliminarily scheduled your item for a workshop before the Planning Board for Tuesday, November 12th.

Sincerely,

Natasha M. Kypfer

Natasha Kypfer
Senior Planner

Worksheet(s) Table Legend:
Provided on Page # = *Requirement Met*
Partially Provided on Page # = *Requirement Not Fully Satisfied*
Not Provided = *Requirement Not Satisfied*

Institutional Development Plan (IDP): Content Land Use Code, Section 8.5.4.C					
Category	**Sub-category**	**Requirement**	**Sub-requirement**	**Location, IDP Page #**	**Review Comments: Overview & Updates Requested**
1. Context information	*a. The institution's adopted mission, vision, or purpose statement*			Pages 4-5	As stated and provided for on pages 4-5, UNE is guided by its Mission, Vision, and Core Values, as well as its own strategic plan ("Our World, Our Future").
	b. A summary of relevant baseline data on the institution, including:	*i. A neighborhood context plan.*		Pages 11-12, Figure 1.1	The UNE's approximately 72-acre campus is bounded by Warren Ave., Bishop St. Extension, and Bishop St. to the north; Stevens Ave. to the east; and, Evergreen Cemetery and CMP's Utility Corridor to the south, as depicted in provided Figure 1.1.
		ii. An inventory of current programs and services.		Page 7-9	The UNE Portland campus houses three academic colleges: the Westbrook College of Health Professions (WCHP), the College of Dental Medicine, and the College of Graduate and Professional Studies. In addition, UNE operates two health clinics on campus: the Oral Health Center and the Dental Hygiene Center, as well as UNE North, the Center for Global Humanities, and cultural institutions that include the Maine Women Writers Collection and the UNE Art Gallery.
		iii. A current census of the number of people using the institution (e.g., employees, enrollment, patients), with an indication of maximums and minimums over time.		Page 18, Table 1.3	Table 1.3 titled "FTE Student, Faculty, and Professional Staff Data", includes population data from 2016-2023 for student, faculty and professional staff, and campus population. Please also add an additional column to Table 1.3 that includes patient figures visiting the campus (for example, dental patients to the Oral

				Health Center), further, consider incorporating part-time data, as the provided table only documents FTE.
		iv. An inventory and/or plan of all existing property holdings within the main campus and within the City of Portland, including an indication of functional land use links between off-campus properties and the main campus (e.g. remote parking).	Page 17, Table 1.2	Table 1.2 titled "UNE Owned Properties in the City of Portland", documents UNE's total of 17 parcels, the majority of which are contiguous in the campus core, while several are outparcels. Please speak to the functional land use links between off-campus properties and the main campus (e.g. remote parking and the Bishop Street shuttle service).
		v. An inventory and/or plan of existing facilities, including data on use, floor area, and any existing functional connections between facilities.	Page 16, Figure 1.5 Pages 21-22	The UNE campus map is provided on page 16 as Figure 1.5, depicting the 25 distinct facilities and 11 parking areas, with an inset map centered around the Campus Quad. Please supplement Figure 1.5 Campus Map with a table listing the 25 facilities and 11 parking areas identified in Figure 1.5, organized chronologically by facility number. Please also incorporate the parking spaces data from Table 3.5 here as well. The table should include columns for facility name, total floor area, and use. For parking areas, organize chronologically by parking area # and include columns for total square footage, total number of existing spaces, and a breakdown of ADA and EV spaces.
	c. A summary of the baseline characteristics of the existing campus and	*i. A summary of existing resources, such as historic, open space, and natural resources.*	Page 19-20	UNE's campus is the site of the Westbrook College Historic District, which includes six buildings built between 1834 and 1952. Further, existing open space and natural

	context of the institution, based on identified study areas, including:			resources are summarized, and include notation of the Portland Trails Forest City Trail connection and the Capisic Brook watershed area.
		ii. A summary of the existing transportation system, including vehicular, pedestrian, transit, bicycle, and parking supply, demand, and utilization.	Page 41-44, Table 3.5	Table 3.5 titled "UNE Portland Campus - Parking Spaces" details the currently 11 parking lots located on campus, plus the on-street parking along two principle campus roadways, which amounts to 882 spaces total, plus the 182 permitted spaces presently at the COM building. Please include a quick summary of the existing transportation system within the Context chapter, to incorporate what is detailed on pages 41-44.
		iii. A summary of existing public infrastructure supporting the institution, including demand, utilization and any capacity issues.	Page 20	Existing stormwater management systems utilize on-site infiltration systems, with secondary use of conveyance to the Stevens Ave. and Bishop St. CSO. Existing wastewater infrastructure for the campus is discharged to a CSO in College St. and Stevens Ave. Other public utilities include: PWD, CMP, and Unitil.
		iv. Relevant municipal plans, projects, and studies that may influence the IDP study area and opportunities for integrating institutional growth.	Page 21	A breakdown of the City's Comprehensive Plan, with tie in to the eight policy guide topics as they relate to UNE's work is provided with excerpts from Portland's Plan that UNE works to promote and advance are underscored and include the: environment, economy, historic resources, and housing. Please include additional studies that should be referenced in this section, such as the: Portland-South Portland Smart Corridor Plan (final report dated June 2018), the One Climate Future

				Plan, and the Forest Avenue Redesign Project. For example, within the Smart Corridor Plan on Page 143 it states: "[The] University of New England (UNE) office at 1075 Forest Avenue, shown in Figure 142 is a parcel that addresses the street well, and would be enhanced by the recommended planting palette and materials design guidelines found later in this section."
	d. A summary of public involvement in the development of the IDP, including major areas of public concern.		Page 22	UNE has worked to involve the public in the creation of the IDP during the IOZ submission process, this includes holding one of two required neighborhood meetings, which took place on June 13, 2024. Please be sure to update this section with the 10/30 neighborhood meeting date. Additionally, it may be beneficial to include a few sentences on the required review by both the Planning Board and City Council, as these will also be opportunities for public involvement.
2. Assessment of future institutional growth and change, including:	*a. A description of institutional needs and areas of future institutional growth and change, with:*	*i. A projected census of users (e.g., enrollment /employment/patient/ visitor figures and anticipated variations over time).*	Page 25, Table 2.2	Table 2.2 titled "Projected Growth of FTE Student, Faculty, and Professional Staff" provides a snapshot of data for the years of 2025, 2028, and 2033. Please include data on campus visitors, i.e. visiting faculty, prospective students, guests, etc.; to incorporate as a column in Table 2.2. Please also add patients seen for on-campus health visits.
		ii. Institutional objectives for property both within and outside the IOZ boundary (e.g. acquisition and/or disposition), including an indication of any functional land use connection for sites outside the IOZ boundary to the main campus.	Pages 26-28	UNE identifies five categories for key current and future institutional needs: campus reorganization, new building and renovation, educational/pedagogy

					improvements, campus infrastructure, and housing.
		iii. A development plan addressing anticipated or potential institutional needs and physical improvements, including the proposed boundary of the IOZ and any phasing of the development.		Pages 28-30, Table 2.3	A development plan is shown in Table 2.3, titled "10 +- Year Development Program", which identifies three core priority timelines: the short-term (0-5 years), medium-term (5-10 years), and long-term (10+ years).
	b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including:	*i. Transportation and access, with:*	*a) An analysis of the projected changes in parking demand, supply, and impacts to the off-street and on-street parking capacity, including an explanation of the proposed parking plan.*		Please provide an analysis of the projected changes in parking demand, supply, and impacts, and a review of current parking conditions. The previous TDM plan could be utilized to assist in completing this section. Further, a discussion on how to mitigate neighborhood impact by reducing on-street parking usage by UNE students and personnel should be included here.
			b) An analysis of the projected changes in vehicular, pedestrian, transit, and bicycle access routes and facilities, their capacity, and safety.	Page 36-37, Tables 3.2 & 3.3	Table 3.2 titled "Trip Generation Analysis" provides a snap shot of vehicular usage projections for the student population in the years 2025, 2028, and 2033. Please provide more details, as it relates to pedestrian and bicycle usage in this section, which largely focuses on vehicular travel.
			c) A transportation, access, and circulation plan, representing the synthesis of the analysis, and including a program of potential improvements or set of guidelines to address access deficiencies to and within the IOZ. The plan should outline proposed mechanisms and potential strategies to meet transportation objectives, including transportation	Pages 38-44	UNE's original TDM plan was created in 2010, and is routinely updated, most recently in April 2022. Strategies that emerged from the plan include: education and promotion, carpooling & ridesharing, transit service, incentives, EV charging infrastructure, bicycle infrastructure, and pedestrian & bicycle access. Please provide a more detailed transportation, access, and circulation

			demand management, phasing, and when a Traffic Movement Permit (TMP) may be required.		plan, that expands beyond the strategies identified in the TDM. As an example, perhaps providing a circulation plan of the core campus as a visual could then highlight potential opportunities for connections to the existing and future trail network. Please also speak to the existing Traffic Movement Permit (TMP) in this section, whether UNE envisions surpassing the threshold for a new TEMP under your build-out plans, i.e. indicate when a revised TMP may be required, or triggered, in the future.
		ii. Environment, with:	*a) An analysis of potential cumulative impacts on natural resources and open spaces.*	Page 52	Please provide an expanded analysis under the 'Proposed Future Development and the Environment' paragraph, which should detail potential cumulative impacts to the existing natural resources and open spaces on campus. For example, perhaps some good data to capture here could be existing vs. proposed impervious lot coverage, the existing open space on campus vs. proposed loss or gain of open space over time, and the existing square footage of wetlands vs. potential impacts or gains in the future.
			b) An analysis of projected energy consumption, hazardous materials generation, noise generation, and similar issues as relevant.	Pages 57-60	UNE's operational sustainability is detailed within the categories of energy conservation, waste management practices, biomedical waster best practices, sustainable landscaping, and noise generation.
			c) An environmental plan, representing the synthesis of the analysis and including a proposed program or set of guidelines for future	Page 56, Figure 4.8	Figure 4.8 titled "Natural Resources and Campus Master Plan" shows proposed campus improvements in locations aimed to mitigate impact to natural resources.

			preservation, enhancement, conservation, and/or mitigation.		
		iii. Infrastructure, with:	*a) An analysis of projected public utility demand and the capacity of associated infrastructure.*	Pages 62-63	Utility demand and capacity are detailed through the lens of the various providers: water services supplied by PWD, electricity supplied by CMP, telephone & data services by Consolidated Communications and Spectrum, natural gas and heating fuels supplied by Unitil, and existing wastewater infrastructure.
			b) An analysis of projected public safety needs and projected impacts to the capacity of these services.	Page 64	UNE has security officers who provide 24/7 patrol and dispatch coverage of the campus, in addition, an emergency notification service (Rave Mobile Safety), provides faculty, staff, and students with timely updates during emergencies, speaking to the capacity of public safety as the campus grows.
			c) An infrastructure plan, representing the synthesis of the analysis and including a proposed program or set of guidelines to support sustainable growth.	Page 61-62, Figure 5.1	Figure 5.1 titled "Existing Stormwater Infrastructure and Campus Master Plan" illustrates existing City sanitary sewer and stormwater infrastructure surrounding and within the campus, as well, future stormwater run-off flows are detailed. Please include a set of guidelines to support sustainable growth at the conclusion of this chapter.
		iv. Design, with:	*a) An analysis of projected impacts to neighboring properties and public spaces, including potential shadow, wind, and lighting impacts, impacts of height and massing, and impacts to historic resources.*	Pages 65-72 Figures 6.1, 6.2, 6.3, & 6.4	The City wants to ensure UNE is adequately addressing potential impacts to the surrounding parcels, including: Evergreen Cemetery, the isolated parcels within the Campus, and properties on Mayfield Street. Please provide spot elevations on the buildings shown in Figure 6.2 to better dedicate heights. Provide rendering of

					proposed development looking from Mayfield Street towards proposed student housing building (west). Additionally, as UNE considered alternative building layouts and parking configurations for the conceptual student housing on the Gulliver's Field site?
			b) An analysis of transition areas between the institution and adjoining neighborhoods, including identification of key character defining components of the surrounding context.	Page 71-72, Figure 6.4	Figure 6.4 titled "Proposed Maximum Heights" has identified transition zones along the edges of the IOZ boundary. Please provide the design rationale for the proposed 50 ft height within the 25 ft-wide transition zone—was there any consideration of varying the maximum height to better align with the surrounding context? Did UNE consider mapping lower maximum heights along Capisic Brook, and what is the rationale for mapping 65 ft on the two outparcels fronting Stevens Avenue? Additionally, the parcel on Forest Avenue, under ReCode, would allow a height of up to 75 ft. We recommend removing the height limitation for that parcel should ReCode pass as proposed.
			c) An analysis of existing Crime Prevention Through Environmental Design issues and identification of how these principles would be addressed as part of the proposed campus development.	Page 72	UNE's Campus Safety and Security Department monitors through in-person patrols and CCTV cameras and provides response 24/7, which contribute to low crime statistics on campus.
			d) A conceptual built environment/public realm plan, representing the synthesis of the analysis and including a set of guidelines for urban design,	Pages 71-75	Figure 6.4 titled "Proposed Maximum Heights" could be expanded on as a conceptual built environment/public realm plan for this section. Has there been consideration for a more

			landscape, open space, and streetscape treatments, with particular attention to the treatment of edges (both within and abutting the IOZ boundary) to achieve compatible transitions.		targeted contextual set of heights throughout the campus to address varying building typologies in adjacent neighborhoods?
		v. Neighborhood engagement, with:	*a) A plan for ongoing community engagement that represents best practices, promotes collaborative problem solving around community concerns, fosters transparency, and identifies mechanisms for neighborhood feedback and institutional accountability.*	Pages 76-77	UNE outlines four steps in their effort to provide ongoing community engagement, which include: -Developing a comprehensive CMP -Providing monthly project updates for all current/active projects -Creating a dedicated email address to allow neighbors to forward questions, concerns, and feedback -Attendance as local community neighborhood association meetings
			b) A property management framework that identifies the institution's process for handling operational property issues with neighbors.	Page 76	UNE directly oversees the maintenance and care of its facilities; it does not inspect or approve any off-campus housing.
			c) Strategies for assuring communication pertaining to property acquisition and disposition in surrounding neighborhoods.	Page 77	UNE has established strategies for assuring communication pertaining to property acquisition and disposition in surrounding neighborhoods, including alerting abutting properties of the transition of ownership and providing the appropriate contact information.
			d) A set of construction management principles to apply to all institutional construction, that represent best practice, aim to minimize short- and long-term construction impacts on surrounding residents and businesses, and ensure a clear communication strategy is in place in advance of construction.	Pages 82-84, + Attachment A	UNE has identified construction management principles that will be implemented to minimize impacts to its surrounding neighborhoods from noise, vibrations, ground movement, truck traffic, dust control and other construction related factors.

Regulatory Framework: Content Land Use Code, Section 8.5.5.D			
Category	**Requirement**	**Location, R.F. – PDF Page # & Document Section**	**Review Comments**
1. Zoning boundary of the IOZ	*The area to which the regulations apply, as shown on the zoning map, subject to other provisions of this ordinance (i.e. the map amendment to the City's zoning map)*	Page 144, Figure 8-H	General comment: Please add page numbers to the Regulatory Framework document itself.
2. Phasing and schedules	*Requirements that relate to particular proposed phases*	N/A - No phasing or scheduling proposed (imminent site plan) at this time.	
	A chart showing the schedule or thresholds for submitting an amended IDP (or elements of an IDP, such as a Transportation Demand Management (TDM) Plan)		
3. Uses	*Clarification, as necessary, on permitted uses*	Page 146, Section C., Table 8-H	
4. Dimensional requirements	*Graphics, sketches, or standards, including details for transition zones within the IOZ boundary*	Pages 146-147, Section D., Figure 8-I	Staff requests further discussion regarding the proposed height map and how to consider the surrounding context. See attached comments.
5. Transportation	*Elements such as Transportation Demand Management Plan (TDM) trip reduction targets or contribution to area-wide TDM measures*	Page 148, Section E.	
	Broad parameters for ensuring pedestrian, vehicular, bicycle and transit access and safety		*City Staff is working with the applicant to draft language for this requirement section.*
	Parking ratios and management strategies		
	Thresholds for access improvements		
6. Environment	*The approach to the inclusion of open space and preservation of environmentally-sensitive areas*	Page 148, Section F.	
7. Mitigation measures	*The broad approach to identified mitigation measures, which would be addressed in greater detail in the site plan review process*	Page 148, Section G.	

	Thresholds for addressing deficiencies		*City Staff is working with the applicant to draft language for this requirement section.*
	Goals for preservation/protection		*City Staff is working with the applicant to draft language for this requirement section.*
8. Design	*Graphics and standards to clarify building placement and envelope (height and massing)*		*City Staff is working with the applicant to draft language for this requirement section.*
	Guidelines for integration of site features		
	Required treatments for transition zones and treatment for all edges (both within and abutting the IOZ boundary)		
	Guidelines for establishing campus identity		
9. Neighborhood integration	*Thresholds and strategies for neighborhood engagement*	Page 150, Section I.	
	Mitigation of impacts on neighboring properties, including construction impacts		*City Staff is working with the applicant to draft language for this requirement section.*
	Buffering requirements		
	Objectives for pedestrian linkages and safety		
	Other requirements that address community concerns		
10. Monitoring	*A schedule for regular monitoring reports on IDP implementation in accordance with the IDP*		This section should simply address monitoring, stating that updates will be provided to the Planning Authority every five years.

Project Review Comments: Round 2
Comments Distributed on: January 17, 2025

Att. 2

Project Title: University of New England Institutional Overlay Zone (UNE IOZ)
Project File No.: ZN-003059-2024
Project Address: 716 Stevens Avenue
Project Planner: Natasha Kypfer, Senior Planner

Dear Caitlin Suhr, Alan Thibeault, and Mary Costigan:

We have completed our second round of review of your application (ZN-003059-2024), a Map and Text Amendment, proposing a new Institutional Overlay Zone (IOZ) for the University of New England (UNE) at approximately 716 Stevens Avenue, proposed to be zoned: B-2 Community Business. This development triggers review by the Planning Board and City Council, and is subject to the following regulations: Amendments – Article 1.10 and Institutional Overlay (IOZ) – Article 8.5.

An updated overview of the City's review can be viewed in the below worksheet and review comments. Only the IDP content table has been included for review in this second round, as the Regulatory Framework is being drafted by City staff, and will be presented at the second workshop.

Next Steps
Please review all feedback and reach out to me, as the lead project review manager, if you have any questions. We will look forward to our upcoming virtual meeting, scheduled for Thursday, January 23rd at 2:00PM. Further, we have scheduled your item for a second workshop before the Planning Board, for Tuesday, January 28th.

Sincerely,

Natasha M. Kypfer

Natasha Kypfer
Senior Planner

Worksheet(s) Table Legend:
Provided on Page # = Requirement Met
Partially Provided on Page # = Requirement Not Fully Satisfied / Staff includes suggested updates.
Not Provided = Requirement Not Satisfied

Review comments found in bold, in the below table's far right column, indicate new comments added following the previous review round.

Institutional Development Plan (IDP): Content Land Use Code, Section 8.5.4.C					
Category	**Sub-category**	**Requirement**	**Sub-requirement**	**Location, IDP Page #**	**Review Comments: Overview & Updates Requested**
1. Context information	*a. The institution's adopted mission, vision, or purpose statement*			Pages 4-5	As stated and provided for on pages 4-5, UNE is guided by its Mission, Vision, and Core Values, as well as its own strategic plan ("Our World, Our Future").
	b. A summary of relevant baseline data on the institution, including:	*i. A neighborhood context plan.*		Pages 11-12, Figure 1.1	The UNE's approximately 72-acre campus is bounded by Warren Ave., Bishop St. Extension, and Bishop St. to the north; Stevens Ave. to the east; and, Evergreen Cemetery and CMP's Utility Corridor to the south, as depicted in provided Figure 1.1.
		ii. An inventory of current programs and services.		Page 7-9	The UNE Portland campus houses three academic colleges: the Westbrook College of Health Professions (WCHP), the College of Dental Medicine, and the College of Graduate and Professional Studies. In addition, UNE operates two health clinics on campus: the Oral Health Center and the Dental Hygiene Center, as well as UNE North, the Center for Global Humanities, and cultural institutions that include the Maine Women Writers Collection and the UNE Art Gallery.
		iii. A current census of the number of people using the institution (e.g., employees, enrollment, patients), with an indication of maximums and minimums over time.		Page 21, Table 1.3	Table 1.3 titled "FTE Student, Faculty, and Professional Staff Data", includes population data from 2016-2023 **for student, faculty and professional staff, campus population, and patient visits. Note, UNE does not keep track of general campus visitors.**
		iv. An inventory and/or plan of all existing property holdings within the main campus and within the City of Portland, including an indication of		Page 20, Table 1.2	Table 1.2 titled "UNE Owned Properties in the City of Portland", documents UNE's total of 17 parcels,

		functional land use links between off-campus properties and the main campus (e.g. remote parking).		the majority of which are contiguous in the campus core, while several are outparcels. **An additional section speaks to the functional land use links between off-campus properties (outparcels) and the main campus.**
		v. An inventory and/or plan of existing facilities, including data on use, floor area, and any existing functional connections between facilities.	Page 16, Figure 1.5 Pp. 17-19, Table 1.1	The UNE campus map is provided on page 16 as Figure 1.5, depicting the 25 distinct facilities and 11 parking areas, with an inset map centered around the Campus Quad. **A campus facilities table has been provided detailing each facility, their location, name, total floor area, building height, and use. Further, the table includes each parking facility, a lot description, total parking area, total number of spaces including those ADA and EV charging compliant.**
	c. A summary of the baseline characteristics of the existing campus and context of the institution, based on identified study areas, including:	*i. A summary of existing resources, such as historic, open space, and natural resources.*	Pages 22-23	UNE's campus is the site of the Westbrook College Historic District, which includes six buildings built between 1834 and 1952. Further, existing open space and natural resources are summarized, and include notation of the Portland Trails Forest City Trail connection and the Capisic Brook watershed area.
		ii. A summary of the existing transportation system, including vehicular, pedestrian, transit, bicycle, and parking supply, demand, and utilization.	Pages 41-53, Table 3.5 & 3.6 Page 50, Figure 3.6	Table 3.5 titled "UNE Portland Campus - Parking Spaces" details the currently 11 parking lots located on campus, plus the on-street parking along two principle campus roadways, which amounts to 882 spaces total, plus the 182 permitted spaces presently at the COM building. **Table 3.6 details parking occupancy at the UNE Portland campus data and assumptions from 2015-2033. The chapter concludes with three main parking goals for the campus.**

		iii. A summary of existing public infrastructure supporting the institution, including demand, utilization and any capacity issues.	Page 24	Existing stormwater management systems utilize on-site infiltration systems, with secondary use of conveyance to the Stevens Ave. and Bishop St. CSO. Existing wastewater infrastructure for the campus is discharged to a CSO in College St. and Stevens Ave. Other public utilities include: PWD, CMP, and Unitil.
		iv. Relevant municipal plans, projects, and studies that may influence the IDP study area and opportunities for integrating institutional growth.	Page 24-27	A breakdown of the City's Comprehensive Plan, with tie in to the eight policy guide topics as they relate to UNE's work is provided with excerpts from Portland's Plan that UNE works to promote and advance are underscored and include the: environment, economy, historic resources, and housing. **Additional studies also referenced, are: One Climate Future, the Smart Corridor Plan, and the Forest Avenue Redesign Project.**
	d. A summary of public involvement in the development of the IDP, including major areas of public concern.		Pages 27-28	UNE has worked to involve the public in the creation of the IDP during the IOZ submission process, **this includes holding two required neighborhood meetings, which took place on June 13, 2024 and October 30, 2024, as well as the necessary Planning Board and City Council meetings during the adoption of the IOZ.**
2. Assessment of future institutional growth and change, including:	*a. A description of institutional needs and areas of future institutional growth and change, with:*	*i. A projected census of users (e.g., enrollment /employment/patient/ visitor figures and anticipated variations over time).*	Page 31, Table 2.2	Table 2.2 titled "Projected Growth of FTE Student, Faculty, and Professional Staff, **and Patient Visits" provides a snapshot of data assumptions for the years of 2025, 2028, and 2033. Note, UNE does not keep track of general campus visitors.**
		ii. Institutional objectives for property both within and outside the IOZ boundary (e.g. acquisition and/or disposition), including an indication of	Pages 32-34	UNE identifies five categories for key current and future institutional needs: campus reorganization, new building

		any functional land use connection for sites outside the IOZ boundary to the main campus.			and renovation, educational/pedagogy improvements, campus infrastructure, and housing.
		iii. A development plan addressing anticipated or potential institutional needs and physical improvements, including the proposed boundary of the IOZ and any phasing of the development.		Pages 34-35, Table 2.3	A development plan is shown in Table 2.3, titled "10 +- Year Development Program", which identifies three core priority timelines: the short-term (0-5 years), medium-term (5-10 years), and long-term (10+ years).
	b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including:	*i. Transportation and access, with:*	*a) An analysis of the projected changes in parking demand, supply, and impacts to the off-street and on-street parking capacity, including an explanation of the proposed parking plan.*	Page 24, Pages 51-53	**The context section notes: "A campus parking analysis, based upon the historical count data, projects a maximum occupancy rate per university population to be at 0.39 from 2025 to 2033. This rate is similar to the Institute of Transportation Engineers (ITE) 85th percentile parking rate." Further, provided within the Transportation Plan section, UNE includes a parking analysis based upon the historical parking counts.**
			b) An analysis of the projected changes in vehicular, pedestrian, transit, and bicycle access routes and facilities, their capacity, and safety.	Pages 43-45, Tables 3.2 & 3.3	Table 3.2 titled "Trip Generation Analysis" provides a snap shot of vehicular usage projections for the student population in the years 2025, 2028, and 2033. **Based upon the most recent TDM survey UNE reports, of total trips to campus, approximately: 1% are transit trips, 1% are bicycle trips, and 3% are walking trips.**
			c) A transportation, access, and circulation plan, representing the synthesis of the analysis, and including a program of potential improvements or set of guidelines to address access deficiencies to and within the IOZ. The plan should outline proposed mechanisms and potential strategies to meet transportation objectives,	Pages 45-53, Figure 3.6	UNE's original TDM plan was created in 2010, and is routinely updated, most recently in April 2022. Strategies that emerged from the plan include: education and promotion, carpooling & ridesharing, transit service, incentives, EV charging infrastructure, bicycle infrastructure, and pedestrian & bicycle access. **Figure 3.6 titled "Core Campus Bicycle and Pedestrian Connectivity", shows the primary**

			including transportation demand management, phasing, and when a Traffic Movement Permit (TMP) may be required.		campus sidewalks, bike facilities, and off-site connections. UNE notes, opportunities to expand this network (as visualized in Fig. 3.6), and to increase these alternative commuting modes, will continue to be explored. Details regarding the Traffic Movement Permit (TMP) have also been included in this section.
		ii. Environment, with:	*a) An analysis of potential cumulative impacts on natural resources and open spaces.*	Page 61 Page 80, Figure 6.4	Provided under the 'Proposed Future Development and the Environment' section, UNE details their commitment to preserving 10± acres on campus as dedicated open space, which is also depicted in Figure 6.4 titled "Proposed Open Space and Maximum Height Map". Staff suggests an additional table be added to this section, breaking down the acreage on campus, and providing the dedicated open space calculations.
			b) An analysis of projected energy consumption, hazardous materials generation, noise generation, and similar issues as relevant.	Pages 67-70	UNE's operational sustainability is detailed within the categories of energy conservation, waste management practices, biomedical waster best practices, sustainable landscaping, and noise generation.
			c) An environmental plan, representing the synthesis of the analysis and including a proposed program or set of guidelines for future preservation, enhancement, conservation, and/or mitigation.	Page 66, Figure 4.8	Figure 4.8 titled "Natural Resources and Campus Master Plan" shows proposed campus improvements in locations aimed to mitigate impact to natural resources.
		iii. Infrastructure, with:	*a) An analysis of projected public utility demand and the capacity of associated infrastructure.*	Pages 72-73	Utility demand and capacity are detailed through the lens of the various providers: water services supplied by PWD, electricity supplied by CMP, telephone & data services by Consolidated Communications and

					Spectrum, natural gas and heating fuels supplied by Unitil, and existing wastewater infrastructure.
			b) An analysis of projected public safety needs and projected impacts to the capacity of these services.	Page 74	UNE has security officers who provide 24/7 patrol and dispatch coverage of the campus, in addition, an emergency notification service (Rave Mobile Safety), provides faculty, staff, and students with timely updates during emergencies, speaking to the capacity of public safety as the campus grows.
			c) An infrastructure plan, representing the synthesis of the analysis and including a proposed program or set of guidelines to support sustainable growth.	Pages 71-74, Figure 5.1	Figure 5.1 titled "Existing Stormwater Infrastructure and Campus Master Plan" illustrates existing City sanitary sewer and stormwater infrastructure surrounding and within the campus, as well, future stormwater run-off flows are detailed. **At the conclusion of this chapter, a set of guidelines to support sustainable growth was added.**
		iv. Design, with:	*a) An analysis of projected impacts to neighboring properties and public spaces, including potential shadow, wind, and lighting impacts, impacts of height and massing, and impacts to historic resources.*	Pages 75-84 Figures 6.1, 6.2, 6.3, & 6.4	The City wants to ensure UNE is adequately addressing potential impacts to the surrounding parcels, including: Evergreen Cemetery, the isolated parcels within the Campus, and properties on Mayfield Street. **Figure 6.1 was updated to include spot elevations on campus current and future buildings, in order to better delineate height. Further, Figure 6.3 was updated to provide a 3D view from Mayfield Street towards proposed student housing building (west). With regard to the future development of the Gulliver's Field site, UNE notes they are evaluating alternatives for building footprints and parking configurations within the general area depicted on the Campus Master Plan (Figure 2.1, P. 33). The**

					general area for development will be within the existing Gulliver's Field site, however final design will be developed in the future and reviewed as part of site plan application
			b) An analysis of transition areas between the institution and adjoining neighborhoods, including identification of key character defining components of the surrounding context.	Page 79-81, Figure 6.4	Figure 6.4 titled "Proposed Open Space and Maximum Height Map" depicts open space (i.e. "no build" areas), as well, a 25-ft-wide transition zone around the interior perimeter of the contiguous campus, with a maximum height in that transition zone of 50-ft. UNE indicates the design rationale of which is to provide a stepback of building heights from the campus edges and adjacent properties, with the intent to focus densification and greater building heights internal to the campus. Further, the open space areas added to the plan will provide added buffering of neighboring properties, and will preserve existing wetland and open space areas, including along Capisic Brook and adjacent to the Mayfield Street neighborhood.
			c) An analysis of existing Crime Prevention Through Environmental Design issues and identification of how these principles would be addressed as part of the proposed campus development.	Page 81	UNE's Campus Safety and Security Department monitors through in-person patrols and CCTV cameras and provides response 24/7, which contribute to low crime statistics on campus.
			d) A conceptual built environment/public realm plan, representing the synthesis of the analysis and including a set of guidelines for urban design, landscape, open space, and streetscape treatments, with particular attention to the treatment of edges (both within	Pages 79-84, Figure 6.4	Figure 6.4 titled "Proposed Open Space and Maximum Height Map" was revised to include open space (i.e., "no build", areas). The open space areas added to the plan provide further buffering of neighboring properties, and will preserve existing wetland and open space areas, such as along Capisic Brook and adjacent to the Mayfield

			and abutting the IOZ boundary) to achieve compatible transitions.		Street neighborhood, and Evergreen Cemetery. UNE notes, the proposed maximum height areas have been selected to facilitate future development in portions of the campus that will not impact natural resources and will enhance campus engagement and safety.
		v. Neighborhood engagement, with:	*a) A plan for ongoing community engagement that represents best practices, promotes collaborative problem solving around community concerns, fosters transparency, and identifies mechanisms for neighborhood feedback and institutional accountability.*	Pages 85-86	UNE outlines four steps in their effort to provide ongoing community engagement, which include: -Developing a comprehensive CMP -Providing monthly project updates for all current/active projects -Creating a dedicated email address to allow neighbors to forward questions, concerns, and feedback -Attendance as local community neighborhood association meetings
			b) A property management framework that identifies the institution's process for handling operational property issues with neighbors.	Page 86	UNE directly oversees the maintenance and care of its facilities; it does not inspect or approve any off-campus housing.
			c) Strategies for assuring communication pertaining to property acquisition and disposition in surrounding neighborhoods.	Page 86	UNE has established strategies for assuring communication pertaining to property acquisition and disposition in surrounding neighborhoods, including alerting abutting properties of the transition of ownership and providing the appropriate contact information.
			d) A set of construction management principles to apply to all institutional construction, that represent best practice, aim to minimize short- and long-term construction impacts on surrounding residents and businesses, and ensure a clear communication strategy is in	Pages 91-93, + Attachment A	UNE has identified construction management principles that will be implemented to minimize impacts to its surrounding neighborhoods from noise, vibrations, ground movement, truck traffic, dust control and other construction related factors.

			place in advance of construction.		

8.4 The University of New England (UNE) Overlay Zone Regulatory Framework

A. Applicability. The regulatory framework shall apply only to development proposed by the University of New England (UNE) within the boundary of the Institutional Overlay Zone (IOZ) and to which UNE holds right, title, or interest. Properties in the UNE IOZ shall continue to be governed by the regulations applicable to the underlying zone except as specifically modified by the regulatory framework. The UNE IOZ shall have the boundaries depicted in Figure 8-H, and includes the properties listed in Table 8-C. Maximum building heights for new principal buildings in the IOZ shall be governed by the UNE IOZ Maximum Permitted Height Overlay Map (Figure 8-I), with accompanying Legend (Table 8-D).

FIGURE 8-H: UNE INSTITUITIONAL OVERLAY ZONE BOUNDARY

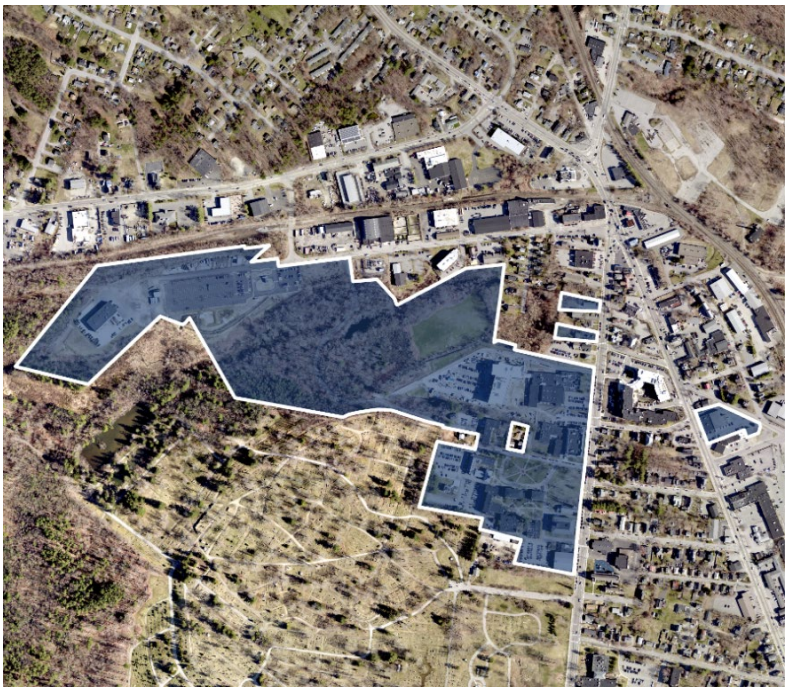


TABLE 8-C: LIST OF PROPERTIES INCLUDED IN THE UNE IOZ

Chart	Block	Lot	Address	Acreage	Ownership
144	A	005	684 Stevens Avenue	0.141	UNE
144	A	006	684 Stevens Avenue	0.275	UNE
144	A	007	684 Stevens Avenue	0.371	UNE
144	A	008	684 Stevens Avenue	0.256	UNE
144	A	009	684 Stevens Avenue	0.586	UNE
145	A	001	706 Stevens Avenue	0.450	UNE
145	A	003	710 Stevens Avenue	0.165	UNE
145	A	006	714 Stevens Avenue	9.231	UNE
145	A	007	710 Stevens Avenue	0.025	UNE
145	A	008	710 Stevens Avenue	0.006	UNE
145	A	009	714 Stevens Avenue	0.036	UNE
145	A	010	714 Stevens Avenue	0.356	UNE

145	B	001	1 College Street	0.338	UNE
145	B	002	1 College Street	0.207	UNE
145	B	006	31 College Street	0.134	UNE
145	B	009	41 College Street	0.200	UNE
145	B	010	51 College Street	0.383	UNE
145	B	011	63 College Street	0.076	UNE
145	B	012	63 College Street	0.114	UNE
145	B	013	63 College Street	0.048	UNE
145	B	014	83 College Street	0.366	UNE
145	B	018	772 Stevens Avenue	8.603	UNE
145	B	022	798 Stevens Avenue	0.438	UNE
145	B	027	83 College Street	3.137	UNE
145	B	029	79 College Street	0.258	UNE
145	B	042	1 College Street	0.162	UNE
145	B	046	1 College Street	0.138	UNE
146	F	005	32 Bell Street	0.106	UNE
147	F	006	1075 Forest Avenue	1.159	UNE
281	A	003	0 Bishop Street	10.555	UNE
290	A	003	83 College Street	1.771	UNE
291	A	001	0 Bishop Street	8.394	UNE
291	A	005	83 College Street	17.972	UNE
291	A	007	83 College Street	0.459	UNE
293	C	005	83 College Street	1.574	UNE

Figure 8-I: UNE MAXIMUM PERMITTED HEIGHT OVERLAY MAP

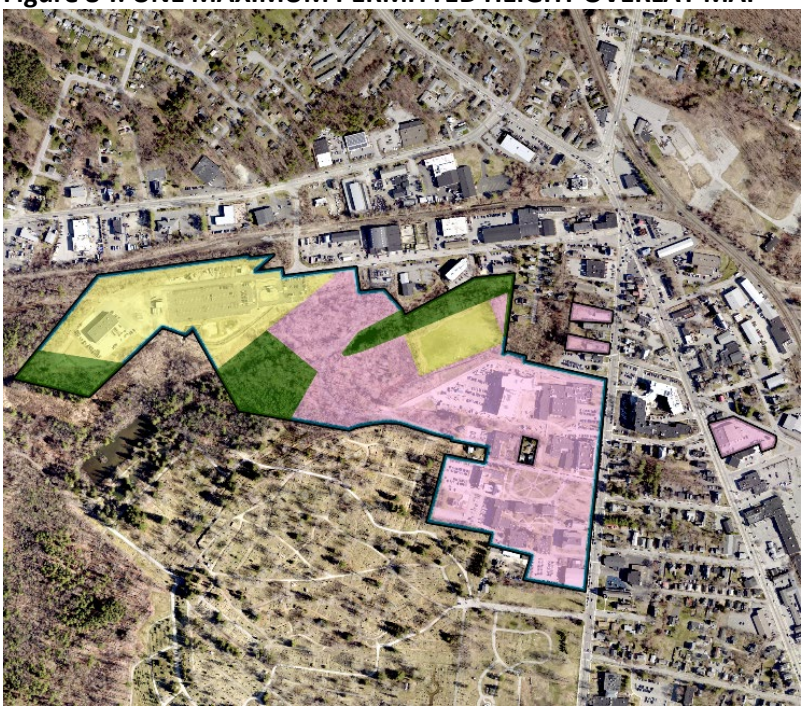


TABLE 8-D: MAXIMUM PERMITTED HEIGHT LEGEND	
	85 feet
	75 feet
	50 feet (25 feet wide)
	0 feet

B. Phasing and monitoring.

1. UNE shall file monitoring reports every five (5) years with the Planning Authority. Monitoring reports shall ensure that data in the IDP is current and provide a summary of progress on IDP implementation, including details of acquisitions and divestments since the date of IDP approval.
2. Interim conditions shall be designed for a pleasant pedestrian experience through planting, lighting, wayfinding, graphics, artwork, or ornamental fencing to provide screening, buffers, and enhancement. Interim areas of the site which are not actively used for parking or construction staging will be appropriately left in a natural state, landscaped or accommodate gathering on lawns or other aesthetically hardened spaces.

C. Uses. In addition to the uses permitted in the underlying zone, the uses in Table 8-E shall also be permitted as a matter of right within the IOZ.

TABLE 8-E: PERMITTED USES
• Laboratory and research facilities
• Off-street parking

D. Dimensional requirements. For the purposes of this IOZ, "lot" is defined as the combination of the contiguous lots under UNE ownership, including land separated by a public or private right-of-way. The "lot" boundary is as shown in Figure 8-H. Side and rear setbacks shall not be required between buildings on contiguous lots owned by UNE on the condition that such contiguous lots shall be considered merged and shall not be separately conveyed unless required setbacks in the underlying zones are provided.

E. Transportation.

1. *Transportation demand management (TDM).* At the time of the first site plan review following IDP approval, UNE shall submit a campus-wide TDM Plan substantially in accordance with those TDM objectives and strategies identified in the approved IDP. The TDM Plan may be phased into short-, mid-, and long-term actions to allow for progressive implementation over time.
2. *Parking.* Parking requirements in the IOZ, shall be established at the time of site plan review based on a parking study that includes a campus-wide analysis of demand and supply. Parking studies shall integrate parking and trip reduction achievements and data contained in the TDM Plan. Parking requirements shall be determined in accordance with the requirements in the Land Use Code in effect at the time of site plan review.

F. Environment. All new buildings and parking facilities proposed by UNE shall integrate with the surrounding context to allow connectivity amongst open space, pedestrian networks, and the Evergreen Cemetery, and to protect the critical natural resources associated with the Capisic Brook watershed. The Planning Board may approve a reduction of the setback requirement for a new building to the least amount necessary to achieve the goals of the development and minimize overall impacts, provided that the setback is not reduced to less than 40 feet.

G. Mitigation measures.

1. Site plan impacts to off-premise infrastructure shall be mitigated in a manner proportionate to those impacts. Mitigation may include financial or in-kind contributions to existing or planned City projects focused on mitigating the impacts of the development. Mitigation contribution shall be determined based on the City's standard procedure in effect at the time of site plan review.
2. Impacts to natural resources shall be mitigated in accordance with local, state, and federal permitting standards in effect at the time.

H. Design.

1. All new development shall be designed to create a cohesive campus character.
2. New buildings shall be designed with building entrance(s) and principle facades oriented towards existing campus buildings, open space, streets and pedestrian pathways.
3. New buildings will minimize visual impact of service areas, loading docks and utility structures.
4. All new development shall provide a variety of open spaces that are integrated into the existing campus.
5. All new development shall provide adequate lighting and signage for clear visibility at streets, pedestrian pathways, building entries, and parking areas.

I. Neighborhood integration.

1. For the purpose of keeping surrounding residential areas appraised of its future development plans, and to address any neighborhood issues related to the operations of the UNE campus, UNE shall adhere to the ongoing neighborhood engagement principles identified in the IDP.
2. Ongoing community engagement shall be conducted, including the continuation of posting project updates on UNE's Campus Planning web page and the creation of a dedicated email address for neighbor communications with UNE's Planning Department.
3. UNE shall conduct annual neighborhood outreach through neighborhood meeting(s), to be hosted on campus, and shall provide the Planning Authority with a copy of the neighborhood notice and a record of participants, content, and feedback as described in Section 13.5.5.C.
4. A designated community contact shall be engaged to be the point of contact for providing information to the neighborhood and receiving feedback.

12 Mountfort Street
Portland, Maine 04101
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

Att. A

August 14, 2024

Kevin Kraft, Director of Planning and Urban Development
City of Portland
389 Congress Street
Portland, ME 04101

Re: University of New England
Application for Text and Map Amendment

Dear Kevin:

Woodard & Curran is pleased to submit this application for a text and map amendment on behalf of the University of New England (UNE). This application includes: 1) a text amendment to adopt the Regulatory Framework for the proposed UNE Institutional Overlay Zone (IOZ); and 2) a map amendment to change the underlying zoning of the UNE properties to B-2 Community Business with an IOZ overlay.

The City of Portland's Land Use Code includes a provision for the city's five major medical and higher education campuses to create an IOZ designation to facilitate a consistent, predictable, and clear growth management process. Consistent with that purpose, UNE is seeking to create a UNE IOZ to accommodate the development and growth of their campus.

UNE began pursuing the IOZ process in 2021 and has had meetings with Planning and other City staff, as well as neighborhood groups and members of the public, to develop its Institutional Development Plan (IDP). The IDP identifies and addresses anticipated long-term institutional needs to support UNE's continued ability to adapt and grow alongside changes in education and technology. The IDP and corresponding Regulatory Framework have been thoughtfully developed to balance the needs of the institution with the needs of the surrounding neighborhood and wider community.

As part of the IOZ process, UNE will simultaneously seek to change the underlying zoning of the campus to B-2 Community Business. The current underlying zoning on campus includes R-3, R-5, I-H, I-M, and B-2. Changing the underlying zoning entirely to B-2 will more accurately reflect the current uses within the campus and complement the surrounding zoning.

Thank you for your consideration. We look forward to working with you.

Sincerely,

Woodard & Curran, Inc.

Caitlin Suhr, PE
Project Manager

CITY OF PORTLAND
Planning & Urban Development Department

MAP AND TEXT AMENDMENT SUBMISSION CHECKLIST * Please submit each document and drawing as a separate PDF file * Please submit all drawings in a 24 x 36 sheet size * Please confirm each item by electronically checking the boxes to the left for each document/drawing	
GENERAL APPLICATION DOCUMENTS	
☑	**Project Description** • Cover Letter with detailed project description
☑	**Consistency with Comprehensive Plan** (Please see page 21 of IDP document) • Analysis of the consistency of the zone change request with the goals, policies and land use plan of Portland's Comprehensive Plan.
☑	**Proposed Text Amendment** (Please see Regulatory Framework) • Provide proposed language for text amendment(s) and cite the relevant sections to be revised in the Land Use code.
☑	**Completed Checklist – Map and Text Amendment Application (this document)**
☑	**Right, Title and Interest** • Deeds, leases, or purchase and sales agreements
PLANS	
☑	**Vicinity Map**
☑	**Proposed Map Amendment** (please use the Portland zoning map as a reference)
☐	**Site Plan (if applicable)** On a separate sheet, please provide a site plan of the property showing existing and proposed improvements, including such features as buildings, parking, driveways, walkways, landscape and property boundaries.

Att. C

Doc#: 12544 Bk:23717 Ps: 74

WARRANTY DEED

(Maine Statutory Short Form)

KNOW ALL BY THESE PRESENTS, that I, ROSEMARY S. KIMBALL, of Yarmouth, County of Cumberland, and State of Maine, for consideration paid, GRANT to the UNIVERSITY OF NEW ENGLAND a non-profit corporation organized and existing under the laws of the State of Maine, the mailing address of which is 11 Hills Beach Road, Biddeford, Maine 04005-9599, with WARRANTY COVENANTS, certain real estate located in Portland, County of Cumberland and State of Maine, which is more particularly described in Exhibit A attached hereto and made a part hereof.

This conveyance is made SUBJECT, HOWEVER, to real estate taxes which are not yet due and payable, which, by acceptance hereof, Grantee assumes and agrees to pay.

MAINE REAL ESTATE TAX PAID

WITNESS my hand and seal this 28th day of February, 2006.

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF:

Witness

Rosemary S. Kimball
Rosemary S. Kimball

STATE OF MAINE
County of Cumberland, SS.

February 28, 2006

Then personally appeared the above-named ROSEMARY S. KIMBALL and acknowledged the foregoing instrument to be her free act and deed.

Before me,

~~Notary Public~~/Maine Attorney-at-Law
Printed Name: Brianna Adams

Exhibit A

A certain lot of parcel of land, with the buildings and improvements thereon, situated on the northerly side of College Street, in the City of Portland, County of Cumberland, State of Maine and bounded and described as follows:

Beginning at a certain point on said College Street where the northerly line of said street is intersected by the extension southerly of a line passing through the middle division wall of a certain double house (the easterly part of which stands upon the premises hereby conveyed); thence northerly by said middle division wall and said wall extended to land now or formerly of the Portland Street Railroad Company; thence easterly by said land of said Railroad Company to land formerly of C. A. Hayden; thence southerly by said Hayden land to said College Street; thence westerly by said College Street to the point of beginning.

Being the same premises acquired by the Grantor and Paul J. Kimball (as joint tenants and not as tenants in common) by Warranty Deed dated January 29, 1987 and recorded in the Cumberland County Registry of Deeds in Book 7620 and Page 201. Paul J. Kimball died March 16, 1993, and his probate is located in the Cumberland County Probate Court, Docket # 93-399.

Received
Recorded Register of Deeds
Mar 01,2006 01:01:20P
Cumberland County
John B OBrien

QUITCLAIM DEED

THE STATE OF MAINE DEPARTMENT OF DEFENSE, VETERANS AND EMERGENCY MANAGEMENT successor in interest to the STATE OF MAINE, acting by and through the Acting Adjutant General pursuant to 37-B M.R.S.A. § 264, (the "Grantor"), FOR CONSIDERATION PAID, grants to the **UNIVERSITY OF NEW ENGLAND**, a Maine non-profit corporation, whose mailing address is 716 Stevens Avenue Portland, ME 04103 (the "Grantee"), certain real property, together with any improvements thereon, located at 760-780 Stevens Avenue, in the City of Portland, County of Cumberland and State of Maine, more particularly describes as follows:

> A certain lot or parcel of land with the buildings thereon situated on the westerly side of Stevens Avenue in the City of Portland in said County of Cumberland and State of Maine, being the same premises conveyed by Elizur B. Forbes to Portland and Forest Avenue Rail Road Company by deed dated March 22, 1864, and recorded in Cumberland County Registry of Deeds in Book 326, Page 212, in which deed said premises were bounded as follows:
>
> "A certain parcel of land fronting on the principal street at Stevens's Plains in Westbrook aforesaid, bounded as follows; beginning on said street at the southeast corner of land formerly of Jeremiah Beedle, now of Woodbury Polleys; thence running North sixty-four and a half degrees West five hundred seven and a half feet; thence North twenty-five and a half degrees East, thirty three feet; thence North sixty-three degrees West one hundred twenty-five feet; thence South seventy-five degrees forty-five minutes West seven hundred twenty feet; thence South sixty-four degrees east nine hundred ten and a half feet; thence North twenty and a quarter degrees east one hundred forty and a half feet; thence South sixty-six and a half degrees east, three hundred twenty four feet to the street or Stevens's Plains road before mentioned; thence North (by the line of the Street) nineteen degrees and three quarters east, two hundred ninety feet to the place of beginning - estimated to contain about nine and one quarter acres."

Meaning and intending to convey the same premises delineated on the Plan of Property in Portland, Maine made for the Adjutant General, Augusta, Maine prepared by H.I. & E.C. Jordan dated August 22, 1958.

For Grantor's source of title see: Warranty Deed from Portland Rail Road Company to the State of Maine dated October 14, 1940 and recorded at the York County Registry of Deeds in Book 1619, Page 299.

MAINE REAL ESTATE TAX PAID

By his signature hereon, the Acting Adjutant General certifies that the premises being conveyed in compliance with 37-B MRSA § 264, Section 6, Subsection 5 constitutes the Portland Armory, that he has designated an officer to inspect the premises, that he has determined the property to be unfit for military use, and has condemned the premises and furthermore that the premises are not being sold for less than appraised value as determined by a person licensed as a real estate appraiser under Title 32, chapter 123 and that the State of Maine Department of Defense, Veterans and Emergency Management is the successor in interest to the State Military Defense Commission of the State of Maine.

IN WITNESS WHEREOF, the State of Maine has caused this instrument to be executed in its name by Brigadier General Gerard F. Bolduc in his capacity as the Acting Adjutant General of the Maine National Guard, pursuant to 37-B M.R.S.A. § 264, this 11 day of June, 2015.

JA.
Witness

STATE OF MAINE

By: Gerard I. Bolduc

Gerard F. Bolduc
Brigadier General, The Acting Adjutant General

State of Maine
County of Kennebec, ss

June 11, 2015

The personally appeared the above-named Brigadier General Gerard F. Bolduc, The Acting Adjutant General of the Maine National Guard, and acknowledged the foregoing instrument to be his free act and deed and, pursuant to authorization of the Maine Legislature as found in 37-B M.R.S.A. § 264, the free act and deed of the State of Maine.

Before me, under authority of 37-B MRSA 390-C.

Notary Public/Attorney-at-Law
ATTORNEY AT LAW
Commission Expires:
Print Name: STACY M. BRADBURY

Received
Recorded Register of Deeds
Jun 17,2015 08:54:11A
Cumberland County
Nancy A. Lane

MAINE REAL ESTATE TAX-Paid

WARRANTY DEED
Statutory Short Form

DLN: 1002440278302

KNOW ALL BY THESE PRESENTS, That **WJN Property Management, LLC,** a Maine Limited Liability Company, whose mailing address is 381 Falmouth Road, Falmouth, ME 04105, for consideration paid, grant to the **University of New England**, a Maine non-profit corporation with an address of 11 Hills Beach Road, Biddeford, ME 04005, with Warranty Covenants, the real property in the City of Portland, County of Cumberland and State of Maine, more particularly described as follows:

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

Beginning at a point on the westerly side line of Stevens Avenue at the northeasterly corner of land of the Stevens Avenue Congregational Church; thence North 68° West by said Church property and property formerly of the Portland Street Railway Company, two hundred sixty and four tenths (260.4) feet to a post; thence North 23° 36' East by said Portland Street Railway Company land ninety-two (92) feet to a post; thence South 59° 19' East by the fence one hundred twelve and forty-seven hundredths (112.47) feet to a post; thence South 61° 35' East one hundred forty-six and twenty-four hundredths (146.24) feet to the westerly side of Stevens Avenue; thence South 20° 45' West fifty-eight and fifty-five hundredths (58.55) feet to said westerly side line of Stevens Avenue to the point of beginning.

Including herewith,

a. Any and all appurtenant rights, easements, rights of way, permits and approvals; and

b. Any and all improvements located on, under or above the above -described Real Property.

Meaning and intending to convey and conveying the real property described in a deed to WJN Property Management, LLC dated August 24, 2020 and recorded in the Cumberland County Registry of Deeds in Book 37103, Page 32.

Witness my duly authorized hand and seal this 27th day of June, 2024.

Witness:

WJN Property Management, LLC

Weston Nolan, Manager

DOC :21924 BK:40834 PG:211
RECEIVED - RECORDED, CUMBERLAND COUNTY REGISTER OF DEEDS
06/27/2024, 02:36:12P
Register of Deeds Jessica M. Spaulding E-RECORDED

STATE OF **MAINE**
COUNTY OF **CUMBERLAND**, ss.

June 27, 2024
~~April 26, 2022~~

Personally appeared on the above date, the above-named Weston Nolan, Manager of WJN Property Management, LLC and acknowledged the foregoing instrument to be his free act and deed in his said capacity.

Before me,

~~Notary Public~~ Attorney at Law
Print name: Cary McCullen
~~Exp:~~ Bar No. 005999

Doc#: 61909 Bk:31071 Ps: 274

SHORT FORM WARRANTY DEED

Saltz Associates, LLC, a Maine limited liability company of Portland, Maine ("Grantor"), for consideration paid, grants to **University of New England,** a Maine nonprofit corporation with a mailing address of 716 Stevens Avenue, Portland, ME 04103 ("Grantee") WITH WARRANTY COVENANTS, certain real property, together with any improvements thereon, located in the City of Portland, County of Cumberland, and State of Maine and more particularly described on Exhibit A attached hereto and made a part hereof.

MAINE REAL ESTATE TAX PAID

Being the same premises conveyed to the Grantor by Warranty Deed from Barry C. Saltz and Jeffrey I. Saltz dated October 20, 2001and recorded in the Cumberland County Registry of Deeds in Book 16999, Page 56.

IN WITNESS WHEREOF Saltz Associates, LLC has caused this instrument to be executed by Barry C. Saltz its Manager, thereunto duly authorized, this 25 day of September, 2013.

WITNESS:

John Norton
Print Name:

SATLZ ASSOCIATES, LLC

By:
Name: BARRY SALTZ
Its Manager

State of Maine
County of Cumberland, ss.

Date: September 25, 2013

PERSONALLY APPEARED the above-named Barry Saltz, Manager of Saltz Associates, LLC, as aforesaid, and acknowledged the foregoing instrument to be his free act and deed in his said capacity.

Before me,
Cathy Morrison
Notary Public
Print Name: Cathy Morrison
Commission Expires: 10/18/18

SEAL

EXHIBIT A

A certain lot or parcel of land with the buildings thereon situated in said Portland, in that part formerly Deering, on the Westerly side of Stevens Avenue, formerly called Stevens Plains Avenue, near Morrill's Corner, and bounded and described as follows:

Beginning at a stake on said Westerly side of Stevens Avenue, at the Northeasterly corner of the lot of land conveyed by The City of Portland to Ralph F. Goodhue by deed dated March 30, 1906, and recorded in the Cumberland County Registry of Deeds in Book 843, Page 431, formerly known as the School House Lot, said stake being distant Southerly along said Westerly side of Stevens Avenue Forty-One and Eight Hundredths (41.08) feet from a stone monument marking an angle in said Westerly line of Stevens Avenue; thence by said land now or formerly of said Goodhue on a course of N 69° 07' W One Hundred Eighty-Three and Forty-Five Hundredths (183.45) feet, more or less, to the lot of land conveyed by George H. Bangs to Elizabeth Hodgdon by deed dated September 20, 1900, and recorded by said Registry of Deeds, in Book 699, Page 24; thence by said land now or formerly of said Hodgdon on a course of N 26° 41' E Ninety-Five and Eighty-Five Hundredths (95.85) feet, more or less, to the lot of land conveyed by Nancy Kimball Roberts to Alice M. Winslow by deed dated December 19, 1913, and recorded in said Registry of Deeds in Book 922, Page 419, formerly belonging to Storer Libby; and thence by said land now or formerly of said Winslow on a course of S 60° 01' E One Hundred Seventy-Seven (177) feet, more or less, to the Westerly side of Stevens Avenue; thence by said Westerly side of Stevens Avenue, on a course of S 21° 10" W Twenty-Six and Twenty-Four Hundredths (26.24) feet to said stone monument marking an angle in said Avenue; and thence by said Westerly side of said Stevens Avenue on a course of S 22° 00' W Forty-One and Eight Hundredths (41.08) feet to the point of beginning. Said above mentioned courses being magnetic and of the date of 1942.

ALSO ANOTHER certain lot or parcel of land situated in said Portland, in that part formerly Deering, and bounded and described as follows:

Beginning at a stake in the rear of Stevens Avenue, on the line of land now or formerly of George C. Roberts, at the Northwesterly corner of the lot of land conveyed by the City of Portland to Ralph F. Goodhue by the deed above mentioned recorded in Book 843, Page 431, which lot of land was formerly known as the Morrills School House Lot; thence running Northerly by the line of said land now or formerly of said Roberts One Hundred Seven (107) feet, more or less, to a stake in the line of said Roberts land; thence running Easterly by the line of said Roberts land Sixty-Five (65) feet to a stake at the Northwesterly corner of the lot of land conveyed by Cora B. Roberts to one Christy E. Chandler by deed dated October 12, 1942, and recorded in said Registry of Deeds in Book 1693, Page 352; thence running Southerly by the Westerly line of said land conveyed by said Cora B. Roberts to said Christy E. Chandler, Ninety-Five and One-half (95 ½) feet, more or less, to the Northerly line of said land conveyed to said Goodhue, formerly said School House Lot, at a point distant Sixty-Five (65) feet Easterly from the point begun there; and thence running Westerly by the line of said Goodhue land, formerly of said School House Lot 65 feet to the point of beginning.

Received
Recorded Register of Deeds
Oct 03,2013 02:29:19P
Cumberland County
Pamela E. Lovley

MAINE REAL ESTATE TAX PAID

QUITCLAIM DEED WITH COVENANT

KNOW ALL BY THESE PRESENTS, that **DELTA REALTY LLC**, a Maine limited liability company ("Grantor"), having a mailing address of 380 Warren Avenue, Portland, Maine 04103, for consideration paid, hereby grants to the **UNIVERSITY OF NEW ENGLAND**, a Maine non-profit corporation ("Grantee"), having a mailing address of 11 Hills Beach Road, Biddeford, Maine 04005, with Quitclaim Covenant, that certain real property located in the City of Portland, Cumberland County, Maine, all more particularly bounded and described as follows:

See **Exhibit A** attached hereto and made a part hereof.

Meaning and intending to convey the real property described in a Quitclaim Deed to the Grantor herein from Northern Utilities, Inc., dated September 19, 2014 and recorded in the Cumberland County Registry of Deeds in Book 31788, Page 197, subject to the easements and rights granted Northern Utilities, Inc. pursuant to that certain Amended and Restated Gas Easement Deed dated November 9, 2015 and recorded in said Registry of Deeds in Book 32746, Page 142 (amended and restating that certain Gas Easement Deed dated September 19, 2014 and recorded in said Registry of Deeds in Book 31788, Page 200). Subject to current real estate taxes and stormwater fees to the City of Portland, Maine not yet due and payable.

IN WITNESS WHEREOF, DELTA REALTY LLC has caused this instrument to be signed and sealed on June 30, 2016.

DELTA REALTY LLC

Witness

By: Andrea Girard
Andrea Girard
Its Manager

State of Maine
County of Cumberland, ss. June 30, 2016

Personally appeared the above-named Andrea Girard in his/her said capacity and acknowledged the foregoing instrument to be his/her free act and deed in his/her said capacity and the free act and deed of said limited liability company.

Before me,

L. R. Clough

~~Notary Public~~/Maine Attorney at Law
Print Name: Lawrence R. Clough
My Commission Expires:

EXHIBIT A

A certain lot or parcel of land with the buildings thereon situated on the easterly side of Forest Avenue, in the City of Portland, County of Cumberland and State of Maine, being more particularly bounded and described as follows:

Beginning on the easterly sideline of Forest Avenue, said point being one hundred forty and two tenths (140.2) feet southerly from the intersection of Read Street and Forest Avenue;

Thence running in an easterly direction one hundred fifty-one and twenty-five hundredths (151.25) feet to Read Street;

Thence running in a southeasterly direction two hundred seventy-eight and thirty-nine hundredths (278.39) feet to a point, said point being the intersection of Read Street and Bell Street;

Thence running in a southerly direction, along the westerly sideline of Bell Street, twenty-one and five tenths (21.5) feet to a point;

Thence in a southwesterly direction and continuing along the westerly sideline of Bell Street, forty and twenty-five hundredths (40.25) feet to a point;

Thence running in a westerly direction seventy-six (76) feet to a point;

Thence, at an interior angle of ninety degrees (90°) from the last mentioned course, running in a northerly direction fifty (50) feet to a point;

Thence, at an exterior angle of ninety degrees (90°) from the last mentioned course, running in a westerly direction two hundred forty-four (244) feet to the easterly sideline of Forest Avenue;

Thence running in a northerly direction, along the easterly sideline of Forest Avenue, two hundred fourteen and fifteen hundredths (214.15) feet to the point begun at.

The Premises are conveyed subject to the rights and easements set forth in that certain Amended and Restated Gas Easement Deed from the Grantor herein dated November 9, 2015 and recorded in said Registry of Deeds in Book 32746, Page 142 (amended and restating that certain Gas Easement Deed dated September 19, 2014 and recorded in said Registry of Deeds in Book 31788, Page 200), pursuant to which, among other things, Northern Utilities, Inc. retained ownership and other rights with respect to certain underground gas pipe lines and related appurtenances located at the Premises.

Received
Recorded Register of Deeds
Jul 01,2016 09:56:04A
Cumberland County
Nancy A. Lane

WARRANTY DEED
(Maine Statutory Short Form)

KNOW ALL MEN BY THESE PRESENTS, that **PIKE INDUSTRIES, INC.**, a Delaware corporation with a place of business and mailing address at 58 Main Street, Westbrook, Maine 04092 ("Grantor"), for consideration paid, hereby grants to **UNIVERSITY OF NEW ENGLAND**, a Maine non-profit corporation with a mailing address of 11 Hills Beach Road, Biddeford, Maine 04005 ("Grantee"), with **WARRANTY COVENANTS**, those certain lots or parcels of land, together with any buildings and improvements thereon, situated in Portland, Cumberland County, Maine, being more particularly described on **Exhibit A** attached hereto and incorporated herein by reference (the "Premises").

MAINE REAL ESTATE TAX PAID

The following restrictions shall run with the land, shall inure to the benefit of the Grantor, and its successors and assigns, and shall be binding upon the Grantee, and its successors and assigns:

1. The Grantee covenants and agrees that the Premises shall not be used for excavation of earth materials, crushing of rock and other materials, production of hot-mix asphalt or other similar products (e.g., cement, ready mix concrete, etc.), storage of earth materials and/or hot-mix, cement or ready-mix products or the sale (retail or wholesale) and distribution of such materials from the Premises or the use of such material or existing processed material unless such excavation and/or use of such materials is for the benefit of the Grantee on the Premises or on contiguous land in common ownership of the Grantee.

2. In the event of a violation of any or all of this restrictive covenant, the Grantor, in addition to all other remedies available to it, may obtain an injunction against the Grantee issued by a court of competent jurisdiction enjoining such breach and shall be entitled to recover its costs and expenses, including, but not limited to, reasonable attorney's fees in the enforcement or defense of the restrictions or any of them.

Being parcels 2 and 3 in the deed of Oldcastle Materials, Inc. to Pike Industries, Inc. dated March 20, 2002, and recorded in the Cumberland County Registry of Deeds in Book 17835, Page 301.

IN WITNESS WHEREOF, the Grantor has caused this instrument to be signed and sealed this 28th day of February, 2012.

WITNESS:

PIKE INDUSTRIES, INC.

By: Brian J Donovan
Print/type name: Brian J. Donovan
Its: Authorized Agent

STATE OF MAINE
CUMBERLAND, ss.

February 28, 2012

Then personally appeared the above named Brian J. Donovan, its Authorized Agent, of Pike Industries, Inc. who acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said Pike Industries, Inc.

Before me,

P. J. Van Hemel

~~Notary Public~~ / Maine Attorney-at-Law
Name Printed: Peter J. Van Hemel
My Commission Expires: _____

H:\DOCS\RATTEY\PIKE\UNE 39662\MSFWDEED3.DOC

EXHIBIT A

TRACT 1

A certain lot or parcel of land in the Morrill's Corner region of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Commencing at a point or stake standing on the old southerly line of the Portland & Rochester Railroad, now the Portland Terminal Company, and at a point where the same intersects with land formerly of Franklin M. Purington,

THENCE South 65 3/4° West 108 Rods 15 Links, more or less, to land now owned by the City of Portland;

THENCE North 24 1/4° West 5 Rods 16 Links, more or less, to a stake;

THENCE South 65 3/4° West 34 Rods 9 Links, more or less, to a stake standing on land owned by said City;

THENCE North 11° West 11 Rods 7 Links, more or less, to a stake, standing on land formerly owned by Hiram Sawyer;

THENCE North 61 1/2° East 107 Rods, more or less, to line of said location of Portland & Rochester Railroad;

THENCE by the line of said Railroad on its southerly side as aforesaid 83 1/4° East 38 1/2 Rods, more or less, to the place of beginning.

EXCEPTING from the above described premises, the premises conveyed by Adam W. Wilson to City of Portland by deed dated March 25, 1889, and recorded in the Cumberland County Registry of Deeds in Book 556, Page 132; and the premises conveyed by Adam W. Wilson to Boston & Maine Railroad by deed dated April 4, 1907, and recorded in said Registry in Book 803, Page 232, and by deed dated August 5, 1910, and recorded in said Registry in Book 863, Page 137.

TRACT II

Another certain lot or parcel of land situated near Morrill's Corner in that part of Portland that was formerly Deering, in the County of Cumberland and State of Maine, lying adjacent to and lying northwesterly of the above described premises, being bounded and described as follows:

Beginning at the northwesterly corner of land formerly of one Smith, on the southerly side of land formerly of Portland & Rochester Railroad, now the Portland Terminal Company, and running South 62° West 106 Rods to land of Portland Cemetery;

THENCE northwesterly by said Cemetery lot 30 Rods to the Old Kenney lot;

THENCE North 52 1/2° East by said Kenney's lot 49 Rods 2 Links to the Portland Terminal Company railroad land, formerly of the Portland & Rochester Railroad;

THENCE southeasterly by said Portland Terminal Company location 70 Rods to the first mentioned bounds or place of beginning.

EXCEPTING, however, from the above described premises two certain pieces or parcels of land, that first being 200 feet in length by 28 feet in width and lying parallel with the above-mentioned railroad, said parcel being conveyed by F.O.J. Bodge to Boston & Maine Railroad by warranty deed November 20, 1907, and recorded in the Cumberland County Registry of Deeds in Book 817, Page 29; and the second being a strip along a portion of the southeasterly and southwesterly side thereof, being conveyed by Lewis Lumber Co. to Central Maine Power Company by deed dated November 23, 1951, and recorded in said Registry in Book 2067, Page 107.

Both tracts are conveyed subject to the rights acquired for a sewer by the City of Portland by taking dated May 26, 1944, and recorded in the office of the City Clerk of the City of Portland, Maine, in Vol. 66, Page 263.

Also excepting the land described in the deed from Tilcon Minerals, Inc. to the City of Portland dated November 22, 1996, recorded in the Cumberland County Registry of Deeds in Book 12886, Page 212.

The premises are conveyed subject to the following rights and easements:

1. Rights and easements granted by Warren Bros. Roads Co. to Central Maine Power Company by instrument dated June 19, 1952, and recorded in the Cumberland County Registry of Deeds in Book 2097, Page 221.

2. Rights and easements granted by Warren Brothers Roads Company to Central Maine Power Company and New England Telephone and Telegraph Company by instrument dated January 27, 1967, and recorded in the Cumberland County Registry of Deeds in Book 2996, Page 102.

3. Rights and easements granted by Warren Brothers Co. to Portland Water District by instrument dated December 15, 1977, and recorded in the Cumberland County Registry of Deeds in Book 4150, Page 72.

4. Rights and easements granted by Warren Bros., a Div. of Ashland-Warren Inc. to Central Maine Power Company and New England Telephone and Telegraph Company by instrument dated January 31, 1978, and recorded in the Cumberland County Registry of Deeds in Book 4239, Page 326.

5. Rights and easements granted by Tilcon Minerals, Inc. to the City of Portland by deed dated November 22, 1996, and recorded in the Cumberland County Registry of Deeds in Book 12886, Page 214.

6. Rights and easements granted by Lewis Lumber Company to Central Maine Power Company by instrument dated November 23, 1951, and recorded in the Cumberland County Registry of Deeds in Book 2067, Page 106.

7. Rights, easements, and exceptions set forth in deed from Rosa Lewis to Warren Brothers Roads Company dated May 26, 1962, recorded in said Registry of Deeds in Book 2676, Page 74.

H:\DOCS\RATTEY\Pike\UNE 39662\EXHIBIT A.docx

Received
Recorded Register of Deeds
Mar 02,2012 11:36:47A
Cumberland County
Pamela E. Lovley

KNOW ALL MEN by these Presents, That

I Oliver Buckley of Westbrook in the County of Cumberland & State of Maine Esquire

in consideration of the sum of two hundred dollars paid by Francis O. J. Smith Esq (Treasurer of the Westbrook Seminary) of Westbrook in the County of Cumberland & State of Maine the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Treasurer and his Successors in Office

~~heirs and assigns~~ forever a certain lot of land situate in said Westbrook and bounded as follows. Viz beginning at a stake running North twenty six degrees East (on a ridge the same being the dividing line between land owned by Zachariah B. Stevens, and on the Western side of the County road twenty one rods eleven links thence South sixty five degrees East nine rods thence North fifteen degrees East four rods and five links thence North sixty nine degrees West thirty three rods thirteen links thence South twenty six degrees West twenty five rods thence South sixty nine degrees East twenty five rods to the first mentioned bounds containing four acres and twenty rods the conditions of this conveyance is such if the contemplated Westbrook Seminary shall not go into operation this deed is void, by my refunding the money I shall have received. The Trustees of the Seminary are to build and maintain a good and lawful fence between their lot and any land adjoining so longas the Seminary exists.

TO HAVE AND TO HOLD the aforegranted and bargained premises, with all the privileges and appertenances thereof, to the said Treasurer and his Successors in Office ~~heirs and assigns~~, to their use and behoof forever. And I do covenant with the said Treasurer & his Successors in office ~~heirs and assigns~~, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Treasurer & his Successors in Office to hold as aforesaid; and that I and my heirs shall and will warrant and defend the same to the said Treasurer & his Successors in Office ~~heirs and assigns~~ forever, against the lawful claims and demands of all persons.

IN WITNESS WHEREOF, I the said Oliver Buckley have hereunto set my hand and seal this twelfth day of January in the year of our Lord one thousand eight hundred and thirty two

SIGNED, SEALED AND DELIVERED, IN PRESENCE OF
Geo Bishop
Samuel Brimblecom

Oliver Buckley LL

CUMBERLAND, SS. January 12th 1832 Personally appeared Oliver Buckley and acknowledged the above instrument to be his free act and deed.—Before me,

Geo Bishop *Justice of the Peace.*

RECEIVED, January 17 1832, and recorded from the original, by
Samuel Small *Register.*

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KNOW ALL MEN by these Presents, That

I James Hicks of Westbrook in the County of Cumberland and State of Maine Gentleman

in consideration of the sum of one hundred and twenty dollars paid by Francis O. J. Smith Esqr (Treasurer of the Westbrook Seminary) of Westbrook in the County of Cumberland & State of Maine the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Treasurer and his Successors in Office ~~heirs and assigns~~ forever a certain lot of land situate in said Westbrook and bounded as follows viz beginning at the North Easterly corner of land owned by J. B. Stevens and on the Western side of the County road running North fifteen degrees East six rods and two links thence North sixty nine degrees East twenty rods thence South fifteen degrees West six rods and two links thence South sixty nine degrees East twenty rods to the first mentioned bounds containing one hundred and twenty one rods the conditions of this conveyance is such if the contemplated Westbrook Seminary should not go into operation this deed is void by my refunding the money I shall have received. The Trustees of the Seminary are to build and maintain a good and lawful fence between their lot and my land adjoining so long as the Seminary exists

TO HAVE AND TO HOLD the aforegranted and bargained premises, with all the privileges and appertenances thereof, to the said Treasurer and his Successors in Office ~~heirs and assigns~~, to their use and behoof forever. And I do covenant with the said Treasurer his Successors in Office ~~heirs and assigns~~, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Treasurer his Successors in Office to hold as aforesaid; and that I and my heirs shall and will warrant and defend the same to the said Treasurer and his Successors in Office ~~heirs and assigns~~ forever, against the lawful claims and demands of all persons.

IN WITNESS WHEREOF, I the said James Hicks with Sophia my wife who hereby relinquishes her right to dower in the above premises have hereunto set our hand and seal this 12th day of January in the year of our Lord one thousand eight hundred and thirty two

SIGNED, SEALED AND DELIVERED, IN PRESENCE OF
Geo Bishop
Samuel Brimblecom

James Hicks L.S.
Sophia Hicks L.S.

CUMBERLAND, SS. January 12th 1832. Personally appeared James Hicks and acknowledged the above instrument to be his free act and deed.—Before me,

Geo Bishop *Justice of the Peace.*

RECEIVED, January 17 1832, and recorded from the original, by

Samuel Small *Register.*

KNOW ALL MEN by these Presents, That

We Zachariah B. Stevens ~~Thoir Pownell by her Hartley Gilbert~~ & Hannah all of Westbrook in the County of Cumberland and State of Maine Esqrs

in consideration of the sum of One hundred and thirteen dollars

paid by Francis O. J. Smith Esq Treasurer of the Westbrook Seminary of Westbrook in the County of Cumberland State of Maine

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Treasurer and his Successors in Office

~~heirs and assigns~~ forever a certain lot of land situate in said Westbrook and bounded as follows viz beginning at a post near the North Easterly corner of my now dwelling house and on the Western side of the County road running North fifteen degrees East ten rods and three links thence North sixty nine degrees West twenty rods thence North fifteen degrees East one rod and fourteen links thence North sixty five degrees West twelve rods and nineteen links thence South twenty six degrees West fourteen rods and four links thence South seventy two degrees East thirty five rods to the first mentioned bounds containing two acres and seventy three rods the conditions of this conveyance is such if the contemplated Westbrook Seminary should not go into operation this deed is void by my refunding the money I shall have received. The Trustees of the Seminary are to build and maintain a lawful good fence between their lot and my land adjoining so long as the Seminary exists

TO HAVE AND TO HOLD the aforegranted and bargained premises, with all the privileges and appertenances thereof, to the said Treasurer & his Successors in Office ~~heirs and assigns~~, to their use and behoof forever. And I do covenant with the said Treasurer & his Successors in Office ~~heirs and assigns~~, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Treasurer to hold as aforesaid; and that I and my heirs shall and will warrant and defend the same to the said Treasurer & his Successors in Office ~~heirs and assigns~~ forever, against the lawful claims and demands of all persons.

IN WITNESS WHEREOF, I the said Zachariah B. Stevens with my wife Miriam who hereby relinquishes her right to dower in and to said premises have hereunto set our hands and seals this twelfth day of January in the year of our Lord one thousand eight hundred and thirty two

SIGNED, SEALED AND DELIVERED, IN PRESENCE OF

Geo Bishop
Samuel Brimblecom

Z. B Stevens LS
Miriam Stevens LS

CUMBERLAND, SS. January 12th 1832 Personally appeared Zachariah B. Stevens and acknowledged the above instrument to be his free act and deed.—Before me,

Geo Bishop *Justice of the Peace.*

RECEIVED, January 17 1832, and recorded from the original, by

Samuel Small *Register.*

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Know all Men by these Presents, That We Zachariah B. Stevens. Oliver Buckley Levi Hersey and Stillman S. Hersey all of Westbrook in the County of Cumberland and State of Maine Gentlemen in consideration of ten dollars paid by Francis O. J. Smith Esq Treasurer of the Westbrook Seminary of Westbrook in the County of Cumberland State of Maine the receipt whereof I do hereby acknowledge, do hereby remise, release, bargain, sell and convey, and forever quitclaim unto the said Treasurer and his successors in Office ~~heirs and assigns~~ forever, all the right, title and interest in and to a certain lot of land situate in said Westbrook, and bounded as follows viz beginning at a stake near the Northwest corner of land owned by James Hicks and on the western side of the County road and running North fifteen degrees East four rods and thirteen links, thence North sixty nine degrees West three rods twelve links thence South fifteen degrees West four rods five links thence South sixty five degrees East three rods sixteen links to the first mentioned bounds containing fifteen rods. the conditions of this conveyance is such if the contemplated Westbrook Seminary should not go into operation this deed is void. The Trustees of the Seminary are to build a good lawful fence between their lot and our land adjoining and maintain the same as long as the Seminary exists. The intention of the parties interested is to convey to the Westbrook Seminary all the land included in the plan of the site of said Seminary made by S. B. Stevens of which the title is vested in either of said parties

TO HAVE AND TO HOLD THE SAME, together with all the privileges and appurtenances thereunto belonging, to the said Treasurer and his Successors in Office ~~heirs and assigns~~ forever. And We do covenant with the said Treasurer his successors in Office ~~heirs and assigns~~, that We will warrant and forever defend the premises to the said Treasurer and his successors in Office ~~heirs and assigns~~ forever, against the lawful claims and demands of all persons claiming by, through, or under ~~us.~~ us

IN WITNESS WHEREOF, We the said Zachariah B. Stevens. Oliver Buckley Levi Hersey and Stillman S. Hersey have hereunto set our hands and seals this twelfth day of January in the year of our Lord one thousand eight hundred and thirty-two

SIGNED, SEALED AND DELIVERED IN PRESENCE OF
Geo Bishop
Samuel Brimblecom

Z. B. Stevens L.S.
Oliver Buckley L.S.
Levi Hersey L.S.
S. S. Hersey L.S.

Cumberland ss.—January 12th 1832 Personally appeared Z B. Stevens. Oliver Buckley Levi Hersey and S. S. Hersey and acknowledged the above instrument to be their free act and deed—BEFORE ME,

Geo Bishop Justice of the Peace.

RECEIVED January 17th 1832 and recorded from the original by
Samuel Small REGISTER.

advertisement in said public paper.

Attest: Eben Leach Register

Received January 9th 1868. at 11h. 55m. A.M. and recorded according to the original. the same being endorsed on mortgage deed recorded in Book 350 Page 344.

Attest: Eben Leach, Register

Pierce
to
Trustees of
Westbrook Seminary

U. S. I. R.
Fifty Cents
C. S. P.
Oct. 19th 67

Know all men by these presents. that I. Cordelia S. Pierce. of Westbrook, in the County of Cumberland, and State of Maine. in consideration of three hundred sixty eight dollars. paid by the Trustees of Westbrook Seminary. the receipt whereof is hereby acknowledged. do hereby give. grant. bargain. sell, and convey. unto the said Trustees, their successors forever. a lot of land situated in said Westbrook. on the Westerly side of the County road leading over Stevens Plains. and bounded as follows viz: Beginning on said road, and at the South-easterly corner of the said Westbrook Seminary lot: thence Southerly on the line of said road. twenty feet to a stake: thence Westerly, on a line parallel with said Seminary lot. and holding the width of twenty feet from said Seminary lot. until it reaches the back line of said Cordelia's land, and strikes the said Seminary lot: thence Northerly on the line of said Seminary lot. twenty feet to a corner: thence on the dividing line. between said Seminary lot. and these premises. forty rods. more or less. to said County road. and first bound mentioned. Said Trustees are to make and maintain a suitable fence between the premises hereby conveyed and adjoining land. No building is to be placed on said premises. any nearer the dwelling house owned and now occupied by said Cordelia S. Pierce. than the Church now stands. which is partly on said premises. and no building is to be placed on said premises. any nearer the Plains road. than said Church now stands.

To have and to hold the above-granted premises, with all the privileges and appurtenances to the same belonging. to the said Trustees. their successors and assigns. to their use and behoof forever. And I. the said Cordelia S. Pierce. for myself. and my heirs. executors. and administrators. do covenant with the said Trustees. their successors and assigns. that I am lawfully seized in fee-simple of the afore-granted premises: that they are free from all incumbrances: that I have good right to sell and convey the same. to the said Trustees, their successors and as-

-signs forever. as aforesaid: and that I will. and my heirs. executors and administrators shall warrant and defend. the same. to the said Trustees. their successors and assigns forever. against the lawful claims and demands of all persons.

In witness whereof. I. the said Cordelia S. Pierce) have hereunto set my hand and seal. this ninth day of October. in the year of our Lord. eighteen hundred and sixty six.

Signed. sealed. and delivered in presence of us Grenville M. Stevens } Cordelia S. Pierce) Seal.

Cumberland ss. October 19th 1867: Then personally appeared the within-named Cordelia S. Pierce), and acknowledged the foregoing instrument to be her free act and deed.

Before me. Walter B. Goodrich). Justice of the Peace.

Received January 9th 1868 at 4h. 35m. P.M. and recorded according to the original.

Attest: Eben Leach. Register.

Bray et al to Green

This Indenture). made the 28th day of May. in the year of our Lord one thousand eight hundred and fifty nine. between Jefferson Bray and Sophia Bray his wife. of the City of Oshkosh. County of Winnebago and State of Wisconsin. of the first part. and Jary Green of Naples. County of Cumberland. State of Maine). of the second part.

Witnesseth. That the said parties of the first part. for and in consideration of the sum of fifty dollars. to them in hand paid. by the said party of the second part. the receipt whereof is hereby confessed. and acknowledged. have given. granted. bargained. sold. remised. released and quit-claimed) and by these presents do give. grant. bargain. sell. remise. release) and quit-claim. unto the said party of the second part. to his heirs and assigns forever. a certain piece or parcel of land situated in said Naples. and is a part of lot numbered one hundred and thirteen (113). on the Mc Arthur Gore. so called. and is a strip of land forty rods wide. bounded Southerly by land heretofore conveyed to Harrison O. Knight. and Northerly by a line forty rods distant from. said Knights Northerly line. and running parallel with said Knights Northerly line. and lies between Trickey Pond and William Berry's lands. containing twenty acres. be the same more or less.

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Piece
To
Westbrook Seminary

Know all Men by these Presents, That

I bordelia S. Pierce of Deering, in the County of Cumberland and State of Maine, Widow,
in consideration of the sum of Three Hundred Twenty Six & 78/100 Dollars paid by
the Westbrook Seminary, an Institution, duly incorporated by law and located at said Deering.
the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said
Westbrook Seminary, its Successors
~~heirs~~ and assigns forever, A certain lot of land situated in said Deering bounded and described as follows, Commencing at the corner made by the intersection of land of Freeman Porter, land of Evergreen Cemetery and the lot hereby conveyed, being the Northerly corner of said Porters homestead lot, Thence by said Cemetery land N. 30° E. 4 rods and 3 links to a point, Thence by said Seminary land N. 28° 30' E. 5 rods and 20 links to a corner, Thence by said Seminary land S. 70° 30' E. 6 rods to a corner, Thence S. 29° W. 10 rods, and 14 links to said Porters homestead lot, Thence by said Porters land, N. 63° W. 6 rods to the point of beginning, Being the Northerly portion of my homestead lot, and containing 16.339 Square feet,

To have and to hold the aforegranted and bargained Premises, with all the privileges and appurtenances thereof, to the said Westbrook Seminary, its Successors
~~heirs~~ and assigns, to their use and behoof forever. And I do covenant with the said
Grantee, its Successors
~~heirs~~ and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances:

that I have good right to sell and convey the same to the said Grantee, its Successors and assigns to hold as aforesaid; and that I and my heirs shall and will warrant and defend the same to the said Grantee, its Successors,
~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said bordelia S. Pierce
~~and of the said~~
~~in testimony of relinquishment of right of dower in the above described premises,~~ have hereunto set my hand and seal this Second day of October in the year of our Lord one thousand eight hundred and eighty two
Signed, Sealed and Delivered
in presence of
F. G. Stevens bordelia S. Pierce, Seal

~~State of Maine,~~ CUMBERLAND, ss. Oct. 2 1882 Personally appeared
the above named bordelia S. Pierce
and acknowledged the above instrument to be her free act and deed.
Before me, Frank G. Stevens, JUSTICE OF THE PEACE.
Received Oct 4 1882, at 10 o'clock 40 m., A. M., and recorded according to the original.
ATTEST, Frank G. Stevens. REGISTER.

Received September 22, 1904, at 11 h, 10 m. A. M., and recorded according to the original
Attest Ray P. Eaton Register

Pierce
T.
Westbrook
Seminary
et
al

Devise

Abstract of the Will of Cordelia S. Pierce

State of Maine.

Cumberland ss. Probate Office.

Portland, Sept. 20. A. D. 1904.

I, Joseph B Reed, Register of the Probate Court, in and for said County, hereby certify that the last Will and Testament and Codicils of Cordelia S. Pierce late of Portland in said County, deceased, was proved, approved and allowed by the Judge of Probate for said County, at a Court held at Portland, on the tenth day of September A. D. 1904; and that the following is a true copy of so much of said Will and Codicils as devises Real Estate in the County aforesaid:

Fourteenth- I give and devise to Westbrook Seminary, its successors and assigns, the lot of land back of my homestead place in that part of said Portland which was formerly Deering, extending from the Easterly boundary line of land of said Seminary one hundred and twenty-five (125) feet to a line parallel with the aforesaid Easterly boundary of said Seminary's land, said last named line extending Southerly from other land of said Seminary to my Southerly boundary.

Fifteenth- I give and devise my homestead place where I now reside in said Portland extending back to the lot devised to the Westbrook Seminary in the section immediately preceding this, in trust to Cyrus O. Varney and Walter F. Goodrich, both of said Portland for a parsonage for "All Souls' Church" so called, on Stevens Plains Avenue in said Portland; reserving however to Ella Louise Fernald, before named, the privilege of occupying the upper tenement of the house, rent free, until she acquires a permanent home elsewhere; and to Mrs. Sarah B. Ballard above mentioned, the privilege of remaining in the lower tenement, rent free, during her life-time, provided she is living in said house at the time of my decease. The expenses of keeping said homestead in repair and providing for insurance and taxes are to be borne equally by Mrs. Sarah B. Ballard and Ella Louise Fernald, aforesaid; the said Trustees to determine what repairs are necessary and see that the same are made.

After the decease of Mrs. Sarah B. Ballard, the said Society of all Souls' Church shall assume all the expenses of said homestead.

Twentieth- I give and devise to Harry C. Stevens, son of Clifton Stevens, aforesaid, his heirs and assigns, a lot of land in said Portland adjoining the Unity club lot, East of the Rufus Dunham estate running East seven-

Cordelia S. Pierce (Deed)

ty-five(75) feet and thence South to the line of land of Alfred Stevens heirs;
Twenty-eighth: All the rest, residue and remainder of my estate, real, personal and mixed wherever found and however situated, I give, bequeath and devise in equal shares to Mrs. Sarah B. Ballard, Minnie Ballard York, Samuel R. Stevens, and Fannie R. Stevens hereinbefore mentioned their heirs and assigns forever.

Lastly: I hereby nominate and appoint Cyprus B. Varney of said Portland Executor of this my last will and testament, and request that he be not required to give any bond for the faithful execution of his said trust; and I also hereby revoke all former wills by me made.

Codicil. Third: For the reason that Mrs. Sarah B. Ballard has deceased and Ella Louise Fernald has attained the age of more than twenty-one years since the making of my said will, I hereby revoke the fifteenth section of my said will; and instead thereof, I hereby give and devise my homestead place described in said fifteenth section to said Ella Louise Fernald during the term of her natural life on condition that she pay to the society of "All Souls" Church named in said fifteenth section, the sum of six hundred dollars and to the executor of my said will the sum of four hundred dollars to be by him added to the residue of my estate, and distributed according to the residuary clause being the twenty eighth section of my said will as altered by this codicil; and I make the further condition that should the said Ella Louise marry her husband shall have no voice and take no part in the management and control of said homestead place. At the decease of the said Ella Louise Fernald I give and devise my said homestead place for a parsonage to said society of "All Souls" Church, its successors and assigns forever.

Fifth: The twentieth section of my said will wherein a certain lot of land is devised to Harry L. Stevens, is hereby confirmed except that said lot is hereby given and devised as running East seventy (70) feet instead of seventy five(75) feet and provided in said will.

Twenty eighth: All the rest residue and remainder of my estate, real, personal and mixed, wherever found and however situated, I give bequeath and devise to Samuel R. Stevens, Frances R. Stevens and Minnie Ballard York hereinbefore mentioned, their heirs and assigns forever.

Twelfth: In all other respects, except as altered or revoked by this codicil, I hereby ratify and confirm my said last will and testament made and executed on the second day of August A.D. 1899 aforesaid, and all the provisions thereof.

Codicil 3. Whereas I Cordelia A. Pierce of Portland in the County of Cumberland and State of Maine on the third day of June 1904 made and executed a codicil to my last will and testament dated the second day of August, 1899, now I do make this further codicil to my said

will to be taken with, and construed, as a part thereof to wit: I hereby add to the third section of said first codicil the following words, viz. But the said Ella Louise Fernald is hereby authorized and empowered at any time during her natural life to sell and convey by her own warranty deed so much of the land adjacent to my said homestead lot as lies westerly from, and in the rear of land of Mrs. Susie Whitman and of the same width of said Whitman lot taking the proceeds of such sale for her own benefit and use.

Witness my hand and the Seal of the Probate Court for said County of Cumberland, the day and year first above written.

Joseph B. Reed

Register.

Received, September 22, 1904, at 11h. 10m. A.M., and recorded according to the original

Attest Ray P. Cotton Register

Emery
To
Boyd et

Abstract of the Will of
Charlotte G. Emery
State of Maine.

Cumberland, ss Probate Office

Portland, Sept. 20, A.D. 1904.

Devise

I, Joseph B. Reed, Register of the Probate Court in and for said County, hereby certify that the last Will and Testament of Charlotte G. Emery late of Portland in said County, deceased, was proved, approved and allowed by the Judge of Probate for said County, at a Court held at Portland, on the tenth day of September, A.D. 1904; and that the following is a true copy of so much of said Will as devises Real Estate in the County aforesaid:

Second. I hereby give, devise and bequeath to my nephew Nicholas Emery Boyd, his heirs and assigns forever, in addition to any interest which I may possibly have in the bonds and personal estate, the one third interest in Nicholas Emery Homestead and the house and lot on Taylor Street, and the furniture in the said Emery Homestead house given to said Nicholas by will of his late mother, Theresa O. Boyd, and in which a life interest was given to me; the two lots of land lying between Danforth and Taylor Streets in said Portland and numbered three (3) and fifteen (15) on a Plan of Lots recorded in Cumberland Registry of Deeds, Plan Book 3, Page or Plan 27, which Plan is hereby referred to; Also one thousand dollars in money if there be so much money remaining of my own at the time of my decease.

Third. I hereby give, bequeath and devise to my niece, Julia Webster

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Know all Men by these Presents, That

I, Will W. Johnson, called as Grantee in my title deed to the premises hereby conveyed William W. Johnson, of the City of Portland, in the County of Cumberland, State of Maine,
in consideration of one dollar and other valuable and sufficient consideration, paid by Ruth S. Johnson, of said Portland, my wife,
the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said

See Book 3520 Page 128

Ruth S. Johnson, her heirs and assigns forever, a certain lot or parcel of land with the buildings by us erected thereon situated in said City on the Northwardly side of College Street, and bounded as follows: Commencing at a granite post standing on the Northwardly side line of said College Street and located two hundred feet more or less Westwardly of a lot of land conveyed by James P. Weston to C. A. Hayden by deed dated Oct. 6, 1881, and recorded in Cumberland County Registry of Deeds, in Book 485, Page 77; and from said granite post running by a line N. 26° E. one hundred and sixty-five feet to land now or formerly of the Portland Street Railroad Company; thence by line between this land and said Railroad Company land Southeastwardly fifty-three feet to a point; thence S.26°W. one hundred sixty-three and 1/10 -163.1- feet to said side line of College Street and thence on said Street line N. 64° W. fifty-three feet to the granite post and point of commencing. Being the same lot of land with said buildings now thereon which was conveyed to me by Warranty deed from Adela S. Adams, the widow and the heir at law of John M. Adams, dated August 22d, 1906, and recorded in said Registry in Book 801, Page 367.

U.S.I.R.
$3.00
W.W.J.
28/10/15

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Ruth S. Johnson, her heirs and assigns, to her and their use and behoof forever. And I do covenant with the said grantee, her heirs and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; save mortgage to Portland Savings Bank;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, her heirs and assigns forever, against the lawful claims and demands of all persons, save said mortgage.

In Witness Whereof, I the said Will W. Johnson, have hereunto set my hand and seal this twenty-eighth day of October in the year of our Lord one thousand nine hundred and fifteen.

Signed, Sealed and Delivered in presence of

Henry W. Swasey, Will W. Johnson, Seal

State of Maine, CUMBERLAND, ss. October 28th, 1915. Then Personally appeared the above named Will W. Johnson, and acknowledged the above instrument to be his free act and deed.

Before me, Henry W. Swasey, *Justice of the Peace.*

Received February 19, 1916, at 10 o'clock 15 m. A. M., and recorded according to the original.

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Know all Men by these Presents, That

I, Frank B. Shepherd, of Portland, in the County of Cumberland and State of Maine,

in consideration of one dollar and other valuable consideration, paid by Charles A. Berry and Ethel N. Berry, both of said Portland, the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Charles A. Berry and Ethel N. Berry as joint tenants and the survivor of them their assigns, and the heirs and assigns of the survivor of them forever, a certain lot or parcel of land, with the buildings thereon, situated in said Portland, bounded and described as follows: Commencing at the westerly side of Stevens Avenue, at the southeasterly corner of land of Whitman; thence southerly by said Stevens Avenue ninety-two (92) feet, more or less, to a point forty (40) feet northerly from the northeasterly corner of land of Evergreen Cemetery; thence westerly by the northerly line of a proposed street and keeping a distance of forty (40) feet from the Evergreen Cemetery northerly line, one hundred fifty-five (155) feet to a stake; thence northerly, at right angles to said last described course, to land of said Whitman; thence easterly by said Whitman land to the point of beginning. Being a part of the premises conveyed to me by Abbie Frances Leighton, by deed dated July 19th, 1920, and recorded in Cumberland County Registry of Deeds, Book 1061, Page 75, together with the right to pass and re-pass over said proposed street.

See Book 2857 Page 332

See Book 3169 Page 813

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenance thereof, to the said Charles A. Berry and Ethel N. Berry as joint tenants and the survivor of them, their assigns and the heirs and assigns of the survivor of them, ~~heirs and assigns~~, to their use and behoof forever. And I do covenant with the said Grantees as joint tenants and the survivor of them, their heirs and assigns, and the heirs and assigns of the survivor of them, that I am lawfully seized in fee of the premises; that they are free of all encumbrances;

that I have good right to sell and convey the same to the said Grantees, to hold as aforesaid; and that I and my heirs shall and will warrant and defend the same to the said Grantees, as joint tenants and the survivor of them, their assigns, and the heirs and assigns of the survivor of them forever against the lawful claims and demands of all persons. ~~heirs and assigns forever, against the lawful claims and demands~~

In Witness Whereof, I the said Frank B. Shepherd, unmarried, have hereunto set my hand and seal this twentieth day of December in the year of our Lord one thousand nine hundred and twenty.

Signed, Sealed and Delivered in presence of

U.S.I.R. $4.50 F.B.S. 12/20/20

Harry L. Cram to F.B.S. Frank B. Shepherd Seal.

State of Maine, CUMBERLAND, ss. Portland, December 20, 1920. Personally appeared the above named Frank B. Shepherd and acknowledged the above instrument to be his free act and deed.

Before me,

Harry L. Cram, *Justice of the Peace.*

Received December 20, 1920, at 10 o'clock 26 m. A. M., and recorded according to the original.

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Know all Men by these Presents, That

We, Alice Roberts Goold of Portland in the County of Cumberland and State of Maine, and George C. Roberts of Lisbon Falls in the County of Androscoggin and State of Maine,

in consideration of One dollar and other valuable considerations, paid by Westbrook Seminary, a corporation organized and existing under the laws of Maine and located at Portland in said County of Cumberland and State of Maine,

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Westbrook Seminary,its successors and assigns forever, a certain lot or parcel of land with the buildings thereon,situated on the northwesterly corner of College Street and Stevens Avenue in that part of Portland formerly Deering,in said County of Cumberland and State of Maine,bounded and described as follows: Beginning at said northwesterly corner of College Street,formerly known as Seminary Street, and Stevens Avenue and running westerly on the northerly side of said College Street one hundred (100) feet; thence running northerly in a line parallel to said Stevens Avenue by land now or formerly of Lydia J. Snow ninety (90) feet;thence running easterly in a line parallel to said College Street by land now or formerly of said Lydia J. Snow to the westerly side of said Stevens Avenue one hundred (100) feet;thence running southerly on the westerly side of said Stevens Avenue ninety (90) feet to the point of beginning.Being a part of the same premises conveyed to Lydia J. Snow by Joseph C. Snow by warranty deed dated December 13, 1880,recorded in Cumberland County Registry of Deeds, Book 478, Page 428,and the same premises conveyed by said Lydia J. Snow to Arabella W. Roberts by deed dated September 6, 1901, recorded in said Registry of Deeds, Book 705,Page 312, and said premises are conveyed subject to the right of drainage and right to maintain sewer therein reserved. Our title to said premises was acquired as devisees under the last will and testament of William W. Roberts,late of said Portland, deceased,extract from whose will is recorded in said Registry of Deeds, Book 1058,Page 368. Said premises are conveyed subject to taxes for the year 1923 which the Grantee hereby assumes and agrees to pay as a part of the consideration hereof.

U.S.I.R
$8.00
A.R.G.
G.C.R.
May 28/23

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Westbrook Seminary,its successors ~~heirs~~ and assigns, to --- and their use and behoof forever. And we do covenant with the said Grantee, its successors ~~heirs~~ and assigns, that we lawfully seized in fee of the premises; that they are free of all incumbrances; except as aforesaid; that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs, shall and will warrant and defend the same to the said Grantee,its successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons. except as aforesaid.

In Witness Whereof, we the said Alice Roberts Goold and George C.Roberts and we, Allan O. Goold,husband of the said Alice Roberts Goold, and Nancy K. Roberts wife of the said George C. Roberts joining in this deed as Grantors, and relinquishing and conveying our right by descent and all other rights in the above described premises have hereunto set our hand sand seals this twenty-eighth day of May in the year of our Lord one thousand nine hundred and twenty-three.

Signed, Sealed and Delivered in presence of

Roscoe Phillips to A.R.G. A.O.G.

Ada S. Gilkey for both

Alice Roberts Goold Seal.
Allan O. Goold Seal.
Geo. C. Roberts Seal.
Nancy K. Roberts Seal.

State of Maine, CUMBERLAND, SS. May 28th, 1923. Personally appeared the above named Alice Roberts Goold and acknowledged the above instrument to be her free act and deed.

Before me, Roscoe Phillips, *Justice of the Peace.*

Received May 28, 1923, at 10 o'clock 45 m. A. M., and recorded according to the original.

Know all Men by these Presents, That

I, Charles A. Tracy, of Raymond, in the County of Cumberland and State of Maine,

in consideration of one dollar and other valuable consideration, paid by Westbrook Seminary and Junior College, a corporation organized and existing under the laws of the State of Maine and located at Portland, in said County and State,
the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Westbrook Seminary and Junior College, its successors and assigns forever, a certain lot or parcel of land, together with the buildings thereon, situated in said Portland and bounded and described as follows: Beginning at a point on the westerly side line of Stevens Avenue, so-called, ninety feet (90') northerly of the northerly corner of Stevens Avenue and College Street; thence westerly by an angle to the left of eighty-four degrees and nine minutes (84° 09') one hundred and three and ninety-seven one hundredths feet (103.97') to a point at an iron fence; thence northerly by an angle to the right of eighty-six degrees and sixteen minutes (86° 16') and by said iron fence and continuation thereof, sixty-three and sixty-five one hundredths feet (63.65') to land now or formerly of Justina O'Brion;thence easterly by an angle to the right of eighty-seven degrees and forty-six minutes (87° 46') and by said land now or formerly of Justina O'Brion one hundred and one and twelve one hundredths feet (101.12') to said Stevens Avenue; thence southerly by said westerly side line of Stevens Avenue seventy-four and forty-nine one hundredths feet (74.49') to point of beginning.

Being the same premises conveyed by Thalia L. Clement to Victor Brewster by deed dated October 19, 1908 and recorded in Cumberland County Registry of Deeds in Book 831, Page 38, and devised by said Victor Brewster to Elias Brewster, an abstract of the will of Victor Brewster being recorded in said Registry of Deeds in Book 1306, Page 44. Said Elias Brewster devised said property to the grantor herein, an abstract of the will of Elias Brewster being recorded in said Registry of Deeds in Book 1570, Page 448.

U.S.I.R.
$7.15
C.A.T.
2/23/43

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Westbrook Seminary and Junior College, its successors

~~heirs~~ and assigns, to its and their use and behoof forever. And I do covenant with the said Grantee, its successors
~~heirs~~ and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances;

that I have good right to sell and convey the same to the said Grantee
to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said
Grantee, its successors
~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said Charles A. Tracy, and I, Nellie I. Tracy, wife of the said Charles A. Tracy, joining in this deed as Grantor, and relinquishing and conveying all right by descent and all other rights in the above described premises,

have hereunto set
our hands and seals this 23rd day of February in the year of our Lord
one thousand nine hundred and forty-three.

Signed, Sealed and Delivered in presence of

E. P. Perkins — Charles A. Tracy Seal

to both — Nellie I. Tracy Seal

State of Maine, CUMBERLAND, SS. February 23, 1943 Personally appeared
the above named Charles A. Tracy
and acknowledged the foregoing instrument to be his free act and deed.
Before me, Elliot P. Perkins, Justice of the Peace

Received February 23 19 43, at 12 o'clock 1 m. P. M., and recorded according to the original.

Know all Men by these Presents, That

I, Addie H. Lowd, of Portland, in the County of Cumberland and State of Maine,

in consideration of one dollar and other valuable consideration, paid by Westbrook Seminary and Junior College, a corporation organized and existing under the laws of the State of Maine and located at Portland, in said County of Cumberland, the receipt whereof I do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Westbrook Seminary and Junior College, its successors and assigns forever, a certain lot or parcel of land with a dwelling house thereon, situated on the northerly side of College Street, in said Portland, numbered seventeen on said street and bounded as follows:

Beginning on the northerly side of College Street at the southwesterly corner of land formerly of J. C. Snow, now or formerly of George E. Donnelly; thence westerly by College Street eighty (80) feet to land now or formerly of Frances E. Skillin; thence northerly by land of Frances E. Skillin one hundred and thirty-nine (139) feet to land formerly of Captain Sargent, now or formerly of Justina B. O'Brien; thence easterly by land of Justina B. O'Brien eighty (80) feet to the northwesterly corner of said land now or formerly of George E. Donnelly; thence southerly by said land of George E. Donnelly one hundred forty-eight (148) feet to the place of beginning, containing 11,480 square feet, more or less.

Being the same premises conveyed to Fred Lowd and Roger W. Flint by deed dated June 30, 1927, recorded in Cumberland County Registry of Deeds, Book 1269, Page 183. Fred Lowd died August 22, 1940 leaving as his only heirs-at-law and next-of-kin, Addie H. Lowd, widow, Dorothy J. Flint, daughter, and Russell H. Lowd, son. Said Roger W. Flint, Dorothy J. Flint and Russell H. Lowd conveyed their interest in said premises to said Addie H. Lowd by deed dated September 3, 1940, recorded in said Registry, Book 1623, Page 395.

This conveyance is made subject to a certain mortgage given by Addie H. Lowd to Marguerite G. Davis, dated July 1, 1941, recorded in said Registry of Deeds in Book 1641, Page 250, on which there is due the principal sum of thirty-five hundred dollars ($3,500.00) and which the Grantee, as part of the consideration for this conveyance, assumes and agrees to pay.

Subject also to the 1944 taxes.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Westbrook Seminary and Junior College, its successors and assigns, to its and their use and behoof forever. And I do covenant with the said Grantee, its successors and ~~heirs and~~ assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; except as aforesaid; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its successors and ~~heirs~~ assigns forever, against the lawful claims and demands of all persons. except as aforesaid.

U.S.I.R. $1.65 A.H.L. 7/8/44

In Witness Whereof, I, the said Addie H. Lowd, widow, have hereunto set my hand and seal this 8th day of July in the year of our Lord one thousand nine hundred and forty-four.

Signed, Sealed and Delivered in presence of

Roger W. Flint — Addie H. Lowd Seal

State of Maine, CUMBERLAND, SS. July 8, 1944 Personally appeared the above named Addie H. Lowd and acknowledged the foregoing instrument to be her free act and deed.

Before me, Roger W. Flint, Notary Public Notarial Seal

Received July 11 1944, at 11 o'clock 45 m. A. M., and recorded according to the original.

All Souls Church Parish to Messiah-All Souls Universalist Church War.

KNOW ALL MEN BY THESE PRESENTS, That All Souls Church Parish, a corporation incorporated under the laws of Maine and located at Portland in the County of Cumberland, in consideration of one dollar and other considerations, paid by Messiah-All Souls Universalist Church, a corporation incorporated under the laws of Maine and located at said Portland, the receipt whereof it does hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Messiah-All Souls Universalish Church, its successors and assigns forever, a certain lot or parcel of land with the buildings thereon, located at No. 706 Stevens Avenue in said Portland, and bounded northerly by land now or formerly of Westbrook Junior College, formerly called Westbrook Seminary, and by land of the grantee westerly by land now or formerly of Westbrook Seminary now Westbrook Junior College; southerly by land now or formerly of Rev. Harrison S. Whitman, and easterly by said Stevens Avenue, being the parsonage premises conveyed to the grantor by the following deeds:
Casco Realty Improvement Company to All Souls Church Parish, dated October 10, 1924, recorded Cumberland County Registry of Deeds, Book 1168, Page 366;
Theodore Kerr to All Souls Church Parish, deed dated October 17, 1924, recorded Book 1168, Page 367;
Ella Louise Perry to All Souls Church Parish, deed dated October 17, 1924, recorded Book 1168, Page 368;
City of Portland to All Souls Church Parish, deed dated October 10, 1928, recorded Book 1300, Page 58.
The premises hereby conveyed are subject to a lease given by All Souls Parish to Ella Louise Perry, dated October 17, 1924, recorded Book 1204, Page 65, and the property is conveyed subject to the following conditions,- viz: that the property herein conveyed shall be and continue to be occupied and used as a parsonage or for other religious purposes, by a society or religious organization of the Universalist denomination; to-wit,-a religious society in direct fellowship with and acknowledging the ecclesiastical authority of the Maine Universalist Convention and of the Universalist Church of America; and it is an express condition of this deed that in case the use or occupation of the aforesaid property should be diverted from the aforesaid purpose for a period of one year, then in such case the Maine Universalist Convention may enter in and upon the premises, take possession thereof and thereafter shall own, hold, use and dispose of the same for general Universalist purposes in accordance with the powers of that corporation.

TO HAVE AND TO HOLD the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said Messiah-All Souls Universalist Church, its successors and assigns, to its and their use and behoof forever, subject, however, to the conditions hereinbefore set forth.

AND it does covenant with the said Grantee, its successors and assigns, that it is lawfully seized in fee of the premises, that they are free of all incumbrances; except as aforesaid; that it has good right to sell and convey the same to the said Grantee to hold as aforesaid; and that it and its successors shall and will warrant

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and defend the same to the said Grantee, its successors and assigns forever, against the lawful claims and demands of all persons.

IN WITNESS WHEREOF, the said Grantor herein has caused these premises to be signed and its seal hereto affixed by the Trustees of the All Souls Church Parish, thereunto duly authorized, this 22d day of August, in the year of our Lord one thousand nine hundred and forty-four.

Signed, Sealed and Delivered in Presence of

ALL SOULS CHURCH PARISH, By the Seal
Trustees of All Souls Parish

Albert N. Whitney Seal
Clyde R. Chase Seal
Andrew G. Spinney Seal
Dora S. Wish Seal
Laura E. Sampson Seal
Emily C. McLaughlin Seal
Inez D. Blaisdell Seal
Florence M. French Seal
Trustees

Inez D. Blaisdell to
Albert N. Whitney
Clyde R. Chase
Andrew G. Spinney
Dora S. Wish
Laura E. Sampson
Emily C. McLaughlin
Florence M. French
Florence Vest
to Inez D. Blaisdell

State of Maine. Cumberland,ss. October 3, 1944.

Personally appeared the above named Inez D. Blaisdell and acknowledged the foregoing instrument to be her free act and deed as trustee of All Souls Church Parish and the free act and deed of All Souls Church Parish.

Before me, Florence Vest Notary Public Notarial Seal

Received October 4, 1944, at 11h 30m A. M., and recorded according to the original =

Reynolds to Welch War.

KNOW ALL MEN BY THESE PRESENTS, That I, Bessie V. Reynolds, of Gray in the County of Cumberland and State of Maine, in consideration of One Dollar and other valuable consideration, paid by Lauretta P. Welch, of Westbrook in said County and State, the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Lauretta P. Welch, her heirs and assigns forever, the following described property:

a certain lot or parcel of land situated in said Gray, lying on the Westerly shore of the most Northerly part of Little Sebago Lake, and bounded and described as follows:

Beginning at an iron post on the shore of said Lake at a point five (5) feet Northerly of the most Northeasterly corner of land of said Bessie V. Reynolds, formerly of Harry A. Weeman; thence Westerly one hundred (100) feet more or less to an iron post at the Northwesterly corner of said land of Bessie V. Reynolds; thence Northerly on the line of the road seventy-five (75) feet to an iron post; thence Easterly one hundred (100) feet more or less to an iron post on the shore of the Lake; thence Southerly on the shore of the Lake seventy (70) feet to the point of beginning.

Said premises being a portion of the first parcel of land conveyed by Ralph J. Trumbull to Adelbert R. Reynolds by deed dated June 25, 1937, recorded in Cumberland Registry of Deeds in Book 1526, Page 151. Together with the right to cross and recross land now or formerly of Matthew C. Morrill in the road formerly used to reach said lot as conveyed to said Adelbert R. Reynolds by said deed of Ralph J.Trumbull.

All Souls Church Parish to Messiah-All Souls Universalist Church War.

KNOW ALL MEN BY THESE PRESENTS, That All Souls Church Parish, a corporation incorporated under the laws of Maine and located at Portland in the County of Cumberland, in consideration of one dollar and other considerations, paid by Messiah-All Souls Universalist Church, a corporation incorporated under the laws of Maine and located at said Portland, the receipt whereof it does hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Messiah-All Souls Universalish Church, its successors and assigns forever, a certain lot or parcel of land with the buildings thereon, located at No. 706 Stevens Avenue in said Portland, and bounded northerly by land now or formerly of Westbrook Junior College, formerly called Westbrook Seminary, and by land of the grantee westerly by land now or formerly of Westbrook Seminary now Westbrook Junior College; southerly by land now or formerly of Rev. Harrison S. Whitman, and easterly by said Stevens Avenue, being the parsonage premises conveyed to the grantor by the following deeds:
Casco Realty Improvement Company to All Souls Church Parish, dated October 10, 1924, recorded Cumberland County Registry of Deeds, Book 1168, Page 366;
Theodore Kerr to All Souls Church Parish, deed dated October 17, 1924, recorded Book 1168, Page 367;
Ella Louise Perry to All Souls Church Parish, deed dated October 17, 1924, recorded Book 1168, Page 368;
City of Portland to All Souls Church Parish, deed dated October 10, 1928, recorded Book 1300, Page 58.
The premises hereby conveyed are subject to a lease given by All Souls Parish to Ella Louise Perry, dated October 17, 1924, recorded Book 1204, Page 65, and the property is conveyed subject to the following conditions,- viz: that the property herein conveyed shall be and continue to be occupied and used as a parsonage or for other religious purposes, by a society or religious organization of the Universalist denomination; to-wit,-a religious society in direct fellowship with and acknowledging the ecclesiastical authority of the Maine Universalist Convention and of the Universalist Church of America; and it is an express condition of this deed that in case the use or occupation of the aforesaid property should be diverted from the aforesaid purpose for a period of one year, then in such case the Maine Universalist Convention may enter in and upon the premises, take possession thereof and thereafter shall own, hold, use and dispose of the same for general Universalist purposes in accordance with the powers of that corporation.

TO HAVE AND TO HOLD the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said Messiah-All Souls Universalist Church, its successors and assigns, to its and their use and behoof forever, subject, however, to the conditions hereinbefore set forth.

AND it does covenant with the said Grantee, its successors and assigns, that it is lawfully seized in fee of the premises, that they are free of all incumbrances; except as aforesaid; that it has good right to sell and convey the same to the said Grantee to hold as aforesaid; and that it and its successors shall and will warrant

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and defend the same to the said Grantee, its successors and assigns forever, against the lawful claims and demands of all persons.

IN WITNESS WHEREOF, the said Grantor herein has caused these premises to be signed and its seal hereto affixed by the Trustees of the All Souls Church Parish, thereunto duly authorized, this 22d day of August, in the year of our Lord one thousand nine hundred and forty-four.

Signed, Sealed and Delivered in Presence of

ALL SOULS CHURCH PARISH, By the Seal
Trustees of All Souls Parish

Albert N. Whitney Seal
Clyde R. Chase Seal
Andrew G. Spinney Seal
Dora S. Wish Seal
Laura E. Sampson Seal
Emily C. McLaughlin Seal
Inez D. Blaisdell Seal
Florence M. French Seal
Trustees

Inez D. Blaisdell to
Albert N. Whitney
Clyde R. Chase
Andrew G. Spinney
Dora S. Wish
Laura E. Sampson
Emily C. McLaughlin
Florence M. French
Florence Vest
to Inez D. Blaisdell

State of Maine. Cumberland,ss. October 3, 1944.

Personally appeared the above named Inez D. Blaisdell and acknowledged the foregoing instrument to be her free act and deed as trustee of All Souls Church Parish and the free act and deed of All Souls Church Parish.

Before me, Florence Vest Notary Public Notarial Seal

Received October 4, 1944, at 11h 30m A. M., and recorded according to the original =

Reynolds to Welch War.

KNOW ALL MEN BY THESE PRESENTS, That I, Bessie V. Reynolds, of Gray in the County of Cumberland and State of Maine, in consideration of One Dollar and other valuable consideration, paid by Lauretta P. Welch, of Westbrook in said County and State, the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Lauretta P. Welch, her heirs and assigns forever, the following described property:

a certain lot or parcel of land situated in said Gray, lying on the Westerly shore of the most Northerly part of Little Sebago Lake, and bounded and described as follows:

Beginning at an iron post on the shore of said Lake at a point five (5) feet Northerly of the most Northeasterly corner of land of said Bessie V. Reynolds, formerly of Harry A. Weeman; thence Westerly one hundred (100) feet more or less to an iron post at the Northwesterly corner of said land of Bessie V. Reynolds; thence Northerly on the line of the road seventy-five (75) feet to an iron post; thence Easterly one hundred (100) feet more or less to an iron post on the shore of the Lake; thence Southerly on the shore of the Lake seventy (70) feet to the point of beginning.

Said premises being a portion of the first parcel of land conveyed by Ralph J. Trumbull to Adelbert R. Reynolds by deed dated June 25, 1937, recorded in Cumberland Registry of Deeds in Book 1526, Page 151. Together with the right to cross and re-cross land now or formerly of Matthew C. Morrill in the road formerly used to reach said lot as conveyed to said Adelbert R. Reynolds by said deed of Ralph J.Trumbull.

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Know all Men by these Presents, That

I, Martha Babcock Webber, of Portland in the County of Cumberland and State of Maine, in consideration of One Dollar ($1.00) and other valuable considerations, paid by Westbrook Seminary and Junior College, a corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine, the receipt whereof I do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Westbrook Seminary and Junior College, its Successors and Assigns forever, the following described property:

A certain lot or parcel of land, with the buildings thereon, situated on Stevens Avenue in the City of Portland, formerly called the "Stevens Plains Road" in the City of Deering, bounded and described as follows:- Beginning on the westerly side of said road at the southerly corner of land formerly of Albert Jones; thence northwesterly on said Jones line twenty (20) rods, more or less, to land formerly of William Kenney; thence southerly by said Kenney's land four (4) rods, more or less, to land formerly of N. K. Sawyer; thence easterly by said Sawyer's land twenty (20) rods, more or less, to said road; thence northerly by said road four (4) rods, more or less, to the place of beginning; being the same premises conveyed to me by Justina B. O'Brien by deed dated July 13, 1932, recorded in Cumberland County Registry of Deeds in Book 1403, Page 305.

This conveyance is made subject to taxes for 1947 which the Grantee assumes and agrees to pay.

U.S.I.R.
$13.20
M.B.W.
8/12/47

To Have and to Hold the aforegranted and bargained premises, with all ~~the~~ privileges and appurtenances thereof, to the said Westbrook Seminary and Junior College, its Successors and Assigns, to it and their use and behoof forever. And I do covenant with the said Grantee, its Successors ~~heirs~~ and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; except as aforesaid; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its Successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons; except as aforesaid.

In Witness Whereof, I, the said Martha Babcock Webber, and I, M. Carroll Webber, husband of the said Martha Babcock Webber, joining in this deed as Grantor, and relinquishing and conveying my rights by descent and all other rights in the above described premises, have hereunto set our hands and seals this 12th day of August in the year of our Lord one thousand nine hundred and forty-seven.

Signed, Sealed and Delivered in presence of

Edward F. Dana — Martha Babcock Webber — Seal

Jayne E. Harrington — M. Carroll Webber M.D. — Seal

State of Maine, CUMBERLAND, ss. August 12, 1947 Personally appeared the above named Martha Babcock Webber and acknowledged the above instrument to be her free act and deed.

Before me, Edward F. Dana Justice of the Peace

Received August 12, 1947, at 2 o'clock 40m. P.M., and recorded according to the original.

Know all Men by these Presents, That

We, Clifford J. Knight and Alice M. Knight, both of Portland in the County of Cumberland and State of Maine

in consideration of One Dollar and other Considerations paid by George O.Chase and Ruth B. Chase, both of Newington in the County of Hartford and State of Connecticut

the receipt whereof we do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said George O. Chase and Ruth B. Chase, as joint tenants and not as tenants in common and their heirs and assigns and the survivor of them and the heirs and assigns of the survivor of them forever, a certain lot or parcel of land with the buildings thereon, situated in Deering in said Portland in the County of Cumberland and State of Maine, bounded and described as follows:

Beginning on the Northerly side of College Street at a stone monument at the intersection of land now or formerly owned by said Clifford J. Knight and land now owned by Westbrook Junior College; thence in a Westerly direction One Hundred Twenty-six and twenty-two hundredths (126.22) feet along said College Street to a stake; thence at a ninety degree (90°) angle Eighty-five and eight tenths (85.8) feet in a Northerly direction to a stake and land now or formerly of the State of Maine; thence One Hundred Twenty-Six and forty-five hundredths (126.45) feet in an easterly direction along land of the State of Maine to a stake; thence Seventy-eight and fifty-two hundredths (78.52) feet in a Southerly direction to the point of beginning.

Being the same premises conveyed to us by Elizabeth Milliken by deed dated December 19, 1956, recorded in Cumberland County Registry of Deeds, Book 2331,Page 248 to which deed and deeds referred to therein reference is made.

Real estate tax for 1957 to be pro-rated as of date of transfer.

U.S.I.R. $15.95 C.J.K. 6/12/57

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said George O.Chase and Ruth B.Chase as joint tenants and not as tenants in common and their heirs and assigns and the survivor of them and the heirs and assigns of the survivor of them forever, to them and their use and behoof forever. And we do covenant with the said Grantees, their heirs and assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances; except as aforesaid that we have good right to sell and convey the same to the said Grantees to hold as aforesaid; and that we and our heirs, shall and will warrant and defend the same to the said Grantees, their heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, We, the said Clifford J. Knight and Alice M. Knight, husband and wife, each joining in this deed as Grantor, and relinquishing and conveying all right by descent and all other rights in the above described premises,

---- hand s and seals this twelfth day of June have hereunto set in the year of our Lord one thousand nine hundred and fifty-seven.

Signed, Sealed and Delivered in presence of

Ralph M. Snyder, to both

Clifford J. Knight Seal

Alice M. Knight Seal

State of Maine, CUMBERLAND, ss. June 12, 1957. Personally appeared the above named Clifford J. Knight and acknowledged the foregoing instrument to be his free act and deed.

Before me, Ralph M. Snyder Justice of the Peace

Received June 12, 1957, at 3 o'clock 40 m. P. M., and recorded according to the original.

303

No. 106

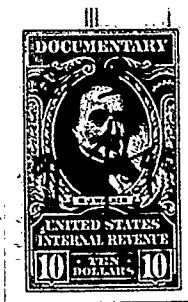
Know All Men by these Presents,

That I, GORDON L. SKILLIN of Waterville in the County of Kennebec and State of Maine

Skillin to Westbrook Seminary & Junior College -- War

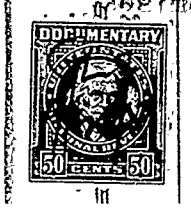
in consideration of One Dollar ($1.00) and other valuable considerations

paid by WESTBROOK SEMINARY AND JUNIOR COLLEGE, a corporation organized and existing under the laws of Maine and located at Portland in the County of Cumberland and State of Maine









the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Westbrook Seminary and Junior College, its successors

and Assigns forever,

the following described property:

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

Beginning at a stone monument in the northerly side line of said College Street at the southwest corner of land of L. Laberton Moore; thence running westerly on said College Street one hundred one (101) feet, more or less, to the "Kenney" line; thence northerly on a line parallel with westerly line of said Moore's land one hundred thirty-one (131) feet, more or less, to the fence between the lot hereby conveyed and land, now or formerly, of the heirs of Capt. Sargent; thence easterly by said Sargent land and the fence one hundred (100) feet, more or less, to said Moore's land; thence southerly by said Moore's land one hundred thirty-nine (139) feet, more or less, to the point of beginning.

Also a certain other lot of land adjoining above described lot on the westerly side thereof, and bounded and described as follows:

Beginning on the northerly side line of said College Street, at the southwest corner of above described lot; thence running westerly on said College Street ten (10) feet, more or less, to a stone monument; thence northerly on a line parallel with the westerly side line of above described lot one hundred fifty-eight (158) feet, more or less, to the fence and land, now or formerly, of the Portland Railroad Company; thence easterly by the fence and said Portland Railroad Company's land seven (7) feet, more or less, to the corner of the fence and land, now or formerly, of the heirs of Capt. Sargent; thence southerly by the fence and said Sargent land twenty-eight (28) feet, more or less, to a post at the southwest corner of said Sargent land; thence easterly by said Sargent land and the fence three (3) feet, more or less, to the northwest corner of above described lot; thence southerly by above described lot one hundred thirty-one (131) feet, more or less, to the point of beginning.

304
304

304

Said premises were conveyed to William H. and Frances E. Skillin by William T. Jordan et als by deed dated October 21, 1904, recorded in Cumberland County Registry of Deeds in Book 758, Page 242. William H. Skillin conveyed his interest to Frances E. Skillin by deed dated April 8, 1908, recorded in said Registry of Deeds in Book 820, Page 377. Frances E. Skillin died intestate on April 29, 1929, leaving no widower and as her sole heirs-at-law, Harlon L. Skillin and Maude E. Clement. Harlon L. Skillin conveyed his interest to Maude E. Clement by deed dated August 22, 1929, recorded in said Registry of Deeds in Book 1328, Page 44. Maude E. Clement devised said premises to the Grantor by Will, abstract of which is recorded in said Registry of Deeds.

To have and to hold the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said Westbrook Seminary and Junior College, its successors

~~x~~ and Assigns, to its and their use and behoof forever.

And I do **covenant** with the said Grantee, its successors ~~x~~ and Assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my Heirs, shall and will ~~Warrant and Defend~~ the same to the said Grantee, its successors ~~x~~ and Assigns forever, against the lawful claims and demands

305

305

of all persons.

In Witness Whereof, I the said Gordon L. Skillin

and I, Norma Skillin wife of the said Gordon L. Skillin

joining in this deed as Grantor , and relinquishing and conveying my rights by descent and all other rights in the above described premises, have hereunto set our hands and seals this 25th day of September in the year of our Lord one thousand nine hundred and fifty-nine.

Signed, Sealed and Delivered in presence of

H. Paul Lancaster
Martha M. Rozzyk

Gordon L. Skillin
Norma L. Skillin

State of Maine,
Kennebec } ss.

25 September 19 59

Personally appeared the above named

Gordon L. Skillin

and acknowledged the above instrument to be his free act and deed.

Before me,

H. Paul Lancaster
Justice of the Peace

OCT 22 1959

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 8 H 21 M A M, and recorded in
BOOK 2507 PAGE 303

Leonard P. Tyson Register

425

Know All Men by These Presents, 425

That I, NELLIE A. DONNELLY, of Portland in the County of Cumberland and State of Maine,

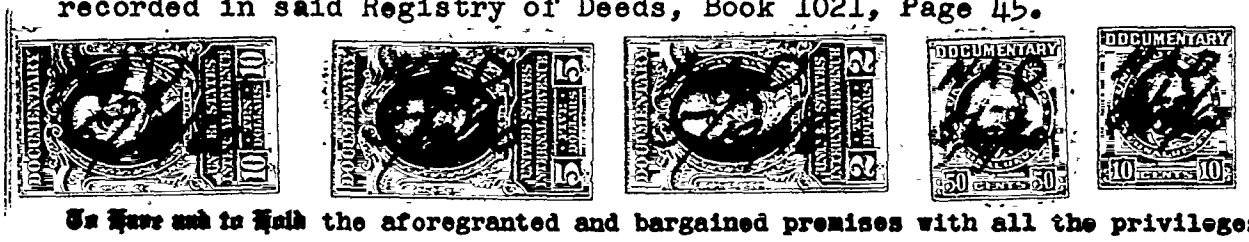
in consideration of One Dollar ($1.00) and other valuable consideration,

paid by WESTBROOK SEMINARY AND JUNIOR COLLEGE, a corporation existing under the laws of Maine and located at said Portland,

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said WESTBROOK SEMINARY AND JUNIOR COLLEGE, its successors and assigns forever, a certain lot or parcel of land, situated on the northerly side of College Street, so-called, in said Portland, and bounded and described as follows:

Beginning at a point on the northerly side of said College Street at the southeasterly corner of land conveyed to the Grantee herein by Addie H. Lowd by deed dated July 8, 1944, and recorded in the Cumberland County Registry of Deeds, Book 1752, Page 321; thence northerly by other land of the Grantee herein one hundred fifty (150) feet, more or less, to land formerly of Capt. Sargent, now of the Grantee herein; thence easterly by said Sargent land forty (40) feet, more or less, to land formerly of Brewster, now of the Grantee herein; thence southerly by said Brewster land and land formerly of Arabella W. Roberts, now of the Grantee herein, one hundred fifty-three (153) feet, more or less, to said College Street; thence westerly by said College Street fifty-eight (58) feet, more or less, to the point of beginning.

Being a portion of the premises conveyed to the Grantor herein by Thalia L. Clement by Warranty Deed dated April 5, 1919, and recorded in said Registry of Deeds, Book 1021, Page 45.



To Have and to Hold the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said WESTBROOK SEMINARY AND JUNIOR COLLEGE, its successors and assigns, to its use and behoof forever.

And I do covenant with the said Grantee, its successors and assigns, that I am lawfully seized in fee of the premises, that they are free of all incumbrances;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs shall and will Warrant and Defend the same to the said Grantee, its successors and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said NELLIE A. DONNELLY, being a widow,

have hereunto set my hand and seal this nineteenth day of May in the year of our Lord one thousand nine hundred and sixty.

Signed, Sealed and Delivered
in presence of

Richard C. Blanchard — Nellie A Donnelly

STATE OF MAINE

CUMBERLAND, ss. May 19, 1960.

Personally appeared the above named NELLIE A. DONNELLY and acknowledged the foregoing instrument to be her free act and deed.

Before me,

Kathryn Butterfield
Notary Public

STATE OF MAINE

CUMBERLAND, ss. REGISTRY OF DEEDS

Received at 11 H 35 M A M on MAY 23 1960 and recorded in Book 2539 Page 425

Attest Margaret L Weber, Deputy Register

Donnelly to Westbrook Seminary & Junior College -- War

Know All Men by These Presents,

397

That we, GEORGE O. CHASE and RUTH B. CHASE of Portland, in the County of Cumberland and State of Maine,

Chase & to Westbrook Seminary & Junior College - War

in consideration of One Dollar ($1.00) and other valuable consideration

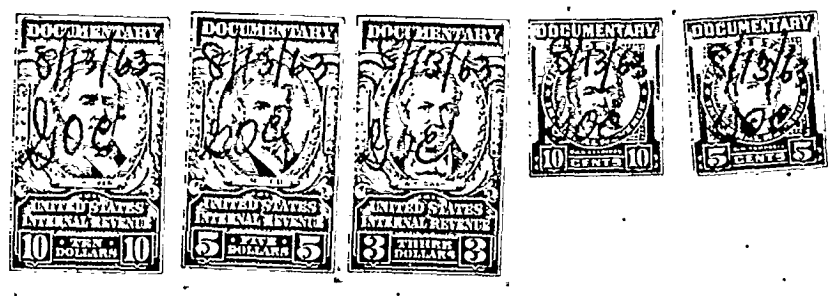
paid by WESTBROOK SEMINARY AND JUNIOR COLLEGE, a corporation incorporated and existing under the laws of the State of Maine, and located at said Portland,

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said WESTBROOK SEMINARY AND JUNIOR COLLEGE, its successors

~~heirs~~ and assigns forever, a certain lot or parcel of land, with the buildings thereon, situated in Deering in said Portland, in the County of Cumberland and State of Maine, bounded and described as follows:

Beginning on the northerly side of College Street at a stone monument at the intersection of land now or formerly owned by Clifford J. Knight and land now owned by Westbrook Seminary and Junior College; thence in a westerly direction one hundred twenty-six and twenty-two hundredths (126.22) feet along said College Street to a stake; thence at a ninety (90) degree angle eighty-five and eight-tenths (85.8) feet in a northerly direction to a stake and land now or formerly of the State of Maine; thence one hundred twenty-six and forty-five hundredths (126.45) feet in an easterly direction along land of the State of Maine to a stake; thence seventy-eight and fifty-two hundredths (78.52) feet in a southerly direction along said land of said Westbrook Seminary and Junior College to the point of beginning.

Being the same premises conveyed to the grantors by Clifford J. Knight and Alice M. Knight by their Deed of Warranty dated June 12, 1957, and recorded in Cumberland County Registry of Deeds in Book 2320, Page 415.



398

To have and to hold the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said WESTBROOK SEMINARY AND JUNIOR COLLEGE, its successors

~~heirs~~ and assigns, to its and their use and behoof forever.

And we do covenant with the said Grantee, its successors ~~heirs~~ and assigns, that we are lawfully seized in fee of the premises, that they are free of all incumbrances;

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs shall and will Warrant and Defend the same to the said Grantee, its successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said GEORGE O. CHASE

and RUTH B. CHASE

wife of the said GEORGE O. CHASE

joining in this deed as Grantors, and relinquishing and conveying our right by descent and all other rights in the above described premises, have hereunto set our hands and seals this fifth day of August in the year of our Lord one thousand nine hundred and sixty-three

Signed, Sealed and Delivered
in presence of

Norton H. Lamb
to both

George O. Chase MD
Ruth B. Chase

State of Maine. Cumberland ss. August 5, 1963.

Personally appeared the above named GEORGE O. CHASE and RUTH B. CHASE

and acknowledged the foregoing instrument to be their free act and deed.

Before me, Norton H. Lamb
~~Justice of the Peace~~
Notary Public

NORTON H. LAMB NOTARY PUBLIC MAINE

AUG 13 1963

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 10 H 45 M AM, and recorded in
BOOK 2767 PAGE 397 Leonard P. Thayer Register

20429

Know All Men by These Presents. 69

That I, WILLIS W. JOHNSON, of Portland, in the County of Cumberland and State of Maine,

in consideration of One Dollar and other valuable considerations,

paid by WESTBROOK COLLEGE, a Maine corporation, located at said Portland.

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said WESTBROOK COLLEGE, its successors

heirs and assigns forever, a certain lot or parcel of land with the buildings thereon situated in said City of Portland on the Northerly side of College Street, and bounded as follows:- Commencing at a granite post standing on the Northerly side of College Street and located two hundred feet more or less Westerly of a lot of land conveyed by James P. Weston to C. A. Hayden by deed dated October 6, 1881, and recorded in Cumberland County Registry of Deeds, in Book 485, Page 77; and from said granite post running by a line N. 26 degrees E. one hundred and sixty-five feet to land formerly of the Portland Street Railroad Company; thence by line between this land and said Railroad Company land Southeasterly fifty-three feet to a point; thence S. 26 degrees W. one hundred sixty-three and 1/10 (163.1) feet to said side line of College Street and thence on said street line N. 64 degrees W. fifty-three feet to the granite post and point of commencing.

Meaning and intending to convey and hereby conveying all and the same premises conveyed by Will W. Johnson to Ruth S. Johnson by deed dated October 28, 1915 and recorded in the Cumberland County Registry of Deeds in Book 963, Page 174.

My title to the above described premises is derived under the Last Will and Testament of Ruth S. Johnson who died February 19, 1973 an abstract of whose will is recorded in said Registry of Deeds in Book 3382, Page 198.

To have and to hold the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said WESTBROOK COLLEGE, its successors

heirs and assigns, to its and their use and behoof forever.

And I do covenant with the said Grantee, its successors heirs and assigns, that I am lawfully seized in fee of the premises, that they are free of all incumbrances; except taxes assessed April 1, 1973 by the City of Portland, which said taxes are prorated as of the date of this conveyance;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs shall and will Warrant and Defend the same to the said Grantee , its successors heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said Willis W. Johnson

and Phyllis B. Johnson

wife of the said Willis W. Johnson

joining in this deed as Grantor , and relinquishing and conveying all right by descent and all other rights in the above described premises, have hereunto set our hand s and seal s this 24th day of August in the year of our Lord one thousand nine hundred and seventy-three.

Signed, Sealed and Delivered
in presence of

Willis W. Johnson

Phyllis B. Johnson

State of Maine. Cumberland ss. August 24th 19 73.

Personally appeared the above named

Willis W. Johnson

and acknowledged the foregoing instrument to be his free act and deed.

Before me,

Justice of the Peace
Notary Public

AUG 28 1973

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 2 H 14 M P M, and recorded in
BOOK 3450 PAGE 69 A. Custis Hughes Register

26398

KNOW ALL MEN BY THESE PRESENTS, That the CITY OF PORTLAND, a body politic and corporate located in the County of Cumberland and State of Maine, in consideration of One Dollar ($1.00) and other good and valuable considerations, paid by Westbrook College, a corporation organized and existing under the laws of the State of Maine and located at 716 Stevens Avenue in said Portland in said County and State, the receipt whereof it does hereby acknowledge, does hereby give, grant, bargain, sell and convey, unto the said Westbrook College, its successors and assigns forever, certain real estate located in said Portland, lying Westerly of College Street and Southerly of Bishop Street, bounded and described as follows:

Beginning at a point on the Northerly line of the land of Portland Railroad Company where the same intersects with land hereby conveyed and land formerly of George H. Smardon, commonly known as the Smardon Gravel Pit, formerly Read's Gravel Pit; thence from said point North 19° 30' East 28.68 rods; thence North 60° West Seven and thirty-two hundredths (7.32) rods to a point; thence South 74° 45' West Thirty-six and sixty-four hundredths (36.64) rods to a point; thence North 5° West Two and fifty-six hundredths (2.56) rods; thence North 30° West Twenty-four and four tenths (24.4) rods; thence South 65° West Forty-seven and twelve hundredths (47.12) rods to center of ditch; thence up the center of said ditch towards what is known as pasture Two Hundred Ninety-eight (298) feet; thence in a straight line to a point in line of Evergreen Cemetery indicated by a spruce stump, said stump being on the intersection between land of said Cemetery and land conveyed by Luther B. Roberts to the said City of Portland; thence from said stump North 80° 21' East Three Hundred Seventy-one and two tenths (372.2) feet to an angle; thence from said angle North 76° 8' East, Five Hundred Ninety-six and twenty-two hundredths (596.22) feet to an angle; thence from said last named angle at a right angle South 12° 52' East Seventy-five (75) feet to land of said Portland Railroad Company; thence about North 76° 8' East by said Portland Railroad Company's land to the point of beginning.

Also a certain other parcel of land, abutting the above described premises and bounded and described as follows: Beginning at the center of the ditch between the hereinabove described premises and the land hereby conveyed and in line of land now or formerly owned by Adam Wilson and running Southerly by land of said Wilson to the Westerly corner of land of Evergreen Cemetery; thence South Twenty-four (24°) degrees East by land of said Cemetery One hundred and seventy-five (175) feet to a point; thence by land formerly of Dennis F. Gulliver, and being the premises hereinabove described, in a straight line to a point in the center of said ditch; said point being Two Hundred Ninety-eight (298) feet from the point of beginning; thence down the center of said ditch to the point of beginning.

256

Excepting and reserving from the above described premises that portion thereof conveyed by the Grantor to Central Maine Power Company by deed dated February 26, 1967, recorded in said Registry of Deeds in Book 2989, Page 13.

This conveyance is made subject to the right-of-way or easement granted by the Grantor to Central Maine Power Company by deed dated December 13, 1951, recorded in said Registry of Deeds in Book 2055, Page 463.

Reserving to the Grantor, its successors and assigns, the right perpetually to enter at any and all times upon a strip of land fifty (50) feet in width lying equally on either side of the storm drain and upon a strip of land fifty (50) feet in width lying equally on either side of the brook presently located on the premises herein conveyed and the right perpetually to maintain, repair, rebuild, relocate, or remove said storm drain and brook with all necessary fixtures and appurtenances within said strips of land, granting to the Grantee, its successors and assigns, the use and enjoyment of said strips of land for such purposes only as will in no way interfere with the perpetual use thereof by the Grantor, its successors and assigns, for the purposes above mentioned, except that no buildings or structures may be erected within said strips of land. Also reserving to the Grantor, its successors and assigns, the right perpetually to enter at any and all times upon the premises herein conveyed for the purpose of access and egress by itself, its servants and/or agents to and from said strips of land.

Being the same premises conveyed to the Grantor by deed of James Gulliver, Administrator, d.b.n.c.t.a., of the Estate of Stephen Gulliver by deed dated August 23, 1935, recorded in said Registry of Deeds in Book 1476, Page 441.

Also a certain lot of land lying in the rear of College Street, in the City of Portland, bounded and described as follows, to wit:

Beginning at a point on the Northerly side line of College Street and at the Westerly corner of land belonging to Francis L. Stone; thence North 25° 22' east by land of said Stone eighty-seven and nineteen one hundredths (87.19) feet to land of the Portland Railroad Company; thence North 62° 26' west by land of said Portland Railroad Company four hundred and thirty-one and ninety three one hundredths (431.93) feet to a point; thence North 76° 08' east by land of said Portland Railroad Company five hundred (500) feet to a point; thence north 13° 52' west seventy-five (75) feet to a point; thence south 76° 08' west five hundred and ninety-six and twenty-two one hundredths (596.22) feet to a point; thence south 80° 21' west three hundred and seventy-one and two tenths (371.2) feet to the stump of a large spruce tree in the boundary of Evergreen Cemetery; thence easterly by land of Evergreen Cemetery and land of Pine Grove Cemetery about seven hundred and sixty (760) feet to a point on the end of College Street; thence north 24° 55' east by the end of College Street thirty and thirty-five one hundredths (30.35) feet to a stone

monument at the end of the northerly side line of College Street; thence south 65° 05' east one hundred and twelve and ninety-four one hundredths (112.94) feet by the northerly side line of College Street to the point of beginning. Said premises being a part of the several promises conveyed to Luther B. Roberts by deed of S. K. Hamilton, Admr., dated June 22, 1910, and by deed of Daniel H. Reed to Luther B. Roberts, dated July 26th, 1909, recorded in Cumberland, ss. Registry of Deeds, Book 843, Page 402, to which several deeds, and the references contained, reference is hereby made for further particulars of description.

Excepting and reserving from the above described premises that portion thereof conveyed by the Grantor to Alice M. Knight by deed dated January 17, 1947, recorded in said Registry of Deeds, in Book 1852, Page 109.

Being the same premises conveyed to the Grantor by Luther B. Roberts by deed dated June 24, 1910, recorded in said Registry of Deeds in Book 861, Page 282, and subject to the reservations contained therein.

By acceptance of this deed, Grantee covenants and agrees that it will:

1. Provide a landscape buffer zone at least twenty-five (25) feet in width along the northerly and easterly lines of the premises herein conveyed in a manner satisfactory to the Planning Board of the City of Portland.

2. Secure from said Planning Board prior site plan approval for development of all or any part of the premises herein conveyed as such development shall occur.

TO HAVE AND TO HOLD the same, together with all the privileges and appurtenances thereunto belonging, to the said Westbrook College, its successors and assigns forever.

AND the said Grantor Corporation does covenant with the said Westbrook College, its successors and assigns, that it will warrant and forever defend the premises to it the said Grantee, its successors and assigns forever, against the lawful claims and demands of all persons claiming by, through, or under it.

258

IN WITNESS WHEREOF, the said City of Portland has caused this instrument to be sealed with its corporate seal and signed in its corporate name by JOHN G. DE PALMA, its Director of Finance, thereunto duly authorized, this 8th day of November in the year one thousand nine hundred and seventy-three.

SIGNED, SEALED AND DELIVERED
IN PRESENCE OF

Patricia E. Mealy

CITY OF PORTLAND

By John G. DePalma
Director of Finance

STATE OF MAINE
CUMBERLAND, ss.

Nov. 8, 1973.

Personally appeared the above named John G. DePalma, Director of Finance of said Grantor Corporation as aforesaid, and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said corporation.

Before me,

Patricia E. Mealy
~~Justice of the Peace~~
Notary Public

NOV 8 1973
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 2 H 27 M P M, and recorded in
BOOK 3481 PAGE 255 W. Ruth Hughes Register

UNIVERSITY OF NEW ENGLAND

INNOVATION FOR A HEALTHIER PLANET

Att. D

Institutional Development Plan

December 2024



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Attachment A: City of Portland Construction Management Plan General Template

1. CONTEXT

Since its inception as Westbrook Seminary in 1831, the University of New England (UNE) Portland campus has been an integral part of the Portland community, providing innovative and diverse education opportunities for its students. The campus has undergone strategic growth and curriculum enhancements to effectively meet the evolving educational and workforce requirements of Portland, Maine, and beyond.

UNE is recognized as a leading educator of healthcare professionals and is one of a handful of private universities with a comprehensive health education mission including medicine, pharmacy, dental medicine, nursing, and an array of allied health professionals. UNE's interprofessional education initiatives prepare future healthcare professionals to practice comprehensive and collaborative team-based care.



Mission, Vision, and Core Values

UNE is guided by its Mission, Vision, and Core Values, as well as its strategic plan entitle, *Our World, Our Future*, which was developed in 2018 and continues to guide the University forward today.

Mission

UNE prepares students to thrive in a rapidly changing world and, in so doing, to improve the health of people, communities, and our planet.

Vision

UNE realizes this mission through their commitment to a distinctive approach to education that puts UNE among the most experientially driven institutions of higher education in the nation. UNE provides teaching and learning that conjoins problem-based and hands-on learning, liberal education, and professional training to immerse students in an educational experience that prepares them with:

- Habits of mind, such as cultural, quantitative, and information literacy, critical thinking, tolerance for ambiguity, and problem-solving skills;
- Discipline-based knowledge in their chosen programs of study; and
- Professional competencies, including emotional intelligence, the ability to collaborate in diverse teams, the skills to communicate persuasively, and the attributes to be thoughtful leaders.



UNE is an institution that challenges students to learn broadly, master their professional skills, ask probing questions, and engage in respectful discourse in the context of a robust marketplace of ideas. In this way, students prepare themselves for further study and successful careers, deeply rewarding lives, and meaningful contributions to their communities and the world.

Core Values

UNE is guided by the following values, essential to the culture of the UNE community.

Student Centeredness - We put the aspirations, needs, and success of our students at the center of all we do.

Diversity, Inclusion, Connection - We believe the benefits of a richly varied campus community arise not only from the diversity of its people but also from a sense of belonging and the context this creates to explore and celebrate differences in backgrounds, experiences, and perspectives, underpinned by a sense of cultural humility and a commitment to ethical ideals.

Relentless Inquiry - We take nothing for granted and view thoughtful — even uncomfortable — questioning and civil discourse as essential to the pursuit of knowledge, contribution to society, and a life worth living. Our commitment to university-wide academic freedom is fundamental to this value.

Boundary Crossing - Solutions to the complex and varied challenges we face in our personal and professional lives, our communities, and society will not be found in any single discipline, college, physical location, or individual. Thus, our ability to move easily across such boundaries in order to collaborate with colleagues makes us better problem solvers and more likely to succeed in whatever ventures we undertake.

Learning Everywhere - We believe that teaching and learning should occur beyond traditional classrooms and laboratories — in any place ripe for inquiry and experimentation, including clinics, environmental and field-study sites, online forums, libraries, museums, theaters, and places of civic engagement, among many others.

Progressive Change - We are not afraid to take thoughtful risks in the pursuit of our shared goals. Our mindset is to strategically forecast and plan for possibilities in an unknown future.

Stewardship of Our Planet - We are committed to promoting environmental, social, and economic well-being to improve the health of individuals, communities, and ecosystems.

UNE's strategic plan, *Our World, Our Vision*, further outlines six strategic priorities that the University will focus on over the next five years.

- Provide Exceptional, Innovative Teaching and Experiential, Collaborative Learning Experiences
- Optimize Enrollment, Progress to Graduation, and Lifelong Learning
- Produce Focused Research and Scholarship
- Ensure a Welcoming, Inclusive, and Vibrant Community
- Expand Engagement with Local, Regional, and Global Partners
- Foster a Strong and Sustainable Resource Base

Current Campus Programming

The UNE Portland campus is primarily a graduate campus, focused on educating health professionals, and is currently home to three of the University's premier Colleges: the Westbrook College of Health Professions, the College of Dental Medicine, and the College of Graduate and Professional Studies. The **Westbrook College of Health Professions (WCHP)** includes more than 1,000 students, faculty, and staff working in graduate programs in Social Work, Physician Assistant, Occupational Therapy, Physical Therapy, and Nurse Anesthesia, and undergraduate programs in Nursing and Dental Hygiene. The WCHP is also home to the Interprofessional Simulation and Innovation Center, which provides training opportunities for both students and healthcare professionals from the region through the use of high-tech patient simulators. In the fall of 2013, the UNE **College of Dental Medicine** unveiled a state-of-the-art Oral Health Center, built on Stevens Avenue, as it welcomed its inaugural class of dental students on campus. The **College of Graduate and Professional Studies** is the University's online college (e.g., UNE Online), whose faculty and staff are also located on campus. UNE Online serves adult learners seeking promising careers in healthcare, education, and management, offering a range of professional graduate degrees and certificates. UNE Online oversees the University's Continuing Education efforts. These are professional certificate programs designed to meet the needs of the regional and national workforce. The **School of Pharmacy** welcomed its inaugural class of 100 students in fall 2009 within a newly erected building on Stevens Avenue; distinguished for its emphasis on research and development, the UNE School of Pharmacy offers a Pharm.D. Degree.

Campus Programming

Currently, the following programs are offered in person on the University's Portland campus:

- Dental Medicine
- Dental Hygiene
- Nursing
- Nurse Anesthesia
- Occupational Therapy
- Pharmacy
- Physical Therapy
- Physician Assistant
- Health, Wellness, and Occupational Studies
- Osteopathic Medicine (anticipated July 2025)

In addition to the academic offerings on campus, the University operates two clinics on campus which are open to the public: the Oral Health Center and the Dental Hygiene Center. The Oral Health Center serves as the clinical education hub for UNE's College of Dental Medicine, offering a wide range of oral health services to the community supervised by licensed faculty dentists. Services include cleanings, checkups, fillings, root canals, crowns, veneers, extractions, x-rays, partial dentures, dentures, bridges, and implants. In 2023, it provided low-cost care for 16,701 patient visits (over 139,000 visits in the last 10 years). The Dental Hygiene Clinic, serving as the clinical education center for the University's Dental Hygiene program, provides services such as oral inspections, nutritional counseling, scaling and plaque removal, sealant placement, oral hygiene instruction, blood pressure screenings, x-rays, fluoride treatments, and mouth guard fabrication. In 2023, it provided low-cost care for 2,540 patient visits (over 11,400 in the last 4 years).

UNE North



In addition to the University's academic programs and clinics, the campus includes UNE North, the Institute for North Atlantic Studies of the University of New England, located at 1075 Forest Avenue. UNE North is a signature interdisciplinary center that convenes faculty, professional staff, and students to partner with stakeholders from across the global North to address critical social, environmental, healthcare, and economic challenges in the North Atlantic and Arctic regions.

UNE North connects UNE's expertise with a robust network of academic, business, government, and non-governmental organizations to foster productive partnerships and solve common problems. UNE North supports students from across the University's colleges and disciplines to engage with this work, through their studies, and in their future careers.

Grounded in the United Nations Sustainable Development Goals, UNE North is a leader in promoting sustainable development in Maine, New England, and throughout the North Atlantic and Arctic region. UNE North is also focused on exploring innovative and scalable approaches to expand access to quality healthcare, particularly in underserved rural communities, through tools such as telehealth and digital medicine and by using pedagogical models such as collaborative interprofessional education. UNE North collaborates with the University's colleges to envision new academic programs, cultivate new research partnerships, and advance new study abroad opportunities for students.

Center for Global Humanities

The campus is also home to UNE's Center for Global Humanities (CGH), where prominent thinkers convene to interact with UNE students and the local community. The CGH hosts free, open to the public lectures and films dedicated to exploring the human condition in the 21st century.

Cultural Institutions

The campus also hosts two important Portland cultural institutions – the Maine Women Writers Collection, and the UNE Art Gallery.



Maine Women Writers Collection

The Maine Women Writers Collection was founded in 1959 by Grace Dow and Dorothy Healy to preserve and make available the writings of Maine women who had achieved literary recognition. Designated as a national Literary Landmark, the Maine Women Writers Collection hosts local women's studies programs and national conferences.



UNE Art Gallery

The UNE Art Gallery on campus was established in 1977 as the Joan Whitney Payson Gallery of Art. The gallery has a rich history of exhibitions, houses the University's permanent collection, and continues to bring imaginative and thought-provoking shows to UNE and to the public.

Campus History

The UNE Portland campus has a long history, dating back to 1830, with the founding of a co-educational boarding school called Westbrook Seminary. Established by the Kennebec Association of Universalists, the charter for Westbrook Seminary was signed by then Governor Daniel Smith on March 4, 1831. The campus's original eight acres were a gift to the Association from Zachariah Stevens, after whom Stevens Avenue is named. The first class was held on June 9, 1834, in the newly constructed Seminary Building, which is now called Alumni Hall.



Westbrook Seminary Building, circa 1834

By the 1890's, the Seminary offered four courses of study: a three-year English course and four-year programs titled scientific, ladies' classical, and preparatory. In the last part of the 19th century, the Seminary added chemistry and physics labs to Alumni Hall and promoted a serious interest in athletics that led to the construction of McArthur Gymnasium in 1900. Other notable buildings constructed during this time to support the expanding curriculum include Goddard Hall (1857), Ludcke Auditorium (1867), and Hersey Hall (1869).

Westbrook Junior College

Westbrook Seminary existed for 91 years until 1925 when the name was changed to Westbrook Junior College. As Westbrook Junior College, the school became a career-oriented women's two-year college, which prepared students to transfer as juniors to four-year colleges or universities. Under the guidance of president Dr. Milton D. Proctor, enrollment increased steadily through the 1930's, 40's, and 50's. During this period, new buildings were added on College Street and Stevens Avenue. In 1952 a new large multi-purpose building was erected and dedicated to Milton D. Proctor, Proctor Hall.

In 1958, Dr. Edward Y. Blewett became president of Westbrook Junior College. During his tenure, with generous assistance of the W.K. Kellogg Foundation, a Department of Dental Hygiene was established. Westbrook Junior College became the first residential junior college in the United States to offer a dental hygiene degree. In the 1960's, with the sustained growth and financial support from major grants and federal money, construction of six new buildings occurred: Coleman Hall (1961), Alexander Hall (1962), Linnell Hall (1962), McDougall Hall (1962), Ginn Hall (1962), and Blewett Hall (1967).

Westbrook College

On July 1st, 1970, Westbrook Seminary and Junior College entered a new stage of educational service with a new name, Westbrook College. Looking toward the future and prompted by federal legislation that prohibited the granting of federal funds to colleges that practiced gender discrimination, the College returned to co-educational.

The first Westbrook College male students enrolled in the 1973 fall semester. In 1975, the Art Gallery was constructed and opened. In the 1980's and early 1990's, the College continued to build upon the 1970's decisions and made a firm commitment to four-year programs that combined liberal arts with professional education. The new Abplanalp Library was constructed at the rear of the existing McArthur Gymnasium and opened in 1986, contributing to the College's academic strength, while the new Finley Recreation Center was completed in 1989, providing sports and leisure opportunities.

University of New England – Portland Campus

Through his tenure from 1987-1996, President William D. Andrews guided the College's transition from associate degree programs to baccalaureate degree programs. During this period, the College found itself caught in national trends of enrollment that especially hit small colleges hard. Seeking to bring Westbrook College into the 21st century, the Trustees voted to merge with the University of New England in Biddeford. On July 31st, 1996, the merger took place under the original 1831 Westbrook College charter.

Under the leadership of President Sandra Featherman, the Westbrook College campus of the University of New England has become a center of national excellence in health professions education. The current focus on interprofessional and experiential education, and recent and ongoing campus renovations, ensure a proud future for an institution that has enriched the lives of students, alumni, neighbors, and friends for the last 189 years.

Site & Neighborhood Context

The UNE campus occupies a triangular shaped 72-acre site in the Deering Center area of Portland and is bounded by Warren Avenue, Bishop Street Extension, and Bishop Street to the north; Stevens Avenue to the east; and the Evergreen Cemetery and Central Maine Power Utility Corridor to the south (see **Figure 1.1**). Within the campus there are several residential properties not owned by UNE along College Street. Also within the campus is the Westbrook College Historic District. UNE owns parcels located outside of campus proper at 812 Stevens Avenue, 798 Stevens Avenue, 32 Bell Street, and 1075 Forest Avenue (also known as UNE North).

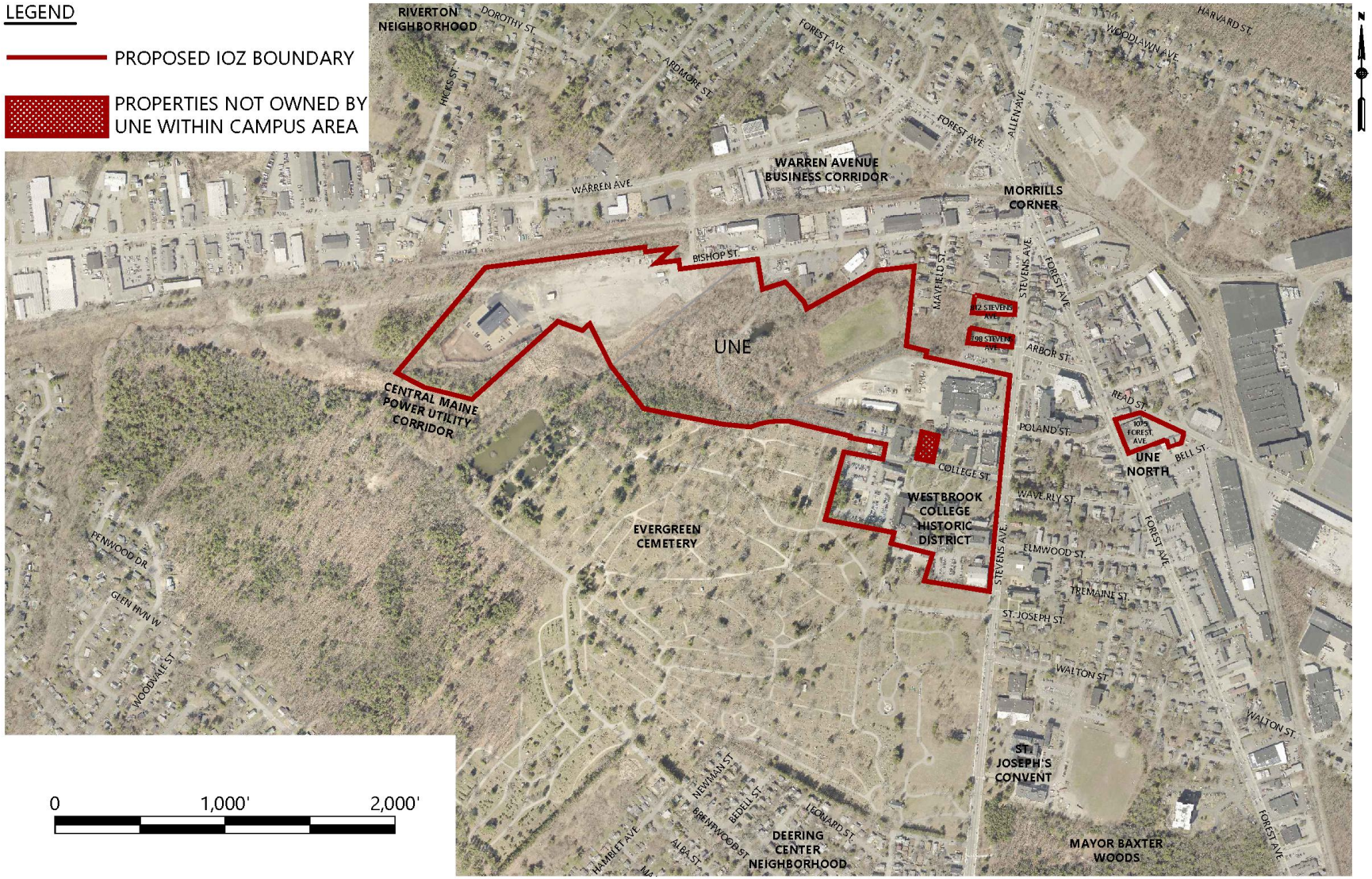


Figure 1.1 UNE Campus Site & Neighborhood Context Map

To the north of the campus, the area includes the Riverton Neighborhood, the Warren Avenue Business Corridor, and Morrill's Corner. To the south of the campus, the area includes St. Joseph's Convent, Mayor Baxter Woods, and the Deering Center Neighborhood. As stated above, the campus is adjacent to the Evergreen Cemetery, which is a 239-acre cemetery and National Historic Landmark established by the City in 1854. The Evergreen Cemetery is also utilized by the community for recreation and offers important community greenspace and recreational amenities including a network of forested trails for walking, cross-country skiing, and bird watching. Ponds located on the cemetery property also offer valuable habitat for wildlife.

Land Use

Land uses on campus and in the surrounding neighborhood include post-secondary facilities, institutional, business, residential, open space, transportation and utility uses (see **Figure 1.2**). Beyond the campus boundaries, the area includes the Stevens Avenue Congregational Church, Stevens Square Community Center, St. Joseph's Catholic Church, a catholic elementary school, St. Brigid, the Samuel Wilde Memorial Chapel, and the Portland Recovery Community Center. Business uses generally run along Warren Avenue, Bishop Street, Stevens Avenue and Forest Avenue and range from industrial to neighborhood food establishments and retail. Residential uses, the majority being detached single family homes, can be found in the area north of Warren and Woodlawn Avenues, between Stevens and Forest Avenue as well as south of Evergreen Cemetery. There are also a few multi-unit residential uses including The Park Danforth, a retirement community across from campus, and the Deering Pavilion, which provides senior living apartments. The open space uses in the area include Evergreen Cemetery, which has trails that connect to campus greenspace, and Mayor Baxter Woods.

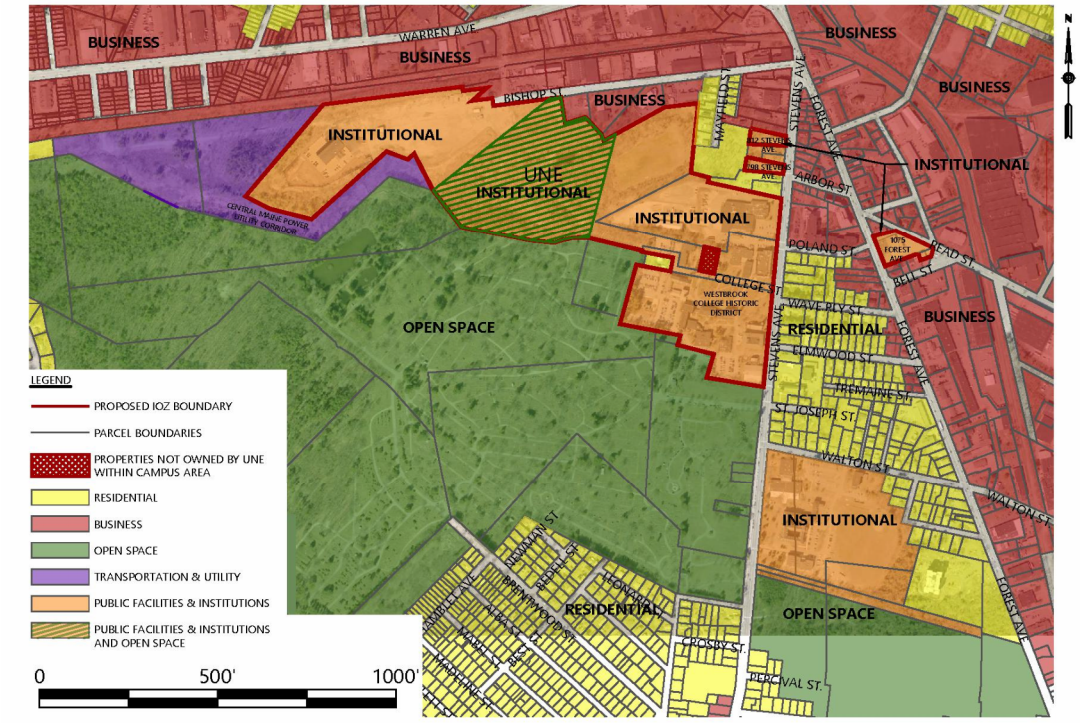


Figure 1.2 UNE Campus Site & Neighborhood Context: Existing Land Use

Zoning

The UNE campus is currently located within several zoning districts, including RN1 and RN3 Residential, IH Industrial – High Impact, IM Industrial – Moderate Impact, and B2 Business Community. Although the campus has remained in its original physical location since its establishment, the existing underlying zoning regulations do not effectively facilitate institutional development, as they primarily cater to residential and industrial uses. The campus core is located within the R5 Residential district, in which institutional uses are only conditionally allowed. Due to the inadequacy of the base regulatory framework of these zoning districts, development on the campus has historically been governed by these zones through conditional use. UNE has developed this Institutional Development Plan (IDP) and new Institutional Overlay Zone (IOZ) to better support the institutional needs of the campus. See **Figure 1.3** for a map of UNE's IOZ in its zoning context. As part of the IOZ process, UNE will simultaneously seek to change the underlying zones within the campus to B2 Business Community. See **Figure 1.4** for the proposed zoning map. This change will allow for simplification of the IOZ Regulatory Framework, will more accurately reflect the current uses within the campus, and will complement the surrounding zoning.

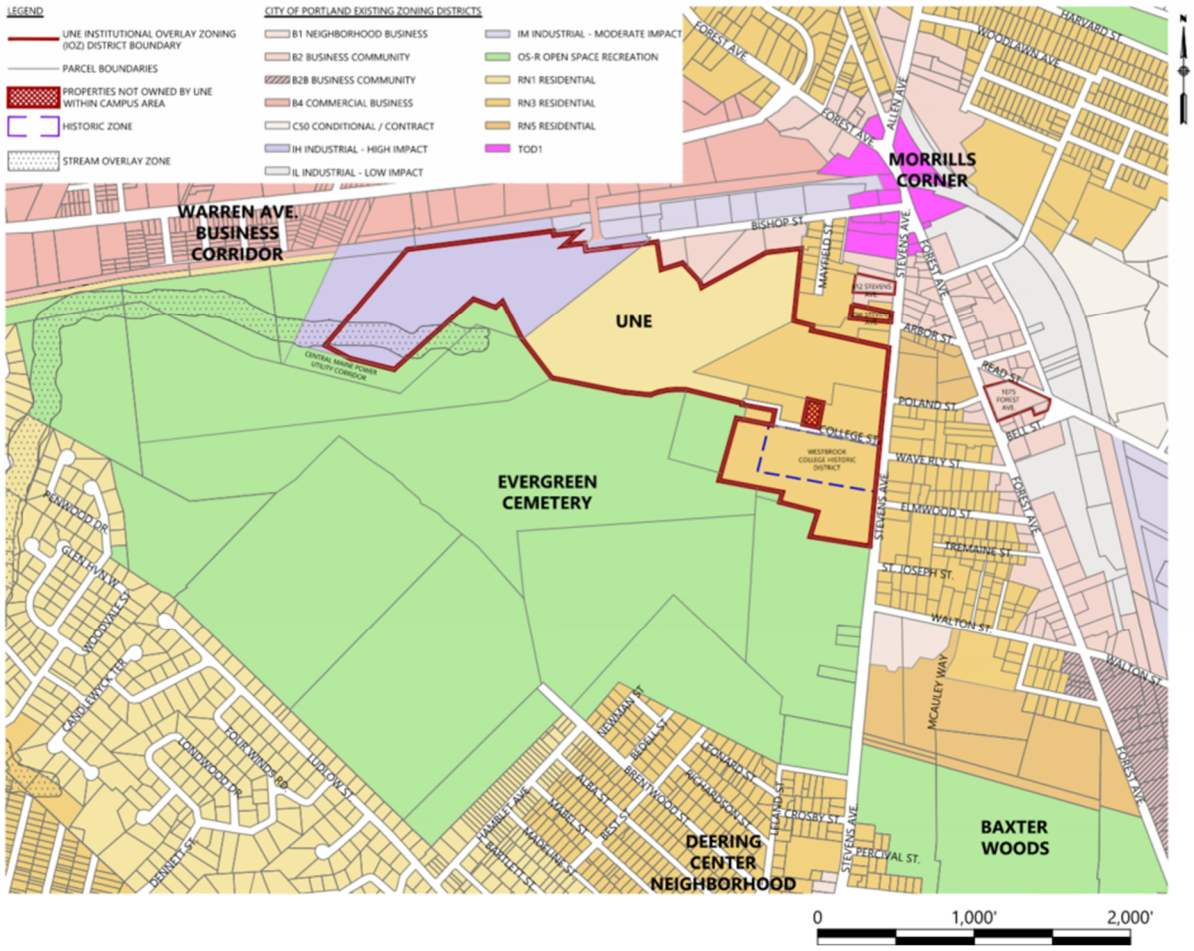


Figure 1.3 UNE Campus Site & Neighborhood Context: Existing Zoning

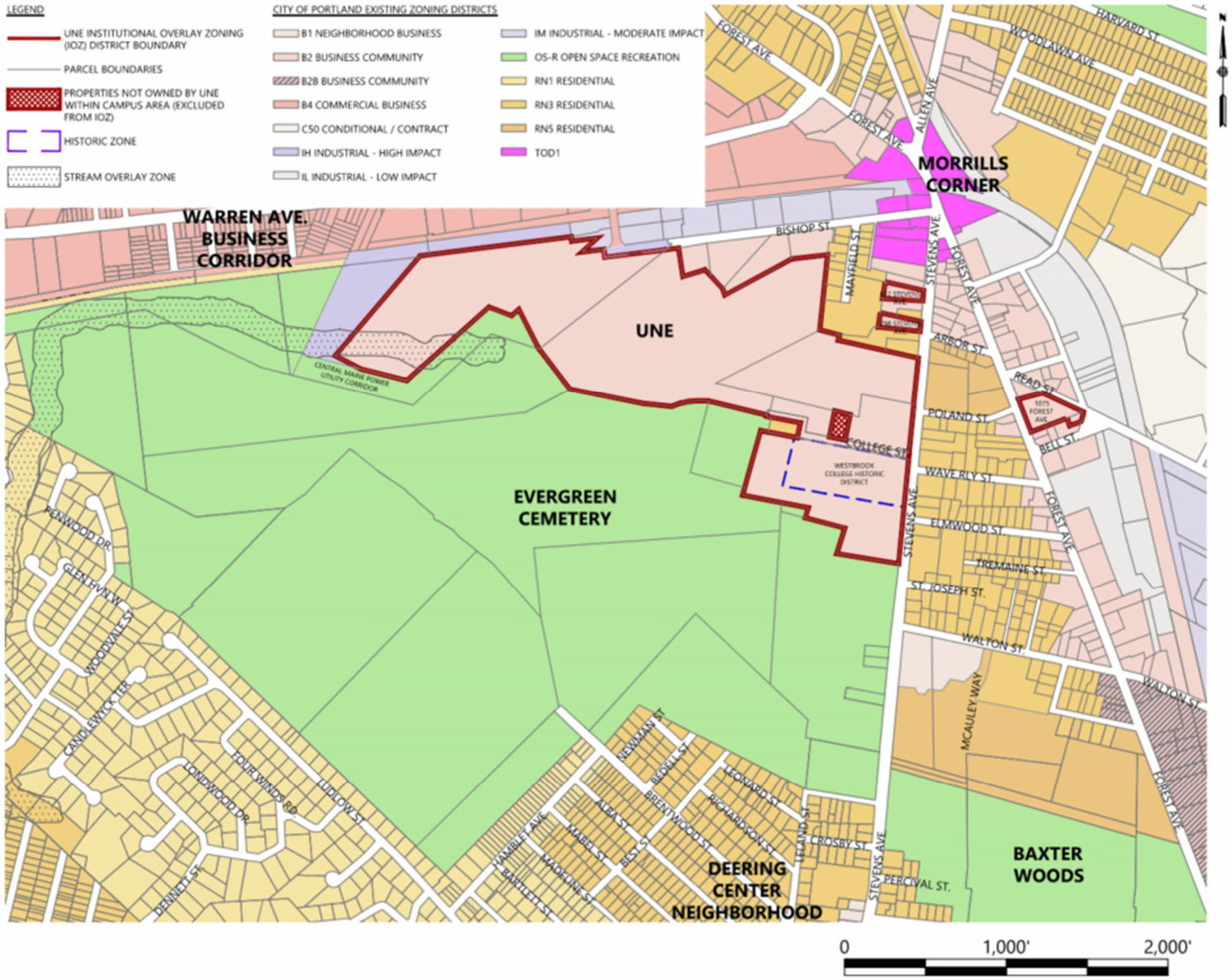


Figure 1.4 UNE Campus Site & Neighborhood Context: Proposed Zoning

Current Campus Buildings

The UNE campus includes 25 separate facilities and 11 parking areas, with a historic campus core located in the southeastern quadrant of the campus, centered around a Campus Quad (see **Figure 1.5**).

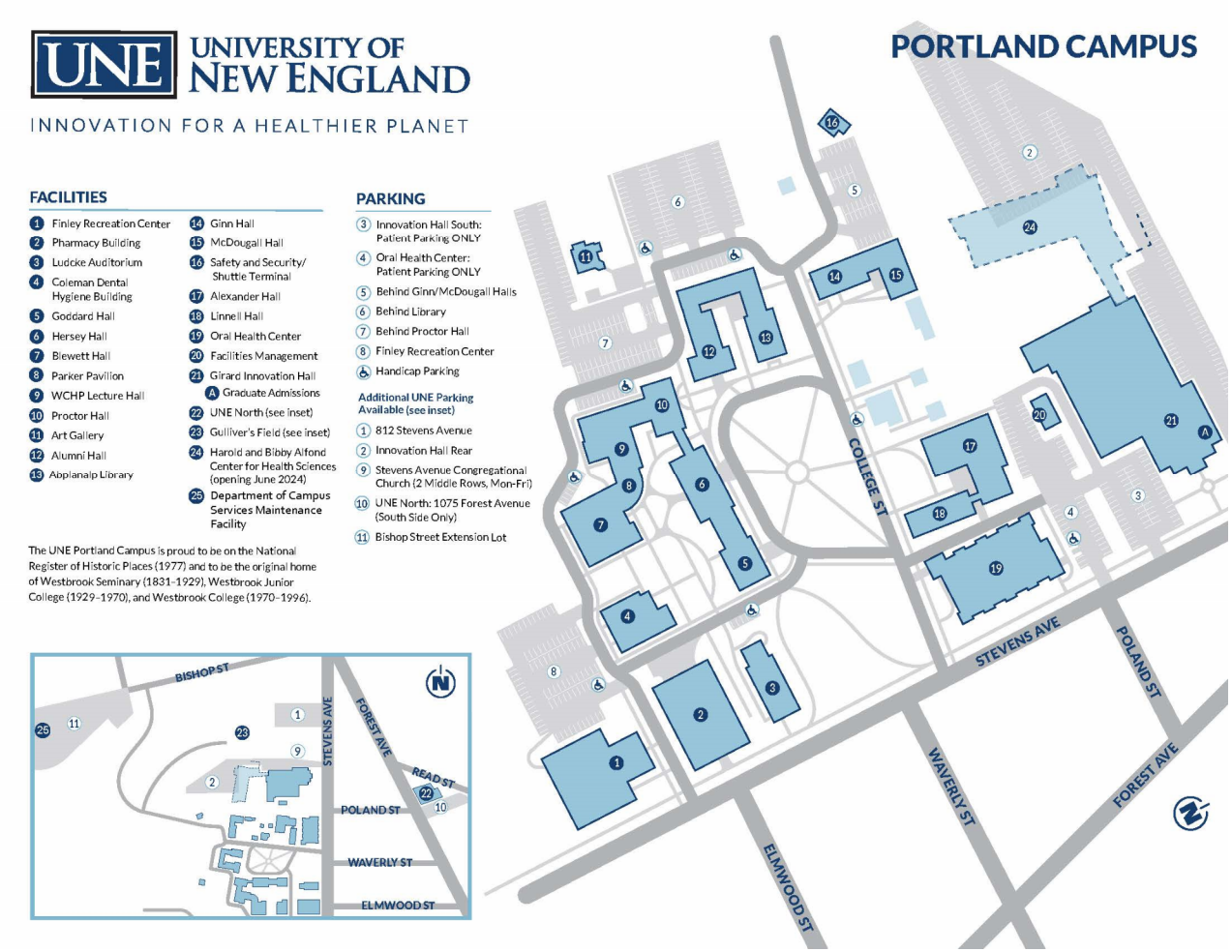


Figure 1.5 Campus Map

Table 1.1

Campus Facilities

Facility Number on Campus Map	*Facility Name*	*Total Floor Area (SF)*	*Building Height (FT)*	*Use*
1	Finley Recreation Center	20,000	36	Recreation
2	School of Pharmacy Building	46,380	55	Academic and research facility
3	Ludcke Auditorium	9,676	42	Auditorium
4	Coleman Hall	10,718	22	Dental Hygiene Program and Clinic
5	Goddard Hall	12,696	48	Academic support with classrooms and faculty offices
6	Hersey Hall	22,170	55	Academic offices
7	Blewett Hall	31,650	32	Classrooms and laboratories
8	Parker Pavilion	6,600	22	Academic support
9	WCHP Lecture Hall	(Parker Pavilion)	22	Lecture hall
10	Proctor Hall	31,074	56	Classrooms and lecture halls
11	Art Gallery	2,890	30	Artwork exhibitions
12	Alumni Hall	9,809	40	Administrative offices, meeting rooms, student study lounge
13	Abplanalp Library	26,636	38	Library
14 + 15	Ginn and McDougall Halls	34,091	40	Support offices
16	Safety and Security / Bus Terminal Building	720	20	Office space

Table 1.1 (continued)

Campus Facilities

Facility Number on Campus Map	*Facility Name*	*Total Floor Area (SF)*	*Building Height (FT)*	*Use*
17	Alexander Hall	13,912	22	Student Union complex; dining hall; campus bookstore
18	Linnell Hall	12,762	26	Support offices; Student Health Clinic
19	Oral Health Center	40,300	42	Dental clinic and simulation lab for College of Dental Medicine
20	Facilities Management Building	2,300	30	Offices and maintenance shop
21	Innovation Hall	66,794	34	Academic support offices, classrooms, student study spaces, multi-function meeting space
22	UNE North (1075 Forest Avenue)	18,000	20	UNE North program; storage
23	Gulliver's Field	2.5-acres	N/A	Soccer and athletic field
24	Harold and Bibby Alfond Center for Health Sciences	112,000	54	College of Osteopathic Medicine (COM)
25	Department of Campus Services Maintenance Facility	14,500	28	Maintenance Facility

Table 1.1 (continued)

Campus Facilities

Parking Facility Number on Campus Map	*Lot Description*	*Total Parking Area (SF)*	*Total Number of Parking Spaces*	*Number of ADA Spaces*	*Number of EV Charging Spaces*
1	812 Stevens Avenue	8,300	30	0	0
2	COM	72,000	182	6	36
3	Innovation South	14,600	33	0	0
4	Oral Health Center	14,600	24	2	1
5	Ginn/McDougall Halls	12,400	28	0	2
6	Behind Library	37,800	103	4	0
7	Behind Proctor Hall	48,700	121	5	0
8	Finley Recreation Center	30,800	89	2	0
9	Stevens Avenue Congregational Church	14,000	31	2	0
10	UNE North: 1075 Forest Ave	31,200	72	0	0
11	Bishop Street Extension Lot	130,000	334	10	70
N/A	Ludcke	1,500	3	2	0
N/A	Hersey Circle	4,500	4	0	0

Property Ownership

UNE owns a number of properties that make up the Portland campus, listed in **Table 1.2** below.

Table 1.2

UNE Owned Properties in the City of Portland

Parcel Address	*Current Land Use*	*Parcel Address*	*Current Land Use*
Contiguous Campus Core			
684 Stevens Avenue	Post Secondary School	63 College Street	Post Secondary School
706 Stevens Avenue	Post Secondary School	79 College Street	Post Secondary School
710 Stevens Avenue	Post Secondary School	83 College Street	Post Secondary School
714 Stevens Avenue	Post Secondary School	0 Bishop Street	Post Secondary School / Parking
772 Stevens Avenue	Post Secondary School	**Outparcels**	
1 College Avenue	Post Secondary School	812 Stevens Avenue	Post Secondary School
31 College Street	Post Secondary School	1075 Forest Avenue	Post Secondary School
41 College Street	Post Secondary School	32 Bell Street	Post Secondary School
51 College Street	Post Secondary School	798 Stevens Avenue	Post Secondary School

Functional Land Use Links

There are four outparcels associated with UNE's Portland campus, as shown in **Table 1.2**. While not immediately connected to UNE's contiguous campus, the outparcels have distinct uses and contribute to UNE's operations. 1075 Forest Avenue houses the UNE North program within an existing 18,000 SF, 20-foot-tall building. Parking for this facility is provided on the site, and on the adjacent 32 Bell Avenue. 812 Stevens Avenue contains a 3,500 SF, 24-foot-tall facility that was formerly a dental office, but was damaged in a fire and subsequently donated to UNE. The building is currently vacant, but the associated parking lot is utilized by UNE for parking. 798 Stevens Avenue was recently acquired by UNE and contains a residential building; UNE does not currently have specific plans for that building and anticipates it may be used as housing for UNE faculty in the future. Connectivity between the outparcels and the contiguous campus is provided by a well-established network of public sidewalks, roadways, and bike routes, which are further described in Chapter 3, Transportation, of this IDP.

The Bishop Street Intermodal Transportation Facility, while one UNE's contiguous campus, is located at the end of Bishop Street away from the core campus. There is a shuttle bus provided between the more remote Bishop Street lot and the campus core to increase the lot's usage. There is a heated shelter with Wi-Fi at each end of the shuttle route to encourage ridership. The Bishop Street lot does not require a parking permit, providing free parking to further encourage its use. The shuttle runs continuously from 7 AM to 7 PM. With these incentives, parking in this remote lot has increased significantly.

Current Campus Populations

The UNE campus focuses mainly on graduate health professions programs and operates as a commuter (non-residential) campus. Clinical experience is integral to all academic programs, with varying criteria for timing and duration. As students rotate into clinical settings, the campus population fluctuates throughout the academic year. UNE boasts around 100 clinical affiliations, spanning 65 sites in Portland and over 450 statewide.

In recent years, the total number of students and staff present on campus has been declining, in part due to the COVID-19 pandemic, and the shift towards offering a hybrid model of study where students can attend classes online. Flexible work arrangements are also available for faculty, with UNE encouraging non-student facing personnel to work remotely when feasible. **Table 1.4** summarizes the full-time equivalent (FTE) student, faculty, and professional staff present on campus since 2016.

Table 1.3

FTE Student, Faculty, Professional Staff, and Patient Visits Data

Year (Fall Matriculation)	FTE Student Population	Full-time Faculty and Professional Staff	Total Full-time Campus Population	Patient Visits (Dental Hygiene & Medicine)
2016	1,362	470	1,832	20,745
2017	1,304	472	1,776	21,465
2018	1,282	467	1,749	21,295
2019	1,247	456	1,703	25,035
2020	1,162	442	1,604	20,580
2021	1,198	578	1,776	20,403
2022	1,098	541	1,639	20,009
2023	979	568	1,547	19,241

Typically, students complete their degree programs on either the Portland or Biddeford campus, with faculty and staff primarily assigned to one campus. While some commuting between campuses does occur, the trend towards remote work and the use of virtual meeting platforms like Zoom has led to fewer faculty and staff traveling between campuses for meetings, resulting in reduced traffic in the surrounding areas.

In addition to accommodating students, faculty, and professional staff, the campus regularly hosts special events and functions utilizing its larger venues, including the function halls in Innovation Hall, Ludke Hall, and Parker Pavilion, as well as occasionally outdoors on the main campus green. These events typically occur outside of regular university operational hours, often on Saturdays, Sundays, and after 5 pm on weekdays, to minimize disruption to core educational activities.

Baseline Characteristics of the Institution

Existing Resources

Historic

UNE's campus includes one of the twelve locally designated historic districts in the City of Portland, the Westbrook College Historic District, which is also nationally registered. The Westbrook College Historic District is composed of a cohesive, homogeneous group of nineteenth and twentieth century buildings that initially formed the rural campus of Westbrook Seminary. The district includes six buildings on the campus that were built between 1834 and 1952:

Westbrook Seminary Building (now Alumni Hall) built in 1833, this building was the first erected in the district, and was originally built with a tower relocated from the Market House in Portland.

Goddard Hall and Hersey Hall were the next buildings erected, in 1857 and 1869, respectively. They were sited at a right angle to Alumni Hall, beginning the idea of a campus quadrangle.

The Universalist Church (now Ludcke Hall) was designed by Francis H. Fassett in 1867 to front on Stevens Avenue, with its axis parallelling that of Goddard and Hersey halls and is Gothic Revival in style.

McArthur Gymnasium (now part of Abplanalp Library) was built in 1900 and designed by Francis H. and Edward F. Fassett. Its location beside Alumni Hall reinforced the campus plan of an L-shared grouping of buildings facing a quadrangle.

Proctor Hall was erected in 1952 between Hersey Hall and Alumni Hall, effectively closing the L-shaped campus group that compliments the massing and style of Goddard and Hersey Halls.

To date, Goddard, Hersey, and Alumni Halls have undergone historical interior renovations and have maintained and/or restored the exteriors to their original grandeur and color. Similarly, modifications to Ludcke and Proctor Hall, and the Abplanalp Library have been completed in conformance with all applicable historic preservation regulations and considerations. The renovation of Alumni Hall was awarded the 2016 Honor Award by Maine Preservation. As UNE expands its campus, it remains mindful of its historical character, aiming to design new facilities that harmonize with the existing historic district.

Existing Open Space and Natural Resources

UNE's campus boasts significant open space with its large campus green located at the main entrance on College Street, and through its preservation of existing freshwater wetland areas. The campus consists of natural area, open space, and ample opportunity for both passive and active recreation for students and the surrounding community offering amenities such as biking and walking trails, a central campus quad in the Westbrook College Historic District, tree-lined streets and pedestrian pathways, and forested area that offers wildlife and bird watching. The Portland Trails Forest City Trail crosses campus along College Street and provides a connection between on- and off-site recreational opportunities. UNE is committed to partnering with Portland Trails to extend their nearly 70-mile network of trails onto the Campus, with the goal of safely linking the Evergreen Cemetery section of walking paths to those in North Deering and providing more opportunities for the community to access Portland's open space and natural areas. The forested areas of campus are host to hardwood and coniferous tree species and emergent wetland species. These vegetative species comprise the riparian forest and scrub-shrub wetland complex surrounding the Capisic Brook headwaters. The City of Portland has identified Capisic Brook as its highest priority watershed and has outlined implementation measures to address water quality in the watershed, as summarized in the Capisic Brook Watershed Management Plan. UNE recognizes the ecological role the campus natural resources provide and is committed to implementing measures that promote groundwater recharge, increase flood capacity, reduce downstream erosion and pollution, and benefit wildlife habitat. A review of existing natural resources including open space and recreation, ecological communities, aquatic resources, and the Capisic Brook Watershed; an assessment of potential impact and impact avoidance of proposed future development; natural resource protection measures; and a review of the campus's operational sustainability is provided in Chapter 4, Environmental Plan, of this IDP.

Existing Transportation System

The campus is serviced by a variety of transportation infrastructure, including several arterial highways in close proximity with convenient access to Maine Turnpike (via Riverside Street, Warren Avenue and Bishop Street) and access to I-295 via Forest Avenue; metro transit bus service; pedestrian infrastructure; EV charging stations; and a bicycle network. The new connector drive allows direct access for UNE community members between the core campus and Bishop Street, allowing users to bypass Morrill's Corner. Based upon the last traffic impact study, performed for the recent permitting process for the relocation of the College of Osteopathic Medicine (COM) to the Portland campus, all campus drives operate at good levels of service ("A" or "B") with no capacity constraints. Stevens Avenue has dedicated marked bike lanes from Pleasant Avenue to south of Bishop Street, providing direct access to the campus. Similarly, there are dedicated bike lanes on Forest Avenue within the campus vicinity, excluding Morrill's Corner where there are shared motor vehicle – bike lanes. UNE provides bicycle racks at a ratio of 1 bicycle rack space per every 20 UNE community members. There is access to showers and lockers facilitating bicycle commuting. Transit service is provided via Greater Portland Metro Route 9, which connects downtown Portland to North Deering via Stevens Avenue and also by Metro Route 2, which connects downtown Portland to Riverton via Forest Avenue. There are two Route 9 Metro stops located on campus.

UNE has had a Transportation Demand Management (TDM) plan since 2010, which is routinely updated. The primary goal of the plan is to reduce vehicle trips to campus and, thus, reduce demand for on-site parking. Reducing trips, both on-campus and off-site, improves traffic flow in the surrounding area, and reduces UNE's carbon emissions. UNE routinely performs student and staff surveys to determine arrival and departure times, transportation modality and parking usage. The results have guided UNE in adjusting its TDM plan, including infrastructure upgrades and bus

schedule changes. Hot mapping of faculty, staff, and student home addresses was utilized to identify additional measures for enhanced promotional activities towards fostering alternative transportation modes.

UNE has a number of parking facilities on its campus and performs annual parking counts to evaluate occupancy rates. Based upon the most recent counts, parking demand peaks between 10:00 AM and 2:00 PM and varies by day. There are currently eleven parking lots located on campus plus on-street parking along two campus roadways. These facilities currently provide a total of 1,064 parking spaces. In 2022, there were 1,241 spaces. The university has been decreasing spaces over time as new projects are completed and parking needs are re-evaluated. A campus parking analysis, based upon the historical count data, projects a maximum occupancy rate per university population to be at 0.39 from 2025 to 2033. This rate is similar to the Institute of Transportation Engineers (ITE) 85th percentile parking rate. UNE has purposefully maintained a surplus of spaces on campus to assure adequate on-site parking, to be sensitive to the neighborhood concerns about on-street parking on Stevens Avenue and in the neighborhood.

Existing Utility Infrastructure

Existing stormwater management systems utilize on-site infiltration systems, with secondary use of conveyance to the Stevens Avenue and Bishop Street combined sewer system. Existing wastewater infrastructure for the campus is discharged to a combined sewer system in College Street and Stevens Avenue. Additionally, UNE participates in the City of Portland's Fats, Oils, and Grease (FOG) Program to responsibly dispose of these biproducts. Maintenance of these systems is performed regularly to ensure that they are operating effectively. For water supply the campus is serviced by the Portland Water District. For electricity, the campus is serviced by Central Maine Power. Unitil currently provides natural gas service to the campus.

Compliance with the City of Portland Plans and Studies

City of Portland Plan 2030

UNE views itself as a partner to the City of Portland and this partnership is integral to their shared sustainable future. The campus was used to host two of the four Community Forums in 2016 that included presentations and engagement activities to shape Portland's Plan 2030. UNE is an important stakeholder and, as a major employer and educator of healthcare professionals, helped provide information and input for developing 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. Excerpts from the plan that UNE works to promote and advance are provided here:

Environment

- "Develop climate resilience through specific carbon reduction goals, comprehensive climate adaptation strategies, and protections for the city's most vulnerable infrastructure."
- "Adopt sustainable land use and transportation policies that support connectivity, walkable neighborhoods, and multi-modal transportation."

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."

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."

Housing

- "Encourage additional contextually appropriate housing density in and proximate to neighborhood centers, concentrations of services, and transit nodes and corridors as a means of supporting complete neighborhoods."
- "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

- "Sustain and build our system of parks, trails, and open spaces to enhance our quality of life, protect our environment, and promote the economic well-being of our remarkable city by the sea."
- "Provide high-quality, well-designed, well-maintained, safe, and integrated parks, trails, public open spaces, and recreational opportunities accessible to all residents."
- "Strengthen connections between open spaces."

Facilities & Services

- "Continue to work in partnership with regional and State agencies, neighboring communities, nonprofit organizations, and private property owners in support of efficient, sustainable City services."

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."
- "Enhance regional trail connections."

One Climate Future

UNE is committed to considering the One Climate Future Plan in its future campus development. The One Climate Future Plan is a joint plan developed by the cities of Portland and South Portland with the goal of working together to be inclusive, vibrant communities that provide opportunities for residents and businesses to thrive in a changing climate. The plan has four elements, which UNE considers and incorporates into their campus planning:

Buildings & Energy Use

- Use of water-efficient/low flow fixtures to reduce water consumption
- Strive for LEED silver building design as standard for energy efficiency goals

Transportation & Land Use

- Providing bike routes, parking, and storage to encourage bike accessibility and use
- Implementation of electrical vehicle charging infrastructure
- Providing safe and accessible pedestrian routes
- Connectivity to public transit stops

Waste Reduction

- Encourage and provide recycling of materials throughout campus
- Use of recycled building materials during construction where feasible

Climate Resilience

- Preserve and protect natural resources through thoughtful land planning
- Incorporate resilient infrastructure systems for stormwater management

Smart Corridor Plan

UNE is committed to considering the recommendations of the Smart Corridor Plan (SCP) in its future campus development. The plan emphasizes the importance of completing the Smart Corridor, a seven-mile route from Morrill's Corner and UNE in Portland to Bug Light Park and Southern Maine Community College (SMCC) in South Portland. This corridor, which includes Forest Ave, High Street/State Street, the Casco Bay Bridge, and Broadway, is used by vehicles, buses, pedestrians, and bicyclists. The goals of the plan include balancing the needs and priorities of all roadway users and corridor stakeholders by encouraging high-quality development, improving safety in all travel models, managing traffic access and congestion, and improving travel options and multimodal access in the corridor. Consistent with this plan, UNE has constructed an internal access roadway that has reduced traffic through Morrill's Corner, encourages use of multi-modal transportation such as bicycling and public transport, and includes in its campus planning the goals to improve accessibility and safety for all street users, supporting a more connected and efficient transportation network.

The SCP highlights the existing Starbucks store at 1080 Forest Avenue as an example of how incorporating Complete Streets green stormwater infrastructure can serve as a template for future development in the corridor. The UNE office at 1075 Forest Avenue is noted as a street frontage that addresses the street well and would be enhanced by the recommended planting palette and materials design guidelines found in the SCP. The SCP also identifies the need for the City to install improved lighting on Poland Street, which is frequently used by UNE students to access campus. UNE supports these recommendations and will consider them in its future campus development.

Forest Avenue Redesign Project

The City of Portland is in the process of evaluating design alternatives for the Forest Avenue Redesign Project, the goal of which is to increase safety and accessibility for all street users, including pedestrians, motorists, bicyclists, and transit users. While the project is not immediately adjacent to UNE's campus, when implemented, it will improve and modernize Forest Avenue between Woodfords Corner to USM/Exit 6, which is a corridor providing access between UNE's campus and downtown Portland and I-295. The project's goals are consistent with UNE's goals for their campus, which include providing a positive pedestrian experience, encouraging the use of bicycling and established bike lanes, and connections to public transit. Improvements in traffic flow and safety on Forest Ave can benefit the broader community, including UNE students and staff who travel through this corridor. By enhancing accessibility and safety, the project supports a more connected and efficient transportation network. UNE will consider the Forest Ave Redesign Project in future development to ensure that the potential benefits to its students, staff, and the surrounding community are fully realized.

Public Involvement in the IDP

Prior to submission of UNE's Institutional Overlay Zone (IOZ) application to the City, UNE held a neighborhood meeting on June 13, 2024, at 6pm at the UNE campus at 716 Stevens Avenue, Hannaford Lecture Hall, Room 109, in the Pharmacy Building. This meeting was appropriately noticed in accordance with the Land Use Code. In an effort to be more inclusive, UNE noticed abutters within 1,000 feet of the campus, rather than the required 500 feet. Thirteen members of the community were in attendance. The purpose of this meeting was to provide a general overview of the IOZ process to the community and solicit community input on what should be considered in this Institutional Development Plan (IDP).

After the submission of UNE's IOZ Application to the City, UNE held a second neighborhood meeting on October 30, 2024, at 6pm at the UNE campus, in the same location as the first meeting. In addition to the notice to abutters within 1,000 feet of the campus, community members that provided their email addresses at previous meetings were notified electronically. Twelve members of the community were in attendance. The purpose of the meeting was to provide an update of the IOZ process, including sharing information from the first draft of the IDP and Regulatory Framework documents, and to provide an opportunity for public engagement and feedback. Certifications for both meetings were submitted to the City for record, which included a copy of the notices sent, sign-in sheets, presentation materials, and record of public feedback.

In addition to the two required neighborhood meetings, UNE has hosted two other meetings with the Deering Center Neighborhood Association (DCNA) to foster public engagement and feedback on the IOZ application and process. The first meeting was held on July 2, 2024, at 6pm in the same location as the neighborhood meetings, and seven members of the public were in attendance. Similarly, the purpose of the meeting was to provide a general overview of the IOZ process and solicit feedback for the IDP. The second meeting with DCNA was held on September 16, 2024, from 6-6;35pm at the Deering Center Community Church. Nine members of the DCNA were in attendance. The purpose of the meeting was to share an update on the IOZ process, and to share IOZ materials including the Campus Master Plan, Regulatory Framework, and Height Map. The meeting provided an opportunity for DCNA engagement in the IOZ process and provided a forum to obtain feedback from the public and these important neighbors to UNE. Technically, these meetings did not qualify as neighborhood meetings, as abutter notices were not provided, though UNE did reach out to and invite this neighborhood group prior to the meeting. These community meetings, along with the two neighborhood meetings,

sought community input and helped inform the development of this IDP. All meeting attendees who provided email contact information were emailed a copy of the Campus Master Plan as well as the notification of the Planning Board Workshop.

In addition to the neighborhood and community meetings, there are several opportunities for public engagement as part of the City review process. This includes opportunities for written or spoken comment at the Planning Board Workshops and Hearing, and at the City Council Hearing.

2. CAMPUS MASTER PLAN

Campus Master Planning Process

UNE has undergone a campus master planning process to evaluate its existing and future facilities' capacity to deliver state-of-the-art educational programs to its students. Through this evaluation, the University has identified development opportunities to support the future growth requirements of UNE and its educational programs on campus.

Over the past decade, UNE has expanded its educational programs and delivery methods, particularly in healthcare. This growth necessitated infrastructure changes to support its mission of providing high-level healthcare education in Maine, especially in the local Portland area. The Campus Master Plan has been developed to accommodate a dynamic campus that continues to evolve alongside changes in education and technology. This IDP identifies potential development and expansion projects aligned with this goal that may be developed at the campus to accommodate growth long-term.

Current Facility Assessment

The first step in the master planning process included evaluation of the current campus and its facilities to establish a baseline for UNE's Campus Master Plan. This evaluation included review of the age and condition of existing buildings, the current interior building layouts, departmental allocation of various educational programs, as well as the overall campus infrastructure including utilities, roadways, parking lots, open space areas, and pedestrian facilities. Establishing this baseline allowed UNE to identify areas to be evaluated and considered as part of future campus development.

Current and Future Program Requirements

As a leading educator of healthcare professionals, UNE is committed to providing a transformational learning experience to its students. To achieve this goal, and the priorities outlined in its Strategic Plan, UNE has identified current and future program requirements that will enable the campus to adapt and thrive in a rapidly changing world.[1] Anticipating these changes and establishing a framework that will provide maximum flexibility to support future adaptation were a key component of identifying future program requirements and developing the Campus Master Plan. Consideration of the projected trends of campus users and anticipated daily populations were also an integral part of identifying future needs and are discussed in Section 2.2.

Planning factors that were considered in establishing the Campus Master Plan and this IDP are outlined in **Table 2.1**.

[1] University of New England (2018). *Charting Our Future: Strategic Plan 2018-2023*. https://www.une.edu/sites/default/files/3_charting_our_future-strategic_plan_2018-2023_draft.pdf

Table 2.1

Campus Planning Factors

Factor	Consideration
INNOVATION & TECHNOLOGY	Ability to support future programs such as telemedicine, virtual technologies, artificial intelligence, and related technologies to enhance innovative and dynamic classroom and experiential learning opportunities
INTER-PROFESSIONAL EDUCATION	Strengthen the inter-professional educational model which brings all of the healthcare related programs together, on one campus, in an environment where there are co-educational opportunities to allow for real life interactions
HOUSING	Provision of on-campus housing to help offset a high-cost and high-demand housing atmosphere in the City of Portland; to foster community; afford more time to study and learn; and reduce traffic in and around the campus
OPEN SPACE & NATURAL RESOURCES	Emphasis on preserving natural resource areas and siting new development to have minimal impacts to existing wetlands and streams, and prioritizing open space for recreational use by students, faculty, staff, and the public
NEIGHBORHOOD CONTEXT	Siting and design of development projects such that they complement the surrounding neighborhood, including considerations for traffic and pedestrian access

Adjacencies

UNE has identified program adjacencies as a significant challenge, particularly as it relates to its interprofessional educational model. Maximizing key programmatic adjacencies was a large driver of the Campus Master Plan.

Currently, the College of Osteopathic Medicine (COM) is located on UNE's Biddeford campus, and the majority of the Westbrook College of Health Professions (WCHP) programs and College of Dental Medicine (CDM) are based on the Portland campus. All three colleges currently utilize space on both campuses, which causes large inefficiencies in the educational model and requires students and faculty to travel long distances. One of the major aspects of this Campus Master Plan addresses these inefficiencies by bringing all of these colleges together onto the Portland campus and providing more appropriate building spaces to support educational programming for the COM, CDM and WCHP colleges. The new COM building,

the Harold and Bibby Alfond Center for Health Sciences, is currently under construction, and expected to be completed in 2025. The COM building is represented as facility number 24 on **Figure 1.4**, UNE Portland Campus Map.

Projected Campus Populations

UNE is projecting an increase in full-time equivalent student, faculty, and professional staff populations over the next 10+ years, as noted in **Table 2.2**. The relocation of the COM from UNE's Biddeford to Portland campus will result in an increase of approximately 400 students and 160 faculty and professional staff on the Portland campus.

Looking forward to the next 10+ years, UNE anticipates a moderate increase in student enrollment year over year. These estimates have been calculated based on historical growth data, considering predictable swings in programmatic capacities and enrollments, limits to programs, and additional offerings. The Fall 2025 student population was determined using the current student population and the projected student population for the Harold and Bibby Alfond Center for Health Science, once complete.

Table 2.2

Projected Growth of FTE Student, Faculty, Professional Staff, and Patient Visits

Year (Fall Matriculation)	FTE Student Population	Full-time Faculty and Professional Staff	Total Full-time Campus Population	Patient Visits (Dental Hygiene & Medicine)
2025	1,400	750	2,150	20,000±
2028	1,600	760	2,360	20,000±
2033	1,750	760	2,510	20,000±

UNE anticipates projected patient visits to remain consistent with historical values, as reflected in **Table 1.4** and **Table 2.2**. UNE does not track other types of visitors, such as visiting faculty, prospective students, or guests.

At the beginning of the 2023-2024 Academic year, 108, or 26% of the Faculty and Staff on the Portland campus, were participating in Flex Work scheduling, which affords them the ability to work remotely at least one day per week. This program is expected to continue. This has reduced parking and traffic demands. The vast majority of the academic programs on campus have face to face programming, with little or no online options. Most majors have clinical requirements to be on campus, which place students in local, statewide, or regional clinical settings. UNE does have a strong online academic program; however, none of those students come to the campus, and thus are not considered in the parking or other areas of impact analysis.

The UNE Portland campus does not currently provide on-campus housing as most of its students are enrolled in graduate degree programs. Currently, most of UNE's Portland students commute from areas in and around Portland. The student population enrolled at UNE's Portland campus generally consists of students aged 22 years and above, who may already have established off-campus housing accommodation. Roughly 72% of UNE students, faculty, and staff live within a 20-mile commuting distance of campus.

UNE is aware of the current housing challenges in the City of Portland, including a limited supply of affordable housing options, and intends to develop on-campus housing to help alleviate some of the housing challenges for its students. Incorporating on-campus housing will help to reduce the number of vehicle trips to and from campus, as well as foster a sense of community amongst students. As described in **Table 2.3**, UNE is considering construction of a new residence hall that would provide 350 beds for students and their families.

Key Institutional Needs

UNE's current and future facility needs can be summarized into 5 main categories:

1. Campus Reorganization
2. New Building and Renovation Need
3. Educational/Pedagogy Improvements Need
4. Campus Infrastructure Needs
5. Housing

Campus Reorganization

For decades, UNE's Portland campus has been the home of many of the University's health profession programs. In 2025, when the COM moves from the Biddeford campus to Portland, the campus will solidify its place as the center of health care education in Northern New England. To recognize that transformation, UNE renamed the campus as the Portland Campus for Health Sciences. The establishment of a unique, nationally recognized Institute for Professional Education and Practice in Portland can only be achieved with the relocation of COM. This reorganization is UNE's highest priority and will allow it to establish a world-class academic healthcare campus in Portland, oriented around inter-professional education with the goal of empowering the next generation of world class health care providers at a single location. The relocation of COM to the Portland campus will allow UNE to strengthen its collaboration with clinical partners throughout the state. Relocation of COM to the Portland campus will also afford the opportunity to repurpose spaces on the Biddeford campus and expand existing undergraduate programs to address critical workforce needs for the State.

New Building and Renovation Need

To achieve the goals of UNE's Strategic Plan, which include providing exceptional, innovative teaching and experiential, collaborative learning experiences, UNE will need to both renovate its existing facilities, and build new academic and support spaces. The age of existing campus buildings and their suitability as structures to meet the needs of a dynamic and evolving educational model are important considerations for identifying anticipated future renovations. Through its evaluation of existing facilities, UNE has identified several buildings that will need renovations and expansions to house relocated educational programs and to improve its support departments, such as Information Technology Services, Campus Services, and Facilities Management. Additionally, lack of housing in and around Portland has deterred students from pursuing a degree at UNE.

Anticipated renovation, expansion, and new building projects are summarized in **Table 2.3**, and reflected on the Campus Master Plan included as **Figure 2.1**.

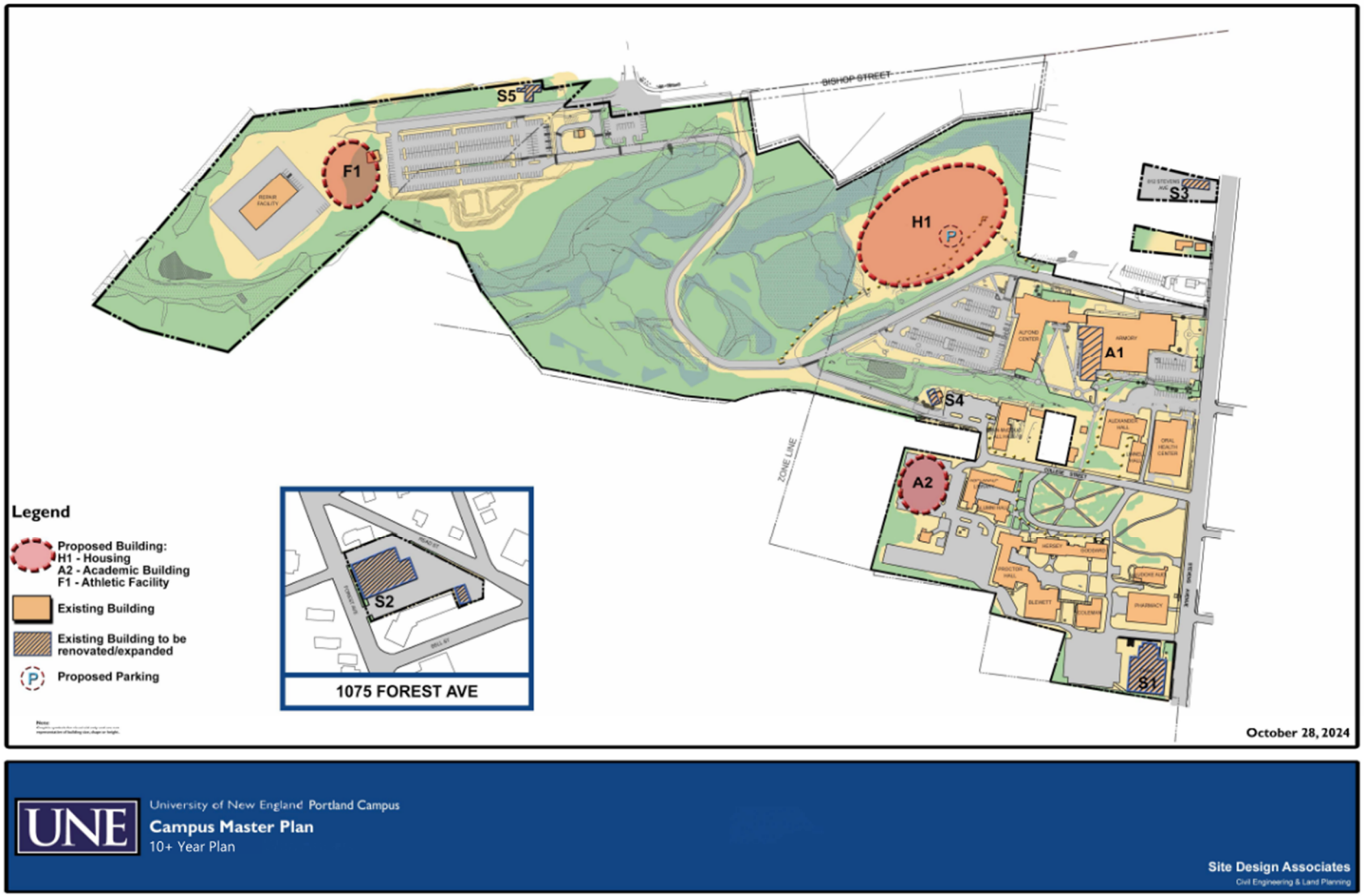


Figure 2.1 Campus Master Plan

Educational/Pedagogy Improvements Need

UNE continually endeavors to improve the way its faculty provides educational programs to its students. Ever-changing technology has also presented challenges for the University as it attempts to stay on the cutting edge in its efforts to provide world-class curriculums. Through its assessment of the current facilities on the Portland campus, it has become evident that UNE will need to undertake future facility projects to upgrade its existing classroom, lecture, laboratory, and study spaces. Mainly, larger academic spaces that facilitate hands on learning as opposed to lecture halls. Additionally, new spaces will be needed to incorporate an emphasis on higher technology, such as virtual reality, high-definition simulation and media that supports telemedicine and digital health. Projects identified within this IDP reflect and support this need.

Campus Infrastructure Needs

Through its extensive evaluation of the existing campus and facilities, UNE has identified infrastructure needs to support the campus reorganization and pedagogy improvements. Existing infrastructure evaluated as part of the master planning process included utilities such as electrical, water, and gas; stormwater systems; access roadways and sidewalks; and parking lots. Parking will be enhanced and expanded to support the additional faculty, staff, and students anticipated. During the construction of the Harold and Bibby Alfond Center for Health Sciences and the Maintenance Facility, UNE, with approval of the utility companies, installed the supporting water, sewer, electrical, communications and natural gas infrastructure to support the future adjacent projects.

Housing

UNE understands there is an increased need for student housing options as programs continue to grow and expand at the UNE Portland campus. Currently, UNE's Portland campus is comprised of commuter students. Existing housing resources are provided to students for off-campus housing options within the area. New housing on campus to support student growth is a vital component that UNE has incorporated within the UNE Campus Master Plan to limit housing pressures on adjacent neighborhoods.

10+ Year Development Plan

UNE's Campus Master Plan identifies anticipated projects which may be developed in the coming years, and identifies short- (0-5 year), medium- (5-10 year), and long-term (10+ year) priorities. These projects and priorities are summarized in **Table 2.3** below, and are represented graphically on the Campus Master Plan, included as **Figure 2.1**. The projects represent the possible future development on the campus, but the realization of these projects and priorities will only occur if the financial and philanthropic plans can support them.

Table 2.3

10±Year Development Program

Priority 1: Short-Term Development Plan (0-5 years)					
Campus Master Plan Identifier	**Project**	**Use Category**	**Total Square Footage**	**Approx. Height**	**Estimated Occupancy**
H1	Residence Hall	Housing	175,000	85 feet	350 beds
A1	Innovation Hall Renovation/Expansion	Academic	24,000	50 feet	2 offices
S3	812 Stevens Ave. Renovation/Expansion	Support	10,000	35 feet	6 offices
Priority 2: Medium-Term Development Plan (5-10 years)					
Campus Master Plan Identifier	**Project**	**Use Category**	**Total Square Footage**	**Approx. Height**	**Estimated Occupancy**
S2	UNE North/1075 Forest Ave. Renovation/Expansion	Support	60,000	65 feet	10 offices
S4	79 College Street Renovation/Expansion	Support	2,500	35 feet	2 offices
S5	Bishop Street Renovation/Expansion	Support	2,000	35 feet	N/A
Priority 3: Long-Term Development Plan (10+ years)					
Campus Master Plan Identifier	**Project**	**Use Category**	**Total Square Footage**	**Approx. Height**	**Estimated Occupancy**
A2	Academic Building	Academic	60,000	65 feet	20 offices
F1	Athletic Facility	Athletic	65,000	50 feet	12 offices

IOZ Boundary and Anticipated Property Acquisition

IOZ Boundary

The proposed IOZ boundary includes the extent of properties currently owned by UNE, as identified in **Table 1.2**, and as shown on **Figure 1.3**, UNE Zoning Context Map. The IOZ boundary includes the contiguous campus core area, as well as the four outparcels located at 812 Stevens Avenue, 798 Stevens Avenue, 32 Bell Street, and 1075 Forest Avenue.

Anticipated Property Acquisition

There is no additional property acquisition anticipated with this Institutional Development Plan.

3. TRANSPORTATION PLAN

Overview

UNE's Portland campus is in a great location, served by several arterial highways in close proximity. It provides connectivity to both pedestrian infrastructure and bicycle networks. Metro transit service is also provided by two (2) bus routes. UNE has had a Transportation Demand Management (TDM) plan in place since 2010, encouraging and promoting alternative modes of transportation to reduce trips and decrease on-site parking needs. It is regularly updated to respond to changing conditions and campus modifications. This reduces traffic impact both on campus and off-site, improving traffic flow in the surrounding area. Lowering the number of vehicular trips through TDM actions also reduces environmental impacts and impacts on the area's neighborhoods.

Campus Location and Access

The Portland campus is located off of Stevens Avenue, as shown below in **Figure 3.1**. Stevens Avenue is classified as a minor arterial. Nearby Forest Avenue is a major arterial while Warren Avenue, to the north, is a minor arterial. Allen Avenue towards the northeast is also a minor arterial. This location, within close proximity of four arterials, provides convenient access to the Maine Turnpike (via Riverside Street), Warren Avenue and Bishop Street. Access to I-295 is provided by Forest Avenue.

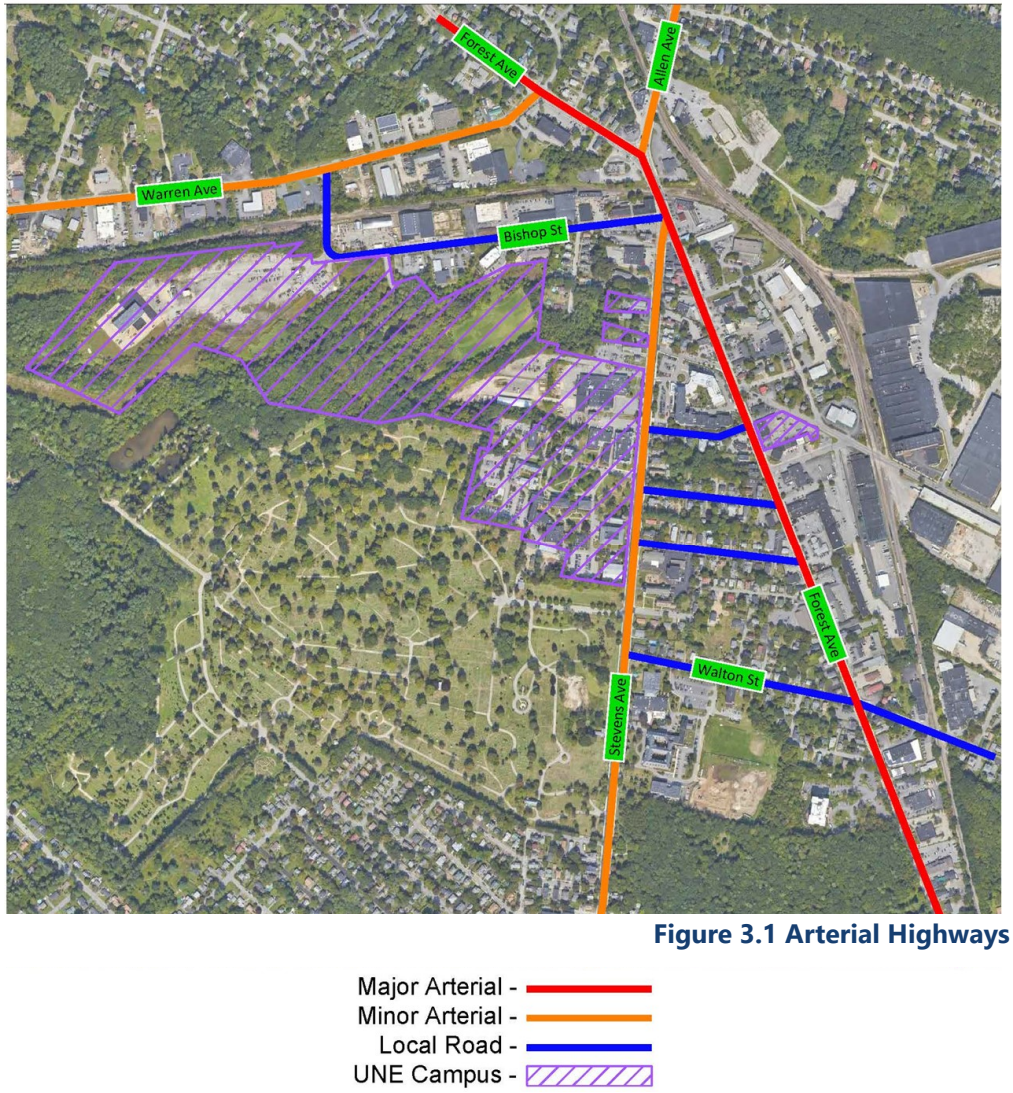


Figure 3.1 Arterial Highways

Vehicular Access

Vehicular access is provided by multiple unsignalized drives to Stevens Avenue as well as by a drive to Bishop Street. The new connector drive, currently under construction, will allow

direct access for UNE community members between the core campus and Bishop Street, allowing users to bypass Morrill's Corner. Based upon the last traffic impact study, performed for the recent permitting process for the relocation of the COM to the Portland campus, all campus drives operate at good levels of service ("A" or "B") with no capacity constraints. Because the Portland campus currently has no on-campus housing, it is a commuter campus. Students and staff arrive from Portland and surrounding communities, as well as from the Biddeford campus. Short-term plans include the addition of student housing, identified on the Campus Master Plan as H1, which will reduce off-site trips. Based upon the most recent student and staff survey, 57 % utilize private vehicles to drive alone to campus while the remaining 43 % utilize alternative modes or a combination of modes.

Pedestrian Access

Pedestrian access is provided by numerous sidewalks both on campus and off campus. Sidewalks are provided on both sides of Stevens Avenue and on both sides of Forest Avenue, which are shown in **Figure 3.2**. This figure also shows a one-mile radius of the campus, which is considered the low end of a reasonable walk commute. There are crosswalks across Stevens Avenue and Forest Avenue in the vicinity of the campus at both signalized and unsignalized locations. These area pedestrian facilities also provide pedestrian access to other educational facilities, namely Longfellow Elementary School, Lincoln Middle School, and Deering High School as well as the local businesses frequented by UNE community members.

A sidewalk will be provided along the length of the new connector road. The Portland Trails network of trails abuts the campus and could be utilized by some local community members to access the campus. UNE is actively working with Portland Trails to extend this network across the UNE campus along, which could provide additional alternative pedestrian access to the campus, as well as rerouting the Portland Trails route away from Morrill's Corner. The extensive area sidewalk system is shown in **Figure 3.2**.



Figure 3.2 Area Sidewalk Network

Bicycle Access

Stevens Avenue has dedicated marked bike lanes from Pleasant Avenue to south of Bishop Street, providing direct access to the campus (see **Figure 3.3**). Similarly, there are dedicated bike lanes on Forest Avenue within the campus vicinity, excluding Morrill's Corner where there are shared motor vehicle – bike lanes. UNE will be providing shared bike lanes on their new connector road, which will allow bikers destined to and from the west to bypass Morrill's corner.

UNE provides bicycle racks at a ratio of 1 bicycle rack space per every 20 UNE community members. There is access to showers and lockers in the Finley Recreation Center facilitating bicycle commuting. Additional shower and locker facilities are being added at the Harold and Bibby Alfond Center for Health Sciences building.

Transit Service

Transit service is provided via Greater Portland Metro Route 9, which connects downtown Portland to North Deering via Stevens Avenue and also by Metro Route 2 which connects downtown Portland to Riverton via Forest Avenue. The transit routes are stops shown in **Figure 3.4.** There are two Route 9 Metro stops located on the Portland campus, both of which are equipped with shelters. Several Route 2 stops on Forest Avenue are within 1,000 feet of the core campus, with one stop at UNE North, located at 1075 Forest Avenue, and Route 2 connects directly to the Metro Pulse (the downtown hub).

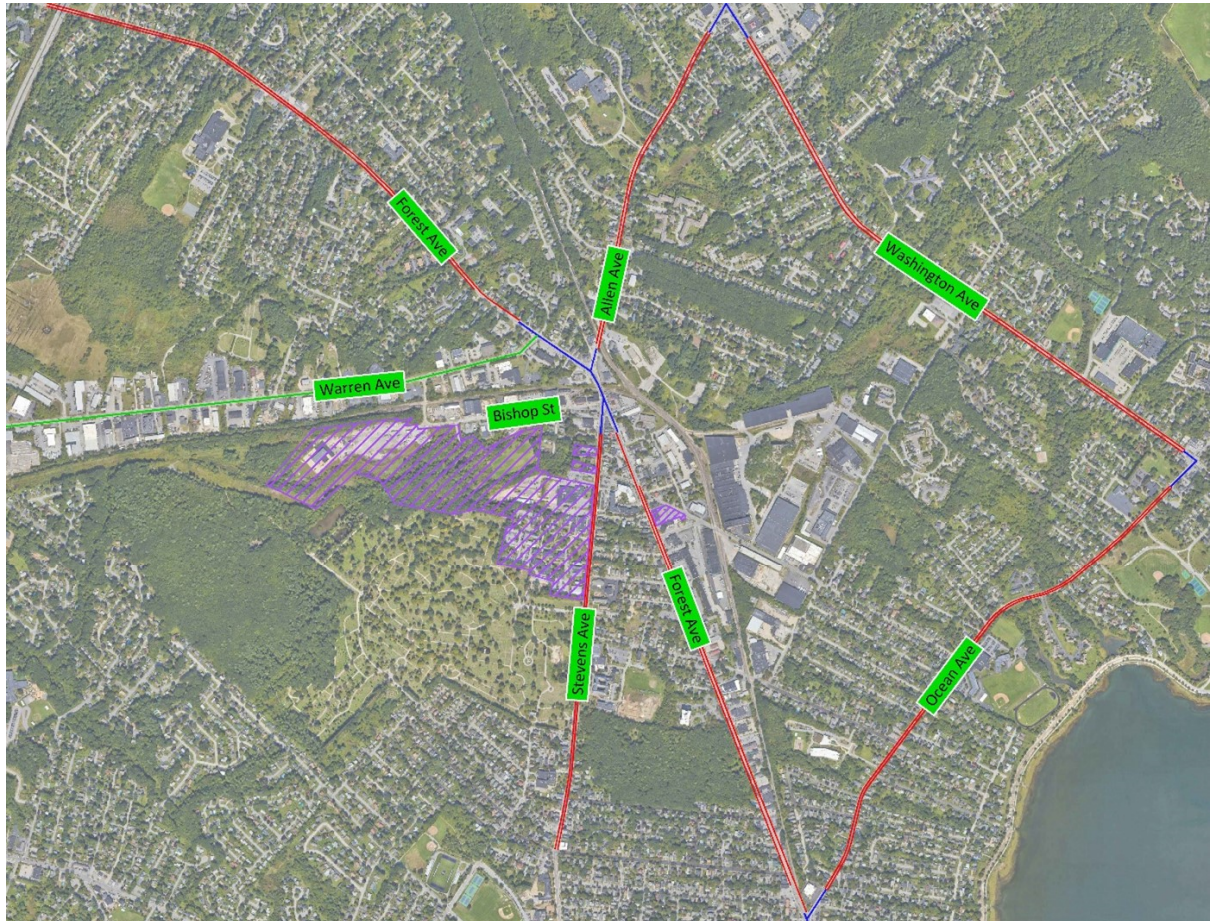


Figure 3.3 Current Bicycle Facilities

UNE provides free bus passes to all students and staff to encourage Metro use. Ridership averaged approximately 1,000 rides per month prior to the COVID-19 pandemic and then declined steeply. Ridership has increased slowly since 2022 to approximately 300 rides per month in 2023. Based upon the most recent 2024 data, monthly Metro ridership currently exceeds 350. The UNE bus pass program also allows free use of the Biddeford Saco Old Orchard Beach Transit, including the Express to Biddeford, as well as the South Portland Bus Service.

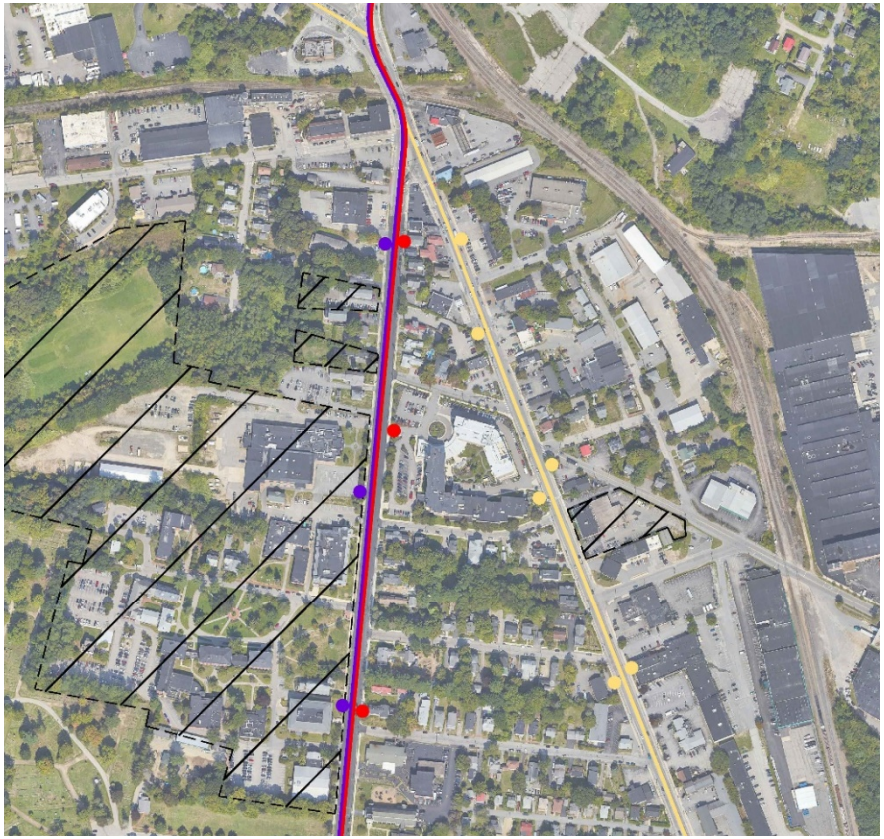


Figure 3.4 Transit Route Stops

Existing Conditions

Traffic Volumes

Existing average annual daily traffic (AADT) data for the vicinity of the campus was obtained from "Traffic Volume Counts, 2014 and 2012 Annual Reports", published by MaineDOT and their Interactive Traffic Map. This data is summarized below:

Table 3.1

Average Annual Daily Traffic

Location	2008	2010	2013	2016	2019	2022
Bishop Street, west of Forest Avenue	--	--	1650	--	--	--
Walton Street, west of Forest Avenue	--	2800	3120	2580	--	--
Forest Avenue, NW of Warren Avenue	20020	19010	19820	18140	--	17370
Forest Avenue, no. of Arbor Street	--	--	24500	22140	22570	18730
Forest Avenue, no. Walton Steet	--	--	21830	--	--	16610
Forest Avenue, so. of Walton Avenue	--	--	21710	--	--	17030
Stevens Avenue, so. of Walton Avenue	--	12510	11680	11620	--	--
Stevens Avenue, no. of Walton Avenue	--	11170	10980	11180	--	--
Stevens Avenue, so. of Forest Avenue	--	10360	10050	11230	--	8320
Warrens Avenue, SW of Forest Avenue	13370	11560	13130	11390	12380	13300
Allen Avenue, no. of Goodridge Ave	--	18210	--	16040	16220	17340

Traffic volumes in the vicinity of the campus have generally declined over the long term 2008 to 2022 period. This includes both Forest Avenue and Stevens Avenue volumes. Warren Avenue volumes are currently similar to previous 2008 levels, but they have grown in the more recent 2016 to 2022 period. Allen Avenue similarly declined long-term but has shown recent growth from 2016 to 2022.

Based upon this data, a 0.50 % growth rate was used to project previous turning movement counts, conducted during the COM study, and at Morrill's Corner in 2022, to existing 2024 conditions. This 0.5 % growth is currently being applied in most Maine locations. These existing 2024 peak hour volumes for the campus vicinity and access drives are shown in **Figure 3.5.**

Trip Generation Analysis

The Portland UNE campus currently has a student population of 979. The campus was recently permitted in 2022 for a student population of 1,598 during Site Plan Review for the relocation of the COM from Biddeford to the Portland campus (1,198 students at that time with the addition of 400 COM students). Projected short-, mid- and long-term student populations are as follows:

Table 3.2

Trip Generation Analysis

Year	Student Population
Fall 2025	1,400
Fall 2028	1,600
Fall 2033	1,750

Given the current student population, the campus is expected to serve 1,400 students in Fall of 2025 when the COM program is relocated. The expected mid-term growth in student population is expected to reach the previously permitted student population of 1,600 in Fall of 2028. Longer term growth projections show the campus reaching a total student population of 1,750 in 2033. This is an increase of approximately 150 students over the 2022 permitted enrollment of 1,598 students.

Trip generation analysis was performed for this projected student growth utilizing the Institute of Transportation Engineer (ITE) Trip Generation manual, the most recent 11th Edition. Land use code 550 – University/College was utilized for the analysis. The calculations were performed on the on the basis of students, which is the best fitting independent variable for the prediction of university trips. The calculations were performed for the

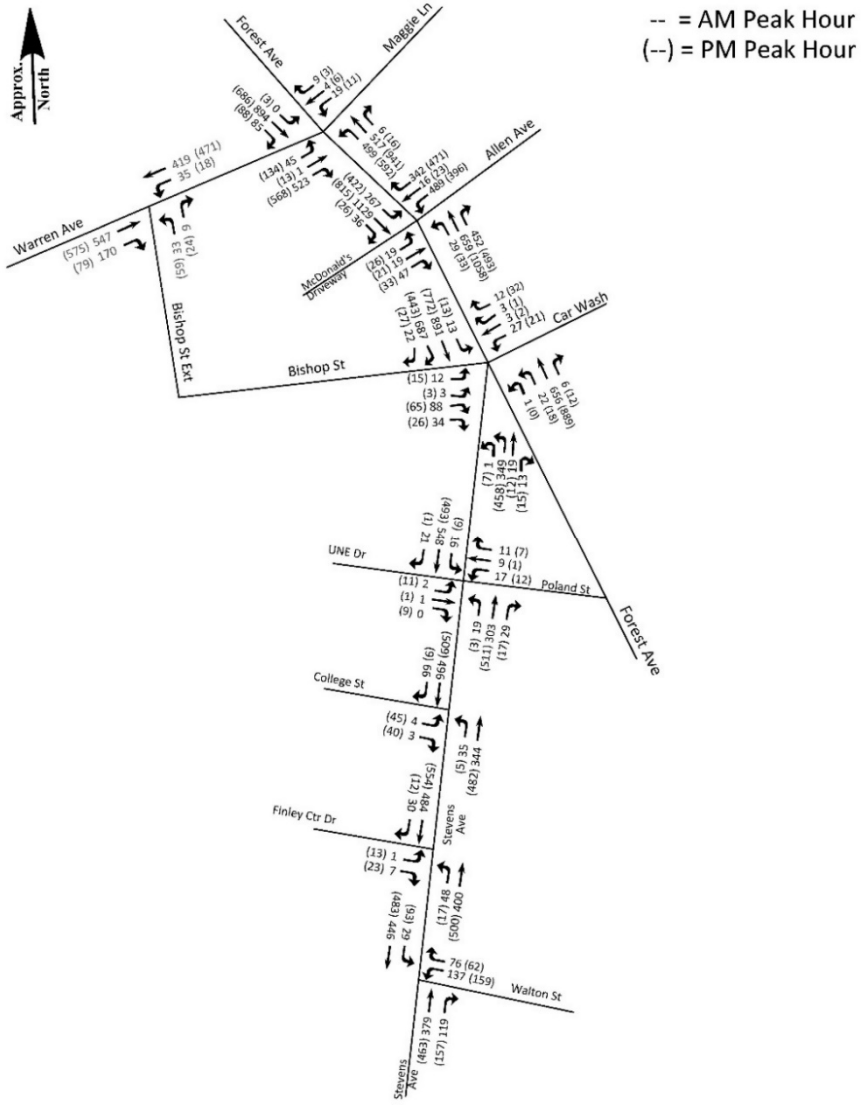


Figure 3.5 Estimated 2024 Traffic Volumes

approximate 150-student increase over previously permitted student population, to a future student population of 1,750. The results are summarized in the following table:

Table 3.3

ITE Trip Generation

Time Period	New One-way Trips	Time Period	New One-way Trips
Daily	234	PM Peak Hour	23
Entering	117	Entering	7
Exiting	117	Exiting	16
AM Peak Hour	23		
Entering	18		
Exiting	5		

The projected long-term growth in student population through 2033 is expected to result in a small increase in vehicular trips accessing the campus, 23 one-way trips in both the AM and PM Peak hours. This level of new traffic wouldn't be expected to have any significant impact off-site on either existing or future traffic operations. Typically, a development won't have any significant impact unless it generates in excess of 25 new lane hour trips in a left-turn lane or 50 new lane hour trips in a through or right turn lane. The maximum of 18 new trips, entering the campus during the AM peak hour, would be split between several arrival directions (north, south and west) and between multiple drives. As a result, the lane hour increases will be fewer than 10, due to the expected growth in student population. The 234 new daily trips represent less than a 2 % increase on Stevens Avenue volumes. Hence, the expected increase in trips due to projected student population growth should have no measurable impact either on campus or off-site.

Currently, based upon the most recent TDM survey, approximately 1 % of the trips to the campus are transit trips, 1 % are bicycle trips and 3 % are walking trips. ITE data also projects peak hour Walk and Walk+Bike+Transit trips. For the projected 150-student increase, there would be 5 additional AM Walk trips and 18 combined Walk+Bike+Transit trips. During the PM peak hour, 6 additional Walk trips are projected with 17 combined Walk+Bike+Transit trips.

In terms of traffic permitting requirements, the state Traffic Movement Permit (TMP) rules were modified in 2022. The rules only apply to a ten-year permitting window. Projects properly permitted over 10 years ago do not need to be considered. The history of recent UNE projects and TMPs is as follows:

- A TMP was obtained in 2008 for the College of Pharmacy for 300 new pharmacy students.
- In 2012, the College of Dentistry was approved by the City for 138 students. The 138-student increase did not require a TMP.
- The College of Osteopathic Medicine (COM) was approved by the City in 2022 with 400 students. The additional trips generated by the COM relocation project, when combined with the College of Dentistry, did not require a TMP.
- Given the above timeline, going forward only the COM project will count towards future TMP requirements since the other projects are beyond the 10-year permitting window. The COM project generated 61 AM and PM peak hour trips. Given the 23 AM and PM peak hour trips projected for the 150-student increase it is unlikely a TMP will be required since peak hour trips will not reach the 100-trip threshold by 2033.

Capacity Constraints

Numerous traffic impact studies have been performed for UNE building projects. The most recent study was "Traffic Impact Study, COM, UNE, Portland, Maine," which was performed by Sewall in 2022. The only capacity constraint identified in the study area for the planned and approved 400-student increase was Morrill's Corner, which includes the signalized intersections of Stevens Avenue, Forest Avenue and Bishop Street, and Forest Avenue/Allen Avenue. The level of service (LOS) at these Forest Avenue intersections was found to be an unacceptable LOS "E" or "F" for several movements and/or approaches. The projected increases in volumes due to the COM relocation were not found to have any significant impact on Morrill's Corner levels of service or delays. Similarly, the minor increase in peak hour trips, 23 one-way trips during the AM and PM peak hour, for the projected long-term growth of the university would have no significant impact on Morrill's Corner operations since these trips are split between several drives, northbound, southbound and westbound directions and between entering/exiting trips. The resulting new lane hour trips would be fewer than ten (10) having no measurable impact off-site on Morrill's Corner operations. Additionally, as previously noted, the new connector drive will reduce existing trips at Morrill's Corner.

Opportunities for Improvement

As previously noted, the only capacity constraint identified in previous studies is Morrill's Corner, including the intersection of Stevens Avenue/Forest Avenue/Bishop Street and the intersection of Forest Avenue/Allen Avenue. It is important to note that area traffic volumes have not changed significantly since these studies were performed and that UNE's student population is currently well below the permitted/previous study level. Morrill's Corner intersections have had known capacity constraints and associated queuing issues for over a decade. The "Portland – South Portland Smart Corridor Plan," completed in 2019, outlined improvements for Morrill's Corner. These improvements include removing Bishop Street from the signal system and limiting exits there to right turns out, and access management improvements/restrictions to other Forest Avenue parcels. Under the preferred plan, the level of service for Morrill's Corner are improved as follows:

Table 3.4

Portland-South Portland Smart Corridor Plan - Potential Morrill's Corner Improvements

Peak Hour/ Intersection	Existing/ No Build	Preferred Alternative
AM Forest Avenue/ Allen Avenue	F	D
AM Forest Avenue/ Stevens Avenue/ Bishop Street	E	C
PM Forest Avenue/ Allen Avenue	E	C
PM Forest Avenue/ Stevens Avenue/ Bishop Street	D	C

While this study was completed in 2019, the improvements have not yet been funded for implementation as the City of Portland has been focusing attention on other transportation priorities.

UNE has previously paid impact fees to the City of Portland for Morrill's Corner improvements. UNE contributed a $29,000 impact fee to the city as part of the 2008 approval for the School of Pharmacy.

The Morrill's Corner improvements would also be expected to address and reduce crash potential at these high crash intersections and along the adjacent links. As previously noted, the new connector drive, currently under construction, will reduce existing trips through Morrill's Corner by allowing UNE community members to directly travel to/from the campus core to/from Warren Avenue, bypassing Morrill's Corner. This reduction in volumes should also improve operations and reduce crash potential.

UNE will continue to update their Transportation Demand Management Plan and strive to reduce off-site trips as described in the following section. The planned addition of on-campus housing is also expected to reduce daily commuting trips to the campus.

Transportation Demand Management Plan

UNE has had a Transportation Demand Management (TDM) plan since 2010, which is routinely updated. The most recent update was completed in April of 2022. The primary goal of the plan is to reduce vehicle trips to campus and, thus, reduce demand for on-site parking. The plan further aims to reduce traffic impacts, both on-campus and off-site, improve traffic flow in the surrounding area, and reduce UNE's Scope 3 carbon emissions.

UNE hopes to achieve these goals by implementing TDM strategies that promote and encourage alternative modes of transportation. In 2019, a "Transportation Think Tank" (TTT) committee formed, with representation from Campus Planning, Student Affairs, Safety and Security, Undergraduate and COM Student Governments, Sustainability Office, and the Environmental Council. With oversight from the TTT committee, the TDM strategies

are regularly reviewed and updated to respond to changing conditions and needs. The TTT committee actively engages in implementing and promoting the TDM strategies outlined below.

TDM Strategies

Education and Promotion

UNE provides both educational and promotional material regarding the advantages of alternative transportation modes. The TDM Coordinator regularly publishes the "*Movements*" newsletter, which is hung in all bathroom stalls throughout the campus, ensuring visibility and contemplation. The newsletter informs the UNE community about ongoing, new, or revised transportation programs, events and resources, like bus maps and schedules, GoMaine carpool/rideshare information, parking updates, bike infrastructure updates, incentive program information and safety practices for pedestrians, among other topics. Additionally, the university regularly provides specific TDM-related information to the campus community through various methods and media formats, including bulletin boards, strategically placed bus schedule brochure holders, weekly community-wide emails, digital screens, and website.

Carpooling & Ridesharing

UNE utilizes the GoMaine service to encourage "greener commuting" to each campus as well as between campuses when required. UNE has its own landing page on the GoMaine website, which helps users find carpool partners, map out alternative transportation methods with transit, walking and biking routes, incentivizes users with rewards, and offers emergency "ride home guarantee" for regular users. Additionally, UNE takes advantage of the expertise of GoMaine staff for educational and promotional events.

The university provides free parking to carpoolers and dedicates some of the most convenient parking spaces as incentives. The university offers GoMaine tutorials every year. The TTT committee has identified the need to streamline carpool permitting procedures, which would make the incentive more desirable while making administration of the program less cumbersome. This is a continued goal for the committee for the upcoming year.

Transit Service

As previously noted, UNE provides free GP Metro, South Portland City Bus Services, and Biddeford, Saco Old Orchard Beach Bus Transit (BSOOB) passes for all students, faculty, and staff to encourage transit usage. Each of these services provides GPS trackers with mobile apps for cell phones, which aid riders in knowing exactly where the bus is located and how close it is to their stop. The TTT committee actively engages with administration from these transit providers to update materials and promote ridership.

Incentives

Since 2008, UNE has continually promoted the use of alternative modes of transportation through incentives and promotions, including:

- Raffling of new bicycles and iPads for transportation competitions
- Providing free coffee and doughnuts to users of the Bishop Street parking lot

- Free use of electric vehicle charging stations
- Free public transit passes.

The university is currently considering dedicating additional prime campus parking spaces as carpool spaces to encourage greater carpooling.

UNE has considered disincentives but given the distance that many students and staff commute, whom have no alternative since they are located too far to walk, bike or utilize transit, disincentives would unfairly punish students and staff whom have no other reasonable alternative, especially in light of the current affordable housing crisis in Southern Maine. Additionally, the UNE Portland Campus is a graduate campus with nontraditional students. Many of which have families, jobs and most must participate in clinical experiences. All of which limit opportunities for alternative transportation usage.

EV Charging Infrastructure

UNE provides free charging for electric vehicles. UNE has eight (8) Level 2 chargers at the Bishop Street parking lot, two of which are reserved for handicapped parking. There are also (62) 100v charging outlets in that lot. There will be additional charging capacity at the Harold and Bibby Alfond Center for Health Sciences parking lot with (10) Level 2 chargers and (26) spaces with 100v outlets. At this time, there are only 17 electric vehicles registered with the University on the campus. The TTT Committee will continue to monitor the growth of EV adoption in the campus community and will advise administration regarding further expansion of charging infrastructure as needed.

Bicycle Infrastructure

UNE promotes bicycling as a convenient means to access campus for those students and employees that reside within the appropriate range, and for exercise and wellness benefits. The university has several bikes on campus that the UNE community members can borrow to utilize during the day. Bike racks are conveniently located across campus for community members to store their personal bikes as well. UNE has previously discussed, and would consider, being a site for a city-wide bike share program.

There is access to showers and lockers in the Finley Recreation Center further facilitating bicycle. The Harold and Bibby Alfond Center for Health Sciences building will include men's, women's and gender-neutral locker room facilities, with showers. These additional facilities will encourage and support greater commuting by active transportation means. The new shared connector drive will provide better access for bicyclists destined to and from the west.

Pedestrian & Bicycle Access

As previously presented, there is an extensive sidewalk system surrounding the campus as well as bike facilities. The shared bike lanes that will be provided on the new connector drive will provide additional opportunities for UNE community members to bike to campus, without having to bike through Morrill's Corner, with its intimidating shared vehicle bicycle lanes.

UNE is committed to partnering with Portland to extend their trail system through UNE property in an effort to safely link the Evergreen Cemetery section of walking paths to those in North Deering. Currently, several large sections of the Portland Trail system are adjacent to UNE's Portland campus in Baxter Woods Park and Evergreen Cemetery. Hikers and walkers wishing to move from the Evergreen Cemetery area to the North Deering

section of Portland must traverse busy streets like Stevens and Allen Avenues, through Morrill's Corner, in order to reach the next trailhead. As part of UNE's initiative to construct the Institute for Interprofessional Education and Practice on its Portland Campus, the access road that links College Street to UNE's Bishop Street parking lot will be improved, with additional lighting and features to improve safety.

UNE Community Member Surveys

UNE routinely performs student and staff surveys to determine arrival and departure times, transportation modality and parking usage, as well as to gauge interest in various alternative transportation and incentive programs. The results have guided UNE in making adjustments to its TDM plan, including infrastructure upgrades, and bus schedule changes. Hot mapping of faculty, staff, and student home addresses was utilized to identify additional measures for enhanced promotional activities towards fostering alternative transportation modes and associated programs.

Based upon the most recent 2023 survey, students and staff on campus are currently utilizing the following mode choices:

- Combination of Modes 34 %
- Carpool/Van 3 %
- Transit 1 %
- Bicycle 1 %
- Walk 3 %
- Remote 1 %
- Drive Alone 57 %

While the majority drive alone to campus, a large percentage of the community uses a combination of modes to reach campus.

The Director of Safety and Security monitors the effectiveness of the TDM plan through biannual parking utilization studies. The TDM Coordinator and TTT Committee use the data collected from these parking studies to continually review and anticipate parking demand on campus and guide ongoing revisions to the TDM plan.

Data analysis conducted during development of the 2022 plan found that 13% of the campus community live within a walkable 1.5 miles radius and a bikeable 1.5 - 5-mile radius of the campus. It was also found in the survey that 11.5% of the survey respondents walk to campus 1-9% of the time.

Figure 3.6 shows the primary campus sidewalks, bike facilities and off-site connections. Opportunities to expand this network and increase these alternative commuting modes will continue to be explored.

Comments indicate that 31% of the survey respondents desire to use an alternative mode of transportation, but are unable due to external commitments, such as work, daycare pickups and clinical requirements. Opportunities to increase the alternative modes of transportation percentage exist, and efforts will continue to be made to identify incentives that would increase these modes of commuting, including the extension of the Portland Trails network through the campus, which would allow Deering Center and Riverton residents to more easily walk to campus.

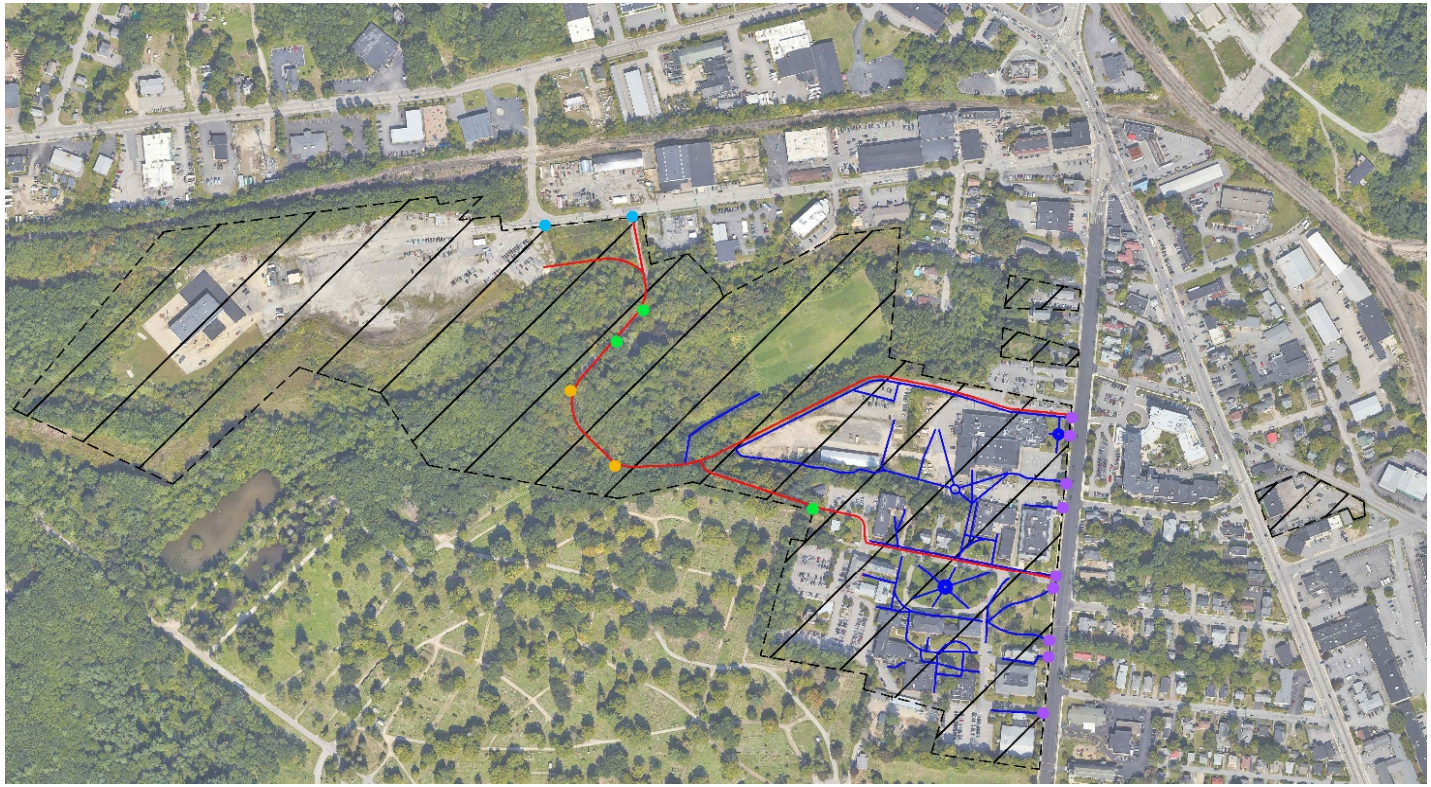


Figure 3.6 Core Campus Bicycle and Pedestrian Connectivity

Parking

While there are several alternative transportation modes available to access the campus and many use a combination of modes, the majority of students and staff arrive by private vehicle. Based upon the most recent parking counts, conducted in fall of 2023, parking demand peaks between 10:00 AM and 2:00 PM and varies by day. There are currently eleven parking lots located on campus plus on-street parking along two campus roadways. The lot locations are shown on the campus map in **Figure 1.4**. The number of spaces located in these lots is detailed below:

Table 3.5

UNE Portland Campus – Parking Spaces

Lot Description	Number of Spaces
Lot 1 – 812 Stevens Avenue	30
Lot 2 – COM	182 (permitted)
Lot 3 – Innovation South	33
Lot 4 – Oral Health Center	24
Lot 5 – Ginn/ MCD	28
Lot 6 – Library	103
Lot 7 – Proctor	121
Lot 8 – Finley	89
Hersey Circle	4
Ludke	3
Bishop	344
UNE North	72
Church	31
Total Spaces	**882 plus 182 (permitted)**

There will be 1,064 parking spaces on campus after the COM project is completed. In 2022, there were 1,241 spaces available, so the university has been decreasing spaces over time as new projects are completed and parking needs are re-evaluated.

Most campus lots require the purchase of parking permits. The largest number of vehicles recorded during the fall 2023 counts in the university lots was 796. This represents 75 % of the overall on campus capacity with the COM completion. This highest weekly demand occurred on Wednesday at 1:00 PM.

There is a shuttle bus provided between the more remote Bishop Street lot and the campus core to increase that lot's usage. There is a heated shelter with Wi-Fi at each end of the shuttle route to encourage ridership. The Bishop Street lot does not require a parking permit, providing free parking to further encourage its use. The shuttle runs continuously from 7 AM to 7 PM with minimal wait times. With these incentives, parking in this more remote lot has increased significantly from 37 vehicles in 2012 to an average of 233 during the peak period in 2019. The average peak daily use in this lot in 2023 was 245 vehicles, which occurred while half of the lot (300 spaces) was closed for construction.

There is significant historical parking data available for the campus given UNE's annual weeklong parking counts. This measured data is summarized by year, along with projections for future years, as follows:

Table 3.6

UNE Portland Campus – Parking Occupancy

Year	Students	Staff	Population	Spaces	Max. Occupancy	Spaces/ Student	Max. Occupancy/ Student	Max. Occupancy/ Population
2015	1,397	317	1,714	783	577	0.560	0.413	0.337
2018	1,257	588	1,845	1,256	765	1.000	0.609	0.415
2021	1,198	578	1,776	1,261	651	1.053	0.543	0.367
2023	979	568	1,547	863	512	0.882	0.523	0.331
2025	1,400	750	2,150	1,056	848	0.754	0.606	0.394
2028	1,600	760	2,360	1,162	931	0.726	0.582	0.394
2033	1,750	760	2,510	1,069	990	0.611	0.566	0.394

As seen in Table 3.6, the number of parking spaces on campus declined from 2021 to 2023. The space/student ratio has been declining since 2021 and is projected to continue to decline while the number of spaces will remain fairly steady long-term, from 2025 through 2033. The projected maximum occupancy rate per university population is projected to be at 0.39 from 2025 to 2033. This rate is very similar to the Institute of Transportation Engineers (ITE) 85th percentile parking for a university of 0.38 vehicles per school population. Additional review of parking rates and opportunities to decrease parking will be evaluated as future building projects go through the site plan review process. UNE has purposefully maintained a surplus of spaces on campus to assure adequate on-site parking, to be sensitive to the neighborhood concerns about on-street parking on Stevens Avenue and in the neighborhood.

In addition to on-campus parking, there is also on-street parking located on surrounding streets, which is available to UNE community members. This on-street parking includes College Avenue on campus and parking along both sides of Stevens Avenue off campus.

The City of Portland has implemented residential parking permits and one-hour parking restrictions on many side streets in the vicinity of campus, reducing the amount of on-street parking available to UNE community members. As long as there continues to be free on-street parking along Stevens Avenue without any time restrictions, in close proximity to the campus core, continued use of these spaces by staff and students is expected to occur given their convenience.

The goals for UNE in terms of parking are:

- Continue to provide an adequate parking supply on-campus
- Reduce parking needs over time through continued TDM actions
- Reduce neighborhood impact by reducing on-street parking usage by UNE students

4. ENVIRONMENTAL PLAN

Existing Natural Resources

Open Space and Recreation

The UNE Portland campus consists of natural area and open space, with opportunity for both passive and active recreation. Approximately 53 percent of the 72-acre campus is open space and offers amenities such as biking and walking trails, a central campus quad, tree-lined streets and pedestrian pathways, and forested area (see **Figure 4.1**) that offers wildlife and bird watching opportunities. There are two gardens on the campus; the Medicinal Herbal Garden, which is a demonstration of the types of medicinal herbs used in phytotherapy, and the Community Garden, which is managed by volunteer faculty and staff and produces vegetables for personal consumption and donation to local charities.

The campus is located adjacent to industrial, commercial, residential, as well as other open space uses. The adjacent 239-acre Evergreen Cemetery offers important community greenspace and recreational amenities including a network of forested trails for walking, cross-country skiing, and bird watching. The Portland Trails Forest City Trail crosses campus along College Street and provides a connection between on- and off-site recreational opportunities. UNE is committed to partnering with Portland Trails to extend their nearly 70-mile network of trails onto the campus, with the goal of safely linking the Evergreen Cemetery section of walking paths to those in North Deering and overall providing more opportunities for the community to access Portland's open space and natural areas.



Figure 4.1 Existing Open Space on Campus

Ecological Communities

The campus contains varied natural resource features and is characterized by two levels of generally flat topography with both landscaped and natural greenspace punctuated by campus facilities.

Forested areas are host to hardwood and coniferous tree species such as speckled alder (*Alnus rugosa*), red maple (*Acer rubrum*), willow (*Salix* spp.), winterberry (*Ilex verticilata*), green ash (*Fraxinus pennsylvanica*), and balsam fir (*Abies balsamea)*. Emergent wetland species on the campus include cattails (*Typha latifolia*), sensitive fern (*Onoclea sensibilis*), jewel weed (*Impatiens capensis*), and blue flag (*Iris versicolor*). These vegetative species comprise the riparian forest and scrub-shrub wetland complex surrounding the Capisic Brook headwaters. **Figure 4.2** illustrates delineated resources within the campus footprint as well as wetlands and streams identified in the United States Fish and Wildlife Service (USFWS) National Wetland Inventory and United States Geological Survey (USGS) National Hydrography Dataset. There are vernal pools, open waters, perennial and intermittent streams, and forested, scrub-shrub, and emergent wetlands delineated on campus.

Consultation with DEP in 2017 determined no records of Significant Wildlife Habitat exist onsite and there are no records of Imperiled (S2) or Critically Imperiled Natural Communities (S1) listed for the site. Additionally, no USFWS Critical Habitat is listed as occurring on campus and according to the Maine Beginning with Habitat map viewer, no Essential or Significant Habitats are recorded on campus. Lastly, no Important Bird Areas are listed by Maine Audubon as occurring on campus.



Figure 4.2 Ecological Communities and Aquatic Resources

Aquatic Resources

Aquatic natural resources can be found on campus and include the headwaters of Capisic Brook. Capisic Brook is listed on the 2022 Maine DEP Integrated Water Quality Monitoring and Assessment Report as '*impaired*' and is included in the City of Portland's Capisic Brook Watershed Management Plan. Capisic Brook, a small tributary to the Fore River, consists of several branches, with headwaters on campus located near north of Gulliver's Field.

Streams on campus are surrounded by riparian hardwood forest and wetlands as described above, as well as vernal pools. The extents and boundaries of streams, wetlands and vernal pools were delineated in 2022 and a vernal pool assessment completed in 2021. The vernal pools identified in 2021 were assessed using the Maine State Vernal Pool Assessment Forms and confirmed by Maine DEP to be Non-Significant Vernal Pools as they lacked the physical and biological characteristics necessary to meet significance criteria.

Under the Maine DEP Natural Resources Protection Act: Chapter 310, Wetlands and Waterbodies Protection Rules, wetlands located within 25-feet of a river, stream, or brook are considered Wetlands of Special Significance. As identified in a 2022 wetland delineation of the campus, many of the wetlands located on-site may be considered Wetlands of Special Significance as they are located within 25-feet of Capisic Brook. UNE recognizes the ecological role the campus natural resources provide such as groundwater recharge, increased flood capacity, downstream erosion and pollution control, and beneficial wildlife habitat.

Capisic Brook Watershed

The Capisic Brook watershed covers approximately 1,418 acres within the cities of Portland and Westbrook. The East Branch of Capisic Brook which flows through part of the UNE campus is within the East Tributary subarea of the Capisic Brook Watershed. Approximately 31% of the watershed is covered by impervious surface. Maine DEP has designated Capisic Brook as an urban impaired stream under Chapter 502 of the Maine Stormwater Management Rules. Capisic Brook is listed as Category 4a, with an approved Total Maximum Daily Load (TMDL) in place. The stream is designated a Class C water, meaning it is intended to meet the state's minimum environmental goals for water quality. The City of Portland identified Capisic Brook as its highest priority watershed and has outlined a number of provisions to address water quality in the watershed as outlined in the Capisic Brook Watershed Management Plan, developed and adopted by the City of Portland in December of 2012. The Plan outlines the status and restoration needs of the watershed and establishes provisions and goals for improving water quality in Capisic Brook.



Capisic Brook has two existing DEP Sample Locations including one near the recently constructed Connector Road (see **Figure 4.3**). Sample results from 2003 were used to develop the Watershed Management Plan and showed that the upstream station on the UNE campus had a healthy macroinvertebrate community, good water quality, low concentration of bacteria, and good instream habitat quality. The downstream station results showed a degraded macroinvertebrate community, impaired water quality, elevated concentrations of bacteria, and impaired instream habitat quality. Variation in water quality at these two stations is attributed to differences in land use and prevalence of impervious surface downstream (south) of campus. The Capisic Brook Watershed Management Plan acknowledges the need for implementation measures to improve water quality within the watershed. Maine DEP has five goals for Capisic Brook including: improvement of instream habitat quality; restoration of natural hydrology; reduction of toxics, nutrients, bacteria, and elevated water temperature in runoff; and improvement of dissolved oxygen levels. UNE remains committed to the protection of the watershed and the stream on campus.

Figure 4.3 Maine DEP Water Quality Sampling Locations

All proposed campus development projects will review potential aquatic resource and watershed impacts and avoid to the extent practicable and feasible, significant impacts to resources in project design and implementation. Proposed projects will submit project plans and designs to the City of Portland for municipal review, per the City's Land Use Code. As the campus is located within the Capisic Brook Watershed, UNE development projects are subject to comply with the Urban Impaired Stream (UIS) Standard of Chapter 500 of the Maine DEP Stormwater Management Rule. All natural resources on campus are protected by the Maine Natural Resource Protection Act (NRPA) which requires permitting/notification of all projects located in, on, or over natural resources or that are located adjacent to natural resources. All proposed projects will avoid and/or minimize impacts to natural resources to the maximum extent practicable and when impacts to areas adjacent to natural resources may not feasibly be avoided, projects will comply with NRPA permitting and mitigation requirements.

Floodplains

The FEMA National Flood Hazard Layer for Portland is currently under review and an updated flood map is approved as of June 20, 2024. One area of Minimal Flood Hazard (500-year floodplain) and one area of High Risk (100-yeard Floodplain) are identified within the proposed IOZ. The area of High Risk is mapped on the western-most portion of the proposed IOZ and continues off-site to the southwest, following the Capisic Brook (see **Figure 4.4**).

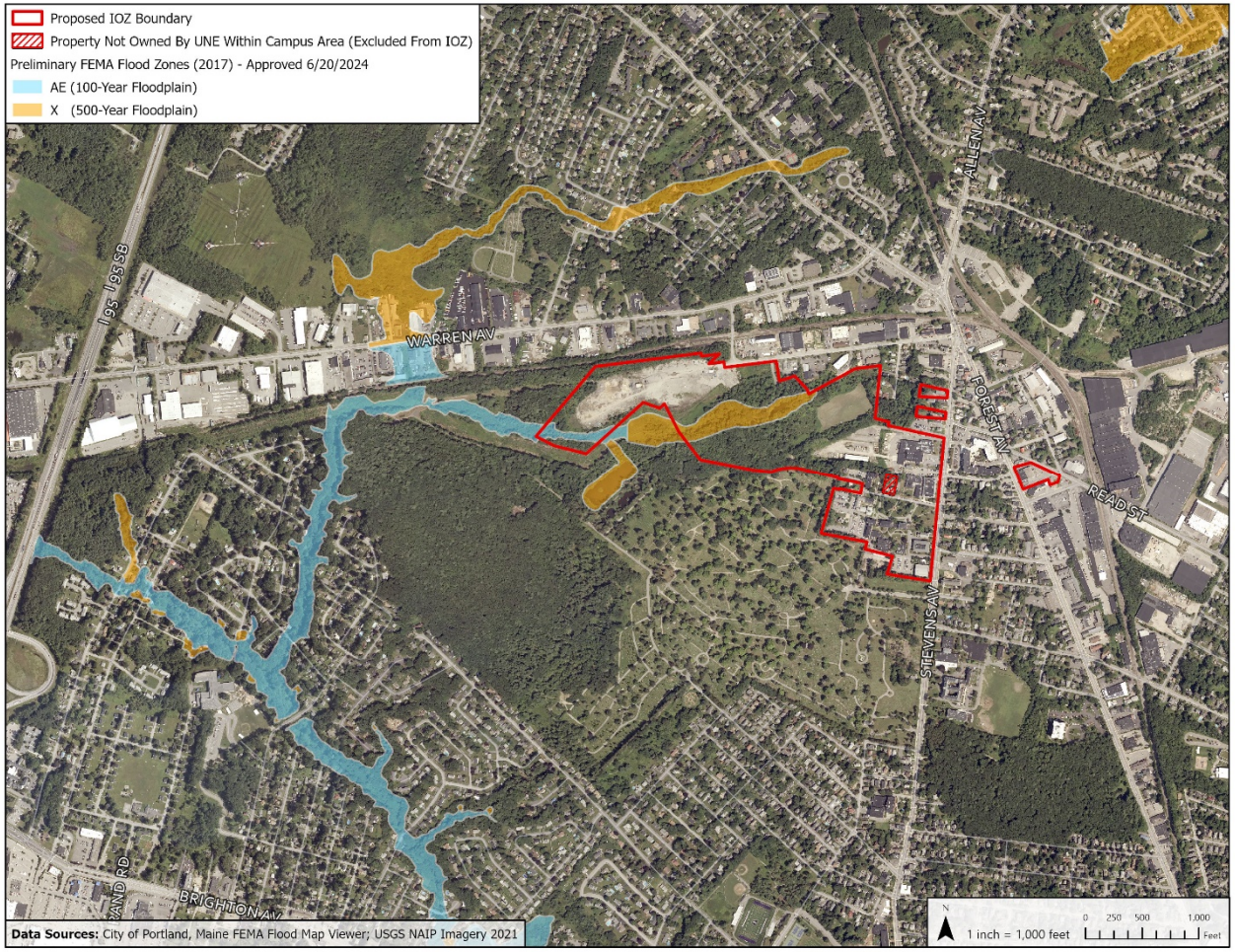


Figure 4.4 FEMA Flood Hazard Map

Proposed Future Development and the Environment

Future development will not impact existing streams on campus and minimum setbacks will be maintained for all future projects. In cases where development cannot reasonably avoid these setbacks, consultation with the City of Portland and Maine DEP will be conducted to determine potential permitting or mitigation requirements. Additionally, none of the proposed projects includes direct or indirect impacts to freshwater wetlands or potential open waters and no impacts to wetlands within the FEMA designated 100-year flood plain are included in the campus master plan. No areas of significant wildlife habitat on or directly adjacent to campus are identified in the Maine Environmental Review Tool. With each project, Best Management Practices (BMPs) will be utilized to prevent offsite impacts to natural resources: additionally, nature-based solutions such as rain gardens, bioswales, landscaping with native plants and nest boxes for birds and bats will be considered to improve post-development conditions. Resources and guidance developed by Maine Audubon, Maine DEP, and Maine Department of Inland Fisheries and Wildlife will be referenced for effective design that will benefit wildlife and support the ecosystem services of the campus open spaces.

UNE has committed to preserving a significant acreage of dedicated open space, as shown on **Figure 6.4**. The total acreage of UNE's campus is approximately 72 acres, with approximately 10 acres being dedicated as open space. The 10± Year Development Plan includes development of approximately 2± acres in Phase 1 (0-5 years), 0 acres in Phase 2 (5-10 years), and 0.6± acres in Phase 3 (10+ years). In total, the proposed development projects are anticipated to result in an increase of approximately 3.5% impervious area across the campus over the next 10+ years. The minimization of impact to natural resources and creation of impervious areas is achieved through careful site selection, including siting the new A2 academic facility on an existing developed surface parking lot and siting the new F1 athletic facility in a previously developed portion of campus. Additionally, through the increase in allowable height, the building footprint for the new H1 housing facility is able to be minimized, preserving the adjacent natural resources.

Athletic Facility (Campus Master Plan Identifier: F1)

The development of the athletic facility will not have impacts to nearby natural resources (see **Figure 4.5**). The facility is proposed in an existing impervious surface lot near the UNE Intermodal Transportation Facility (ITF).



Figure 4.5 Proposed Athletic Facility (F1) Development and Adjacent Natural Resources

Residence Hall (Campus Master Plan Identifier: H1)

The Residence Hall and associated parking (see **Figure 4.6**) are proposed for development on the existing Gulliver's Field and have been planned to minimize natural resource impacts, however some impacts may be unavoidable. In cases where development cannot reasonably avoid these setbacks, consultation with the City of Portland and Maine DEP will be conducted to determine potential permitting or mitigation requirements.

Gulliver's Field is a mowed, turf grass soccer and athletic field currently used for informal recreation with low vegetative species diversity and low wildlife value but is adjacent to mixed hardwood forest and forested and shrub wetlands as described in the Ecological Communities section of this chapter. These adjacent forested habitats may provide habitat a variety of eastern warblers, ruffed grouse, the American woodcock, red and gray foxes, microtones, and mustelids and serve as stopover locations for spring and fall migratory passerine bird species.

No impacts or tree-clearing activities are proposed in the Campus Master Plan within the open space areas on campus; forested areas will remain unchanged and provide valuable wildlife habitat and open space.

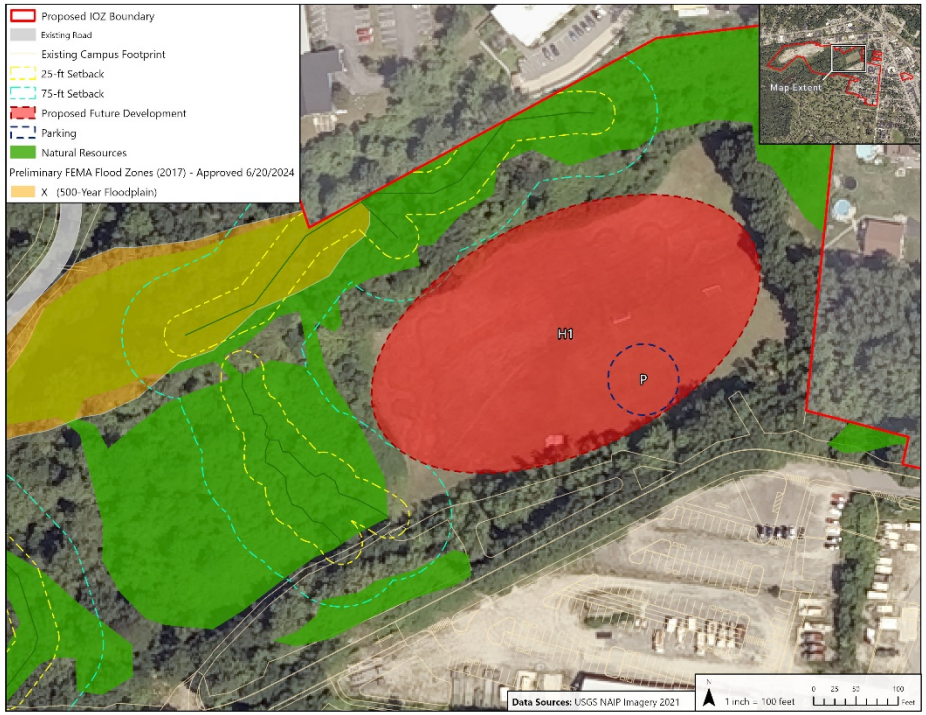


Figure 4.6 Proposed Residence Hall Development and Adjacent Natural Resources

Academic Building (Campus Master Plan Identifier: A2)

The proposed Academic Building will be built on an existing parking lot on the southwest side of campus (see **Figure 4.7**). No significant tree-clearing and no direct or indirect impacts to natural resources is proposed for this project.



Figure 4.7 Proposed Academic Building Development and Adjacent Natural Resources

Natural Resources Protection

UNE, in development of this IDP, has sited the proposed campus improvements in locations that avoid conflict with natural resources being contained to existing disturbed areas and maintaining open space (see **Figure 4.8**). Through thoughtful siting, impacts to the undeveloped and natural areas of the campus are avoided or minimized to the greatest extent practicable and overall contribute to the health of Capisic Brook by maintaining the stream's riparian zone, which provides canopy cover, flood protection, stabilizes soils, filters pollutants, and provides habitat for native wildlife. As previously stated, UNE is partnering with Portland Trails with the goal of providing more opportunities for the community to access Portland's open space and natural areas. UNE students and staff participate annually in coastal and river cleanup efforts and are part of a research team leading the effort to restore the American Chestnut tree, a keystone species of eastern U.S. forests, including Maine. In addition, UNE received funding approval to undertake a cleanup of the Campus Pond of accumulated debris, demonstrating the university's commitment to environmental stewardship.

With all campus improvements, consideration of the site's natural characteristics including soils, hydrology, slope, and vegetation as well as its proximity to wetlands, aquatic resources, and habitats will be evaluated, and impacts avoided or minimized to the greatest extent practicable and adhering to all related state and federal permitting requirements.

Specific to the Capisic Brook watershed, UNE understands its importance and will meet City and State stormwater management requirements for quality and quantity and consistent with earlier work on campus. The specific measures utilized to meet the regulatory requirements related to stormwater runoff will be determined during the site plan review process for each proposed facility. Items in the BMP toolbox include revegetation of currently impervious and de-vegetated areas, infiltration of stormwater where soil conditions permit, and under-drained soil filters. UNE will manage stormwater on-site before considering connections to the City's enclosed stormwater system. Further detail on stormwater management is provided in Chapter 5, "Infrastructure Plan."

As stated above, UNE is committed to including design elements that foster environmental stewardship and promote the health of ecosystems and the Capisic Brook Watershed. Incorporating wildlife habitat design into the project planning process will ensure that with each new project, additional greenspace and/or habitat is created. All proposed campus development projects will review potential aquatic resource and watershed impacts and avoid to the extent practicable and feasible, significant impacts to resources in project design and implementation. Proposed projects will submit project plans and designs to the City of Portland for municipal review and plans are subject to comply with the Urban Impaired Stream (UIS) Standard of Chapter 500 of the Maine DEP Stormwater Management Rule and NRPA permit requirements.

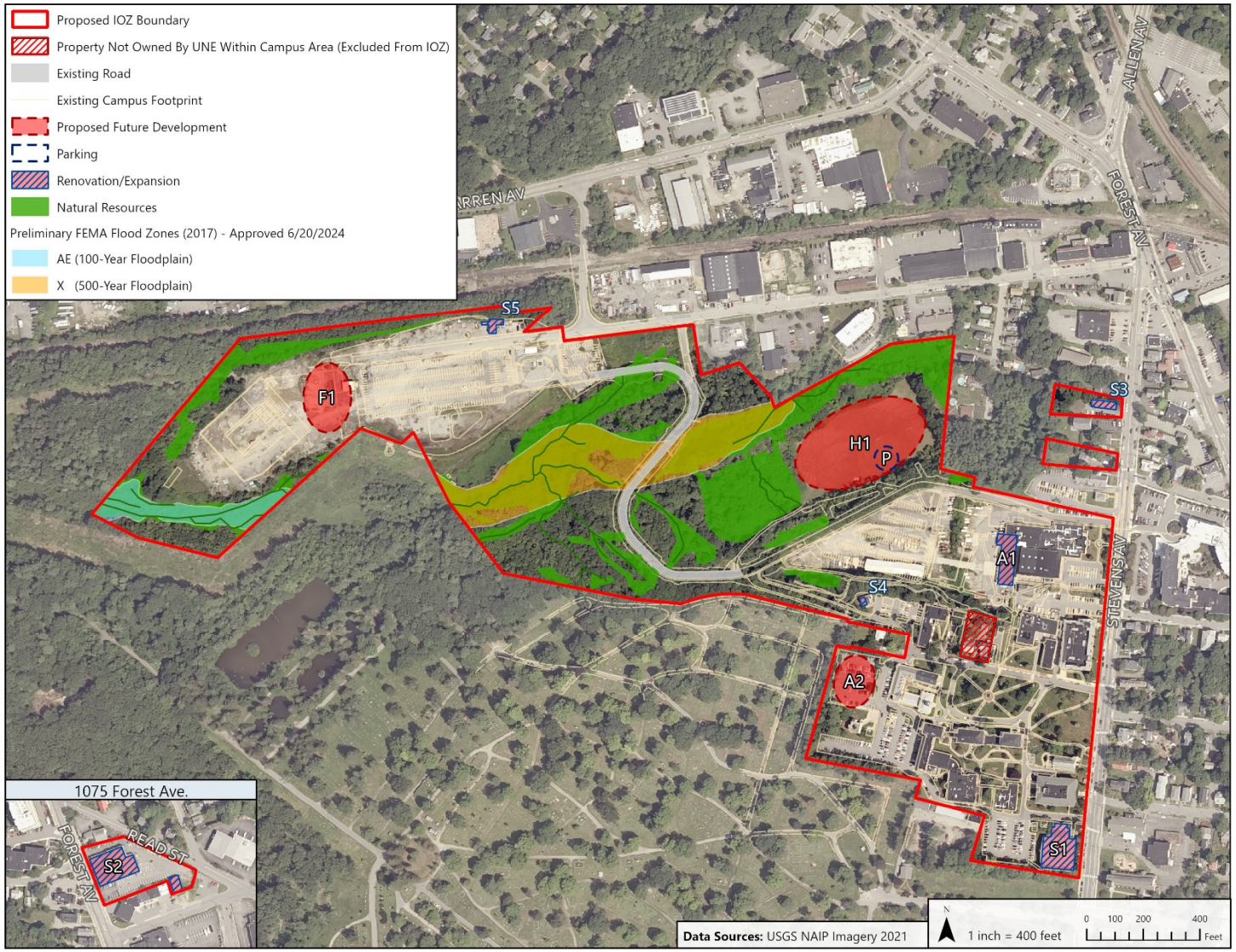


Figure 4.8 Natural Resources and Campus Master Plan

Operational Sustainability

Environmental stewardship is a core value of the University. UNE has been named one of the nation's most environmentally responsible colleges for seven consecutive years, according to the Princeton Review. In 2024, UNE was named in the Princeton Review's top 50 of the nation's most eco-friendly colleges. All new construction is conducted to the highest standards of sustainability, and all renovations are conducted with an eye toward improving environmental impacts. Each year, UNE invests in additional sustainable energy products (e.g., solar panels). As part of long-term plans for the campus, UNE expects to maintain, and where possible, broaden initiatives on its sustainable operation strategies.

Energy Conservation

UNE's Sustainability Office has been conducting greenhouse gas (GHG) emission inventories since 2008. The university's Carbon Monitoring Task Force has been charged with "making recommendations on energy demand, procurement, production, renewable technology implementation, emissions reductions and conservation." UNE voluntarily became a signatory to the Carbon Commitment in 2008 and as part of this commitment, created the university's Climate Action Plan (CAP) in 2010, which was subsequently updated in 2017. The UNE CAP has set an aggressive carbon neutral goal for 2040. The 2017 CAP update includes goals for GHG reductions and activities to help achieve those goals, including energy efficiency and renewable energy projects, building design and development standards (see Chapter 6), waste reduction strategies, alternative transportation initiatives (see Chapter 3), sustainability criteria integration into contracts, offset purchases, community-based marketing strategies aimed at sustainable behavior adoption for individuals, and integration of climate change and sustainability education across the curriculum.

The University's Energy Subcommittee regularly reviews operational efficiencies and monitors energy consumption internally through its direct digital controls and utility statements. Fiscal year 2023 usage for the campus was as follows: 4,668,514.67 kWh of electricity, 1,964.9 gallons of #2 heating oil, 2,146.6 gallons of propane, and 278,523.13 cubic feet (CCF) of natural gas burned in the campus' central steam plant and natural gas condensing boilers.

If the university realizes the full potential of development identified in the Campus Master Plan, the potential future usage of electricity and natural gas may initially be higher assuming similar operational conditions. However, with UNE's commitment to carbon neutrality, and advances in building technology, the actual consumption may be significantly less. UNE is unaware of capacity issues in these existing distribution systems and anticipates use of these systems to supply the future development. UNE will request capacity to serve letters from Central Maine Power (CMP) and Unitil for new projects during each site plan review process.

As detailed in the UNE Climate Action Plan, UNE has previously partnered with ConEdison Solutions to investigate a comprehensive energy efficiency program, and is now working with B2Q Associates to update it. The potential sustainable energy use opportunities being considered include further LED retrofits, solar thermal, solar electric, and boiler plant upgrades with potential fuel switching. Building automation controls and window replacements for the campus are currently in progress. UNE has also developed a purchasing policy for energy consuming appliances and equipment to guide future campus purchases that do more to consider life-cycle costs. UNE will also undertake a lighting audit and retrofit, considering life-cycle costs when deciding what fixtures to install or replace.

Waste Management

Appropriate disposal of waste is a priority of the Sustainability and Environmental Health and Safety (EHS) Department at UNE. The EHS Department believes that "all faculty, professional staff, administration, students, and patrons are entitled to a safe and healthy campus." To this end, UNE commits resources to remove recognized hazards, provide education and training, provide appropriate personal protective equipment, and holds everyone accountable and responsible for good health and safety practices. For all university activities, UNE implements and maintains the University's Environmental Health and Safety Manual (revised August 2019), which houses the campuses environmental health and safety policies and procedures in accordance with federal and state regulations and also maintains the campuses Chemical Hygiene Plan (revised May 2022). These policies and procedures are continuously reviewed to ensure that UNE is meeting the goal of providing a safe and healthy campus community.

Annual Waste Audit

UNE partners with its contracted waste hauler to conduct annual waste audits of all municipal solid waste (MSW) dumpsters and single-sort recycling containers on campus. The annual waste audit spans three weeks in October, is weight-based, and is reported through the annual GHG emissions inventory on a fiscal year basis. For the fiscal year 2023, the campus disposed of an estimated 60 tons of MSW, and an additional estimated 7 tons of mixed single-sort recycling and cardboard were separated for recycling.

Recycling

UNE encourages students, faculty, and staff to engage in recycling and waste reduction throughout campus operations. Single-sort recycling stations are available in all academic and business buildings and include a three-bin, color coded system: blue for returnable bottles and cans, green for single-sort recycling, and gray for trash. The green, single-sort recycling bins allow for the co-mingling of paper, plastics labeled #1-7, metal, and glass. Returnable bottles and cans are separated from the single-sort stream for the purpose of supporting the recycling program, as the funds collected help to purchase bins, labels, signs, and educational materials aimed at waste minimization. In fiscal year 2022, UNE categorized its recycled waste and found 3% cardboard, 4% returnables (or redeemables), 12% metal, and 16% single-sort materials.

Additionally, campus recycling includes batteries, fluorescent light bulbs, computers, and electronics through the universal waste program. Books and journals are either recycled through the single sort program or donated to Better World Books for literacy programs. Waste cooking oil is collected by Maine Standard Biofuels and incorporated into their Bioheat product. Ink and toner cartridges are recycled through our office supply contractor. Facilities staff recycle used motor oil, scrap metal, tires, pallets, and captured refrigerants as well. Unneeded, lightly used furniture is offered to other non-profits or municipalities.

Composting

Food waste, such as kitchen preparation food scraps, compostable utensils and dinnerware, and post-meal food scraps are collected from UNE's Nor'easter Café dining facility. Compost is collected by Garbage to Garden and brought to Benson Farm in Gorham for composting. In fiscal year 2023 over 3,222 gallons of food waste was composted from campus. The Green Office certification program also encourages individual offices to participate in the program, and the Communications Department, Library, and College of Graduate and Professional Studies have collection locations

for food waste in their kitchenette areas that are routinely collected by office staff and consolidated with the dining service waste for composting by Garbage to Garden.

Hazardous Waste

UNE is registered as a Small Quantity Generator (SQG) as defined by Chapter 851 of Maine DEP's hazardous waste regulations. The campus generates less than 220 pounds of hazardous waste a month and generates less than 1 pound of acute hazardous waste per month and does not accumulate more than 1 pound of acute hazardous waste at any one time. The hazardous waste generated on campus is gradually generated in small amounts in the research and academic laboratories. UNE does not anticipate increased hazardous waste generation and the future relocation of the Maine Army National Guard Vehicle Maintenance Facility will reduce the need to store hazardous materials on campus. All hazardous waste is appropriately labelled, stored, shipped, and managed in accordance with the Maine DEP hazardous waste regulations per Chapters 850-852, 857, and 875. The EHS Department oversees the management of hazardous waste and ensures the appropriate process documentation of all hazardous waste generated at the facility from generation to disposal.

Biomedical Waste

UNE is registered with DEP as a large quantity biomedical waste generator (a facility that generates 50 pounds or more of biomedical waste per month). Two types of biomedical waste are generated at UNE. The first is generated from academic and research labs and consists mostly of solid cultures of media, disposable culture containers and sharps. The second is generated by medical services and consists of blood-soaked material, personal protective equipment and other potentially infectious material. All biomedical waste is generated, managed, and disposed of in accordance with the regulations set forth by the DEP in Chapter 900, the Biomedical Waste Management Rules. Laboratory managers are responsible for the generation and packaging of biomedical waste while EHS oversees the program from generation, storage, transportation, and ultimate disposal. EHS maintains all paperwork associated with the transportation and disposal of biomedical waste. UNE has a biomedical waste management plan for the campus; the plan includes a description of the biomedical waste generated, packaging and handling procedures, training requirements, spill containment and clean up procedures, and contact information for persons responsible for biomedical waste management at the university.

Sustainable Landscaping

As stated above, there are two gardens on the campus of significance regarding sustainability - the Medicinal Herbal Garden and the Community Garden. UNE is committed to including design elements that foster environmental stewardship and promote the health of ecosystems and the Capisic Brook Watershed such as bird-safe window design, stabilizing construction disturbance areas with native seed mixes and revegetation utilizing native plants, in particular as buffers between development and natural areas; utilizing best management practices for stormwater retention and infiltration; limiting tree clearing; and removing existing trash and debris from aquatic resources. Incorporating wildlife habitat design into the project planning process will ensure that with each new project, additional greenspace and habitat is created.

Noise Generation

UNE's campus generates noise at low levels that are consistent with and generally not disruptive to the neighborhood. Measured sound levels are below the Noise Standards within the City's' Land Use Ordinance. Some periods of increased noise generation are anticipated during project construction and are addressed in Chapter 7 – Neighborhood Engagement.

5. INFRASTRUCTURE PLAN

Infrastructure Planning

Sustainable and resilient infrastructure is essential for the continued operation of UNE's existing campus as well as planned development. With the projected future demand realized through the Campus Master Plan, sufficient capacity to serve would be ensured. **Figure 5-1** illustrates existing City sanitary sewer and stormwater infrastructure within and surrounding the campus.

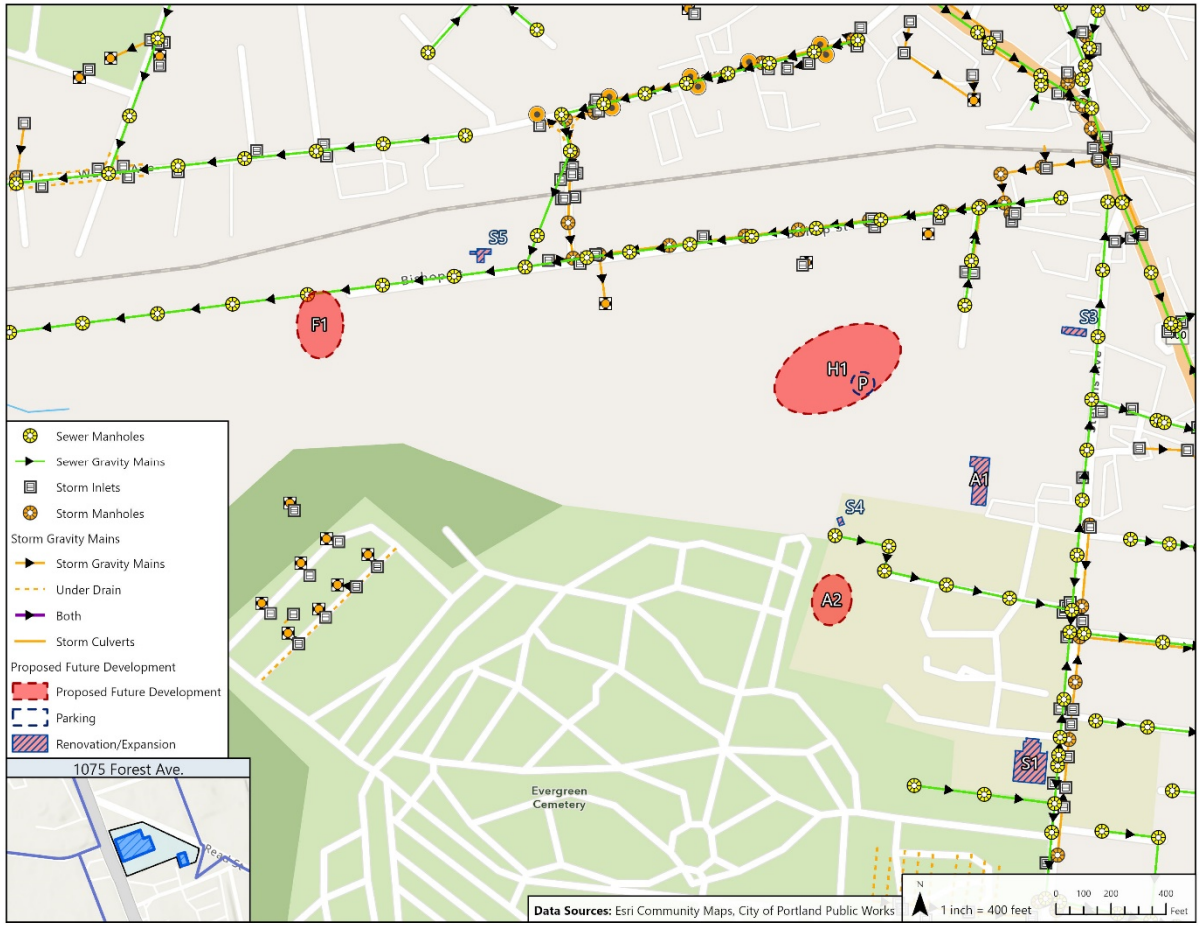


Figure 5.1 Existing Stormwater Infrastructure and Campus Master Plan

Stormwater Management

Existing Stormwater Infrastructure

Existing stormwater management systems on campus mainly utilize on-site stormwater quality and quantity BMPs including infiltration systems, with the secondary means being conveyance to the Stevens Avenue and Bishop Street combined sewer system. The value and importance of reducing stormwater runoff is reflected in UNE's recent development projects as evident in the design of the UNE Intermodal Transportation Facility, which reduced impervious surfaces by approximately 2.3 acres and utilized infiltration systems to minimize flow to the combined sewer. With the northwestern portion of the campus within the Capisic Brook Watershed, an urban impaired stream classified by Maine DEP, UNE seeks to actively contribute to the health of the watershed through the implementation of low impact development strategies.

The Bishop Street combined sewer has a Combined Sewer Overflow (CSO) located to the west of the UNE campus, which serves as a relief point during high-flow conditions. In low-flow conditions, combined sewer flows to a pump station located off of Congress Street, which sends flow to the East End Wastewater Treatment Plant. UNE understands the importance of reducing and minimizing flows to this combined system to help reduce the potential for overflows. The Stevens Avenue combined sewer is routed to Back Cove, where it is ultimately conveyed to the East End Wastewater Treatment Plant.

Future Stormwater Flows

UNE will continue to make efforts to minimize the impact of its future development stormwater runoff through the continued and expanded use of infiltration systems. All projects at UNE will be designed in compliance with the State and City standards. Wherever possible, UNE intends to manage stormwater on site to reduce flows to the City's combined system and consistent with its past, UNE will meet or exceed local and state regulatory requirements.

The University also has an active Spill Prevention Control and Countermeasure Plan and Stormwater Pollution Prevention Plans, further assisting them with regulatory compliance.

Utility Demand and Capacity

Water

Water services are supplied by Portland Water District (PWD). The two water mains that serve the campus include a 12" water main in Stevens Avenue and a 12" water main in Bishop Street. Fire protection services include hydrants that are located along Warren Avenue, Forest Avenue, Bishop Street and Stevens Avenue. UNE strives to limit water consumption through various means including low flow fixtures. Water usage in fiscal year 2023 was 13,741.4 gallons per day (GPD).

Ability to serve letters have been provided by PWD for two current projects (as of the preparation of this Plan) including the Department of Campus Services Maintenance Facility building and the COM building. Based on correspondence with PWD, UNE does not anticipate any issues with capacity

of the existing water distribution systems to support the university's Master Plan and will provide ability to serve letters from PWD as part of future Site Plan Reviews.

Wastewater

Wastewater from UNE is discharged to a combined sewer system in College Street and Stevens Avenue. With a conservative assumption that no water is exported (used for drinking water as an example) and assuming wastewater discharge is equivalent to water usage, in the fiscal year 2023 wastewater discharge was 13,741 GPD. Future planned development is expected to increase wastewater discharge. All future projects will provide an ability to serve letter from the Department of Public Works as part of Site Plan Review. UNE also participates in the City's Fats, Oils, and Grease (FOG) Program, to responsibly dispose of these biproducts; maintenance of these systems is performed regularly to ensure they are operating effectively and not discharging to the City's sewer system.

Electricity

Central Maine Power currently provides electric power to the campus. As discussed in Section 4 Environmental Plan, fiscal year 2023 usage for the campus was: 4,668,514.67 kWh of electricity. UNE will request capacity to serve letters from Central Maine Power (CMP) during each site plan review process but does not anticipate any electrical capacity issues in the future.

Telephone & Data

UNE is currently serviced for their communications services by Consolidated Communications and plans to continue to work with this provider in the future. Additionally, UNE internet is serviced by Consolidated Communications and Spectrum and plans to work with these providers in the future. UNE does not anticipate any capacity issues or disruptions in the future.

Natural Gas and Heating Fuels

Unitil currently provides natural gas service to the campus. Natural gas services are located within Bishop Street and Stevens Avenue. Natural gas services required for future buildings will be coordinated with Unitil during the site plan approval process. Fiscal year 2023 usage for the campus was 278,523.13 cubic feet (CCF) of natural gas burned in the campus' central steam plant and natural gas condensing boilers. Two new 4" service lines have been installed to supply natural gas to future projects including F1 (Athletic Facility) from Bishop Street, and H1 (Residence Hall) from Stevens Avenue. The remaining planned projects will not require upgrades to existing natural gas services. If determined to be needed, gas service for future projects will be evaluated during site plan review. With UNE's commitment to carbon neutrality, and advances in building technology, future natural gas consumption will be limited to the greatest extent possible during the development of the Campus Master Plan.

Further, as discussed in Section 4 Environmental Plan, fiscal year 2023 usage for the campus included 1,964.9 gallons of #2 heating oil, and 2,146.6 gallons of propane. UNE does not anticipate any capacity issues securing heating fuels in the future.

Public Safety



The well-being of UNE's students and faculty is the top priority of UNE. This goes hand in hand with safety and security on campus. UNE has security officers that provide 24/7 patrol and dispatch coverage of the campus. These services are essential for crime prevention and emergency response. In addition to on campus security, UNE uses Rave Mobile Safety, an emergency notification service, which provides faculty, professional staff, and students with timely information and instructions during emergencies.

Sustainable Guidelines

UNE is committed to developing and maintaining sustainable and resilient infrastructure to support its current and future campus operations. UNE's proactive approach includes effective stormwater management through on-site infiltration systems and compliance with state and City standards to minimize runoff. UNE's water and wastewater systems are supported by Portland Water District and the City's infrastructure. UNE will continue to ensure sustainable capacity and growth of water and wastewater systems. UNE prioritizes efficiency and sustainability in its use of electricity, natural gas, and heating fuels. Additionally, UNE's robust public safety measures and reliable communication services ensure a secure and well-connected environment.

UNE has, and will continue to, support infrastructure sustainable growth through several key guidelines. For water conservation, UNE will implement and maintain water-efficient or low-flow fixtures to significantly reduce water consumption. For stormwater management, UNE will continue to incorporate and uphold green infrastructure practices and promote on-site infiltration. Enhancing energy efficiency is also a priority; UNE will upgrade and sustain energy-efficient systems such as LED lighting and energy-efficient HVAC systems. Achieving LEED Silver certification will continue to be the standard for energy efficiency. UNE is also dedicated to preserving existing natural habitats, integrating them into the campus landscape, and preserving open spaces and wetland areas where practicable. Through these practices, UNE will continue its commitment to a sustainable and environmentally responsible future.

6. DESIGN

UNE recognizes that the success of future development relies on structured design guidelines, review, and accountability. UNE is committed to maintaining its existing building stock, including those within the Westbrook College Historic District. Where feasible, UNE will renovate its existing buildings to create internal efficiencies and provide for continued and cutting-edge learning excellence, while respecting the campus' historic character. Where necessary, UNE will develop new buildings in accordance with the Campus Master Plan. UNE has committed to assessing the applicability and feasibility of the construction of new buildings to State of Maine Energy Stretch Code (IECC 2021), which meets and, in some places, exceeds Leadership in Energy and Environmental Design (LEED) Silver standards. The University also aims to design and build structures that are at significantly more energy efficient than comparable building stock, verified with third-party energy modeling. Building systems will be evaluated for life-cycle costs and take into account life-cycle fuel consumption and initial capital investment. This assessment informs the decision-making process for future development. New construction will also adhere to considering sustainability and energy efficiency in the Request for Qualifications (RFQ) process and will continue to integrate best practice design into all new projects. Each individual project will work within the planning framework and goals that set out to minimize its adverse impact on the campus, the environment, and the community.

Development Design Impact Considerations

UNE's campus includes one of the twelve locally designated historic districts in the City of Portland, and a nationally registered district, which is the Westbook College District and its contributing buildings of Alumni Hall, Hersey Hall, Goddard Hall, the Abplanalp Library and the internal common or College Green. The proposed campus development looks to balance the campus' history and neighborhood context with UNE's programmatic needs. Predominant design characteristics of the historic property and resources (i.e., materiality, scale, orientation, etc..) are considered to establish a baseline for informing design principles. The design focuses on minimizing environmental impact while creating a cohesive campus with sensible and historically sensitive buildings and inviting open spaces. Within this framework, UNE aims to preserve the historic character of the existing campus and find opportunities for modernization and set the tone for the future of UNE and its commitment to the modern delivery of healthcare. The campus development will be planned to complement and enhance the community by respecting architectural character, minimizing visual and physical burdens, and creating enhanced open space accessible to all. Building siting will focus on campus optimization and minimizing impacts on neighbors through the use of buffers, landscaping, and architectural design. As much as possible the development will seek to create more compact circulation, limit new shadows and wind, and minimize the visual impacts from the surrounding neighborhood. Existing buffers will be maintained, as much as possible, to maintain the current visual character of the campus. Similarly, no new campus entrances are planned, which might adversely increase or change the existing public ways. The campus frontage is anticipated to remain the same with the Campus Master Plan.



Figure 6.1 Proposed Development in 3D - Overview

Neighborhood Integration

The neighborhood design standards establish a framework for a visually and architecturally integrated campus development and ensure that the campus is safe, environmentally sensitive, and minimizes adverse impacts on and off the campus. With respect to how the potential campus interfaces with the neighborhood, these design standards address the scale and massing of buildings, appropriate materials and colors, rooflines, locations of building entrances, building linkages, architectural detailing, adjacent open spaces, campus circulation and similar features.



Figure 6.2 Proposed Development in 3D - View from Stevens Avenue

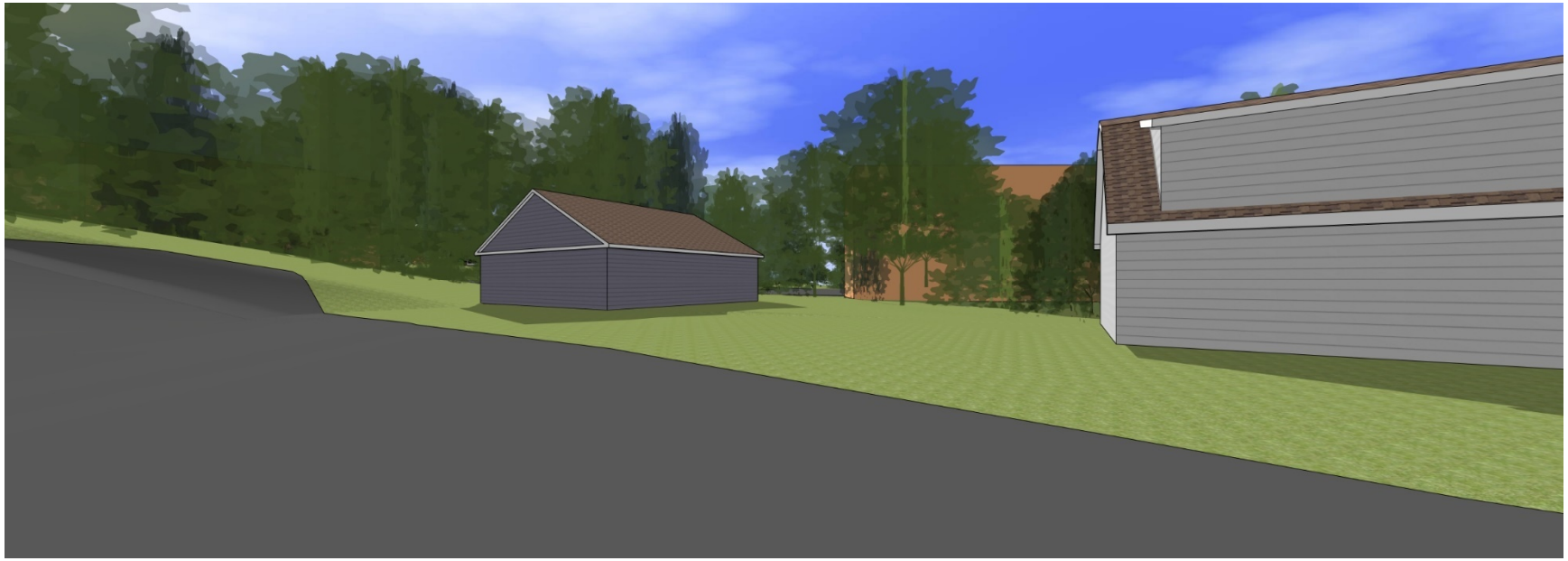


Figure 6.3 Proposed Development in 3D - View from Mayfield Street

Historic Preservation and Impact on Future Designs

The Westbrook College Historic District encompasses the historic core of the campus and is bounded on the east by Stevens Avenue, and on the north by College Avenue. The surrounding context and history set the tone for the campus character and future development integration. UNE is committed to respecting and celebrating historic preservation and maintaining the overall legacy of the neighborhood. UNE has successfully designed, permitted, and renovated several historic facilities on campus. To date, Goddard Hall, Hersey Hall, and Alumni Hall have been revitalized through full historical renovations permitting through the Historic Preservation Commission. The exterior of these facilities has been maintained and restored to their original grandeur and color. All work done to Ludcke Hall, Proctor Hall and the Abplanalp Library has been done with an effort to preserve the historical nature of these facilities and has also been permitted through the Historic Preservation Commission. UNE's renovation of Alumni Hall was recognized with Maine Preservation's 2016 Honor Award as an outstanding example of historic preservation.

The Westbrook College Historic District building characteristics include a range of late 1800s and early 1900s architectural styles including Gothic Revival, Italianate style, and Colonial Revival. Creating an intimate scale and romanticism focus with earthy materials and sophisticated aesthetics. These styles have provided guidance on the design characteristics of recently completed buildings such as the School of Pharmacy and College of

Dental Medicine building located directly on Stevens Avenue. Brick blends, sizing of windows and doors, building proportions and roof edge details allow newer buildings to seamlessly blend with those within the historic district and surrounding community.

Sustainability and Resiliency

UNE has a commitment to its community and natural surroundings. Campus development will further improve UNE's status as a resilient campus that provides a responsiveness to the planet and inspire the next generation of environment stewards. Buildings will be situated and oriented to take advantage of passive solar energy, natural light, air, and views. New buildings will take a low impact development approach to manage stormwater runoff and emphasize conservation and use of on-site natural features to protect water quality. The use of high efficiency building envelopes and mechanical systems will reduce the energy necessary to operate the building, further increasing resilience and protecting against unanticipated events. Universities are a vital partner to the communities they serve, and UNE will ensure the campus is part of an overall community solution to sustainability and resiliency.

Maximum Heights

UNE uses a multi-pronged methodology to determine the appropriate height profile for potential future development within the IOZ boundary to ensure an appropriate scale, while maximizing the utilization of space and minimizing impacts to the environment and surrounding neighborhood. As shown in **Table 2.3**, heights and square footages have been identified that reflects UNE's campus modernization needs. The development proposed in the Campus Master Plan would be allowed in the proposed Institutional Overlay Zone, including allowances of up to 85 feet in the areas of the proposed Residence Hall (H1), Athletic Facility (F1), and Bishop Street (S5) renovation/expansion and up to 75 feet elsewhere on the campus, consistent with the maximum allowable height in the proposed underlying zone of B2. Along the campus edges, where the campus is located adjacent to residential and open space zones, a 25 foot wide transition zone will allow for building heights of up to 50 feet (see **Figure 6.4**).



Figure 6.4 Proposed Open Space and Maximum Height Map

These heights were determined using context-sensitive best practices, similar to those used to develop height zones for UNE's Biddeford campus. The approach includes enabling larger buildings within the campus core while providing height transitions and expanded setbacks to better align with the scale of the residential and historic neighborhoods along the campus' edge. Consideration was also given to the campus' natural topography when determining maximum heights, to minimize perceived height from adjacent streets and neighborhoods. Dedicated open space areas reflected on Figure 6.4, such as along Capisic Brook, are identified as no-build areas, to preserve existing natural resource areas. Consistent with the City of Portland's recently adopted ReCode, UNE is seeking an increase in allowable maximum height from 75-feet (per the proposed underlying zone of B-2) to 85-feet in specific locations on campus to allow for densification and to minimize impacts to natural resources. The resulting height profiles are the basis of the maximum heights in the Regulatory Framework.

Transition Zones

UNE has identified transition zones along the edges of the IOZ boundary to allow for an appropriate relationship to the surrounding context and create a consistent scale of development. **Figure 6.4** depicts a 25-foot-wide transition zone around the interior perimeter of the contiguous campus with a maximum height in that transition zone of 50-feet. In the area of campus adjacent to the Mayfield Street neighborhood, an open space area 50 feet in width provides buffering and transition from the residential neighborhood to the interior 85-foot maximum height at Gulliver's Field.

Safety & Environment

UNE is committed to maintaining a safe environment for all users in and around its campus. The Campus Safety and Security Department monitors the campuses through in-person patrols and CCTV cameras and provides response to any situation that may arise, around the clock, every day of the year. UNE recognizes that environmental design can play a large role in creating a safe place. To this end, UNE has focused on providing a clean and aesthetically pleasing campus environment that is designed with vandal-resistant materials and is providing clear and properly sized signs in safe locations to ensure safe wayfinding. Paths from transit stops, bike storage areas, and parking areas to main pedestrian entrances are well-lit with clear sight lines. Street-level elevations and landscaping areas are designed to minimize potential hideouts and blind spots. Call boxes with blue lights are distributed across campus and are easily identifiable as well as the installation CCTV monitors in more remote areas provide additional safety measures. An Important element is the adequate lighting levels on walkways, parking lots and roadways as well as encouraging activating spaces to encourage many eyes and people. UNE's Campus Safety and Security Department provides a Clery Report every year that summarizes the past year's offenses and crime statistics on each of its campuses. Over the last 3 years there have been no events reported related to issues stemming from Crime Prevention Through Environmental Design (CPTED) deficiencies on the campus. The University feels that active CPTED during the planning of projects has contributed to low crime statistics.

Design Guidelines

School integrity, academic achievement, and productive student lifestyle is reflected in the institution's physical building and campuses. To ensure that this character is intentional and consistent across UNE's Portland campus, the following Architectural Design Guidelines have been established. These guidelines will preserve and enhance the image of the University's quality, beauty, durability, and history.

UNE has developed a Master Plan (see **Figure 2.1**) and guidelines to enhance its campuses and help it fulfill its greatest potential. The Master Plan identifies the future programmatic needs and generally locates future building based on connectivity, height strategies, and sustainability approaches. Where possible buildings are clustered close together to encourage dense development while reinforcing active outdoor spaces, creating functional linkages with surrounding facilities. The Architectural Design Guidelines are to be used in conjunction with the Master Plan for consistency on the Portland campus and provide an overarching framework while still allowing flexibility in individual building design. The Architectural Design Guidelines provide direction for future development in the IOZ around the visual identity, building location, mass, and consistent use of materials.

Architectural Design Guidelines

The Architectural Design Guidelines were developed to address the following requirements and needs of UNE. These guidelines are intended to provide general guidance and direction and are not intended to supersede any local, state, or federal codes. It is the architect's responsibility to comply with all applicable codes.

1. Cohesive Campus

The overall composition and experience of the campus will be considered for cohesive identity.

2. Building Design

Building façade materials will be of high quality, durable to the weather, and contribute to an attractive campus experience.

3. Building Entrances

Building entrances will include prominent facades and be oriented toward pedestrian-oriented activity areas, including parking areas, to facilitate safe and barrier free access.

4. Lighting

New or renovated buildings should have adequate exterior lighting to ensure that entrances and surrounding areas are safe. All new exterior lighting will be selected to provide lighting levels that meet the safety criteria of the Illuminating Engineers Society of North America, IESNA. Consideration will be given to limit light trespass and glare into neighboring properties through the use of cutoff fixtures at the edge of campus, resulting in less light spillover into the surrounding community.

5. Outdoor Spaces

Building designs should strive to include a variety of open spaces and activities ranging from small intimate courtyards for contemplative study to open lawn areas for informal recreation and outdoor classes. Where applicable, provision should be made during the programming and conceptual design of new facilities to provide opportunities for outdoor use of open space as part of the site and for integration within the larger open space/conservation network.

6. 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.

Visual Identity

The historic nature of the buildings located within the Westbrook College Historic District provides the underlying baseline for the visual identity of new proposed buildings. In addition to creating a consistent historic language, universal design elements will be considered. Universal Design is the design and composition of an environment so that it can be accessed, understood, and utilized to the greatest extent possible by all people regardless of their age, gender, or ability. All new buildings will be in accordance with ADA requirements. The University is committed to making its spaces accessible to the public. The University employs a comprehensive and consistent interior and exterior signage system on campus to establish a unified visual identity. This aids in the cohesiveness of the campus and creates a familiar visual style for information. All signs comply with ADA guidelines.

Building Location

The Master Plan identifies potential building sites and open spaces. This framework provides guidance to ensure a cohesive campus and that the University's goals are being met. The Architectural Design Guidelines will reinforce the University's Master Plan while providing further direction on site elements. Access for emergency and maintenance vehicles, ADA issues, the relationship of new facilities with respect to existing campus elements, and the surrounding natural environment must be considered and maintained with each new building or renovation/expansion. In addition to new connections, new buildings and renovations/expansions must consider existing building relationships to ensure campus functionality and space activation are enhanced and not negatively impacted. Each new project will need to include pedestrian pathways and thoughtful, placemaking design to reinforce the Master Plan's vision.

Massing

The shape and size of each potential building is a balance of programmatic needs, site constraints, and appropriateness based on the historic context and University's goals. Human scale, pedestrian orientation and circulation, entrances and relationship to open space are key elements to consider. The perceived proportions of both individual and the collective buildings need to consider visual connections and sight lines. Deliberate efforts need to be made to avoid adverse impacts on surrounding neighborhood context. The Architectural Design Guidelines provide human scale strategies to deploy to any new building or addition.

Building Materials and Systems

Material selection is critical for maintaining the overall aesthetic vision while ensuring performance standards are met. The American Society for Testing and Materials (ASTM) is recognized as the industry standard for establishing the performance requirements for various building materials. Adhering to ASTM standards for design criteria, material performance, and construction will provide quality control levels while eliminating untested

or unproven materials, products, and systems from consideration on future projects. Materials selection will consider long-term maintenance and life cycle costs. Life Cycle Costing (LCC) is a process used to select the most appropriate and durable material based upon the owner's ability to initially purchase it, evaluate the materials' longevity, and its expected maintenance costs. LCC systems principally address mechanical, electrical, and plumbing; however, can also include materials associated with the aesthetic character of a project as well. Analysis of architectural, civil, and structural materials tends to be a balance of vendor reputation, past performance, environmental factors, and maintenance resources. The University's life cycle expectations are based on a 40-year building life. In addition, materials shall be considered on their physical make up and performance to ensure no materials that contain harmful substances or release volatile organic compounds are being used. The University considers WELL Building Design and U.S. Green Building Council (USGBC) design features in its projects. WELL, is a performance-based system for measuring, certifying, and monitoring features of the built environment. No asbestos containing materials, lead, PCBs, or mercury will be allowed in construction. UNE will strive to eliminate the release of volatile organic compounds to the extent practicable. Energy-efficient design will be incorporated into the design of each new project. The University has adopted the Maine Energy Code and whenever feasible, new, and renovated buildings will be designed with approaches targeting energy conservation and energy efficiency. UNE uses the IECC or USGBC LEED Silver rating for its energy efficiency and sustainability baseline. UNE is also a signatory of the Carbon Commitment and is striving for carbon neutrality.

7. NEIGHBORHOOD ENGAGEMENT

Being a good neighbor and having meaningful engagement with the community is critical to UNE's success. UNE makes every effort to being a respectful and understanding partner to its adjacent communities. An open exchange of information, ideas and feedback allows for vetted decision making and ensures everyone benefits from future plans and growth while minimizing adverse impacts. This engagement foundation allows the community to flourish and address concerns together. UNE ensures their partnership and communication goes above and beyond standard outreach. Informing abutters within a 1,000-foot radius, going beyond the 500-foot radius requirement, UNE is committed to including as many community members as possible in the IOZ process and Campus Planning.

Ongoing Community Engagement

UNE understands that its vision and growth is dependent on the overall success of the entire community, and this begins with open communication and collaborative engagement. UNE is committed to building and maintaining trust by clearly and consistently engaging its neighbors on both the institution's core mission and neighborhood concerns. The surrounding community is a diverse section of the city with many perspectives and goals. The campus is an important component that acts as a transition between commercial and industrial businesses in the Forest Avenue, Morrill's Corner and Warren Avenue corridors and the residential neighborhoods of Deering Center, Stevens Avenue and Mayfield Street. UNE values its role with both the local residential communities and the area businesses and strives to be fully supportive of the health and vitality of its neighbors. Over the years, UNE has established an honest and reliable communications, such as with the Deering Center Neighborhood Association, and UNE is committed to maintaining an open dialog with all of its neighbors, to resolve disputes quickly and fairly, and to ensure that its growth not only provides a robust, highly educated future workforce, but that also enhances the neighborhood's unique diversity, economy and livability. To do this, UNE proposes the following ongoing community engagement initiatives to ensure the surrounding neighbors are kept informed of UNE's future development plans and to gather any feedback from the public related to projects or operations on the UNE campus.

1. Develop a comprehensive Construction Management Plan utilizing the City of Portland's template to provide information on maintaining normal campus operations, providing continual public safety, and minimizing impacts to areas surrounding the campus during project construction. More information on the Construction Management Plan is below in this chapter.
2. Provide high level monthly project updates for all current/active projects on the Campus Planning page of UNE's web page (www.une.edu/campus/campus-planning). This web page will be accessible to the public.
3. Create a dedicated email address (uneprojects@une.edu) to allow neighbors to forward questions, concerns, or feedback directly to UNE's Planning Department and project team members. These emails will be answered in a timely fashion by the people directly involved in the construction activities. This email will also be utilized to send out specific project updates and potential impacts to its neighbors on current projects. Email updates will be sent out to neighbors who request to be included on the updates.
4. Continue to attend regularly scheduled local community neighborhood association meetings, like the Deering Center Neighborhood Association (DCNA), to present and review future development plans and receive ideas and feedback.

UNE's community reach is broad and deep in Portland, Cumberland County, across the State, and the region, with particular benefits to health care services, student and faculty volunteer initiatives for the marginalized and underserved, and educational benefits for residents. UNE is Maine's largest

private university and the state's largest health care professional educator. UNE is also one of the region's major employers and ranks in the top quartile of Maine workplaces for the size of its workforce. Given this broad impact and influence it is important for UNE to have ongoing community engagement and align with all stakeholders.

UNE partners with external community focused associations that can help coordinate outreach and amplify messaging. These groups include the Deering Center Neighborhood Association, Friends of Evergreen, Portland Trails, etc. A neighborhood meeting was held on June 13, 2024, to provide the neighborhood with background information on the IOZ process and to garner feedback on UNE's Campus Master Plan. A second neighborhood meeting was held on October 30, 2024, at 6pm in the same location as the first meeting, to provide an update on the IOZ process and share materials from this IDP and from the Regulatory Framework. In addition to the required neighborhood meetings, UNE has hosted meetings on July 2, 2024, and September 16, 2024, with the Deering Center Neighborhood Association (DCNA), to share updates on the IOZ process and solicit feedback from this important neighbor to UNE.

A Community Advisory Group will be created for the purpose of sharing information on project development, planning, and seeking input. To the extent practicable, the group will be comprised of representatives of interested groups such as the Deering Center Neighborhood, parks and trails, bicycle/pedestrian, public transit, and the business community.

Property Management Framework

UNE directly oversees the maintenance and care of its facilities. This includes Safety and Security, grounds and building maintenance. Should operational issues arise, neighbors are encouraged to reach out to inform UNE of their concerns. The UNE phone line is answered 24/7 and persons can report concerns directly at any time. UNE has an on-call roster of technicians available to respond to emergencies in the evenings, overnight or on weekends or holidays.

UNE does not inspect or approve any off-campus housing and only provides an off-campus housing list as a convenience to students and landlords/rental agencies. UNE operates under the assumption that landlords/rental agencies conduct business within the guidelines of the law and all contractual agreements are between students and the landlords or agents. Any property issues of non-university properties would be dealt with through the appropriate resources. UNE provides an Off-Campus Housing Disclaimer that outlines its general approach.

Property Acquisition and Disposition Communications

UNE has established strategies for assuring communication pertaining to property acquisition and disposition in surrounding neighborhoods. This includes alerting abutting properties of the transition of ownership and providing the appropriate contact information should it be required.

Student Service Learning and Volunteerism

Student learning and volunteerism aligns and integrates academics with the needs of the community. This learning strategy integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civil responsibility, and strengthen communities. Community engagement is a core component of all UNE health professions programs and Student Service Learning and Volunteerism is a key

commitment of the university. Through structured service learning and volunteer opportunities, UNE students play an active role in promoting health, with an emphasis on serving Portland's vulnerable citizens. More than 700 health professions students annually provide hundreds of hours to non-profits across the city, often in interdisciplinary team-based groups that maximize the impact to community members. Benefits of UNE's Student Service Learning and Volunteerism includes culture competency, professional skill development, real-world application, and an opportunity to give back to the local community.

Service to the City and Region

UNE students and staff volunteer and donate generously to the local communities. They provide thousands of hours of service annually. Some examples include:

Health Care

UNE educates approximately 2,500 health professions students annually, nearly all of whom advance their clinical knowledge and skills by completing student practicums with health care affiliates in Portland, across Maine, and throughout New England. UNE has well established, long term academic and clinical partnerships with over 65 organizations in Portland alone, including major health systems, retail pharmacies, elder care facilities, agencies supporting disadvantaged residents, physical therapy businesses, and the Portland School System, among many others.

- Hundreds of UNE health care students provide thousands of hours to nonprofits in southern Maine, including the City of Portland, annually.
- In 2023 there were nearly 20,000 visits to one of UNE's Portland-based community outpatient health clinics, offering reduced cost care:
    - Dental Hygiene Clinic 2,540 (Over 11,400 visits in last 4 years)
    - OT/PT Lab and Rehab Clinic 1,135 (Over 4,700 visits in last 4 years)
    - Oral Health Center 16,701 (Over 139,000 visits in the last 10 years)
- Allied Health Professions Students provide many hours of service at a number of Portland clinical sites.
- Dental students have annual rotations at Greater Portland Health
- Physical Therapy students provide services in 21 clinical locations in Portland.
- Applied Exercise students provide services in 6 clinical locations in Portland, including Portland High School
- Dental Hygiene students provide service in 3 clinical locations in Portland including St. Brigid's School
- Dental Hygiene students provide service at Portland Women, Infants & Children (WIC) sites, with 130 outpatient visits in 2023.
- Public Health, Social Work, and Nutrition students provide services at 13 clinical locations in Portland.
- Athletic Training students provide services for Deering and Portland High Schools
- Nurse Anesthesiologist students provide services for patients at Maine Medical Center and Mercy Hospital
- Occupational Therapy students provide services at 8 clinical sites in Portland including STRIVE, Long Creek Youth Development Center, and the Boys and Girls Club
- Physical Therapy students provide services at 11 clinical sites in Portland.
- Hundreds of UNE Nursing students provide a range of services at Portland health care providers and public health centers.
- The Cedars Portland senior living community has engaged the CDM to serve as a dental home for its residents.

- UNE COM supports many trainings for Portland-based surgeons, physicians, and EMTs.
- In 2024, 9 COM students were chosen for Maine Medical's Residency Program.
- In 2024, 60 COM students completed clinical rotations at Portland health care centers (majority Maine Medical Center and Northern Light Mercy)

Public Health

UNE's Center for Excellence in Public Health (CEPH) provides education and service to the community and administers the Maine Area Health Education Center (AHEC). Portland and the surrounding communities are partners and recipients of these services.

- CEPH implements the State of Maine's SNAP-Ed program. Since 2012, the City of Portland's Public Health Division Nutrition Educators have provided Maine SNAP-Ed programming including direct education and policy and systems and environmental change interventions for eligible participants in the Portland community.
- Between 2016 and 2022, CEPH oversaw statewide substance use prevention efforts on behalf of the Maine Center for Disease Control and Prevention (CDC). The City of Portland was one of CEPH's subcontractors and implemented substance use prevention interventions in Portland.
- Between 2018 and 2020, in collaboration with UNE COM, CEPH oversaw a federally funded Primary Care Training and Enhancement Champions grant, through which a physician from GPH participated in a 2-year fellowship to improve services for people with opioid use disorder.
- Between 2020 and 2022, in collaboration with GPH and the Portland-based Maine Access Immigrant Network, CEPH evaluated a federally funded project on behalf of the Maine CDC to address health disparities in diabetes and HIV among Black and African immigrants, refugees, and asylum-seeking individuals in Cumberland County.
- Maine AHEC Network engages University of New England health profession students in community-based learning experiences with underserved communities in Portland. Maine AHEC Network coordinates these events in collaboration with community partners and provides training for students in advance of their participation. Examples since 2018 include:
    - School-based Oral Health Care: Partner with local schools to have students participate in delivering oral health education, and in some cases apply dental varnish for school students (2018–Present)
    - Portland Needle Exchange: Partnership with Portland Public Health's Free Clinic where students provided support at the Portland Needle Exchange (2018-Present)
    - School-based Vision and Hearing Screenings: Partner with local schools for students to assist with vision and hearing screenings (2018–Present)
    - Cumberland County Jail Corrections Officer Wellness Program: Partner with Cumberland County Jail for students to provide wellness education to corrections officers (2019-2020)
    - Greater Portland Health Support Group for Refugees and Immigrants: Partner with Greater Portland Health for students to assist with a Support Group for Refugee and Immigrants (2019)
    - Preble Street Volunteering: Students volunteered to assist at the Preble Street shelter (2018-2019)

- Partnered with Portland Public Health's Screening Priority Urgent Referral (SPUR) Clinic screenings for newly arrived refugees and asylees at Portland Public Health (PPH). The program rolled out this spring, with:
    - 14 Scholar and Non-Scholar student participants, with a combined 21 student visits (some chose to visit multiple times)
    - Students worked with precepting health professionals at the SPUR clinic, participating in health history taking and physical exams, point of care testing, intake and resource referral, health promotion and education.
- Maine AHEC Network Youth Healthcare Workforce Diversity Program
    - Since 2017 Maine AHEC Network has partnered with Portland high schools and the local Ethnic Community-Based Organization Maine Access Immigrant Network to provide health career exploration learning opportunities for New Mainer students. A total of 167 Portland high school New Mainer students has participated in the program since it began in 2017.

Service Learning and Community Outreach

Community engagement is a core component of all UNE health profession programs. Through structured service learning and volunteer opportunities, UNE students play an active role in promoting health, with an emphasis on serving Portland's vulnerable citizens. More than 700 health professions students annually provide hundreds of hours to non-profits across the city.

- Meals for Maine 2023 Contributions (September 2023)
    - 23,290 nonperishable, shelf stable meals distributed to:
        - Preble Street Resource Center: 13,260 meals donated.
        - Sacred Heart Food Pantry: 2,690 meals donated.
        - Milestone Recovery: 2,040 meals donated.
        - Maine Access Immigrant Network: 1,630 meals donated.
        - City of Portland: 1,630 meals donated.
        - South Portland Library: 2,040 meals donated.
        - More than 28,000 additional meals were distributed to other areas in Cumberland County and beyond.
    - Meals for Maine 2024 will double its impact with 100,000 meals delivered across the state, with a focus on Portland and Biddeford
- Cumberland County Jail (CCJ)
    - Hundreds of harm reduction kits have been assembled by students and given to residents in need upon release from incarceration.
    - Wellness kits and programming have been delivered to correction officers (COs) at CCJ to promote healthy living for individuals in these high stress positions.
    - In fall 2024, weekly wellness programming will return to residents after a 4-year hiatus due to COVID. Jail administration and Armour Health have requested that UNE re-implement this long-standing program that earned UNE a Cumberland County Sherriff's Office Certificate of Appreciation in 2018.
- Barron Center
    - Nearly 100 UNE students have participated in the "Dinner with Friends" program which pairs students with residents to share a meal and special events together.

- Boys and Girls Clubs of Greater Portland:
  - More than 25 UNE students volunteer as mentors at the clubs each semester.
  - Even more students have delivered special event programming for club members such as health fairs and pizza parties.
  - Hundreds of pounds of granola bars, pasta and tomato sauce have been donated by the UNE community to help address food insecurity among club members.
- Milestone Recovery:
  - Hundreds of students have shadowed the HOME team, learning about the collaborative effort to address the needs of Portland's unhoused community.
  - Hundreds of sandwiches have been made by UNE students and delivered around Portland in collaboration with the HOME team.
  - Student clubs and organizations have gathered hundreds of dollars' worth of supplies to meet the needs of Milestone's "wish list," as well as collected donations to fill backpacks for delivery around Portland by the HOME team.
- Deering High School & Casco Bay High School:
  - UNE students have regularly delivered programming, mentorship, and special events for students, including a Career Exploration Day and STEM Expo exhibits.
- Maine Department of Corrections:
  - Students have assembled more than 8,000 harm reduction kits for distribution to individuals state-wide, including community correction offices in Portland. As part of the kits, UNE students write notes of encouragement and hope which have been found to be incredibly meaningful to recipients.
- UNE College of Dental Medicine (CDM) Community Service:
  - Second-year dental students visit Goodwill LifeWorks Deaf Services and Goodwill Neuro Rehab Clinic to provide oral health education and activities to their patients.
  - Third-year dental students visit the Glickman Lauder Center of Excellence in Autism and Developmental Disorders once a month to provide oral health education and desensitization activities for the children at the Center.
  - Health Fair at the Greater Portland Immigration Welcome Center.
  - CDM participates in the Juneteenth Community Health Fair.
  - CDM is one of several locations across the state participating in a program to provide care to veterans through the Maine Veterans' Dental Network (MVDN). Any veteran who is not 100% service-connected to the Veterans Administration, does not have dental insurance, and cannot afford to pay for dental care out of pocket can register for the program.
- Hundreds of UNE students have volunteered countless hours for Portland based Partners for World Health.
- Students in UNE's Reproductive Health Leadership program collected donations to assemble menstruation care kits for Sacred Heart Pantry when funding for these critically needed products ran out.
- COM provides medical services for the Maine Marathon.
- UNE is recipient of a grant to support training of Sexual Assault Nurse Examiners (SANE):
- Training Forensic Nurses, law enforcement, and EMS in Portland.
- ME Council of Elder Abuse Prevention Summit training.

- UNE's Center for Excellence in Aging and Health offers continuing education opportunities to 730 Legacy Scholars annually – 143 of those scholars live in Portland.

Economy

UNE serves over 970 students on the Portland Campus alone. UNE brings students from Maine, New England, and increasingly from across the country and the world to Portland to live, study, and work. Many students elect to stay in Maine following graduation, including in Portland. The University is a top local employer, and it spends significantly to support local businesses. UNE faculty, professional staff, and students volunteer thousands of hours annually, providing *pro bono* services in the City. UNE researchers are tackling some of the most pressing issues facing the City and region, developing solutions with tangible impacts.

Many UNE students live in Portland and surrounding communities. They spend money to support local businesses and institutions. UNE also attracts thousands of visitors every year to Portland. These visitors spend money on lodging, food, and other services in the community.

- In 2023, 979 students attended classes on the Portland campus, and 372 reported a Portland home address.
- An additional 400 students will join the Portland campus when the new UNE COM facility opens Summer 2025.
- Approximately 30% of students are from Maine (including Portland and the surrounding area), and 70% of students come from outside of Maine (bringing "new" dollars to the community and region).
- A 2024 economic impact study found that student and visitor spending accounts for $51.9 million in revenue for Maine businesses annually.

UNE is a major employer in Portland, Cumberland County, and the state of Maine, with many employees living in Portland and the surrounding areas. These residents pay property taxes and rent or mortgages. They support local businesses and services. Their children attend local schools. The following data exclude student employee numbers.

- UNE is the 15th largest employer in Cumberland County.
- UNE employs 1,890 people in Maine - over 560 employees work on the Portland campus.
- An estimated 150 additional employees will join the Portland campus when the new UNE COM facility opens Summer 2025.
- 177 UNE employees live in the City of Portland.
- UNE provides excellent employment opportunities with competitive salaries and benefit packages.
- UNE pays over $17.6 million per year in salaries and benefits to employees living in Portland.
- UNE spends over $143 million annually in operational expenses, $55.4 million of which buys goods and services from Maine businesses, the vast majority of which are located in southern Maine.

Construction Management Principles

UNE has identified the construction management principles that will be implemented to minimize impacts to its surrounding neighborhoods from noise, vibrations, ground movement, truck traffic, dust control and other construction related factors. UNE will strive to schedule and undertake

construction operations in a way that will minimize, to the extent feasible, the disturbance to the public and occupants of buildings in the adjacent area.

Communication Initiatives

UNE has established a communication method to connect with its adjacent neighbors, the City of Portland, and construction teams. To facilitate direct interaction, UNE employs a dedicated email address where neighbors can submit questions or express concerns. UNE staff responsible for future projects promptly address these emails. Additionally, UNE proactively sends monthly updates to interested neighbors, covering project status and important alerts related to activities that might impact nearby roadways, create dust, vibration, or noise, and affect traffic around the campus. These updates are also accessible on the UNE website's Campus Planning page at une.edu. Furthermore, UNE actively engages with adjacent neighborhood associations, such as the Deering Center Neighborhood Association (DCNA), by participating in regularly scheduled meetings to discuss ongoing or upcoming projects.

Construction Schedule

UNE commits to delivering estimated master project schedules at the outset of any significant construction project it undertakes in the future. Throughout the construction period, regular updates to these schedules will occur, reflecting any adjustments to dates. These updates will be tailored based on the project's assessed impact on the surrounding neighborhoods and areas. UNE will relay these updates through the communication initiatives mentioned earlier.

Construction Management Plan

As part of the planning process and before beginning any major construction project, UNE will create a comprehensive Logistics and Safety Plan. This plan will be shared with neighboring communities and the City with objectives to ensure the continuity of normal campus operations, enhance public safety, and minimize disruptions in the areas surrounding the campus. UNE will adopt the City's Construction Management Plan template to develop its own Construction Management Plan, which will accompany each future project's Site Plan application.

Project Work Hours

Construction Management Plans submitted for each future project will outline the project's work hours, carefully established to minimize the impact on surrounding areas and neighbors, while ensuring efficient completion of the project work. UNE will adhere to the City's code of ordinances, which regulates work hours.

Public Safety and Access

Safety is of utmost concern for UNE, and it will be thoroughly reviewed and integrated into its Construction Management Plans. During construction, pedestrian walkways and vehicular access routes will be clearly marked with appropriate signage and diligently maintained. Safety fencing and lockable gates will be deployed to separate construction zones from public spaces. Access to these fenced-off areas will be restricted to authorized

construction personnel, delivery staff, and members of the construction project team. UNE's campus houses a Safety and Security Department, which will oversee safety and access to these construction zones outside of work hours.

Construction Noise

UNE is dedicated to minimizing construction noise impacts on the surrounding areas. Construction projects inherently generate noise due to necessary tasks throughout their duration. UNE, along with its construction project team members, will proactively notify neighbors of any abnormal noise-creating activities, such as blasting or pile driving, through the updates process the university has established.

Construction Traffic and Parking

Construction Truck Routes and Volume – UNE and its construction project team will establish construction vehicle access routes to and from construction zones, prioritizing distance from residential and other sensitive areas. Construction vehicles will directly enter the fenced construction areas, avoiding queues on public roadways. This will be achieved by managing the frequency and volume of deliveries throughout the construction timeline. Clear markings and signage will guide construction traffic strategically to minimize noise, reduce conflicts with on and off campus users, and limit the spread of dust and dirt. Specific details for each future project will be outlined in the Construction Management Plans submitted for each project.

Construction Staging Areas – Construction staging areas for material and equipment delivered to the project sites will be located within the fenced construction zones for each project, ensuring they are positioned as far away as possible from residential and other sensitive areas.

Construction Personnel Parking – Jobsite personnel will be instructed to park either within the fenced construction zones for each project or remotely in UNE's Bishop Street parking lot. The construction project team and its subcontractors will actively promote the use of public transportation by workers to minimize the impact on the surrounding area.

Construction Air Quality

To mitigate dust issues and minimize impacts on the local environment from its project sites, UNE and its project team will implement several strictly enforced measures. These measures include using wetting agents to control airborne dust from construction access drives and construction zones, covering soil stockpiles as needed, ensuring that transport trucks use covers while moving materials that generate dust, and periodically sweeping and cleaning the construction zones.

City of Portland Construction Management Plan General Template

Attachment A is the standardized City of Portland template that will be used for each future project to establish a clear and concise plan and open lines of communications with the City and its neighbors.

Construction Management Plan
General Template
[Applicant and Project Name]

Construction Management Plans shall depict the overall planning, coordination, and control of a construction site, including phases as applicable, from beginning to completion. The City's goal for a construction management plan is to support a safe construction site and protect the public safety, accessibility (including preserving accessible pedestrian, bicycle, and vehicular modes of transport throughout the city), and welfare during construction. In addition, the construction management plan shall minimize construction impacts in their duration and magnitude to the surrounding area and develop an effective communication process for resolving concerns and conflicts.

The Construction Management Plan will be submitted as part of the Site Plan Review and it shall address the construction logistics for a project. The Construction Management Plan shall include the following submissions:

1) a construction management site plan;
2) a construction schedule (time frame); and
3) a written narrative addressing the categories below.

A. Construction Management Principles

The following narrative provides an overview of the construction management principles that the [Applicant and Contractor] has identified to minimize impacts from the construction, such as noise, vibrations, ground movement, truck traffic, and other construction related factors to the surrounding building and communities.

B. Development Review of Construction Management Plan

[Applicant and Contractor] shall submit a construction management plan that provides a comprehensive logistics and safety program for the construction project, which will be reviewed and approved as part of the site plan review process. Minimizing impacts to areas surrounding the building/construction site will be primary considerations in the process.

The Planning Authority and the Department of Public Works have the right to seek revisions to an approved Construction Management Plan or require a condition of approval that states an applicant shall coordinate a project's construction schedule with the timing of nearby construction activity, in order to avoid cumulative impacts on a neighborhood. Such a condition may involve a delay in commencement of construction, if necessary.

The following details define the intended approach to the successful management of the project construction and the construction management plan will address the general conditions contained below.

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

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

Other permits, as applicable, include

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

[Applicant and Contractor] will work diligently to implement a communication strategy as outlined below. The communication strategy is intended to ensure that all construction operations are performed in accordance with all agreements, ordinances and special permits applicable to this project. The Construction Manager will work closely with adjacent abutters, businesses, nearby construction sites, and all parties informed, as far in advance as possible, of scheduled work, particularly work anticipated to cause significant noise, vibrations, or dust. The final construction management plan shall provide for the following:

1. Contact Person and contact information for the [applicant and contractor] and who is available 24 hours
2. Construction Signage posted on the site with Contact Information for Contractor
3. Describe any additional communication strategies
4. All construction site signage is temporary and shall be removed at project completion.

E. Construction Schedule

1. The contractor shall submit a schedule or time line for the construction project, including any Phasing.
2. Hours of Construction. Construction may occur during the daytime hours as defined in Section 17-18. Construction Activities for Building permit (Attachment 1) and Section 25-129. Noise, dust and debris (Attachment 2).
3. Extended Hours or Night Work: Pursuant to Section 17-18, this section not apply to emergency utility work or "Situations where the public works authority or the office of building inspections determines that the construction activity is of a unique character which cannot reasonably be completed or performed during the permitted hours and which is not of a recurring nature, provided that prior to engaging in such activity the contractor or his representatives gives notice of the time and scope of such proposed activity, the notice to be given in a manner approved by the public works authority."
4. Material Deliveries: Schedule and designated location for delivery of materials and boxed goods.

F. Security & Public Safety

1. The Construction Management Plan will depict all proposed fencing or other barriers and access gates (with knox locking devices) with the intent of separating pedestrian and vehicle circulation from the construction site.

2. Structures undergoing construction, alteration, or demolition operations, including those in underground locations, shall comply with NFPA 1 Chapter 16. *Safeguarding Construction, Alteration, and Demolition Operations.*
3. Fire Safety Program. An overall construction of demolition fire safety program shall be developed. Essential items to be emphasized include the following:
    - Good Housekeeping
    - On-site security
    - Installation of new fire protection systems as construction progresses
    - Preservation of existing systems during demolition
    - Organization and training of an on-site fire brigade
    - Development of a pre-fire plan with the local fire department
    - Rapid communication
    - Consideration of special hazards resulting rom previous occupancies
    - Protection of existing structures and equipment from exposure fires resulting from construction, alteration, and demolition operations
4. Blasting, if required, shall conform with all measures of Article VIII. Regulation of Explosives in the Land Use Code and Section 3.7 Standards for Blasting and Regulation of Explosives in Portland's Technical Manual.
5. Any proposed temporary security lighting shall be shown on CMP and all fixtures shall be full cutoffs.

G. Construction Permitting and Traffic Control Plans

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

3. Traffic Control Plans: Construction activity that impacts the existing public street system must be controlled to protect the safety of the construction workers and all modes of the traveling public. Projects are required to submit a satisfactory 'maintenance of traffic" (MOT) plan prior to any site plan, subdivision, or street opening permit approval. MOT plans may be required for projects that have impacts on local streets.

   Maintenance of Traffic (MOT) plans shall provide for the safe passage of the public through or along the construction work zone. On a case-by-case basis, applicants may be allowed to close a street and/or detour a mode of traffic when absolutely necessary

for safety. MOT plans shall employ the appropriate techniques and devices as called for n the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). In addition:

- Construction speed signing may be used as needed to slow traffic
- Traffic Control signs shall not be placed where they are an obstruction to bicycles or pedestrians.
- In some situations, flaggers may be required.
- Police details may be required at lighted intersections and may be requested by the City's transportation engineer or his designee.

All existing modes of travel in work zone area shall be accommodated if impacted by the activity. The safe passage of pedestrians, bicyclists, transit providers, and motorists are of equal importance when planning out the work zone; no pre-existing travel mode may be eliminated without the express approval of the Department of Public Works. The MOT should also address on-street parking impacts, including deliveries and parking for adjoining businesses and property owners, analysis of roadway capacity or diversion capacity if street closure or change to roadway capacity is required, and coordination with other on-going or future construction or utility projects in the vicinity.

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

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

H. Site Management and Controls

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

1. Regular trash and debris removal
2. Street cleaning and damage controls
3. Dust controls- The construction shall comply with Portland's requirements under Section 25-129 on Noise, dust and debris (Attachment 2).
4. Noise: The construction shall comply with Portland's requirements under Section 17-18 of the City Code (Attachment 1) and Section 25-129 on Noise, dust and debris Attachment 2).
5. Rodent Control will be provided, if applicable, by a professional exterminator and consistent with Chapter 22 of the City Code.

6. Snow Removal: Pursuant to Section 25-173 Contractors to ensure a safe means of travel within the work zone.
    1) Snow/ice removal or commence automatically from (1" of snow and up) or Ice
    2) Remove snow as needed within the work zone, including parking spaces & not to block any driveways or sight lines with the piles of snow.
    3) Clear all walks & ramps with the work zone
    4) Sand or Salt as needed
    5) Clear all basin or drainage to help snow melt
    6) This would include Monday-Friday Sat/Sunday/Holidays

I. Erosion Control and Preservation of Trees

1. The [contractor] shall install all erosion and sedimentation controls as depicted on the approved erosion and sedimentation control plan prior to the pre-construction meeting for inspection by the City. The contractor shall regularly inspect the control measures, no less than weekly and after significant storm events, and maintain any installed temporary or permanent stormwater management systems in working order. The contractor shall document all inspection activities and corrective actions and be prepared to provide these documents for inspection by the City, Maine Department of Environmental Protection or the U.S. Environmental Protection Agency upon request.
2. The [contractor] shall maintain all tree and landscaping preservation measures as depicted on the landscaping plan (Exhibit) within the area of construction.
3. The storage of materials shall be identified and avoid being located under/near trees.

J. Construction Staging Area

1. The Construction Management Plan shall depict location of the material staging areas, the location on onsite temporary construction trailers, the location on onsite truck delivery holding areas, the location onsite truck washing stations, masonry mixing stations, the general location of the construction security fence and the general location of temporary construction dumpsters. An open storage areas shall be shown on the plan.
2. Delivery Truck Holding Areas On-Site: The delivery holding area shall be shown on the plan and shall not be blocked during construction. On days when the construction activities require multiple truck deliveries, these deliveries will be carefully scheduled so that there is always adequate on-site area for the holding of the trucks until they can be unloaded. Once at the site all vehicles well be brought within the fence line and will make every attempt to avoid queueing on public streets.
3. Delivery Truck Holding Areas Off-Site: In the event that adequate on-site area for holding of trucks is not available, an off-site marshalling area will be utilized for trucking. The designated off-site location will be identified in the construction management plan.

K. Parking During Construction

1. Construction Parking: Adequate parking for construction workers shall be provided on site or arrangements for off-street parking at an off-site location shall be provided. The parking arrangements shall be included in the construction management plan.

2. Parking: Where existing facilities are remaining in operation during construction, the construction management plan shall identify how the parking for employees and others shall be managed.
3. Truck Routes and Volumes: The Construction Management Plan shall address the designated truck routes and expected truck volumes.

L. Dewatering Plans

A basic dewatering plan for any construction work is required. 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.

For construction work that will require frequent dewatering of groundwater from site, a dewatering plan must be prepared 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

For construction work that will take place over a long period (e.g. 12 months or more), involve major demolition/ deep excavation/ piling and/or special construction techniques, or are located near sensitive uses (e.g. medical care facilities, schools), the Construction Management Plan should provide details and demonstrate that all appropriate special measures have been taken to avoid, minimize, or possibly compensate for potential impacts. This may include taking baseline measurements before construction, such as arranging to photograph the foundations of nearby properties upon consent of the owners, in order to assess any future impacts of vibration, noise, etc.

REGULATORY FRAMEWORK

8.5.8 The University of New England Institutional Overlay Zone Regulatory Framework

A. Applicability: All development proposed by the University of New England (UNE) within the boundary of the Institutional Overlay Zone (IOZ) shall be consistent with the approved Institutional Development Plan (IDP), consistent with the Comprehensive Plan, and meet applicable standards of the Land Use Code, unless such standards are superseded by the following Regulatory Framework. This Regulatory Framework shall govern future development by UNE within the IOZ unless amended by the Portland City Council upon formal application of UNE. The UNE IOZ shall have the boundaries depicted in Figure 8-H, and shall include the properties listed in Table 8-G.

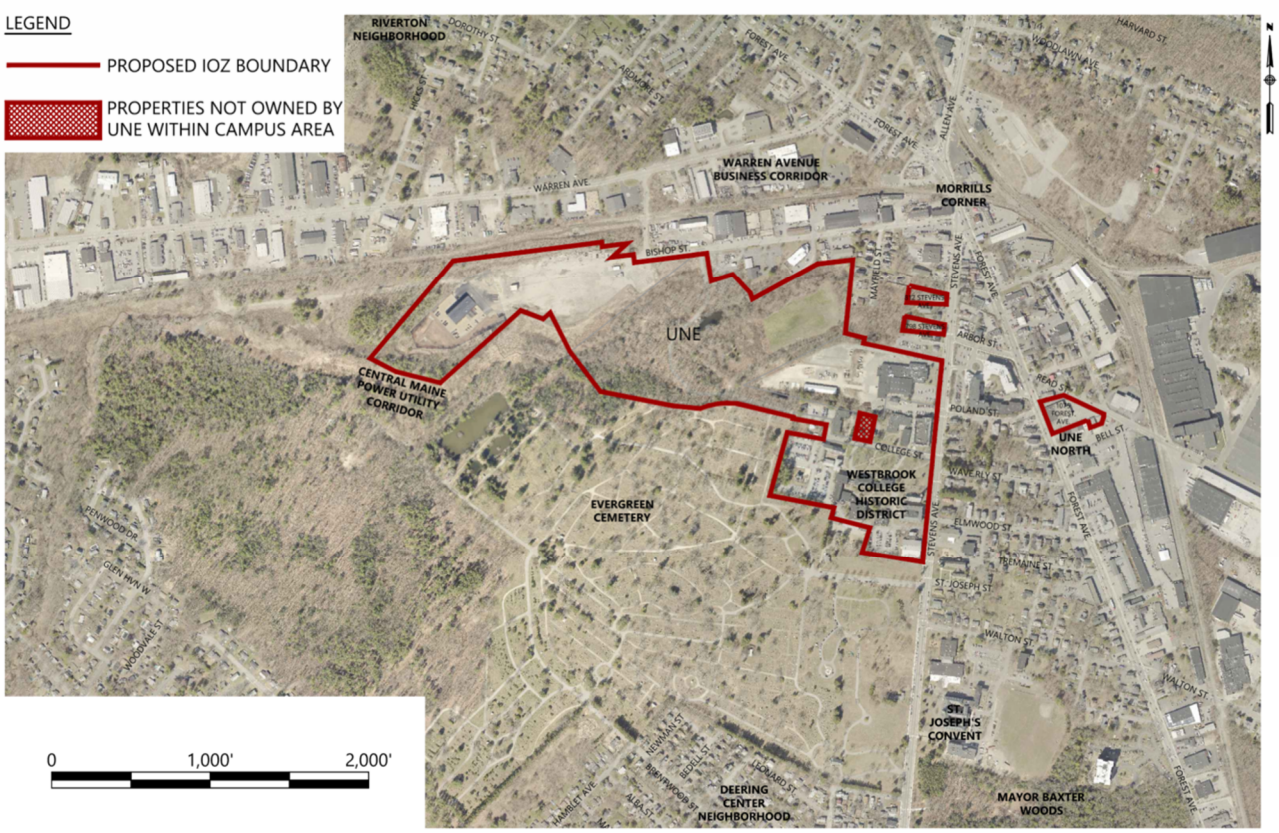


Figure 8-H: UNE Institutional Overlay Zone Boundary

Table 8-G: List of Properties Included in the UNE IOZ					
Chart	**Block**	**Lot**	**Address**	**Acreage**	**Ownership**
144	A	005	684 Stevens Avenue	0.141	UNE
144	A	006	684 Stevens Avenue	0.275	UNE
144	A	007	684 Stevens Avenue	0.371	UNE
144	A	008	684 Stevens Avenue	0.256	UNE
144	A	009	684 Stevens Avenue	0.586	UNE
145	A	001	706 Stevens Avenue	0.450	UNE
145	A	003	710 Stevens Avenue	0.165	UNE
145	A	006	714 Stevens Avenue	9.231	UNE
145	A	007	710 Stevens Avenue	0.025	UNE
145	A	008	710 Stevens Avenue	0.006	UNE
145	A	009	714 Stevens Avenue	0.036	UNE
145	A	010	714 Stevens Avenue	0.356	UNE
145	B	001	1 College Street	0.338	UNE
145	B	002	1 College Street	0.207	UNE
145	B	006	31 College Street	0.134	UNE
145	B	009	41 College Street	0.200	UNE
145	B	010	51 College Street	0.383	UNE
145	B	011	63 College Street	0.076	UNE
145	B	012	63 College Street	0.114	UNE
145	B	013	63 College Street	0.048	UNE
145	B	014	83 College Street	0.366	UNE
145	B	018	772 Stevens Avenue	8.603	UNE
145	B	022	798 Stevens Avenue	0.438	UNE
145	B	027	83 College Street	3.137	UNE
145	B	029	79 College Street	0.258	UNE
145	B	042	1 College Street	0.162	UNE
145	B	046	1 College Street	0.138	UNE
146	F	005	32 Bell Street	0.106	UNE
147	F	006	1075 Forest Avenue	1.159	UNE
281	A	003	0 Bishop Street	10.555	UNE
290	A	003	83 College Street	1.771	UNE
291	A	001	0 Bishop Street	8.394	UNE
291	A	005	83 College Street	17.972	UNE
291	A	007	83 College Street	0.459	UNE
293	C	005	83 College Street	1.574	UNE

B. Updates and Amendments.

1. It is intended that the IDP will be updated on a regular basis to ensure that the data is current and that the document remains accurate. Accordingly, UNE shall file monitoring reports every five (5) years with the Planning Authority and shall include a summary of progress on IDP implementation and progress towards targets established in UNE's Transportation Demand Management Plan (TDM), and of acquisitions and divestment since the date of IDP approval. At the time of the submission of the monitoring report, UNE shall identify any updates to the IDP which may result from updated master planning, changes in baseline information, or changes in the adjacent neighborhoods which affect UNE, to allow the IDP to remain current. Updates and minor amendments not described in Sub-section 2 and 3 below shall be reviewed
administratively by the Planning Authority.

2. Minor amendments that impact phasing of the development or change the approach to parking, transportation, neighborhood engagement, or design shall be reviewed by the Planning Board for consistency with the objectives of the IDP. In addition to consistency with the objectives of the IDP, review of phasing and development program amendments shall focus on integration with the campus and impacts on transportation or infrastructure. This review may occur simultaneously with the site plan review of an anticipated project.

3. Major amendments shall be reviewed by the Planning Board and are required under the following circumstances:
a. A change to the IOZ boundary or Regulatory Framework is required;
b. The IDP is no longer representative of the institutional mission or approach to community as a result of redevelopment in the area or City upgrades to neighborhood planning (such as, but not limited to, roadway changes, infrastructure upgrades, community design,); or,
c. Development proposed by UNE is inconsistent with the Campus Master Plan, Transportation Plan intent, Design Plan intent, or Environment and Infrastructure plan intent identified in the IDP.

4. Proposed amendments to the IOZ boundary or regulatory framework must also be adopted by the City Council subject to the provisions of the Land Use Code.

C. Uses. The UNE Campus will encompass a variety of uses to support the academic programs on the campus. In addition to the uses permitted in the underlying zone, the uses in Table 8-H shall also be permitted as a matter of right in all buildings that are located within the IOZ. In recognition that the UNE Campus contains undergraduate and graduate-level programming, ground floor retail, restaurant, or comparable community-oriented uses that provide services to local residents, students, faculty and staff may be provided. Such uses are expressly permitted whether ancillary to or supporting the educational institution, and shall be open and welcoming to the general public in addition to students, faculty, staff, or visitors of UNE.

Table 8-H: Permitted Uses
Laboratory and Research Facilities
Off-Street Parking
Intermodal Transportation Facilities

D. Dimensional requirements.

1. Applicability
   All principal buildings and structures located within the IOZ shall be subject to the dimensional requirements of the underlying zone, except where modified by the provisions of this Section.

   For the purposes of this IOZ, "lot" is defined as the combination of the contiguous lots under UNE ownership, including land separated by a public or private right-of-way. The "lot" boundary is as shown in Figure 8-H. Side and rear setbacks shall not be required between buildings on contiguous lots owned by UNE on the condition that such contiguous lots shall be considered merged and shall not be separately conveyed unless required setbacks in the underlying zones are provided.

Table 8-I: Dimensional Requirements	
Building Height (max.)	Maximum building heights for new principal buildings in the IOZ shall be governed by the UNE IOZ Height Map (Figure 8-I)

2. Transition Zones
   The UNE campus abuts residential zones to the north and across Stevens Avenue to the east. As shown on the UNE IOZ Height Map, transition zones extend twenty-five feet from the lot boundary. Within transition zones, the maximum building height shall be fifty feet.

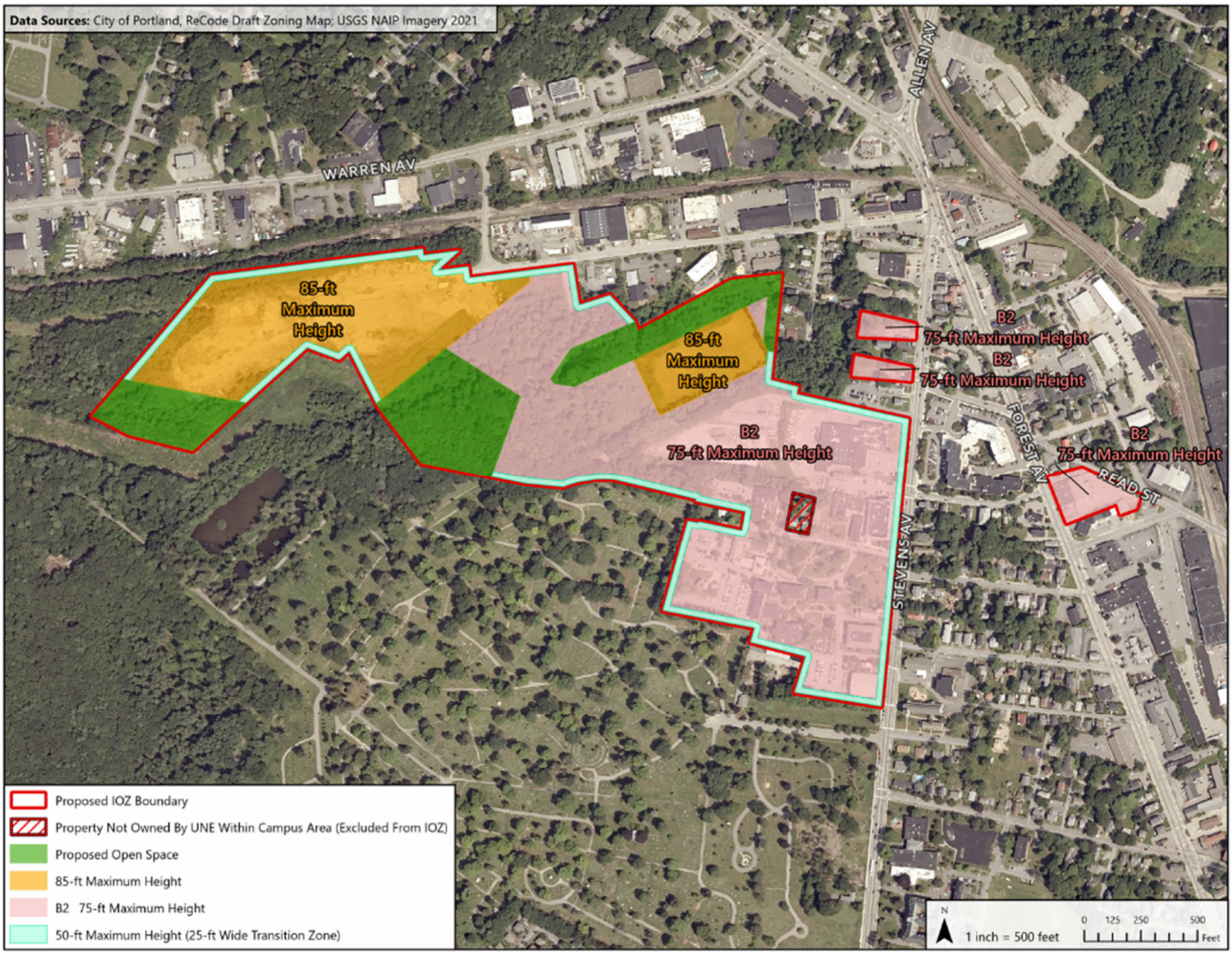


Figure 8-I: Open Space and Maximum Height Map

E. Transportation.

1. Transportation Demand Management (TDM)

a. At the time of the first site plan review following IDP approval, UNE shall submit a campus-wide TDM Plan substantially in accordance with those TDM objectives and strategies identified in the approved IDP. The TDM Plan will be updated with each subsequent application for site plan approval to allow for progressive and responsive implementation over time.

b. The TDM Plan shall be designed to provide transportation choice with the goal of reducing parking demand and single-occupancy vehicle trips to and from UNE by students, faculty, staff, and visitors.

c. The TDM Plan shall establish parking, mode share, and trip reduction targets associated with each phase of development, as well as a data collection plan.

d. The TDM Plan shall include parameters to encourage trip reduction and to ensure pedestrian, vehicular, bicycle, and public transit access and safety.

e. Annual monitoring reports will be submitted for the TDM Plan. TDM monitoring reports shall include a summary of progress towards targets established in the TDM Plan. If deficiencies are identified, they will be resolved in accordance with the site plan approval.

2. Parking.

Parking requirements in the IOZ shall be established at the time of site plan review based on a parking study that includes a campus-wide analysis of demand and supply. Parking studies shall integrate parking and trip reduction achievements and data contained in the TDM Plan. Parking requirements shall be determined in accordance with the requirements in the Land Use Code in effect at the time of site plan review and shall be sufficient to alleviate parking pressure on surrounding neighborhoods.

F. Environment.

1. All proposed campus development projects shall avoid to the extent practicable and feasible, significant impacts to wetlands and aquatic resources. Development shall comply with the Urban Impaired Stream (UIS) Standard of Chapter 500 of the Maine DEP Stormwater Management Rules, as applicable.

2. All new buildings and parking facilities shall be set back a minimum of 75 feet from the normal high-water line of existing streams. Notwithstanding this requirement, the Planning Board may approve a reduction of the setback requirement for a new building to the least amount necessary to achieve the goals of the development and minimize overall impacts, provided that the setback is not reduced to less than 40 feet.

3. Development in significant wildlife habitats (as defined by the Maine Department of Environmental Protection) will be minimized to the maximum extent practicable and shall comply with all applicable local, state and federal permitting requirements in effect at the time.

G. Mitigation measures.

1. Site plan impacts to off-premise infrastructure shall be mitigated in a manner proportionate to those impacts. Mitigation may include financial or in-kind contributions to existing or planned City projects focused on mitigating the impacts of the development. Mitigation contribution shall be determined based on the City's standard procedure in effect at the time of site plan review.

2. Impacts to natural resources shall be mitigated in accordance with local, state and federal permitting standards in effect at the time.

H. Design.

1. Introduction and intent.

New development in the IOZ shall adhere to the following design guidelines and the site plan standards of the City of Portland. All new development shall be designed to create a visual connection with the goal of achieving a cohesive campus appearance with a strong identity and sense of place. These standards are intended to regulate future development on the UNE campus to

ensure that new development is sensitive to adjacent neighborhoods while allowing UNE to maintain a thriving academic institution in Portland.

2. Standards
   a. Cohesive campus
      The overall composition and experience of the campus will be considered for cohesive identity.
   b. Building design
      Building facade materials will be of high quality, durable to the weather, and contribute to an attractive campus experience.
   c. Building entrances
      Building entrances will include prominent facades and be oriented toward pedestrian-oriented activity areas, including parking areas, to facilitate safe and barrier free access.
   d. Lighting
      New or renovated buildings should have adequate exterior lighting to ensure that entrances and surrounding areas are safe. All new exterior lighting will be selected to provide lighting levels that meet the safety criteria of the Illuminating Engineers Society of North America, IESNA. Consideration will be given to limit light trespass and glare into neighboring properties through the use of cutoff fixtures at the edge of campus, resulting in less light spillover into the surrounding community.

   e. Outdoor Spaces
      Building designs should strive to include a variety of open spaces and activities ranging from small intimate courtyards for contemplative study to open lawn areas for informal recreation and outdoor classes. Where applicable, provision should be made during the programming and conceptual design of new facilities to provide opportunities for outdoor use of open space as part of the site and for integration within the larger open space/conservation network.

   f. 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.

3. Signage. Signs shall comply with the requirements of Article 20, except as modified below:

   a. Signs shall be designed in accordance with a signage plan pursuant to signage standards promulgated by the university, providing for a unified and ADA compliant campus-wide system for identification, orientation, and regulatory signage.
   b. A unified campus-wide signage plan shall be submitted for review and approval by the Planning Authority. Any update to such plan due to a change in name, text or logo shall not require amendment to the IDP.
   c. Banners are allowed as follows:

i. Generic banners containing the logo and colors of the university, used for decorative purposes.

ii. Banners used for advertising university events, which can be displayed for a maximum of four weeks prior to and one week following the event.

I. Neighborhood integration.

1. Neighborhood Engagement

a. For the purpose of keeping surrounding residential areas appraised of its future development plans, and to address any neighborhood issues related to the operations of the UNE campus, UNE shall adhere to the ongoing neighborhood engagement principles identified in the IDP.

b. Ongoing community engagement shall be conducted, including the continuation of posting project updates on UNE's Campus Planning web page and the creation of a dedicated email address for neighbor communications with UNE's Planning Department.

c. A Community Advisory Group shall be created for the purpose of sharing information on project development, planning, and seeking input. To the extent practicable, the group shall be comprised of representatives of interested groups such as the Deering Center Neighborhood, parks and trails, bicycle/pedestrian, public transit, and the business community.

d. A designated community contact shall be engaged to be the point of contact for providing information to the neighborhood and receiving feedback.

2. Construction Management

At the time of site plan review, UNE shall submit a Construction Management Plan substantially in accordance with the construction management principles identified in the Institutional Development Plan for review and approval by the Planning Authority.

J. Monitoring

1. Monitoring reports shall be provided to the City of Portland Planning Authority every five (5) years from the date of IDP approval. Monitoring reports shall include a summary of progress on IDP implementation and of acquisitions and divestment since the date of IDP approval.

FIGURE 1.4 - UNE CAMPUS SITE NEIGHBORHOOD CONTEXT: PROPOSED ZONING

Att. F

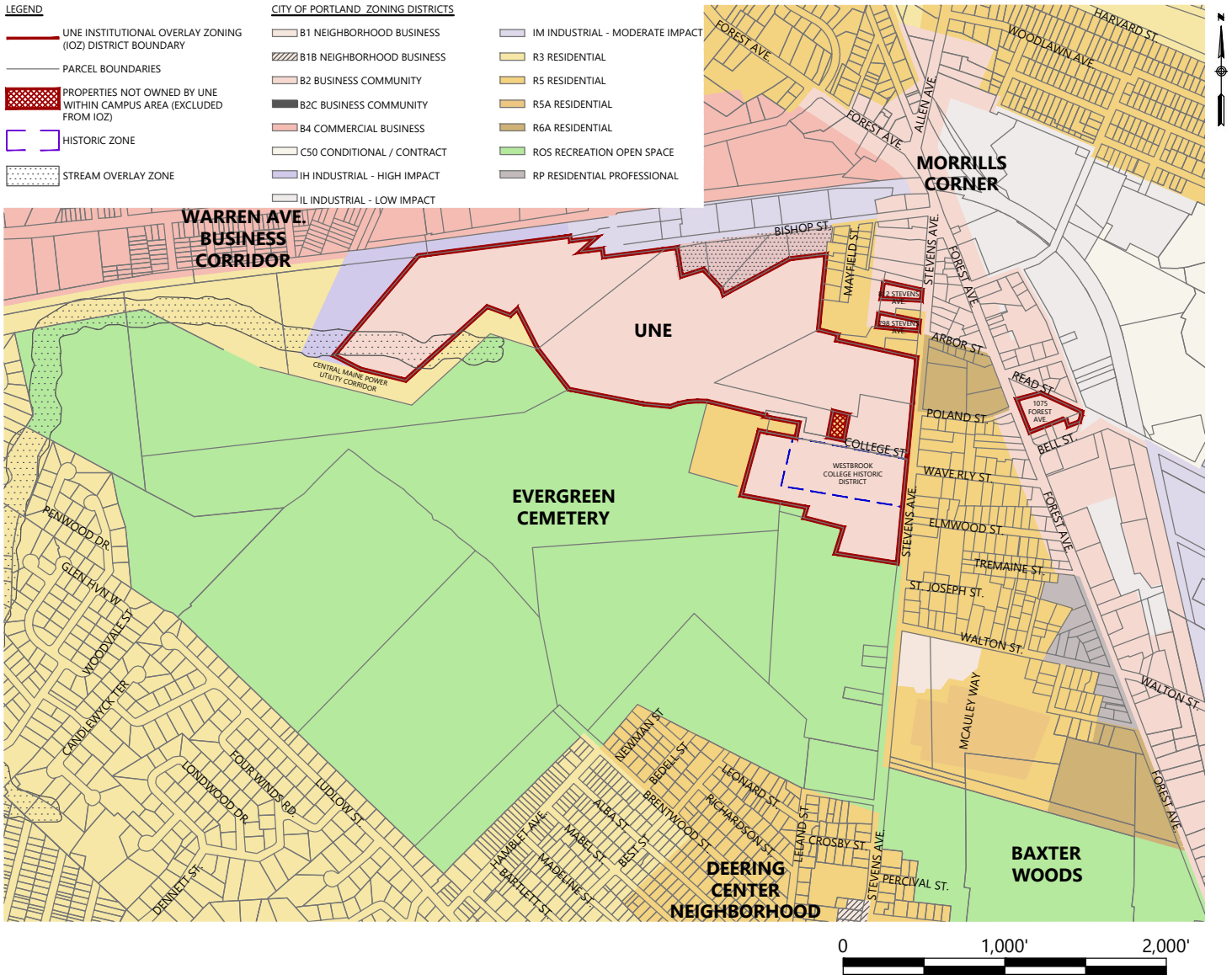
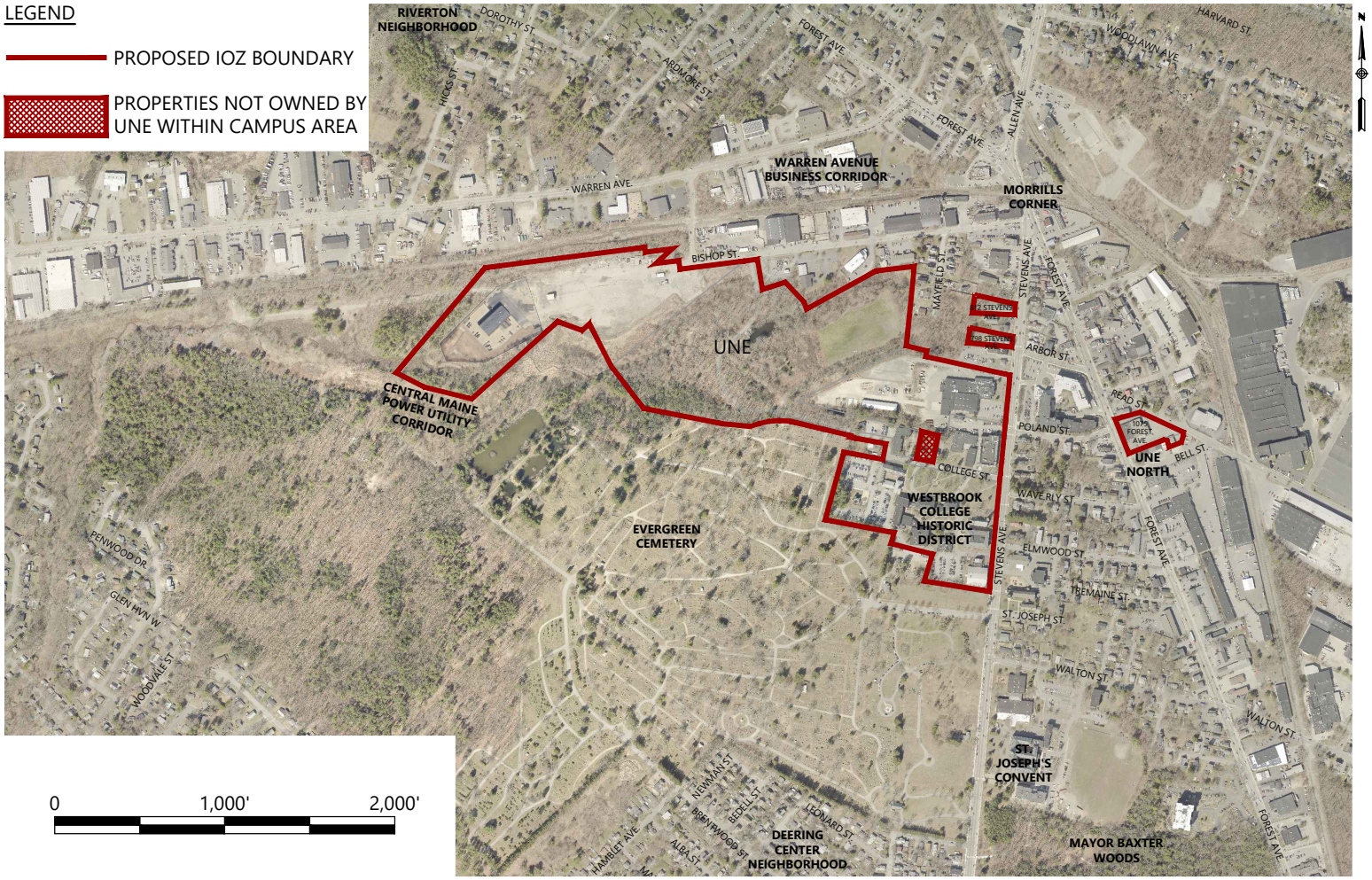


FIGURE 1.1 - UNE CAMPUS SITE & NEIGHBORHOOD CONTEXT MAP

Att. G



12 Mountfort Street
Portland, Maine 04101
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

Att. H

Via Electronic Mail

October 9, 2024

Natasha Kypfer, Senior Planner
City of Portland
389 Congress Street, 4th Floor
Portland, ME 04101
nkypfer@portlandmaine.gov

Re: UNE Institutional Overlay Zone Application (ZN-003059-2024)
Neighborhood Meeting #1

Dear Natasha:

I, Megan Gatto, consultant for the University of New England (UNE), hereby certify that a Neighborhood Meeting was held on Thursday, June 13, 2024, at the UNE Portland Campus, 716 Stevens Avenue, in the Hannaford Lecture Hall, Room 109, at the College of Pharmacy, for the Institutional Overlay Zone proposed for the UNE Portland Campus (address: 716 Stevens Avenue).

I also certify that on June 3, 2024, notices were mailed to the following:

1. All addresses on the mailing list provided by the Planning Division which includes owners within 1,000 feet of the proposed Institutional Overlay Zone.

2. Residents on the "interested parties" list.

Sincerely,

Woodard & Curran, Inc.

Megan Gatto

Megan Gatto, AICP
Project Manager

Attachments:
1. Copy of the notice sent
2. Sign-in sheets
3. Presented material (PowerPoint Presentation)
4. Meeting Minutes

12 Mountfort Street
Portland, Maine 04101
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

June 3, 2024

Dear Neighbor:

On behalf of the University of New England (Applicant), please join us at a neighborhood meeting to discuss our plans for the Portland Campus Overlay Zone located at 716 Stevens Avenue in Portland, Maine.

The City of Portland has implemented an Institutional Overlay Zone (IOZ) ordinance that "provides a regulatory mechanism available to the city's four major medical and higher education campuses where an improved regulatory structure is needed to facilitate a consistent, predictable, and clear growth management process." This applies to the University of New England. This process will ultimately simplify the campus planning and regulatory permitting process in the future as the University grows. UNE has initiated the necessary work to coordinate with the City of Portland and apply for this Institutional Zone change.

This neighborhood meeting will provide an overview of the IOZ process and gather our neighbors' input on the growth of the campus, in advance of our Application to the City.

Neighborhood Meeting

Meeting Location: University of New England – Portland Campus, 716 Stevens Avenue, Hannaford Lecture Hall, Room 109, College of Pharmacy, Portland, ME

Meeting Date: Thursday, June 13, 2024

Meeting Time: 6:00-7:00 PM

The City of Portland's Land Use Code requires that property owners within 500 feet of the proposed development and residents on the City's "interested parties list" be invited to participate in a neighborhood meeting. In an effort to be more inclusive, UNE has extended beyond the 500-foot requirement to include property owners within 1,000 feet of the Portland Campus. Your contact information has been provided to us by the City of Portland as part of these lists. A sign-in sheet will be circulated at the meeting, and minutes of the meetings will be taken. Both the sign-in sheets and minutes will be submitted to the Planning Authority for inclusion in the project's Institutional Overlay Zone (IOZ) application to City Planning, which includes an Institutional Development Plan and Regulatory Framework.

If you have any questions, please contact me at +1 (781) 613-0168 or via email at megan.gatto@woodardcurran.com

Sincerely,

WOODARD & CURRAN, INC.

Megan Gatto

Megan Gatto, AICP
Project Manager

On behalf of the University of New England (UNE) - Portland Campus

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.

12 Mountfort Street
Portland, Maine 04101
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

Woodard & Curran

Neighborhood Meeting Sign-In Sheet

DATE: **June 13, 2024**

RE: UNE Portland Campus – Institutional Overlay Zone (IOZ) Neighborhood Meeting Sign-In Sheet

---

Dear Neighbors,

Thank you for attending tonight's public Neighborhood Meeting at the University of New England – Portland Campus, 716 Stevens Avenue, Hannaford Lecture Hall, Room 109, College of Pharmacy, Portland, ME for the proposed rezoning of the UNE Portland Campus. Please sign in below.

Thank you,

UNE IOZ Project Team

Name	Email
Susan Small	SSmall2@maine.rr.com
FRAN GIRARD	fran girard 380@ gmail.com
Katherine Kilcullen	ccec@maine.rr.com
CHRISTOPHER NELSON	CMNELSON707@AOL.COM
Kate Sykes	Ksykes@portlandmaine.gov

Woodard & Curran

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Mona Oates	MONAOATES@GMAIL.COM
Haig Infranktjary	
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email Dev. Plan

Woodard & Curran

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Anna Bullett	~~anna~~ abullett@portlandme.gov



UNE UNIVERSITY OF NEW ENGLAND
INNOVATION FOR A HEALTHIER PLANET

Woodard & Curran BERNSTEIN SHUR

Sewall
The evolution of expertise

University of New England – Portland Campus

Institutional Overlay Zone (IOZ)

Alan Thibeault, Vice President for University Operations



UNIVERSITY OF NEW ENGLAND

INNOVATION FOR A HEALTHIER PLANET

Agenda

- Welcome
- Overview of UNE (*Portland Campus History + Programming*)
- Regulatory Process – *(Institutional Overlay Zone)*
- Campus Master Plan
- Public Involvement Opportunities
- Comments and Questions

UNE Portland Campus: History

- Founded in 1830
- Portland Campus located at 716 Stevens Avenue
- UNE is a private university with a comprehensive health education mission that includes medicine, pharmacy, dental medicine, nursing, and allied health professionals.



Woodard & Curran Sewall BERN STEIN SHUR UNE UNIVERSITY OF NEW ENGLAND
INNOVATION FOR A HEALTHIER PLANET

UNE Portland Campus: Programming

The UNE Portland Campus is primarily a graduate campus, focused on educating health professionals, and is currently home to four of the University's premier Colleges: the Westbrook College of Health Professions, the College of Dental Medicine, the College of Graduate and Professional Studies and the School of Pharmacy.





Programs:

- Dental Medicine
- Dental Hygiene
- Nursing
- Nurse Anesthesia
- Occupational Therapy
- Pharmacy
- Physical Therapy
- Physician Assistant
- Health, Wellness, and Occupational Studies

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INNOVATION FOR A HEALTHIER PLANET

Recent Activities at UNE Portland



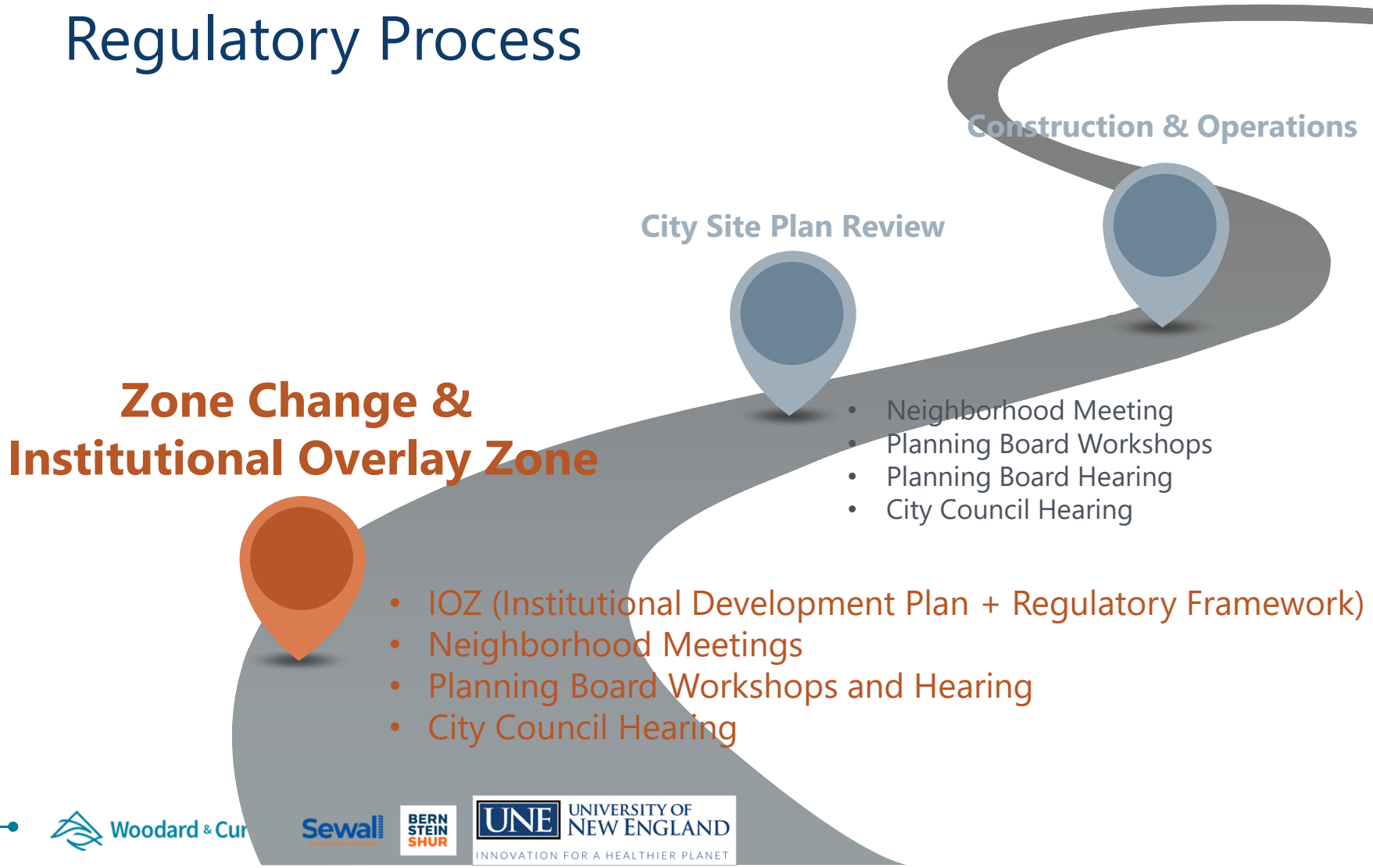
Woodard & Curran Sewall BERN STEIN SHUR UNE UNIVERSITY OF NEW ENGLAND
INNOVATION FOR A HEALTHIER PLANET

COM Building Rendering



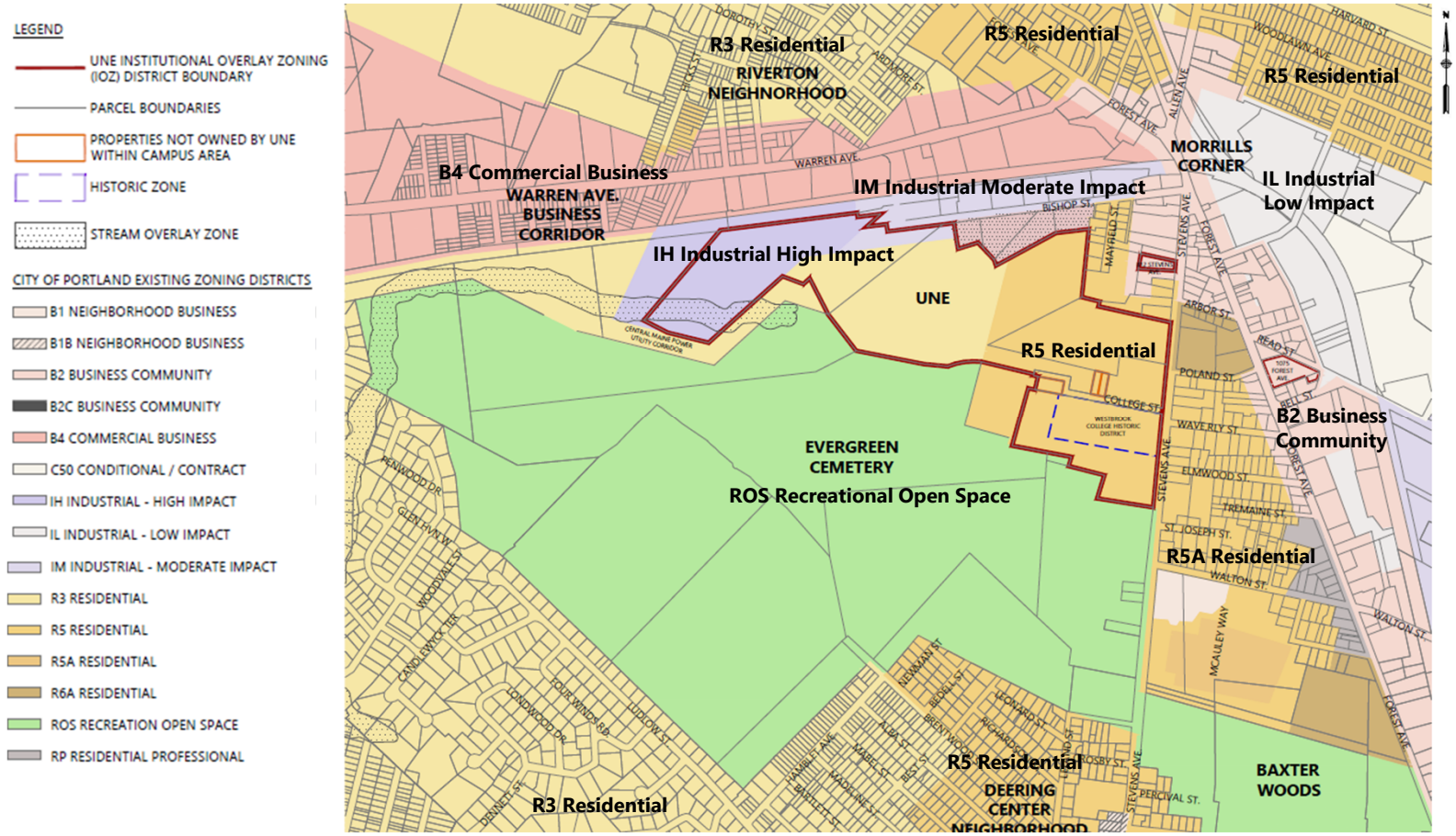
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INNOVATION FOR A HEALTHIER PLANET

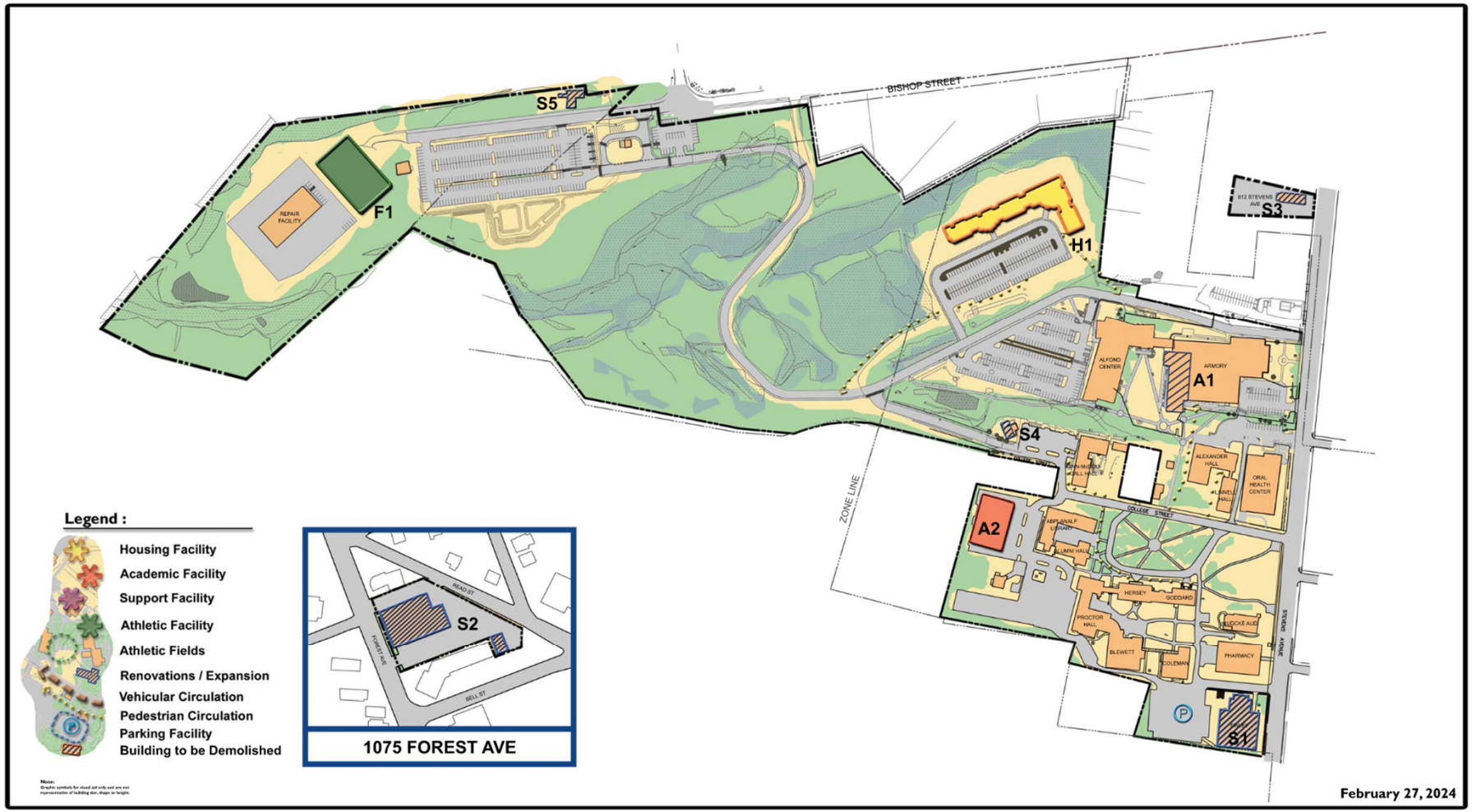
Regulatory Process



Woodard & Cur Sewall BERN STEIN SHUR UNE UNIVERSITY OF NEW ENGLAND INNOVATION FOR A HEALTHIER PLANET

Existing Zoning





University of New England Portland Campus

Campus Master Plan

Five Year Plan

Site Design Associates

Civil Engineering & Land Planning

BERN STEIN SHUR

Sewall

The evolution of expertise

Woodard & Curran

10+ Year Development Plan

	Student Population
Fall 2025	1,400
Fall 2028	1,600
Fall 2033	1,750

Priority 1: Short-Term Development Plan (0-5 years)				
Campus Master Plan Identifier	Project	Use Category	Total Square Footage	Estimated Occupancy
H1	Residence Hall	Housing	175,000	350 beds
A1	Innovation Hall Renovation/Expansion	Academic	24,000	2 offices
S3	812 Stevens Ave. Renovation/Expansion	Support	10,000	6 offices
Priority 2: Medium-Term Development Plan (5-10 years)				
Campus Master Plan Identifier	Project	Use Category	Total Square Footage	Estimated Occupancy
S2	UNE North/1075 Forest Ave. Renovation/Expansion	Support	60,000	10 offices
S4	79 College Street Renovation/Expansion	Support	2,500	2 offices
S5	Bishop Street Renovation/Expansion	Support	2,000	N/A
Priority 3: Long-Term Development Plan (10+ years)				
Campus Master Plan Identifier	Project	Use Category	Total Square Footage	Estimated Occupancy
A2	Academic Building	Academic	60,000	20 offices
F1	Athletic Facility	Athletic	65,000	12 offices

Woodard & Curran Sewall BERN STEIN SHUR UNE UNIVERSITY OF NEW ENGLAND
INNOVATION FOR A HEALTHIER PLANET

Public Involvement Opportunities - IOZ

- Pre-Submission Neighborhood Meeting – **WE ARE HERE**
- Post-Submission Neighborhood Meeting – Summer/Fall
- Public Hearings as part of the Regulatory Process
  - Planning Board Workshops
  - Planning Board Hearing
  - City Council Hearing
- Continued Public Engagement

Woodard & Curran Sewall BERNSTEIN SHUR UNE UNIVERSITY OF NEW ENGLAND INNOVATION FOR A HEALTHIER PLANET

Communications

- Current/active project monthly updates on Campus Planning webpage (www.une.edu/campus/campus-planning).
- Email questions/concerns/feedback directly to UNE's Planning Department (uneprojects@une.edu).
- Deering Center Neighborhood Association (DCNA), to present and review future development plans and receive ideas/feedback.

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Open Forum

We are here to listen and answer questions.

UNE

- Your input is important to us
- Second Neighborhood Meeting in summer/fall
- Visit our website at for updates
  - http://www.une.edu/campus/campus-planning
- Email with questions, concerns, or feedback directly to UNE's Planning Department and project team members.
  - uneprojects@une.edu



Thank you!

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12 Mountfort Street
Portland, Maine 04101
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

NEIGHBORHOOD MEETING MINUTES

University of New England – Portland Campus Rezoning – Neighborhood Meeting #1

PROJECT:
University of New England (UNE)
Portland Campus Rezoning

MEETING DATE: 06/13/2024

LOCATION:
University of New England - Portland Campus, 716 Stevens Avenue, Hannaford Lecture Hall, Room 109, College of Pharmacy, Portland, ME

ISSUED DATE: 10/09/2024

ATTENDEES:

Presenters/Representatives
Alan Thibeault – UNE
Jim Irwin - UNE
Mary Costigan – Bernstein Shur
Diane Morabito - Sewall
Barry Sheff – Woodard & Curran (W&C)
Megan Gatto – Woodard & Curran (W&C)

Public
Susan Small
Fran Girard
Katherine Kilcullen
Christopher Nelson
Kate Sykes
Jerry Hankinson
Mona Oates
Haig Tifrakjian
Scott Dalton
Brenda Boothby
Carleton Winslow
Sean Hagan
Anna Bullett

Total recorded attendance was 13.

In person began at 6:00 p.m.

Project Presentation & Content

- Welcome and Introductions provided by Alan Thibeault, UNE
- Project Background presentation provided by Alan Thibeault, UNE and Mary Costigan, Bernstein Shur
  - Overview of UNE (Portland Campus History + Programming)
  - Regulatory Process (Institutional Overlay Zone)
  - Campus Master Plan
  - Public Involvement Opportunities
  - Comments and Questions

Record of Feedback

Throughout and following the project presentation, there was a question-and-answer period with attendees. The following topics were discussed:

- Questions and discussion about zoning, property acquisitions, and tax concerns
    - Representatives clarified that the proposed IOZ only applies to UNE property as currently held and will not apply to property acquired thereafter, without revisions to the IOZ necessitating Planning Board and City Council approval.
    - Participant asked what the Roux did for underlying zoning; representatives responded the change was from I-M to B5.
    - Participant asked if IOZ application was submitted to City; representatives confirmed it has not submitted an application and will use the information gained tonight to revise the draft before it is submitted.
    - Participant asked if the City is considering an adjacent zone change; representative responded they were not aware of that.
    - Participant asked about whether UNE makes payment in lieu of taxes (PILOT) to the City; representatives responded that they did not, and as a non-profit were not required to. However, UNE provides significant services to the greater community, including the low-cost dental clinics on campus.
    - Participant asked about whether PILOT could be a condition of IOZ approval; representatives responded they felt that would be an unusual condition.
    - Concerns were raised about City tax increases from future UNE property acquisitions.
- Questions and discussion about UNE's future plans for campus expansion
    - Participant asked what additional properties UNE is considering in the long term; representatives responded that one homeowner on Stevens Avenue has approached the University to sell their property, and that the University is considering this offer.
- Questions and discussion about traffic and parking
    - Concerns were raised about parking along Stevens Avenue.
    - Participant asked how UNE communicates with students on encouraging use of the Bishop Street remote lot; respondents reiterated communication with students is constant to increase usage of the remote parking lot.
    - Participant asked is UNE contemplating a parking garage in the future; representatives responded that structured parking is not envisioned on campus, as the city has confirmed that the current parking capacity is adequate to meet the University's needs.
    - Participant asked about shuttle usage; representatives responded that METRO use is down since COVID however the University still offers free bus passes to all faculty, staff and students, and encourages usage to reduce single occupancy vehicle trips.
    - Concerns were raised about on-street parking impacts; representatives expressed understanding and reiterated the Bishop Street remote parking and other parking on campus is intended to alleviate on-street parking, but student habits are a challenge to change, especially when pubic parking is readily

available closer to the buildings, then the students, faculty and staff will use it. UNE will continue to support any revisions to public parking the City makes.
    - Representatives clarified the size of the Bishop Street parking lot and usage: There are approximately 350 spaces with 100 cars parked at any given time.
    - Participant inquired about COM building parking needs; representatives explained that parking was a Site Plan review consideration with the City's Planning Board and that there is adequate parking supply available on campus. In fact, during its review the Planning Board suggested UNE has too much parking on site.
    - Participant asked is the City studying traffic at Morrill's Corner; representatives explained they were not aware of any ongoing City traffic studies.
- Questions and discussion about Westbrook Historic District
    - Concerns were raised regarding impacts to historic district; representatives expressed no intention to change the historic district.
- Questions and discussion about Campus Master Plan
    - Representatives clarified there would be height and dimensional limits to campus master plan, which will enable the University to meet campus program needs.
    - Representatives responded to a specific question regarding the location of Bishop Street remote parking versus proposed housing, and the intent to keep housing closer to the academic buildings on campus.
- Questions and discussion about zoning restriction changes and adjacent lot zoning
    - Concerns were raised regarding noise and light impacts; representatives reassured they had no intention of seeking changes from existing City Ordinances for noise or light trespass, and actually utilizes its own lighting standards to limit the impacts as well.
    - There was a discussion about noise and light restrictions in various city zones, for example: noise standards in B-2 zoning districts versus R-zone standards; representatives reassured these standards were City-wide and the proposed IOZ would not seek to modify those.
    - Concerns were raised regarding off-campus Waste Management truck collections before 7am.
- Questions and discussion about environmental impacts
    - Concerns were raised regarding impervious area, including Gulliver's field on Mayfield Street and climate impacts; representatives explained their overarching approach to protecting natural resources and UNE goal to Carbon Neutrality by 2040 and its commitment to its Climate Action Plan, most recently updated in 2017. UNE has a long, successful track record designing and constructing facilities in sensitive environmental locations, and is confident that this could be achieved on Gulliver's Field as well.
    - Participant asked what wildlife studies have been done; representatives explained that all studies associated with prior Site Plan approvals are public record and available through the City.
    - A concern was raised about a nearby well or individual spring and the water level; representatives shared the COM building stormwater design was reviewed and approved by the City Planning Board and had a lack of awareness of the particular issue raised and did not believe they were related, but

promised to make inquiries into this issue so it could be adequately considered in any future design.
    - A concern was raised about impacts to migratory birds, in particular the American Woodcock, resulting from development; representatives reiterated that all studies associated with prior Site Plan approvals are public record and available through the City.
    - A concern was raised about construction impacts to Mayfield with planned housing (H1) building; representatives offered assurance that City Site Plan and MaineDEP Site Law standards have always and will continue to be met when proposing future projects.
- Questions and discussion about housing
    - Participant asked If anyone looked at land behind Bruno's for housing; representatives responded that UNE has not looked at that land.
    - Positive comment shared about student tenants in the area.
    - Concerns were raised about the height of housing - too tall; representatives explained the intent of increased height to reduce footprints and impervious area and maintain open space on campus.
    - Participant asked can you develop multiple buildings or move housing to Bishop Street and parking to Gulliver field; representatives reiterated their intent to locate housing proximate to academic buildings, and that multiple buildings would have greater potential impact
- Questions and discussion about maximum growth potential
    - Participant asked about student population size and program sizes; representatives responded with current campus demographics.
- Questions and discussion about neighborhood traffic
    - Concerns were raised about traffic at Morrill's Corner; representative expressed understanding and shared a benefit of the Bishop Street parking lot and private connector road is to remove students, staff, and faculty from the intersection. This access road would also afford public cyclists access without going through Morrill's Corner.
- Questions and discussion about meeting noticing
    - Some attendees asked for earlier public notice.
    - One commenter noted that the meeting room was hard to find.

Attendees requested a copy of the Master Plan be provided to them. A follow up email was promised to be sent to all attendees with email addresses on the attendance sheet, which would include the Master Plan.

List of Plans, Documents or Drawings Shared

The following information was shared via the PowerPoint presentation given at the meeting, with the presentation attached for reference:

- Regulatory Process and project timeline
- Campus Master Plan
- Work completed to date
- Website for campus project updates
- Email for follow up questions and concerns.

Meeting Close

- The meeting closed at approximately 7:15 and the project team thanked attendees and noted that a second Neighborhood Meeting would be held in the summer/fall 2024 and those in attendance will receive an email notice as well as another mailed notice.

12 Mountfort Street
Portland, Maine 04101
www.woodardcurran.com

T 800.426.4262
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F 207.774.6635

Att. I

Via Electronic Mail

November 19, 2024

Natasha Kypfer, Senior Planner
City of Portland
389 Congress Street, 4th Floor
Portland, ME 04101
nkypfer@portlandmaine.gov

Re: UNE Institutional Overlay Zone Application (ZN-003059-2024)
Neighborhood Meeting #2

Dear Natasha:

I, Caitlin Suhr, consultant for the University of New England (UNE), hereby certify that a Neighborhood Meeting was held at 6 PM on Wednesday, October 30, at the UNE Portland Campus, 716 Stevens Avenue, in the Hannaford Lecture Hall, Room 109, at the College of Pharmacy, for the Institutional Overlay Zone proposed for the UNE Portland Campus (address: 716 Stevens Avenue).

I also certify that on October 15, 2024, notices were mailed to the following:

1. All addresses on the mailing list provided by the Planning Division which includes owners within 1,000 feet of the proposed Institutional Overlay Zone.

2. Residents on the "interested parties" list.

Sincerely,

Woodard & Curran, Inc.

Caitlin Suhr, PE
Project Manager

Attachments:
1. Copy of the notice sent
2. Sign-in sheets
3. Presented material (PowerPoint Presentation)
4. Record of Feedback

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Portland, Maine 04101
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T 207.774.2112
F 207.774.6635

October 15, 2024

Dear Neighbor,

On behalf of the University of New England (UNE) (Applicant), please join us at a Neighborhood Meeting to discuss UNE's plans for an Institutional Overlay Zone (IOZ) at their Portland campus, located at 716 Stevens Avenue in Portland, Maine.

The City of Portland's Land Use Code allows for the creation of an IOZ to "provide a regulatory mechanism available to the city's four major medical and higher education campuses where an improved regulatory structure is needed to facilitate a consistent, predictable, and clear growth management process." Consistent with that purpose, UNE is seeking a zoning amendment to create an UNE IOZ to accommodate the development and growth of their Portland Campus.

UNE has submitted a Text and Map Amendment Application to the City of Portland to create an UNE IOZ, and to change the underlying zoning of the UNE properties to B-2 Community Business. As part of that Application, the City of Portland's Land Use Code requires at least two Neighborhood Meetings be held to encourage public involvement. The first meeting was held on June 13, 2024, during the development of the IOZ Application, and before the formal submission of the zone change application. A second meeting is required to be held during the City's review, which is currently ongoing.

This Neighborhood Meeting will provide an overview of the IOZ process, provide an update on UNE's IOZ Application, including the Institutional Development Plan (IDP) and Regulatory Framework, and provide an opportunity to gather neighbors' input on the growth of the campus.

Neighborhood Meeting

Meeting Location: University of New England – Portland Campus, 716 Stevens Avenue, Hannaford Lecture Hall, Room 109, College of Pharmacy, Portland, ME

Meeting Date: Wednesday, October 30, 2024

Meeting Time: 6:00 – 7:00 PM

The City of Portland's Land Use Code requires that property owners within 500 feet of the proposed development and residents on the City's "interested parties list" be invited to participate in a Neighborhood Meeting. In an effort to be more inclusive, UNE has extended beyond the 500-foot requirement to include property owners within 1,000 feet of the Portland campus. Your contact information has been provided to us by the City of Portland as part of these lists. A sign-in sheet will be circulated at the meeting, and minutes of the meeting will be taken. Both the sign-in sheet and meeting minutes will be submitted to the Planning Authority for inclusion in the project's IOZ application to City Planning.

If you have any questions, please contact me at 207-558-3707 or via email at csuhr@woodardcurran.com. We hope to see you.

Sincerely,

Woodard & Curran, Inc.



Caitlin Suhr, PE
Project Manager
On behalf of the University of New England (UNE)

Attachments: Campus Map with Neighborhood Meeting Location

Note:

Under the City of Portland Land Use Code, at least two Neighborhood Meetings shall be required as part of an Application for an Institutional Overlay Zone (Section 8.5.3.B.). The first shall be held prior to the formal submission of a zone change application for an Institutional Overlay Zone and the second shall be held during the City's review. Meetings shall identify the concerns, if any, of affected residents and property owners, and inform the development of the Institutional Development Plan (IDP) and regulatory framework. Meetings shall be held in a convenient location proximate to the institution. The applicant shall provide written notification to property owners of record within 500 feet of the proposed IOZ boundary at least ten days prior to the meeting dates and maintain written records of the meetings.

Should you wish to offer additional comments on this Application, 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.

UNIVERSITY OF NEW ENGLAND

INNOVATION FOR A HEALTHIER PLANET

PORTLAND CAMPUS

FACILITIES

1. Finley Recreation Center
2. Pharmacy Building
3. Ludcke Auditorium
4. Coleman Dental Hygiene Building
5. Goddard Hall
6. Hersey Hall
7. Blewett Hall
8. Parker Pavilion
9. WCHP Lecture Hall
10. Proctor Hall
11. Art Gallery
12. Alumni Hall
13. Abplanalp Library
14. Ginn Hall
15. McDougall Hall
16. Safety and Security/ Shuttle Terminal
17. Alexander Hall
18. Linnell Hall
19. Oral Health Center
20. Facilities Management
21. Girard Innovation Hall
    - A. Graduate Admissions
22. UNE North (see inset)
23. Gulliver's Field (see inset)
24. Harold and Bibby Alfond Center for Health Sciences (opening June 2024)

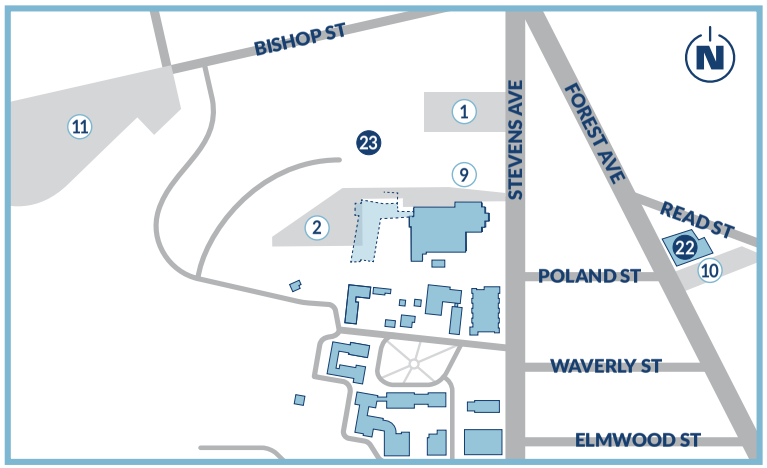
PARKING

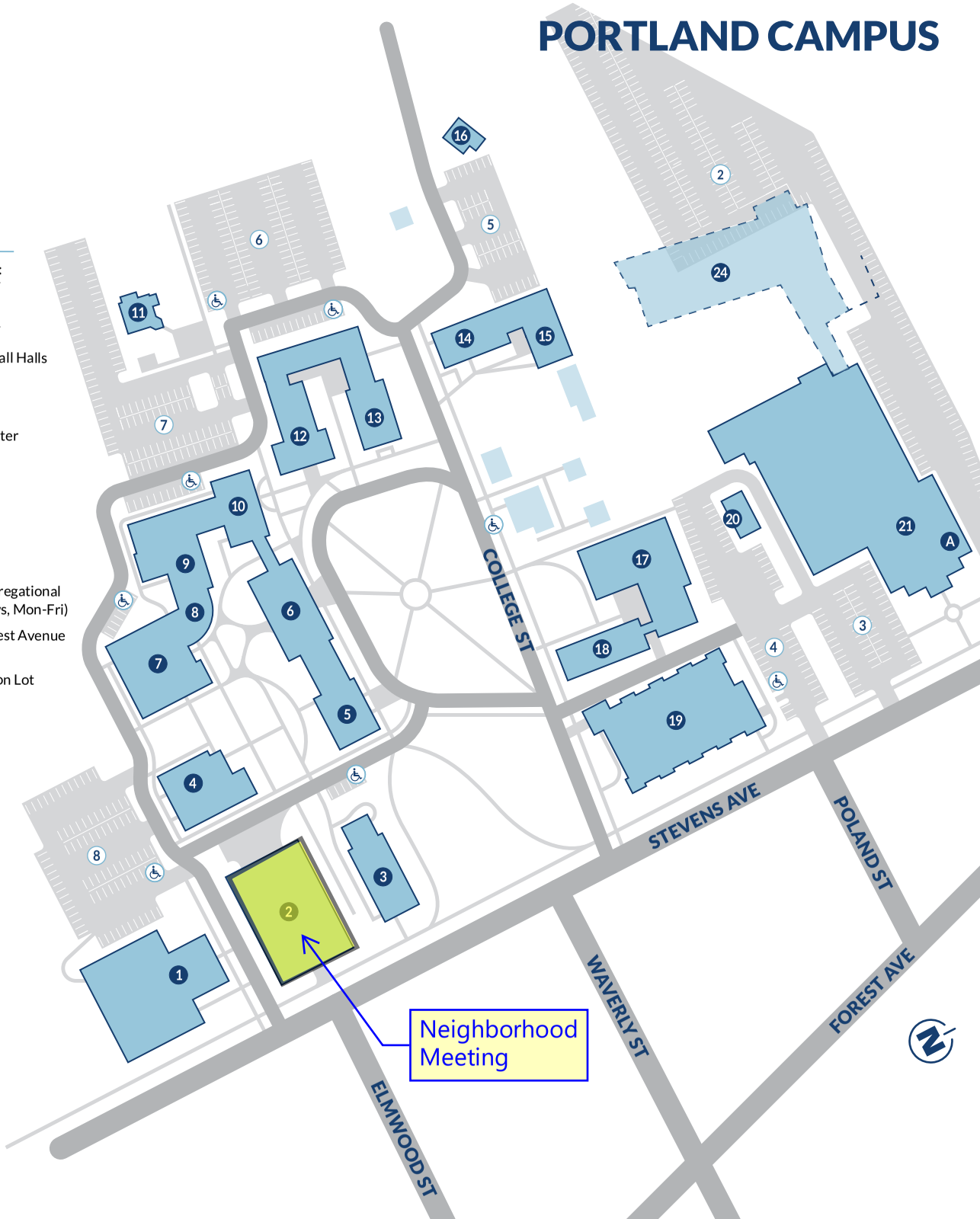
3. Innovation Hall South: Patient Parking ONLY
4. Oral Health Center: Patient Parking ONLY
5. Behind Ginn/McDougall Halls
6. Behind Library
7. Behind Proctor Hall
8. Finley Recreation Center
- Handicap Parking

Additional UNE Parking Available (see inset)

1. 812 Stevens Avenue
2. Innovation Hall Rear
9. Stevens Avenue Congregational Church (2 Middle Rows, Mon-Fri)
10. UNE North: 1075 Forest Avenue (South Side Only)
11. Bishop Street Extension Lot

The UNE Portland Campus is proud to be on the National Register of Historic Places (1977) and to be the original home of Westbrook Seminary (1831–1929), Westbrook Junior College (1929–1970), and Westbrook College (1970–1996).





University of New England
Institutional Overlay Zoning
Neighborhood Meeting
October 30, 2024
6pm at Hannaford Lecture Hall

Attendee	Address/Contact Information
Mona Oates	29 Mayfield St. Portland ME 04103 monaoates@gmail.com
LISA PRESIEJSKI	
Karl Parker	karlparker18@gmail.com ✓
Matt Montgomery	259 Walton St mattmonty1@gmail.com ✓
Kate Sykes	ksykes@PortlandMaine.gov
Katherine Kibalka	cccc@maine.rr.com
Hiren Mukherjea	

University of New England
Institutional Overlay Zoning
Neighborhood Meeting
October 30, 2024
6pm at Hannaford Lecture Hall

Attendee	Address/Contact Information
Fr. Paul Sullivan SJ	OLH Parish - 492 Ocean Ave Portland 04103 Paul.Sullivan@portlanddiocese.org
William Burke	St. Brigid School - 695 Stevens Avenue, Portland, 04103 william.burke@portlanddiocese.org
Scott Dalton	751 Stevens Ave Portland 04104 sbdalo6371@gmail.com
Susan Small	39 Mayfield St, ssmall2@maine.rr.com

University of New England
Institutional Overlay Zoning
Neighborhood Meeting
October 30, 2024
6pm at Hannaford Lecture Hall

Attendee	Address/Contact Information	
Mark Jaronczyk	19 Maggie Lane, 04103, 714-721-8978, mj_xxcal@hotmail.com	✓



UNIVERSITY OF NEW ENGLAND
INNOVATION FOR A HEALTHIER PLANET

Woodard & Curran

BERNSTEIN SHUR

Sewall
The evolution of expertise

University of New England – Portland Campus

Institutional Overlay Zone (IOZ)

Alan Thibeault, Vice President for University Operations



UNIVERSITY OF NEW ENGLAND

INNOVATION FOR A HEALTHIER PLANET

Agenda

Overview of UNE

Regulatory Process

Institutional Development Plan

Public Engagement

Comments and Questions

UNE Portland Campus

Mission: UNE prepares students to thrive in a rapidly changing world and, in so doing, to improve the health of people, communities, and our planet.



Programs:

- Dental Medicine
- Dental Hygiene
- Nursing
- Nurse Anesthesia
- Occupational Therapy
- Pharmacy
- Physical Therapy
- Physician Assistant
- Health, Wellness, and Occupational Studies

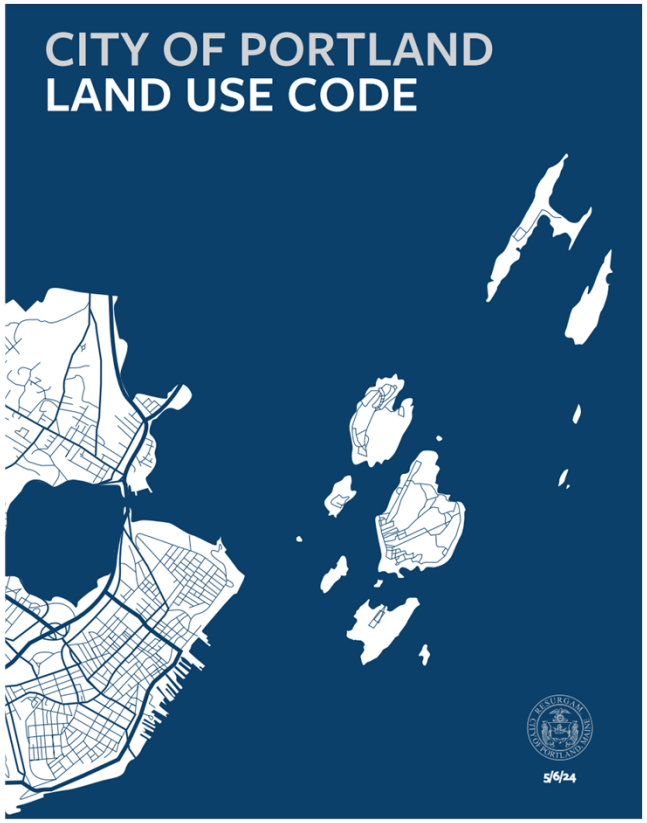


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Regulatory Process



What is a Zoning Amendment?



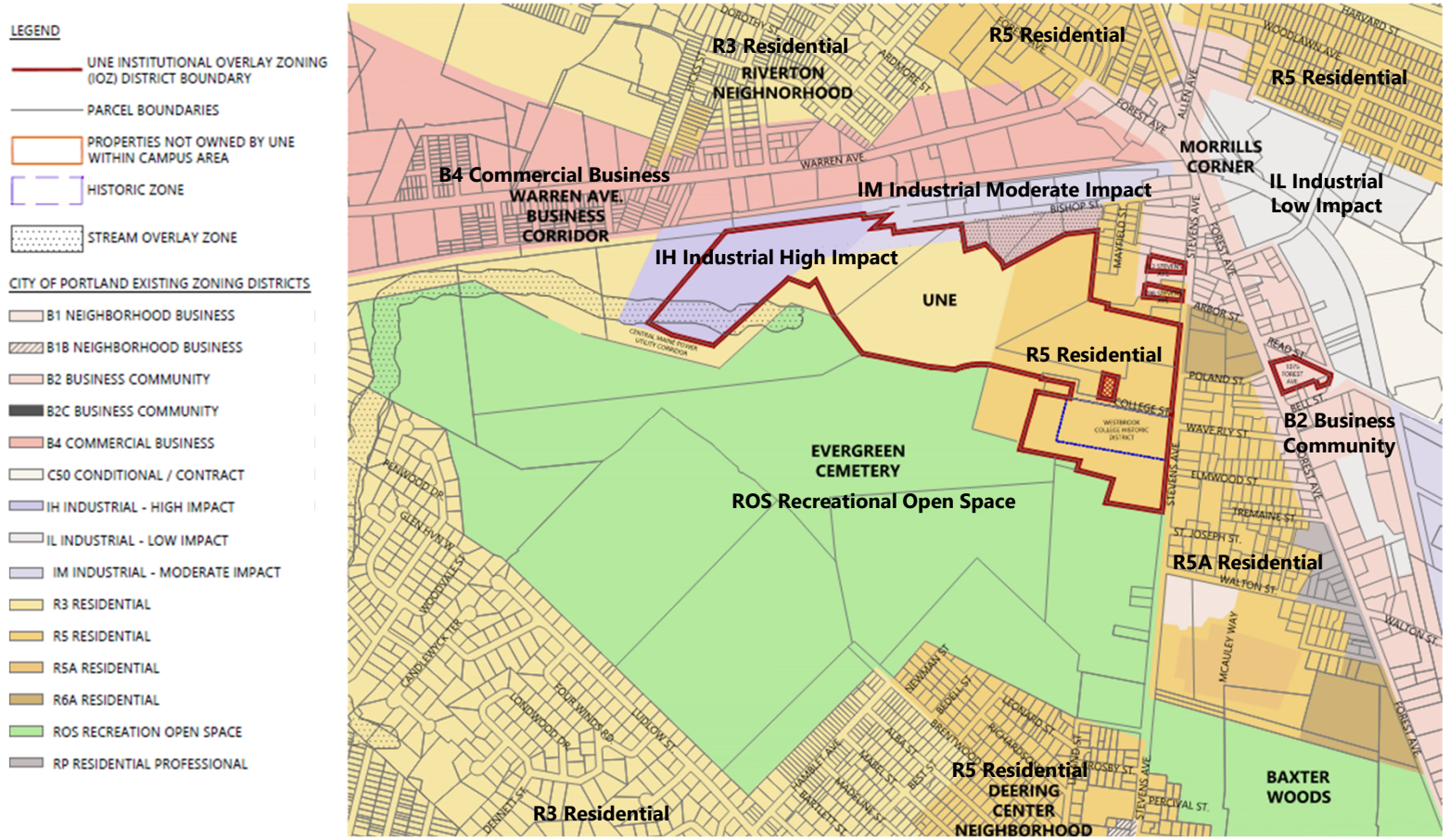
A request to change the way a property is designated in the City's Land Use Code.

Establishes the parameters that will apply to future development:

- Permitted uses
- Dimensional requirements (height & setbacks)
- Design guidelines

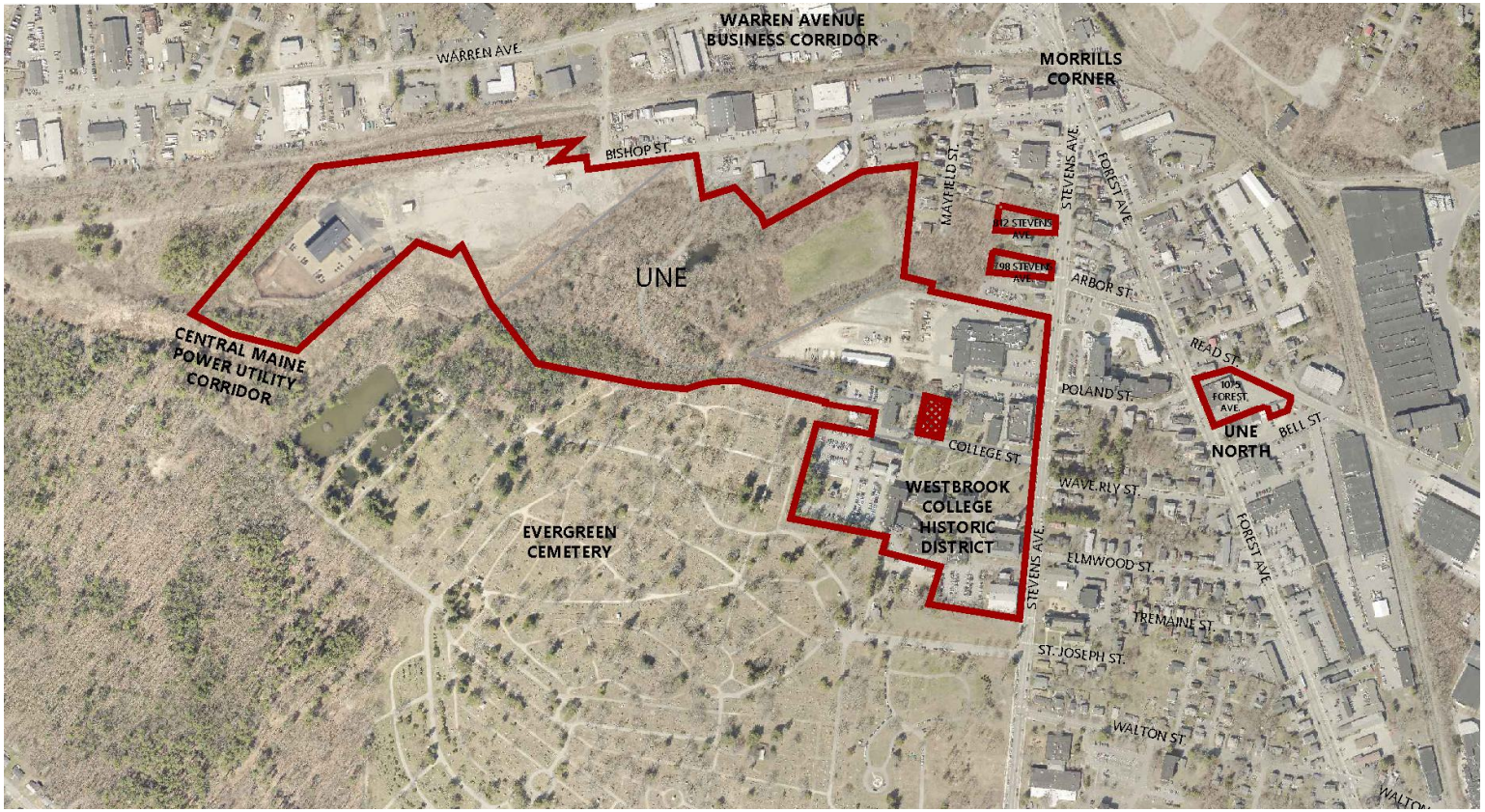
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Existing Zoning



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INNOVATION FOR A HEALTHIER PLANET

Institutional Overlay Zone (IOZ)



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INNOVATION FOR A HEALTHIER PLANET

Public Feedback

- Traffic & Parking
- Building Height & Locations
- Natural Resources & Environment
- Historical District
- Housing
- Zoning



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INNOVATION FOR A HEALTHIER PLANET

Institutional Development Plan (IDP)

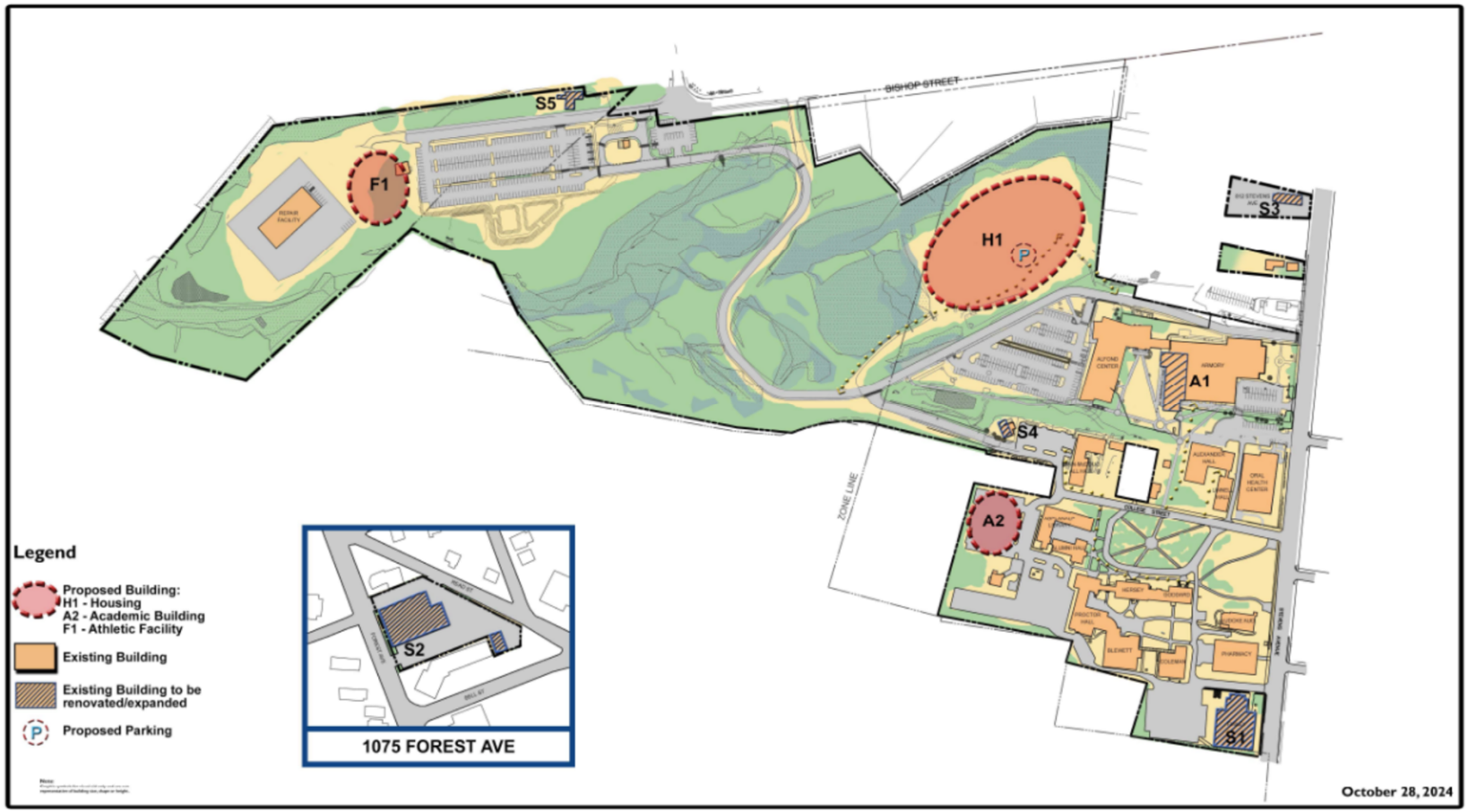


Planning for the future development of UNE's Campus

- Baseline Characteristics of the Institution
- Campus Master Plan
- Transportation Plan
- Environmental Plan
- Infrastructure Plan
- Design
- Neighborhood Engagement

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Campus Master Plan



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INNOVATION FOR A HEALTHIER PLANET

10+ Year Development Plan

Priority 1: Short-Term Development Plan (0-5 years)				
Campus Master Plan Identifier	Project	Use Category	Total Square Footage	Estimated Occupancy
H1	Residence Hall	Housing	175,000	350 beds
A1	Innovation Hall Renovation/Expansion	Academic	24,000	2 offices
S3	812 Stevens Ave. Renovation/Expansion	Support	10,000	6 offices
Priority 2: Medium-Term Development Plan (5-10 years)				
Campus Master Plan Identifier	Project	Use Category	Total Square Footage	Estimated Occupancy
S2	UNE North/1075 Forest Ave. Renovation/Expansion	Support	60,000	10 offices
S4	79 College Street Renovation/Expansion	Support	2,500	2 offices
S5	Bishop Street Renovation/Expansion	Support	2,000	N/A
Priority 3: Long-Term Development Plan (10+ years)				
Campus Master Plan Identifier	Project	Use Category	Total Square Footage	Estimated Occupancy
A2	Academic Building	Academic	60,000	20 offices
F1	Athletic Facility	Athletic	65,000	12 offices

Woodard & Curran Sewall BERN STEIN SHUR UNE UNIVERSITY OF NEW ENGLAND
INNOVATION FOR A HEALTHIER PLANET

Student Populations

Year	Student Population
Fall 2015	1,397
Fall 2018	1,257
Fall 2021	1,198
Fall 2023	979
Fall 2025	1,400
Fall 2028	1,600
Fall 2033	1,750

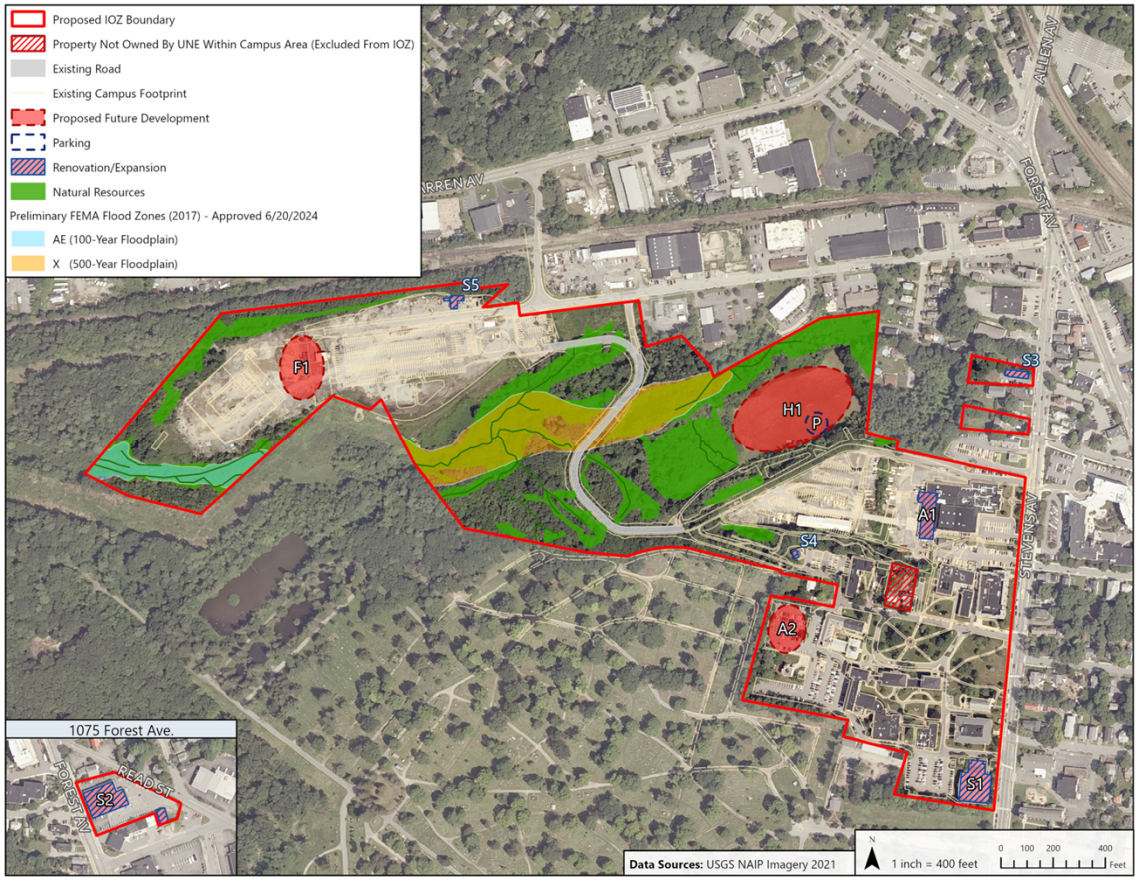
Proposed Height Map



Woodard & Curran Sewall BERN STEIN SHUR UNE UNIVERSITY OF NEW ENGLAND
INNOVATION FOR A HEALTHIER PLANET

IDP: Environmental Plan

- UNE committed to fostering environmental stewardship
- Extensive open space and natural areas
- New development sited to avoid existing natural resources
- Maintaining Capisic Brook riparian zone
- Partnership with Portland Trails
- Future site development projects will be required to go through Site Plan Review and comply with local and state stormwater management requirements



Woodard & Curran Sewall BERN STEIN SHUR UNE UNIVERSITY OF NEW ENGLAND
INNOVATION FOR A HEALTHIER PLANET

IDP: Transportation Plan

- Traffic volumes in area have been declining
- Inclusion of on-campus housing will help reduce peak hour trips to and from campus
- Projected long-term growth of student population not expected to have any significant off-site impacts
- Newly constructed connector road provides relief to Morrill's Corner

ITE Trip Generation

Time Period	New One-way Trips	Time Period	New One-way Trips
Daily	234	PM Peak Hour	23
Entering	117	Entering	7
Exiting	117	Exiting	16
AM Peak Hour	23		
Entering	18		
Exiting	5		

Average Annual Daily Traffic

Location	2008	2010	2013	2016	2019	2022
Bishop Street, west of Forest Avenue	--	--	1650	--	--	--
Walton Street, west of Forest Avenue	--	2800	3120	2580	--	--
Forest Avenue, NW of Warren Avenue	20020	19010	19820	18140	--	17370
Forest Avenue, no. of Arbor Street	--	--	24500	22140	22570	18730
Forest Avenue, no. Walton Steet	--	--	21830	--	--	16610
Forest Avenue, so. of Walton Avenue	--	--	21710	--	--	17030
Stevens Avenue, so. of Walton Avenue	--	12510	11680	11620	--	--
Stevens Avenue, no. of Walton Avenue	--	11170	10980	11180	--	--
Stevens Avenue, so. of Forest Avenue	--	10360	10050	11230	--	8320
Warrens Avenue, SW of Forest Avenue	13370	11560	13130	11390	12380	13300
Allen Avenue, no. of Goodridge Ave	--	18210	--	16040	16220	17340

Woodard & Curran Sewall BERNSTEIN SHUR UNE UNIVERSITY OF NEW ENGLAND
INNOVATION FOR A HEALTHIER PLANET

Public Involvement Opportunities - IOZ

- Pre-Submission Neighborhood Meeting – held on June 13, 2024
- Post-Submission Neighborhood Meeting – **WE ARE HERE**
- Public Hearings as part of the Regulatory Process
  - Planning Board Workshops (First Workshop 11/12)
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- Continued Public Engagement

Woodard & Curran Sewall BERNSTEIN SHUR UNE UNIVERSITY OF NEW ENGLAND INNOVATION FOR A HEALTHIER PLANET

Communications

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- Visit our website at for updates
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  - uneprojects@une.edu



Thank you!

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Open Forum

We are here to listen and answer questions.

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NEIGHBORHOOD MEETING MINUTES

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PROJECT:
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Portland Campus Rezoning

MEETING DATE: October 30, 2024

ISSUED DATE: November 19, 2024

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ATTENDEES:

Presenters/Representatives
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Mary Costigan – Bernstein Shur
Diane Morabito – Sewall
Caitlin Suhr – Woodard & Curran (W&C)

Public
See attached sign-in sheet

Total recorded attendance was 12.

In person began at 6:00 p.m.

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- Presentation provided by Alan Thibeault, UNE and Mary Costigan, Bernstein Shur
  - Overview of UNE
  - Regulatory Process (Institutional Overlay Zone)
  - Institutional Development Plan
  - Public Involvement Opportunities
  - Comments and Questions

Record of Feedback

Throughout and following the project presentation, there was a question-and-answer period with attendees. The following questions were asked and feedback provided:

- Participant asked if information on the upcoming Planning Board Workshop could be provided.
- Participant asked if any future property acquisitions would automatically be included in the IOZ.

- Participant asked where the headwaters of Capisic Brook are located.
- Participant asked what an urban impaired stream is.
- Participant asked if the parking lot behind the newly constructed College of Osteopathic Medicine (COM) building has been permitted and how many spaces it has.
- Participant asked what the ratio of students and staff is to parking spaces.
- Participants expressed that it is difficult to find on-street parking on Stevens Avenue due to students parking there.
- Participants expressed that the City doesn't enforce the 1-hour parking restrictions on side streets, and that students block driveways of abutters.
- Participant asked what the existing building is located behind the Bishop Street parking area.
- Participant asked what height is allowed in the B-2 zone under current zoning.
- Participant asked how many stories the proposed housing building would be.
- Participant asked whether the new housing would be dormitories or apartments.
- Participant asked what will happen if the building height request as part of this application doesn't get approved.
- Participant asked if the housing will be for students only.
- Participant asked if UNE is bound by rent control restrictions.
- Participant asked what the height is of the new medical (COM) building.
- Participant asked whether the housing building could be located where the proposed athletic facility is, near Bishop Street.
- Participant asked what academic programs will be occupying proposed development A2.
- Participant asked if the location of proposed development A2 is located in an existing parking lot.
- Participant asked how many units would be in the housing building.
- Participant noted that there was recently construction noise happening at night at one of the parking lots on campus.
- Participant noted that 2024 student population data was not provided in the table in the presentation.
- Participant asked what UNE's plans are for the building at 798 Stevens Avenue.
- Participant asked whether UNE has done traffic counts for new roadway internal to campus.
- Participant asked when UNE met with DCNA.
- Participant asked what DCNA's concerns were related to the IOZ application.
- Participant asked if a copy of the PowerPoint presentation could be made available.
- Participant asked if this information is available on UNE's website.

List of Plans, Documents or Drawings Shared

The following information was shared via the PowerPoint presentation given at the meeting, with the presentation attached for reference:

- UNE Portland Campus overview
- Regulatory process and project timeline
- Existing and proposed zoning

- Summary of public feedback received to date
- Institutional Development Plan (IDP)
- Campus Master Plan
- Proposed Height Map
- IDP: Environmental Plan
- IDP: Transportation Plan
- Public involvement opportunities
- Email for follow up questions and concerns.

Meeting Close

- The meeting closed at approximately 7:30 and the project team thanked attendees.

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Att. J

Via Electronic Mail

December 20, 2024

Natasha Kypfer, Senior Planner
City of Portland
389 Congress Street
Portland, ME 04101
nkypfer@portlandmaine.gov

Re: University of New England – Map and Text Amendment Application ZN-003059-2024
Response to City Comments

Dear Natasha:

Thank you for coordinating the review of our application (ZN-003059-2024), a Map and Text Amendment, proposing a new Institutional Overlay Zone (IOZ) for the University of New England (UNE) at 716 Stevens Avenue, with a change to the underlying zoning to B-2 Community Business. We received the comments from the City's reviewers on October 17, 2024, and are providing responses.

Our responses are provided in tables in the following sections:

- Attachment 1: Institutional Development Plan (IDP): Response To Comments
- Attachment 2: Regulatory Framework: Response To Comments

If you have any questions or require additional information, please do not hesitate to contact me at (207) 558-3707 or csuhr@woodardcurran.com. We look forward to continuing to collaborate with the City as we work through the IOZ process.

Sincerely,

Woodard & Curran, Inc.

Caitlin Suhr, PE
Project Manager

cc: Alan Thibeault, University of New England
Mary Costigan, Bernstein Shur
Diane Morabito, Sewell Infrastructure

PN: 0235387.00

Worksheet(s) Table Legend:
Provided on Page # = Requirement Met
Partially Provided on Page # = Requirement Not Fully Satisfied
Not Provided = Requirement Not Satisfied

1. ATTACHMENT 1: INSTITUTIONAL DEVELOPMENT PLAN (IDP): RESPONSE TO COMMENTS

Institutional Development Plan (IDP): Content Land Use Code, Section 8.5.4.C			
Category, Sub-category, requirement and Sub-requirement	***Location, IDP Page #***	***Review Comments: Overview & Updates Requested***	***Comment Response Provided by Applicant***
1. Context Information *a. The institution's adopted mission, vision or purpose statement*	Pages 4-5	As stated and provided for on pages 4-5, UNE is guided by its Mission, Vision, and Core Values, as well as its own strategic plan ("Our World, Our Future").	This requirement has been met.
1. Context Information *b. A summary of relevant baseline data on the institution, including;* *i. A neighborhood context plan*	Pages 11-12, Figure 1.1	The UNE's approximately 72-acre campus is bounded by Warren Ave., Bishop St. Extension, and Bishop St. to the north; Stevens Ave. to the east; and, Evergreen Cemetery and CMP's Utility Corridor to the south, as depicted in provided Figure 1.1.	This requirement has been met.
1. Context Information *b. A summary of relevant baseline data on the institution, including;* *ii. An inventory of current programs and services.*	Page 7-9	The UNE Portland campus houses three academic colleges: the Westbrook College of Health Professions (WCHP), the College of Dental Medicine, and the College of Graduate and Professional Studies. In addition, UNE operates two health clinics on campus: the Oral Health Center and the Dental Hygiene Center, as well as UNE North, the Center for Global Humanities, and cultural institutions that include the Maine Women Writers Collection and the UNE Art Gallery.	This requirement has been met.

1. Context Information *b. A summary of relevant baseline data on the institution, including;* *iii. A current census of the number of people using the institution (e.g., employees, enrollment, patients), with an indication of maximums and minimums over time.*	Page 18, Table 1.3	Table 1.3 titled "FTE Student, Faculty, and Professional Staff Data", includes population data from 2016-2023 for student, faculty and professional staff, and campus population. Please also add an additional column to Table 1.3 that includes patient figures visiting the campus (for example, dental patients to the Oral Health Center), further, consider incorporating part-time data, as the provided table only documents FTE.	Table 1.3 has been updated to include historical patient visit data. UNE does not keep track of other campus visitors so is unable to provide this information.
1. Context Information *b. A summary of relevant baseline data on the institution, including;* *iv. An inventory and/or plan of all existing property holdings within the main campus and within the City of Portland, including an indication of functional land use links between off-campus properties and the main campus (e.g. remote parking).*	Page 17, Table 1.2	Table 1.2 titled "UNE Owned Properties in the City of Portland", documents UNE's total of 17 parcels, the majority of which are contiguous in the campus core, while several are outparcels. Please speak to the functional land use links between off-campus properties and the main campus (e.g. remote parking and the Bishop Street shuttle service).	This section has been updated to include descriptions of the outparcels, including their functional land use, and links to the campus core.
1. Context Information *b. A summary of relevant baseline data on the institution, including;* *v. An inventory and/or plan of existing facilities, including data on use, floor area, and any existing functional connections between facilities.*	Page 16, Figure 1.5 Pages 21-22	The UNE campus map is provided on page 16 as Figure 1.5, depicting the 25 distinct facilities and 11 parking areas, with an inset map centered around the Campus Quad. Please supplement Figure 1.5 Campus Map with a table listing the 25 facilities and 11 parking areas identified in Figure 1.5, organized chronologically by facility number. Please also incorporate the parking spaces data from Table 3.5 here as well. The table should include columns for facility name, total	Table 1.2 has been added to this section that lists and describes the facilities and parking areas as shown on the Campus Map.

		floor area, and use. For parking areas, organize chronologically by parking area # and include columns for total square footage, total number of existing spaces, and a breakdown of ADA and EV spaces.	
1. Context Information *c. A summary of the baseline characteristics of the existing campus and context of the institution, based on identified study areas, including:* *i. A summary of existing resources, such as historic, open space, and natural resources.*	Pages 19-20	UNE's campus is the site of the Westbrook College Historic District, which includes six buildings built between 1834 and 1952. Further, existing open space and natural resources are summarized, and include notation of the Portland Trails Forest City Trail connection and the Capisic Brook watershed area.	This requirement has been met.
1. Context Information *c. A summary of the baseline characteristics of the existing campus and context of the institution, based on identified study areas, including:* *ii. A summary of the existing transportation system, including vehicular, pedestrian, transit, bicycle, and parking supply, demand, and utilization*	Page 41-44, Table 3.5	Table 3.5 titled "UNE Portland Campus - Parking Spaces" details the currently 11 parking lots located on campus, plus the on-street parking along two principle campus roadways, which amounts to 882 spaces total, plus the 182 permitted spaces presently at the COM building. Please include a quick summary of the existing transportation system within the Context chapter, to incorporate what is detailed on pages 41-44.	A summary of the existing transportation system has been added to the Context chapter.
1. Context Information *c. A summary of the baseline characteristics of the existing campus and context of the institution, based on identified study areas, including:*	Page 20	Existing stormwater management systems utilize on-site infiltration systems, with secondary use of conveyance to the Stevens Ave. and Bishop St. CSO. Existing wastewater infrastructure for the campus is discharged to	This requirement has been met.

iii. A summary of existing public infrastructure supporting the institution, including demand, utilization and any capacity issues.		a CSO in College St. and Stevens Ave. Other public utilities include: PWD, CMP, and Unitil.	
1. Context Information *c. A summary of the baseline characteristics of the existing campus and context of the institution, based on identified study areas, including:* *iv. Relevant municipal plans, projects, and studies that may influence the IDP study area and opportunities for integrating institutional growth.*	Page 21	A breakdown of the City's Comprehensive Plan, with tie in to the eight policy guide topics as they relate to UNE's work is provided with excerpts from Portland's Plan that UNE works to promote and advance are underscored and include the: environment, economy, historic resources, and housing. Please include additional studies that should be referenced in this section, such as the: Portland-South Portland Smart Corridor Plan (final report dated June 2018), the One Climate Future Plan, and the Forest Avenue Redesign Project. For example, within the Smart Corridor Plan on Page 143 it states: "[The] University of New England (UNE) office at 1075 Forest Avenue, shown in Figure 142 is a parcel that addresses the street well, and would be enhanced by the recommended planting palette and materials design guidelines found later in this section."	This section has been updated to reference additional studies as suggested in the comment.
1. Context Information *d. A summary of public involvement in the development of the IDP, including major areas of public concern.*	Page 22	UNE has worked to involve the public in the creation of the IDP during the IOZ submission process, this includes holding one of two required neighborhood meetings, which took place on June 13, 2024. Please be sure to update this section with the 10/30 neighborhood meeting date. Additionally, it may be beneficial to include a few sentences on the required review by both the Planning Board and City Council, as these	This section has been updated to include the 10/30 neighborhood meeting, as well as to include an additional meeting with Deering Center Neighborhood Association. Additional information on the City review process and opportunities for public engagement at Planning Board and City Council has also been provided.

		will also be opportunities for public involvement.	
2. Assessment of future institutional growth and change, including: *a. A description of institutional needs and areas of future institutional growth and change, with:* *i. A projected census of users (e.g., enrollment /employment/patient/ visitor figures and anticipated variations over time).*	Page 25, Table 2.2	Table 2.2 titled "Projected Growth of FTE Student, Faculty, and Professional Staff" provides a snapshot of data for the years of 2025, 2028, and 2033. Please include data on campus visitors, i.e. visiting faculty, prospective students, guests, etc.; to incorporate as a column in Table 2.2. Please also add patients seen for on-campus health visits.	Projected patient visit data has been added to Table 2.2. UNE does not track other types of visitors (such as visiting faculty, prospective students, or guests) so is unable to provide projections for these visitor types.
2. Assessment of future institutional growth and change, including: *a. A description of institutional needs and areas of future institutional growth and change, with:* *ii. Institutional objectives for property both within and outside the IOZ boundary (e.g. acquisition and/or disposition), including an indication of any functional land use connection for sites outside the IOZ boundary to the main campus.*	Pages 26-28	UNE identifies five categories for key current and future institutional needs: campus reorganization, new building and renovation, educational/pedagogy improvements, campus infrastructure, and housing.	This requirement has been met.
2. Assessment of future institutional growth and change, including: *a. A description of institutional needs and areas of future*	Pages 28-30, Table 2.3	A development plan is shown in Table 2.3, titled "10 +- Year Development Program", which identifies three core priority timelines: the short-term (0-5 years), medium-term (5-10 years), and long-term (10+ years).	This requirement has been met.

institutional growth and change, with: *iii. A development plan addressing anticipated or potential institutional needs and physical improvements, including the proposed boundary of the IOZ and any phasing of the development.*			
2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including:* *i. Transportation and access, with:* *a) An analysis of the projected changes in parking demand, supply, and impacts to the off-street and on-street parking capacity, including an explanation of the proposed parking plan.*		Please provide an analysis of the projected changes in parking demand, supply, and impacts, and a review of current parking conditions. The previous TDM plan could be utilized to assist in completing this section. Further, a discussion on how to mitigate neighborhood impact by reducing on-street parking usage by UNE students and personnel should be included here.	This section has been updated to include the parking analysis based upon the historical parking counts.
2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support*	Page 36-37, Tables 3.2 & 3.3	Table 3.2 titled "Trip Generation Analysis" provides a snap shot of vehicular usage projections for the student population in the years 2025, 2028, and 2033.	This section has been updated to project increases in pedestrian, bicycle and transit trips based upon ITE data for the projected increase in student population.

the development parameters as set out in the regulatory framework, including: *i. Transportation and access, with:* *b) An analysis of the projected changes in vehicular, pedestrian, transit, and bicycle access routes and facilities, their capacity, and safety.*		Please provide more details, as it relates to pedestrian and bicycle usage in this section, which largely focuses on vehicular travel.	
2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including:* *i. Transportation and access, with:* *c) A transportation, access, and circulation plan, representing the synthesis of the analysis, and including a program of potential improvements or set of guidelines to address access deficiencies to and within the IOZ. The plan should outline proposed mechanisms and potential strategies to meet transportation objectives, including transportation demand management, phasing,*	Pages 38-44	UNE's original TDM plan was created in 2010, and is routinely updated, most recently in April 2022. Strategies that emerged from the plan include: education and promotion, carpooling & ridesharing, transit service, incentives, EV charging infrastructure, bicycle infrastructure, and pedestrian & bicycle access. Please provide a more detailed transportation, access, and circulation plan, that expands beyond the strategies identified in the TDM. As an example, perhaps providing a circulation plan of the core campus as a visual could then highlight potential opportunities for connections to the existing and future trail network. Please also speak to the existing Traffic Movement Permit (TMP) in this section, whether UNE envisions surpassing the threshold for a new TEMP under your build-out plans, i.e. indicate when a revised TMP may be required, or triggered, in the future.	A circulation and access plan for the core campus (Figure 3.6) has been added, as suggested, showing the sidewalk connections as well as trail connections with some discussion. A discussion was added regarding the historical TMP information and recent campus building projects. It is unlikely a TMP will be required for the building projects anticipated in this 10-year plan.

and when a Traffic Movement Permit (TMP) may be required.			
2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including:* *ii. Environment, with:* *a) An analysis of potential cumulative impacts on natural resources and open spaces.*	Page 52	Please provide an expanded analysis under the 'Proposed Future Development and the Environment' paragraph, which should detail potential cumulative impacts to the existing natural resources and open spaces on campus. For example, perhaps some good data to capture here could be existing vs. proposed impervious lot coverage, the existing open space on campus vs. proposed loss or gain of open space over time, and the existing square footage of wetlands vs. potential impacts or gains in the future.	An expanded analysis related to anticipated impacts on natural resources and open space has been included in this section.
2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including:* *ii. Environment, with:* *b) An analysis of projected energy consumption, hazardous materials*	Pages 57-60	UNE's operational sustainability is detailed within the categories of energy conservation, waste management practices, biomedical waster best practices, sustainable landscaping, and noise generation.	This requirement has been met.

generation, noise generation, and similar issues as relevant.			
2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including:* *ii. Environment, with:* *c) An environmental plan, representing the synthesis of the analysis and including a proposed program or set of guidelines for future preservation, enhancement, conservation, and/or mitigation*	Page 56, Figure 4.8	Figure 4.8 titled "Natural Resources and Campus Master Plan" shows proposed campus improvements in locations aimed to mitigate impact to natural resources.	This requirement has been met.
2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including:* *iii. Infrastructure, with:*	Pages 62-63	Utility demand and capacity are detailed through the lens of the various providers: water services supplied by PWD, electricity supplied by CMP, telephone & data services by Consolidated Communications and Spectrum, natural gas and heating fuels supplied by Unitil, and existing wastewater infrastructure	This requirement has been met.

a) An analysis of projected public utility demand and the capacity of associated infrastructure.			
2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including:* *iii. Infrastructure, with:* *b) An analysis of projected public safety needs and projected impacts to the capacity of these services.*	Page 64	UNE has security officers who provide 24/7 patrol and dispatch coverage of the campus, in addition, an emergency notification service (Rave Mobile Safety), provides faculty, staff, and students with timely updates during emergencies, speaking to the capacity of public safety as the campus grows.	This requirement has been met.
2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including:* *iii. Infrastructure, with:* *c) An infrastructure plan, representing the synthesis of the analysis and including a proposed*	Pages 61-62, Figure 5.1	Figure 5.1 titled "Existing Stormwater Infrastructure and Campus Master Plan" illustrates existing City sanitary sewer and stormwater infrastructure surrounding and within the campus, as well, future stormwater run-off flows are detailed. Please include a set of guidelines to support sustainable growth at the conclusion of this chapter.	A set of guidelines to support sustainable growth has been added at the conclusion of this chapter.

program or set of guidelines to support sustainable growth.			
2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including:* *iv. Design, with:* *a) An analysis of projected impacts to neighboring properties and public spaces, including potential shadow, wind, and lighting impacts, impacts of height and massing, and impacts to historic resources.*	Pages 65-72, Figures 6.1, 6.2, 6.3, & 6.4	The City wants to ensure UNE is adequately addressing potential impacts to the surrounding parcels, including: Evergreen Cemetery, the isolated parcels within the Campus, and properties on Mayfield Street. Please provide spot elevations on the buildings shown in Figure 6.2 to better dedicate heights. Provide rendering of proposed development looking from Mayfield Street towards proposed student housing building (west). Additionally, as UNE considered alternative building layouts and parking configurations for the conceptual student housing on the Gulliver's Field site?	Building height information has been added to Figure 6.1 to provide greater context for existing and proposed facilities. A rendering of the proposed housing development looking from Mayfield Street towards the proposed student housing building has been included as Figure 6.3. The design of the proposed housing building and associated parking area is still in the planning stages. UNE is evaluating alternatives for building footprints and parking configurations within the general area depicted on the Campus Master Plan. The general area for development will be within the existing Gulliver's Field site, however final design will be developed in the future and reviewed by the City as part of the Site Plan Review process. The rendering included as Figure 6.3 shows a version of the housing located at the closest point to Mayfield Street within the 85-ft maximum height overlay.
2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set*	Page 71-72, Figure 6.4	Figure 6.4 titled "Proposed Maximum Heights" has identified transition zones along the edges of the IOZ boundary. Please provide the design rationale for the proposed 50 ft height within the 25 ft-wide transition zone—was there any consideration of varying the maximum height to better align with the surrounding context? Did UNE	Figure 6.4 has been revised to be a "Proposed Open Space and Maximum Height Map" and has been updated to include open space, i.e., "no build", areas. The design rationale for the proposed 50 ft height within the 25 ft-wide transition zone was to provide a step back of building heights from the campus edges and

out in the regulatory framework, including: *iv. Design, with:* *b) An analysis of transition areas between the institution and adjoining neighborhoods, including identification of key character defining components of the surrounding context.*		consider mapping lower maximum heights along Capisic Brook, and what is the rationale for mapping 65 ft on the two outparcels fronting Stevens Avenue? Additionally, the parcel on Forest Avenue, under ReCode, would allow a height of up to 75 ft. We recommend removing the height limitation for that parcel should ReCode pass as proposed.	adjacent properties, with the intent to focus densification and greater building heights internal to the campus. The open space areas that have been added to the plan will provide further buffering of neighboring properties, and will preserve existing wetland and open space areas, such as along Capisic Brook and adjacent to the Mayfield Street neighborhood. The proposed maximum height of the outparcels on Stevens Ave and Forest Ave have been revised to 75-ft for consistency with the updated maximum height for the B2 zone as part of the recently adopted ReCode. The UNE outparcels at 1075 Forest Ave, 32 Bell Street, and 812 Stevens Ave are zoned B2 under ReCode. As part of this IOZ application, UNE is seeking to change the underlying zoning at outparcel 798 Stevens Ave to B2 for consistency with the rest of the campus and nearby properties on Stevens Ave.
2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including:* *iv. Design, with:*	Page 72	UNE's Campus Safety and Security Department monitors through in-person patrols and CCTV cameras and provides response 24/7, which contribute to low crime statistics on campus.	This requirement has been met.

c) An analysis of existing Crime Prevention Through Environmental Design issues and identification of how these principles would be addressed as part of the proposed campus development.			
2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including:* *iv. Design, with:* *d) A conceptual built environment/public realm plan, representing the synthesis of the analysis and including a set of guidelines for urban design, landscape, open space, and streetscape treatments, with particular attention to the treatment of edges (both within and abutting the IOZ boundary) to achieve compatible transitions.*	Pages 71-75	Figure 6.4 titled "Proposed Maximum Heights" could be expanded on as a conceptual built environment/public realm plan for this section. Has there been consideration for a more targeted contextual set of heights throughout the campus to address varying building typologies in adjacent neighborhoods?	Figure 6.4 has been revised to be a "Proposed Open Space and Maximum Height Map" and has been updated to include open space, i.e., "no build", areas. The open space areas that have been added to the plan will provide further buffering of neighboring properties, and will preserve existing wetland and open space areas, such as along Capisic Brook and adjacent to the Mayfield Street neighborhood, and Evergreen Cemetery. The proposed maximum height areas have been thoughtfully selected to facilitate future development in portions of the campus that will not impact natural resources and will enhance campus engagement and safety.
2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or*	Pages 76-77	UNE outlines four steps in their effort to provide ongoing community engagement, which include:	This requirement has been met.

potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including: *v. Neighborhood engagement, with:* *a) A plan for ongoing community engagement that represents best practices, promotes collaborative problem solving around community concerns, fosters transparency, and identifies mechanisms for neighborhood feedback and institutional accountability.*		-Developing a comprehensive CMP -Providing monthly project updates for all current/active projects -Creating a dedicated email address to allow neighbors to forward questions, concerns, and feedback -Attendance as local community neighborhood association meetings	
2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including:* *v. Neighborhood engagement, with:* *b) A property management framework that identifies the institution's process for handling operational property issues with neighbors.*	Page 76	UNE directly oversees the maintenance and care of its facilities; it does not inspect or approve any off-campus housing.	This requirement has been met.

2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including:* *v. Neighborhood engagement, with:* *c) Strategies for assuring communication pertaining to property acquisition and disposition in surrounding neighborhoods.*	Page 77	UNE has established strategies for assuring communication pertaining to property acquisition and disposition in surrounding neighborhoods, including alerting abutting properties of the transition of ownership and providing the appropriate contact information.	This requirement has been met.
2. Assessment of future institutional growth and change, including: *b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the development parameters as set out in the regulatory framework, including:* *v. Neighborhood engagement, with:* *d) A set of construction management principles to apply to all institutional construction, that represent best practice, aim to minimize short- and long-term construction impacts on*	Pages 82-84, + Attachment A	UNE has identified construction management principles that will be implemented to minimize impacts to its surrounding neighborhoods from noise, vibrations, ground movement, truck traffic, dust control and other construction related factors.	This requirement has been met.

surrounding residents and businesses, and ensure a clear communication strategy is in place in advance of construction.			

2. REGULATORY FRAMEWORK RESPONSE TO COMMENTS

Regulatory Framework: Content Land Use Code, Section 8.5.5.D			
Category & Requirement	***Location, R.F. – PDF Page Number & Document Section***	***Review Comments: Overview & Updates Requested***	***Comment Response Provided by Applicant***
1. Zoning boundary of the IOZ *The area to which the regulations apply, as shown on the zoning map, subject to other provisions of this ordinance (i.e. the map amendment to the City's zoning map)*	Page 144, Figure 8-H	General comment: Please add page numbers to the Regulatory Framework document itself.	Page numbers have been added.
2. Phasing and schedules *Requirements that relate to particular proposed phases* *A chart showing the schedule or thresholds for submitting an amended IDP (or elements of an IDP, such as a Transportation Demand Management (TDM) Plan)*		N/A - No phasing or scheduling proposed (imminent site plan) at this time.	

3. Uses *Clarification, as necessary, on permitted uses*	Page 146, Section C., Table 8-H		
4. Dimensional requirements *Graphics, sketches, or standards, including details for transition zones within the IOZ boundary*	Pages 146-147, Section D., Figure 8-I	Staff requests further discussion regarding the proposed height map and how to consider the surrounding context. See attached comments.	The applicant met with City Staff on October 22, 2024, and December 13, 2024, to further discuss the proposed height map. Changes to the height map have been incorporated as shown on Figure 8-I.
5. Transportation *Elements such as Transportation Demand Management Plan (TDM) trip reduction targets or contribution to area-wide TDM measures* *Broad parameters for ensuring pedestrian, vehicular, bicycle and transit access and safety* *Parking ratios and management strategies* *Thresholds for access improvements*	Page 148, Section E.	*City Staff is working with the applicant to draft language for this requirement section.*	The applicant is working with City Staff on the final language for this requirement section.

6. Environment *The approach to the inclusion of open space and preservation of environmentally-sensitive areas*	Page 148, Section F.		
7. Mitigation measures *The broad approach to identified mitigation measures, which would be addressed in greater detail in the site plan review process* *Thresholds for addressing deficiencies* *Goals for preservation/protection*	Page 148, Section G.	*City Staff is working with the applicant to draft language for this requirement section.* *City Staff is working with the applicant to draft language for this requirement section.*	The applicant is working with City Staff on the final language for this requirement section.
8. Design *Graphics and standards to clarify building placement and envelope (height and massing)* *Guidelines for integration of site features* *Required treatments for transition zones and treatment for all edges*		*City Staff is working with the applicant to draft language for this requirement section.*	The applicant is working with City Staff on the final language for this requirement section.

(both within and abutting the IOZ boundary) *Guidelines for establishing campus identity*			
9. Neighborhood integration Thresholds and strategies for neighborhood engagement Mitigation of impacts on neighboring properties, including construction impacts Buffering requirements Objectives for pedestrian linkages and safety Other requirements that address community concerns	Page 150, Section I.	*City Staff is working with the applicant to draft language for this requirement section.*	The applicant is working with City Staff on the final language for this requirement section.
10. Monitoring *A schedule for regular monitoring reports on IDP implementation in accordance with the IDP*		This section should simply address monitoring, stating that updates will be provided to the Planning Authority every five years.	Monitoring requirements have been added to this section.

1001 Westbrook Street
Major Site Plan
PL-002853-2024
Portland International Jetport

Submitted to:	Portland Planning Board	**Prepared By:**	Zach Powell
Public Hearing Date:	January 28, 2025	**Date:**	January 24, 2025

I. INTRODUCTION

Portland International Jetport has submitted a Major Site Plan application to facilitate the expansion of an existing short-term paved parking lot and unpaved surface parking area to create a paved parking lot with 667 long-term parking spaces. As part of the proposed development, a 1.9-megawatt battery storage system is also proposed to be installed.

The Applicant has submitted a Site Location of Development (SLOD) amendment to permit L-13760 and NRPA permit, which is still under review by the Maine Department of Environmental Protection (Maine DEP). The Army Corps of Engineers provided authorization on August 14, 2024 (Attachment D1) for the proposed fill of ±11,151 square feet of wetlands on the project site. The project falls under an existing Traffic Movement Permit (TMP) for the Terminal Expansion, which was approved by the Planning Board in 2008.



Figure 1: Wayfinding plan showing the site (Highlighted in blue) and the proposed battery storage (Outlined in yellow).

A workshop on the application on May 14, 2024, with the discussion on the application focusing on the proposed wetland impacts and landscaping. A hearing on the application was held on November 26, 2024, where the application was tabled to provide additional information related to the submitted waiver requests.

The Planning and Urban Development Department mailed 38 notices advertising this meeting to property owners within 500 feet of the site. A legal advertisement ran in the January 16, 2025 and the January 17, 2025 editions of the *Portland Press Herald*.

Applicant: Paul Bradbury, CEO, Portland International Jetport
Representing Agent: Owens McCullough, Sebago Technics

II. REQUIRED REVIEWS AND REQUESTED WAIVERS

Review	Applicable Standards
Major Site Plan Review	Section 14.6
Waiver Requests	**Applicable Standards**
1. Sidewalks are not proposed to be constructed on Jetport Boulevard & Westbrook Street.	Land Use Code §14.6.1(B)(3)(a) - All development shall provide curb and sidewalks along all frontages. *Staff are supportive.*
2. The applicant is requesting to fill ±11,151 square feet of wetlands on the site.	Land Use Code §14.6.2(A)(1) - All development shall preserve and protect significant natural features by incorporating them into site design. *Staff are supportive.*
3. The applicant is requesting the installation of parking lot islands with a total of 24 trees when 267 trees or 133 trees & 400 shrubs are required.	Land Use Code §14.6.2(C)(3)(a) – Developments shall include at least two trees (or one tree and three shrubs) per five parking spaces planted in landscaped islands to screen, shade, and break up parking. *Staff are supportive.*
4. Construction of a parking lot island where a portion of the island is less than 8 feet in width (3.5 feet).	Technical Manual §4.5.5 – Landscaped islands shall be curbed and a minimum of eight (8) feet in width, not including curbing. *Staff are supportive.*
5. The applicant is requesting direct discharge of treated stormwater from the site into Casco Bay.	Technical Manual §5(III): Developments as specified under Section II Applicability in Portland must comply with the most recent version of the Maine Department of Environmental Protection (Maine DEP) Chapter 500 Rules for Stormwater Management. *Staff are supportive.*

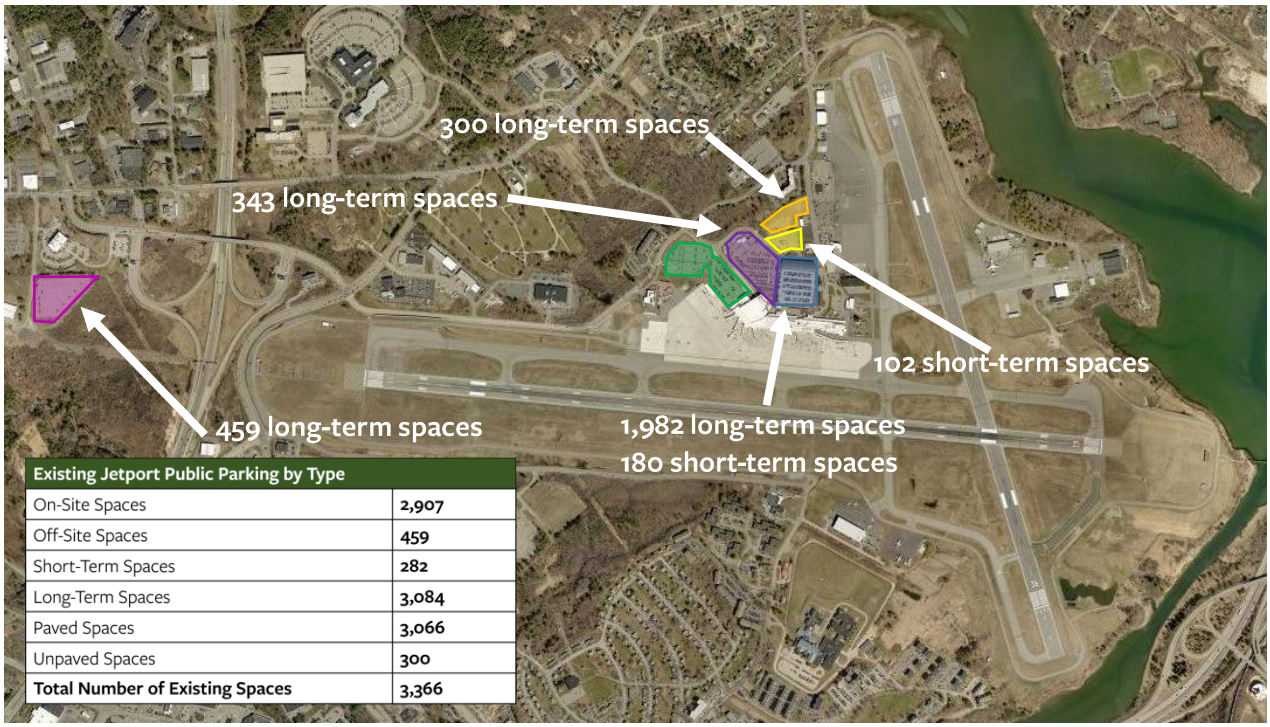
III. PROJECT DATA

Existing Zoning	A-B (Airport Business)		
Existing Use	Off-Street Parking (Surface) (102 paved automobile spaces; 300 unpaved automobile spaces); Undeveloped Land		
Proposed Use	Off-Street Parking (Surface)		667 automobile spaces
Property Size	42,976 SF (0.98 acres)		
	Existing	*Proposed*	*Net Change*
Automobile Parking Spaces	402 spaces 102 paved 300 unpaved	667 paved spaces	+265 spaces
Bicycle Parking Spaces	0 spaces	0 spaces	No change
Curb Cuts	3	3	No change
Trees in Streetscape	±55	88	±33

IV. EXISTING CONDITIONS

The project site is centrally located on the Portland International Jetport campus and occupies half of a city block at 0.98 acres in area. The site is bounded to the north by Jetport Boulevard, to the South by Loop Road,

to the East by Westbrook Street, and to the West by International Parkway. The site is immediately adjacent to a hotel and proximate to other surface and structured parking for the Jetport and undeveloped land. The site contains a mixture of paved short-term surface automobile spaces (102) (shown in yellow in **Figure 2**), unpaved long-term valet surface parking spaces (300) (shown in orange in **Figure 2**), informal vehicle storage, and undeveloped land. The Jetport also has an additional 2,964 long-term parking spaces with 2,505 on-site and 459 off-site, as shown in **Figure 2**. 480 spaces (shown in green) are used for employee parking.



Existing Jetport Public Parking by Type	
On-Site Spaces	2,907
Off-Site Spaces	459
Short-Term Spaces	282
Long-Term Spaces	3,084
Paved Spaces	3,066
Unpaved Spaces	300
Total Number of Existing Spaces	3,366

Figure 2: Aerial image showing public parking areas for the Jetport. Off-site parking includes a 459-space long-term parking lot (shown in pink). On-site parking includes 300 long-term valet parking spaces (shown in orange), structured parking with 1,982 long-term and 180 short-term parking spaces (shown in blue), 343 long-term surface parking spaces (shown in purple), and 102 short-term surface parking spaces (shown in yellow).

The undeveloped portion of the site contains ±11,151 square feet of wetlands and 169 trees >10" at diameter breast height. Two sculptures from the public art piece Glimpse (2011) are located along the site's frontage on Loop Road as shown in **Figure 3**.

The site has three curb cuts, and sidewalks are provided along the frontages of International Parkway and Loop Road. Bicycle lanes are located along the International Parkway & Jetport Boulevard frontages of the site.

The project site is currently served by public transit with METRO Route #5, with a stop located ~710 feet from the southern boundary of the project site.



Figure 3: View looking west from Loop Road at two of the sculptures from the public art piece *Glimpse* (*2011*) that are located on the project site.

V. RIGHT, TITLE, AND INTEREST

The property owner is the City of Portland and the Applicant has submitted deeds (Attachment C) verifying that all three properties are under common ownership.

The 2018 Portland International Jetport Sustainability Airport Master Plan identified the acquisition of the area shown in yellow in **Figure 4** to be an intermediate priority of the airport. Order 81-21/22 was unanimously approved by the City Council on November 1, 2021 to purchase that portion of land in yellow that was previously used as a private valet parking service.

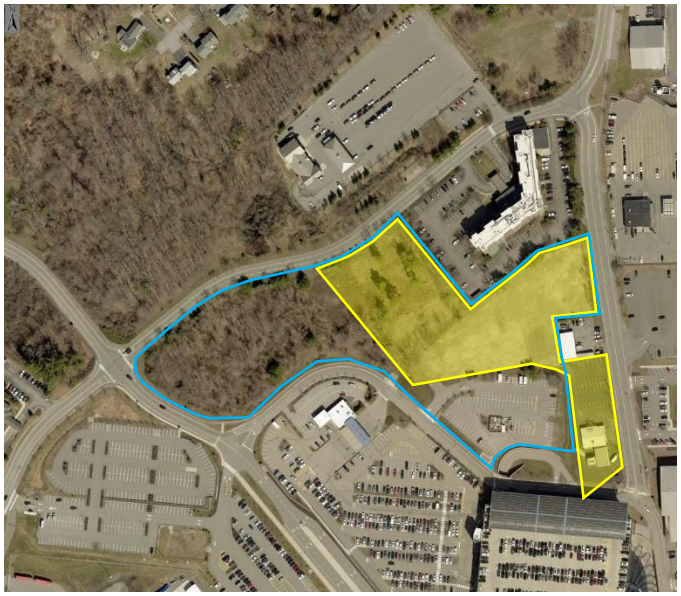


Figure 4: Aerial image showing the project site boundary (in blue) and private land purchased as part of a recommended intermediate priority of the Portland International Jetport Sustainability Airport Master Plan (in yellow).

VI. FINANCIAL AND TECHNICAL CAPACITY

The Applicant has submitted a letter (Attachment H) listing the unrestricted cash fund balance for the Jetport of $39.1 million, with the proposed project anticipated to cost $8 million. Supporting information has been supplied related to the technical capacity of Sebago Technics in Attachment I.

VII. PROPOSED DEVELOPMENT

The applicant is proposing to pave the existing ±1.65-acre unpaved parking area and repave an existing short-term paved lot with 102 spaces (cell phone lot) to create two paved parking lots with 667 long-term parking

spaces. The clearing of the northwestern portion of the site would include the removal of 153 trees >10" at diameter breast height (DBH) and the filling of ±11,151 square feet of wetlands. Of the trees being removed, 19 are Ash trees, which, based upon a site inspection by City Arborist Mark Reiland, the majority of these trees are infected with Emerald Ash Borer.

Existing parking areas are proposed to be redeveloped and regraded, with new subsurface utility and stormwater infrastructure being installed. A 1.9-megawatt lithium-ion battery is proposed to be installed on the western portion of the site, which will be screened with a combination of fencing and landscaping.

Through §1.14 of the Technical Manual, parking lots greater than 100 spaces can establish EV parking requirements based on an EV parking demand study prepared by a qualified professional. The Applicant has submitted an EV parking demand study (Attachment M1) showing that the proposed number of spaces (141 EV-ready spaces & 56 off-site Level 1 chargers) aligns or exceeds practices from peer airports in the region and aligns with the longer parking patterns associated with airline passengers.

Construction is proposed in two phases, as shown in **Figure 5**. Each phase is anticipated to take three months and would start with the western portion of the site (shown in red) and then progress to the eastern portion of the site (shown in yellow).

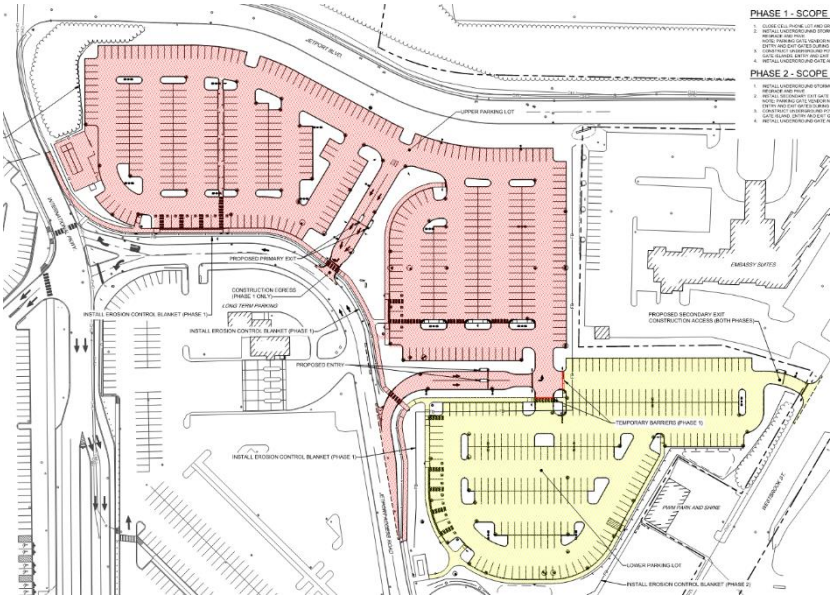


Figure 5: Phasing Plan with Phase 1 (in red) and Phase 2 (in yellow) each anticipated to take three months to complete.

All existing curb cuts would be updated as part of the proposed project, with vehicles entering from Loop Road to pay stations and exiting either onto Loop Road or Westbrook Street.

The two existing public art pieces from *Glimpse* are proposed to be removed from the site. City Staff & the Public Art Committee, in coordination with the artist Wendy Klemperer, are working to develop plans for the removal, storage, and relocation of the sculptures. Final approval for the relocation of the sculptures requires approval from the City Council.

Proposed landscaping for the site includes planting 93 deciduous and 69 coniferous trees, and a combination of 712 perennials & shrubs.

VIII. ZONING ANALYSIS

The site is located in the A-B (Airport Business) zone. The purpose of the A-B zone is 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 use to provide for the comfort and convenience of the airport's patrons and employees.

The zoning dimensional requirements are permissive and are intended to allow for a variety of commercial and industrial uses that are supportive of the functions of the Jetport, while including setback restrictions from the adjacent Stroudwater neighborhood to minimize negative impacts. As submitted, the application is consistent with applicable A-B zoning standards as shown below in **Table 1**. Additionally, off-street parking is listed as a permitted use in the A-B zone as identified in Table 6-E.

Table 1: Applicable Dimensional Requirements

Dimensional Standard	Requirement	Proposed	Determination
Minimum Lot Area	20,000 square feet	358,094 square feet	**Complies**
Minimum Street Frontage	50 feet	1,450.17 feet	**Complies**
Maximum Impervious Surface Ratio	70%	48%	**Complies**

IX. NOVEMBER 26, 2024 HEARING



Figure 6: Wayfinding plan showing the previous location proposed for the battery storage (in red) and the new location after the workshop (in purple), along with the proposed internal sidewalks (in green) to the existing sidewalk network (in blue).

At the November 26, 2024 hearing, the Board focused the majority of the hearing on the submitted waiver requests and the supporting justifications for these requests. Discussion focused on the proposed impacts to three wetlands on the property and whether alternative strategies (e.g., more compact design, off-site lease) could achieve the intended goal of providing additional parking in advance of the parking garage expansion on the campus. Based on the information submitted at the hearing, the application was tabled to January 28, 2025, with a request for the applicant to submit an alternative design that eliminated the need for landscape waivers, to better understand how the layout of the site would be modified, and how many additional spaces would be created through this more compliant design.

14 members of the public provided comment at the meeting focusing on wetland & vernal pond impacts, consistency with City plans (2018 Sustainable Airport Master Plan & One Climate Future) and FAA regulations for community participation, proposed removal of existing trees, and support for better data collection on existing parking to inform increases in parking supply.

X. APPLICATION MATERIALS SINCE NOVEMBER 26, 2024 HEARING

In support of the submitted waiver requests, the Applicant has submitted the following application materials:

- A map of sites considered for additional parking and proximate natural resources that informed the selected location of the proposed parking facility (Attachment GG);
- Wetland delineation from 2018 near the existing off-campus Pink Lot (Attachment HH);
- A parking exhibit showing the proposed increase in new parking spaces and associated wetland impacts (Attachment II);
- A landscape exhibit comparing the proposed design, along with an alternative design that eliminates the need for landscape waivers (Attachment JJ);
- Daily parking counts from January 1, 2024 to October 31, 2024 (Attachment KK);
- Anticipated increase (~2.0 to 2.2%) in enplanements between 2025 and 2029 as calculated by the Federal Aviation Policy and Plans Office (APO)(Attachment LL);
- A copy of a November 14, 2020 memo to Former City Manager Jon Jennings describing the project purpose and need (Attachment MM);
- Sheets from the 2018 Sustainable Airport Master Plan that identify the project site for future surface parking (Attachment NN); and
- A cover letter including further justification for the submitted waivers summarizing the materials mentioned above (Attachment OO).

XI. SITE PLAN STANDARDS

Section 14.6 of the City's Land Use Code establishes standards for reviewing Site Plan applications. Per this section, Site Plans shall adhere to the following requirements:

Section 14.6.1. Transportation Standards

A. Impact on Surrounding Street Systems

Staff Comment: The proposed parking lot is not anticipated to result in significant hazards to the surrounding street network since the facility is located in the core of the Jetport campus. As a parking lot, the proposed use does not require a traffic study since parking lots are not classified as trip generators by traffic engineers.

City reviewers requested confirmation that the 2008 Traffic Movement Permit (TMP) conditions of approval were met, which was provided by the Applicant in Attachment A3. Attachment A3 provides direct responses and photographs documenting compliance with the TMP conditions of approval. Through the submission of this document and the proposed type of development, the Applicant has demonstrated compliance with the standards related to impacts on surrounding street systems.

B. Access and Circulation

Staff Comment: Based on City Staff feedback on internal circulation & pedestrian connections, the design has been updated to provide additional internal sidewalks and additional signage to improve connections to the existing sidewalk network.

Waiver Request: The applicant seeks a waiver under Land Use Code §14.6.1(B)(3)(a), which requires curb and sidewalk installation along all frontages for new developments. Specifically, the applicant requests not to provide sidewalks along the Jetport Boulevard and Westbrook Street frontages, citing two key justifications for the waiver as outlined in §14.6.1(B)(3)(c)(1) (Existing sidewalks are present on the opposite sides of these streets), and §14.6.1(B)(3)(c)(1)(2) (Construction of new sidewalks would necessitate the removal of additional vegetation and trees).

City Staff have reviewed the waiver request and find that the applicant meets three of the waiver criteria listed in §14.6.1(B)(3)(c)(1):

1. An existing sidewalk runs along the opposite side of Jetport Boulevard, just north of the site, covering most of the street's length and offering a safe alternative walking route. Similarly, a sidewalk on the opposite side of Westbrook Street, directly east of the site, provides another safe alternative walking route.
2. Installation of sidewalks would result in the loss of significant landscaping features on the site.
3. There is no reasonable expectation of pedestrian traffic originating from, heading to, or passing through these specific locations.

C. Public Transit Access

Staff Comment: Given that an existing transit shelter is located within the airport terminal that is less than ¼ mile from the project site, the project is not required to install a transit shelter.

D. Parking

Staff Comment: Per the City's Land Use Code, under Article 19, Table 19-A, there are no minimum parking requirements for parking lots and/or airports do not have explicitly listed automobile or bicycle parking total requirements in Article 19 of the Land Use Code.

All proposed spaces and aisles meet the minimum dimensional requirements. Snow storage is proposed to be handled by a snow hauler, which will transport snow to an off-site City storage location, which aligns with the snow management strategy for the Jetport campus.

As discussed in Section VII of this report, the Applicant has submitted an EV parking demand study demonstrating that the proposed number of EV-ready spaces (141) & off-site EV spaces in the nearby parking structure (56) align with regional trends for airports. Similarly, the use of Level 1 chargers is justified based on the fact that over 90% of motorists are parked at the Jetport for ≥24 hours, which is the typical charge time for a vehicle using a Level 1 charger.

E. Transportation Demand Management

Staff Comment: The Jetport has an existing TDM plan for the 2008 terminal expansion and the proposed project does not meet a threshold for creating a separate TDM plan. In the latest TDM report, the Jetport has noted that using off-site parking, carpooling, and allowing for more flexible/remote work options have all been successful strategies in reducing overall parking demand for the airport, and have contributed to increases in trips by modes other than single-occupancy vehicles. The frequency and hours of operation of bus service and carpooling have been noted by the Jetport as challenging factors, and the Jetport has indicated that it is pursuing strategies to further incentivize carpooling, improve the experience for ride-share users, and update the Jetport website to include additional information about alternative transportation modes.

Section 14.6.2. Environmental Quality Standards

A. Preservation of Significant Natural Features

Staff Comment: The application proposes impacts to ±11,151 square feet of wetlands, as shown in green in **Figure 7**. 9,967 square feet of previously permitted and filled wetlands are shown in **Figure 7** in orange.



Figure 7: Site plan showing location of wetlands proposed to be impacted (in green) and previously impact wetlands (in orange).

Waiver Request: The Applicant has submitted a waiver request for these impacts describing that the wetlands have limited ecological & habitat functions based on Army Corps of Engineers standards. Impacts to the wetlands have been minimized through the relocation of the proposed battery storage, while preservation of the wetlands compromises the development of the site with their central placement & location along areas that require grading. Authorization was provided by the Army Corps of Engineers on August 14, 2024 (Attachment D1) for the proposed fill of ±11,151 square feet of wetlands on the project site, with review by Maine DEP for a SLOD amendment & NRPA permit still ongoing.

The existing wetlands are centrally located within the proposed development area, which creates limitations on the construction of a surface parking lot. Based on Board and Staff feedback, the Applicant has revised the project design to relocate the battery storage area south of the wetlands, which preserves approximately 1,733 square feet of wetlands, which were originally intended to be filled during the original application submission. The applicant has noted in Attachment OO that additional considerations such as reduced aisle widths and compact parking spaces were considered, but not implemented given that they resulted in no appreciable preservation of wetlands & the fact that larger vehicles utilize the surface parking based on structured parking constraints.

City Staff are recommending as a condition of approval that evidence of approvals from Maine DEP be submitted prior to issuance of a building permit. The project area does not propose development within a designated habitat block.

Through the demonstration of compliance with relevant state and federal review processes, efforts such as considering reduced drive aisle widths and compact parking spaces to minimize the scale of the waiver, laying out the parking lot to comply with relevant parking lot standards, such as drive aisle width, parking space

width, and islands, the applicant has demonstrated efforts to minimize impacts to significant natural resources and Staff support the waiver request.

B. Landscape Preservation

Staff Comment: The subject application proposes to retain 25 of the existing 178 trees >10" Diameter Breast Height (DBH) within the project area. 19 of the 153 trees proposed to be removed are Ash trees, with the majority of the trees identified by the City Arborist as being infected by Emerald Ash Borers, which are actively being removed across the city.

Since the workshop, the Applicant updated the site plan set (Attachment P2) to include landscape preservation measures for trees & vegetation proposed to be preserved along International Boulevard & Westbrook Street. Preservation measures include a combination of fencing and 3" minimum depth woodchips within the dripline.

C. Site Landscaping and Buffers

Staff Comment: The site has 2,295 feet of frontage and is required to provide a combination of 1 tree or six plantings per 30 feet (77 trees or 462 plantings). The site proposes preserving 25 trees and planting 162 new trees, exceeding the minimum requirement.

A total of 667 parking spaces are proposed, requiring the planting of 267 trees or 133 trees & 400 shrubs in landscaped islands at least 8 feet in width. As submitted, a total of 23 trees are to be planted in landscaped islands. The Applicant has noted that conflicts with the stormwater detention & treatment system prevent additional plantings in the islands, with a significant number of trees proposed to be installed in other locations on the site. An additional 34 trees and 248 shrubs are proposed to be planted in landscaped peninsulas, which provide a similar benefit/meet the intent of the requirement.

Waiver Request: §14.6.3(c) of the Land Use Code states that waiver requests may be submitted when site constraints prevent implementation and can be partially waived, with a contribution to the City of Portland Tree Fund to be provided proportionate to the number of trees not able to be planted (127). Staff are supportive of the waiver given that compliance with the standard would result in no substantial increase in existing parking and other required site elements (e.g., subsurface stormwater detention tanks, lighting) limiting the available space to plant additional trees. Staff is including a recommended condition of approval that a contribution of $50,800 (127 trees X $400/tree) be provided to the City of Portland Tree Fund or that the applicant demonstrates compliance with the requirements by planting an additional 127 trees throughout the Jetport campus prior to issuance of a certificate of occupancy.

Waiver Request: A portion of one of the landscaped islands (shown in **Figure 8**) does not meet the minimum width of 8 feet as required in §4.5.5 of the Technical Manual, for which the Applicant has submitted a waiver request. Staff are supportive of the waiver request since the Applicant has provided notes ensuring sufficient soil depth and high-quality planting mix to promote the long-term viability of the trees, which achieves the same goal as the minimum required landscape island width.

The site has 1,243 feet of frontage along City rights-of-way and is required to provide a minimum of 36 street trees. The Applicant is proposing to utilize street tree alternatives to preserve 12 trees that are less than 20 feet from & visible from the right-of-way, and plant 58 new trees within 20 feet from & visible from the right-of-way, exceeding the minimum requirement for street trees.

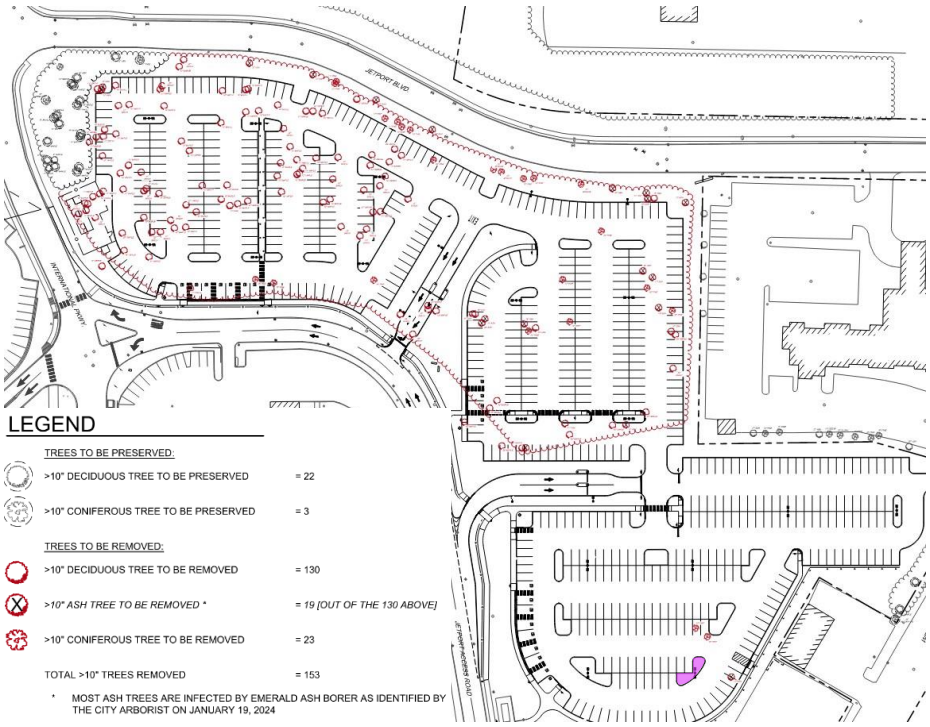


Figure 8: Tree removal plan, which proposes the removal of 153 trees >10" DBH and retention of 25 trees >10" DBH. The landscaped island with a portion less than 8 feet in width that the Applicant is seeking a waiver for is highlighted in pink.

The battery storage is proposed to be screened by opaque privacy fencing. City Staff are recommending a condition of approval that the applicant submit details for the proposed screening, identifying the material, height, and structural components of the screening, to be reviewed and approved by the Planning Authority, and ensure compliance with §6.8.8(A) of the Land Use Code and §4.5.7 of the Technical Manual.

D. Water Quality, Stormwater Management, and Erosion Control

Staff Comment: The project proposes the use of two Contech stormfilters with storage to manage stormwater on-site. Based on the submitted stormwater management report, the proposed design will meet or exceed the detention capability of the site as compared to existing conditions for the 2-, 10-, and 25-year storms.

The project proposes ±5.64 acres of new impervious area and 7.24 acres of developed area. Chapter 500 & §5 of the Technical Manual require at least 80% of the developed area and 95% of the impervious area of the project to be treated. The proposed design proposes to treat 90.5% of the developed area & 96% of the impervious area to be treated, exceeding the requirements of Chapter 500 and the Technical Manual by approximately 10% and 1% respectively.

Waiver Request: The submitted design proposes directly discharging treated stormwater into Casco Bay and a waiver of the Maine DEP Chapter 500 Flooding Standard has been requested as part of the review of the SLOD amendment. To meet the City of Portland stormwater requirements, the applicant will be required to submit a corresponding flooding waiver. Given that the waiver would reduce stress on the city's sewer system during larger storm events and direct discharge is a common practice for sites close to larger waterbodies, City Staff is supportive of the submitted waiver request.

Section 14.6.3. Public Infrastructure and Community Safety Standards

A. Consistency with City Master Plans

Staff Comment: On November 21, 2016, the City Council accepted the Portland International Jetport Sustainable Airport Master Plan (Order 88-16/17). The 2018 Portland International Jetport Sustainability Airport Master Plan identified the acquisition of the central and eastern portion of the project site to be an intermediate priority of the airport. Order 81-21/22 was unanimously approved by the City Council on November 1, 2021 to purchase the land, which was previously used as a private valet parking service.

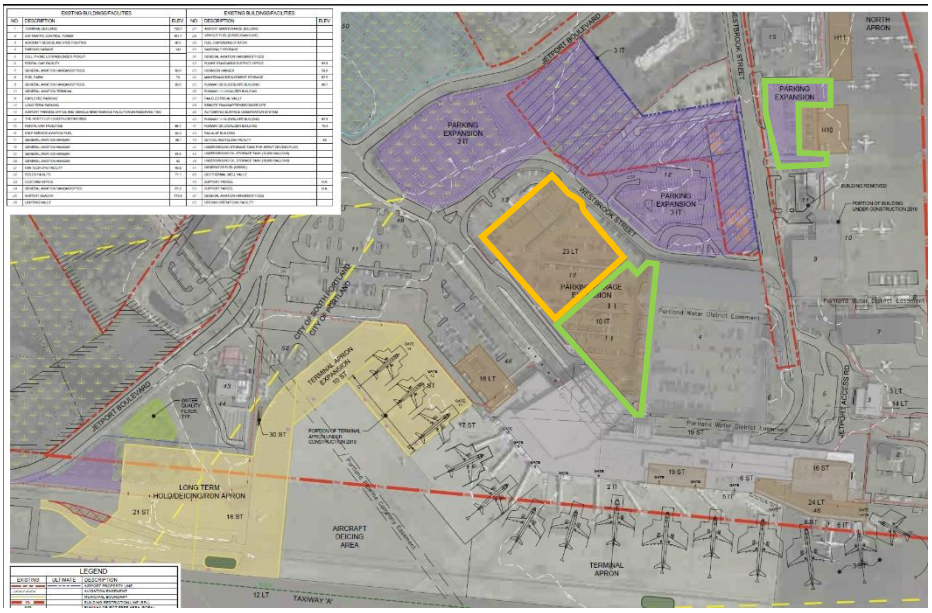


Figure 9: Development plan from *Portland International Jetport Sustainability Airport Master Plan* showing short, intermediate, and long-term development projects.

This project is listed as an intermediate-term project in the Master Plan (**Figure 9**). An additional surface parking expansion on the eastern side of Westbrook Street and a partial expansion of the parking garage are also listed as intermediate-term projects (outlined in green). A second parking expansion is also proposed as a long-term project (outlined in orange).

The proposed project is located in the A-B (Airport Business) zone, which is designated for the development of airport-related enterprises. Permitted uses in this zone typically include those associated with the operation of the airport terminal, individual airlines, and accessory uses that enhance the comfort and convenience of airport patrons and employees. Off-street parking is also a permitted use within the A-B zone. State regulations require zoning ordinances to be pursuant to and consistent with a comprehensive plan adopted by the municipal legislative body. The city's Comprehensive Plan reflects a broad array of goals and strategies, recognizing that policymakers must balance multiple concerns and policy objectives when making policy decisions. The City's zoning has been found consistent with its comprehensive plan, which guides land use decisions informed by various policy areas. Accordingly, the proposed project is a permitted use in the A-B zone, conforming with the zoning requirements and therefore aligns with the City's Comprehensive Plan.

B. Public Safety and Fire Prevention

Staff Comment: Entry and exit gates are proposed at least 30 feet from the City right-of-way and include Knox boxes to allow for emergency vehicle access.

Based on feedback from the Department of Public Works, the Applicant has provided internal sidewalks and additional signage to provide clearer direction for pedestrians to the terminal to minimize conflicts between pedestrians & motorists.

C. Public Utilities

Staff Comment: Electricity for the parking lots is proposed to be provided through existing underground service from the Jetport, and utility plans have been updated to confirm that lines would not create conflicts with the proposed stormwater detention tanks.

Connections to the City's storm drain are proposed, along with a waiver request to discharge directly to the Fore River. Two treatment & temporary detention tanks are proposed to discharge stormwater at the same or reduced volume as compared with the existing condition.

Section 14.6.4. Site Design Standards

A. Massing, Ventilation, and Wind Impact

Staff Comment: Not applicable. The proposed application does not propose a structure that would create massing, ventilation, or wind impacts.

B. Shadows

Staff Comment: Not applicable. The proposed application does not propose a structure that would create a significant shadow.

C. Snow and Ice Loading

Staff Comment: Complies. As part of the Jetport's larger snow removal strategy, the parking lot proposes removal to an off-site City storage location.

D. View Corridors

Staff Comment: Not applicable, since the site is not located along a view corridor.

E. Historic Resources

Staff Comment: The proposed development is not located within or within 100 feet of a local historic district, landmark, cemetery, or landscape. A copy of the application has been referred to the Maine Historic Preservation Commission (MHPC) for a Section 106 consultation and MHPC has determined that the project will have no impact on historic properties (Attachment Y).

F. Exterior Lighting

Staff Comment: The submitted photometric plan has been updated to provide information on the two types of luminaires proposed for the parking lot, with a total of 23 luminaires proposed for the parking lot. Information on the illumination and hours of operation (dusk to dawn) has been submitted and meets the standards of §12 of the Technical Manual. Existing street lighting along the City right-of-way complies with the standards of §10 of the Technical Manual.

G. Noise and Vibration

Staff Comment: Not applicable. The site does not propose the installation of utility equipment that will result in negative noise or vibration levels out of compliance with City requirements.

H. Signage and Wayfinding

Staff Comment: Updated signage is proposed to direct drivers to the parking lot from Loop Road, along with corresponding wayfinding signage throughout and around the parking lot to the terminal.

Sign permits will be required to be submitted to confirm compliance with Article 20 of the Land Use Code.

I. Design Standards

Staff Comment: Not applicable. The proposed development is not subject to the standards of the Design Manual.

XII. NEIGHBORHOOD MEETING AND PUBLIC COMMENT

Since the last hearing, five written public comments have been received which question the need for the project and express concerns related to the impact on surrounding natural resources. The Applicant held a Neighborhood Meeting on April 11, 2024, and 26 members of the public attended (Attachment DD). Comments raised at the Neighborhood Meeting focused on the environmental impacts of the project and support for alternative strategies to provide parking (e.g., prioritizing the structured parking expansion, expanded transit service). The Applicant has established a project webpage as part of the Jetport website (https://portlandjetport.org/parking-lot-expansion-information), which includes an audio recording from an earlier neighborhood meeting on the project on December 12, 2023.

XIII. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Department staff determines that the application PL-002853-2024, a Major Site Plan at 1001 Westbrook Street, seeking to expand an existing short-term paved parking lot and unpaved surface parking area and undeveloped land to create a paved parking lot with 667 long-term parking spaces, meets the applicable standards of Portland's Land Use Code.

XIV. PROPOSED MOTIONS

A. WAIVERS

On the basis of the application, plans, reports, and other information submitted by the applicant, findings and recommendations contained in the Planning Board Report for the public hearing on January 28, 2025 for application PL-002853-2024 at 1001 Westbrook Street relevant to the site plan standards of the Land Use Code and the City of Portland's Technical Manual, and other regulations, and the testimony presented at the Planning Board hearing:

1. **Sidewalks on Jetport Boulevard & Westbrook Street**
   The Planning Board [**finds/does not find**] based upon the City's Review, that extraordinary conditions exist or undue hardship may result from strict compliance with §14.6.1(B)(3)(a) of the Land Use Code, which requires the installation of a sidewalk along all site frontages, that substantial justice and the public interest are secured with the proposed variation in this standard, and that variation is consistent with the intent of the ordinance. The Planning Board [**waives/does not waive**] §14.6.1(B)(3)(a) of the Land Use Code to allow for no sidewalk to be installed on Jetport Boulevard and Westbrook Street.

2. Impacts to Significant Natural Features
   The Planning Board [finds/does not find] based upon the City's Review, that extraordinary conditions exist or undue hardship may result from strict compliance with §14.6.2(A)(1) of the Land Use Code which requires the preservation and protection of significant natural features through incorporation into the site design, that substantial justice and the public interest are secured with the proposed variation in this standard, and that variation is consistent with the intent of the ordinance. The Planning Board [waives/does not waive] §14.6.2(A)(1) of the Land Use Code to allow the fill of ±11,151 square feet of wetlands.

3. Parking Lot Island Landscaping
   The Planning Board [finds/does not find] based upon the City's Review, that extraordinary conditions exist or undue hardship may result from strict compliance with §14.6.2(C)(3)(a) of the Land Use Code, which requires the planting of two trees (or one tree and three shrubs) per five parking spaces in landscaped islands, that substantial justice and the public interest are secured with the proposed variation in this standard, and that variation is consistent with the intent of the ordinance. The Planning Board [waives/does not waive] §14.6.2(C)(3)(a) of the Land Use Code to permit the planting of 24 trees in landscaped islands.

4. Minimum Parking Lot Island Width
   The Planning Board [finds/does not find] based upon the City's Review, that extraordinary conditions exist or undue hardship may result from strict compliance with §4.5.5 of the Technical Manual, which requires a minimum parking lot island width of 8 feet (not including curbing), that substantial justice and the public interest are secured with the proposed variation in this standard, and that variation is consistent with the intent of the ordinance. The Planning Board [waives/does not waive] §4.5.5 of the Technical Manual to allow for the installation of a landscaped island where a portion of the island is less than 8 feet in width (3.5 feet).

5. Direct Discharge of Treated Stormwater into Fore River
   The Planning Board [finds/does not find] based upon the City's Review, that extraordinary conditions exist or undue hardship may result from strict compliance with §5(III) of the Technical Manual which requires compliance with Chapter 500 Rules for Stormwater Management, that substantial justice and the public interest are secured with the proposed variation in this standard, and that variation is consistent with the intent of the ordinance. The Planning Board [waives/does not waive] §5(III) of the Technical Manual to allow the direct discharge of treated stormwater from the site into the Fore River.

B. SITE PLAN REVIEW

On the basis of the application, plans, reports, and other information submitted by the applicant, findings and recommendations contained in the Planning Board Report for the public hearing on January 28, 2025 for application PL-002853-2024 at 1001 Westbrook Street relevant to the site plan regulations and the testimony presented at the Planning Board hearing, the Planning Board [finds/does not find] that the plan is in conformance with the site plan standards of the Land Use Code subject to the following conditions of approval:

PRIOR TO ISSUANCE OF THE BUILDING PERMIT

1. The applicant shall submit evidence of approvals from Maine DEP for the Site Location of Development & NRPA applications associated with the project.

2. The applicant shall provide an ability to serve letter from Central Maine Power (CMP).
3. The Applicant shall submit an updated site plan set detailing the materiality, height, and structural components of the proposed privacy fence screening the battery storage.

PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY

4. The Applicant shall submit verification that Level 1 chargers for 56 parking spaces have been installed in the structured parking at the Jetport.
5. The applicant shall contribute to the tree fund in the amount of $400 per tree for 127 trees, for a total of $50,800 associated with the waiver for parking lot island landscaping or the applicant shall provide the Planning Authority with documentation that the additional 127 trees have been planted throughout the Jetport property.

C. PLANNING BOARD DECISION

On the basis of the findings, conclusions, and recommendations contained in the Planning Board report for the public hearing on January 28, 2025 related to application PL-002853-2024 for 1001 Westbrook Street, which is attached to the draft approval letter and incorporated therein, the Planning Board **[adopts/does not adopt]** the approval letter as drafted as the Planning Board's decision for application PL-002853-2024, and authorizes the Planning Board Chair to sign the approval letter as drafted.

XV. ATTACHMENTS

Staff Attachments

1. October 28, 2024 Project Worksheet
2. October 28, 2024 City Staff Comments
3. 2008 Terminal Expansion Traffic Movement Permit Conditions of Approval
4. NRPA Permit Application 2024-02-29
5. SLOD Application 2024-02-29

Applicant's Documents

A. Cover Letter
A1. Applicant Response Letter 2024-05-10
A2. Applicant Response Letter 2024-08-30
A3. Applicant Response Letter 2024-11-11 (Satisfaction of TMP Conditions)
A4. Applicant Response Letter 2024-11-15
B. Major Site Plan Checklist
C. Right, Title, and Interest
D. Evidence of Approvals
D1. Army Corps of Engineers Authorization Letter 2024-08-14
E. Zoning Analysis Table
F. Conformity with Land Use Ordinance
F1. PWM Sustainability Action Evaluation Tool
G. Waiver Table 2024-11-21
G1. Alternatives Analysis
H. Financial Capacity
I. Technical Capacity
J. Impact on Surrounding Streets

K. Access and Circulation
L. Public Transit
M. Off-Street Parking
M1. EV Parking Demand Study
N. Preservation of Natural Features
O. Landscape Preservation
P. Site Landscaping and Buffers
Q. Water Quality, Stormwater & Erosion Control
Q1. Stormwater & ESC Construction Management Plan 2024-09-19
R. Consistency with Master Plans
S. Public Safety and Fire Prevention
T. Availability and Adequacy of Public Utilities
U. Massing, Ventilation, and Wind Impacts
V. Shadows
W. Snow and Ice Loading
X. View Corridor
Y. Historic Resources
Z. Exterior Lighting
Z1. On-Site Lighting Cut Sheets
AA. Noise and Vibration
BB. Signage and Wayfinding
BB1. Wayfinding Exhibit 2024-07-26
BB2. Wayfinding Exhibit 2024-11-14
CC. Zone-Related Design Standards
DD. April 11 Public Meeting Sign-In Sheet
EE. April 11 Public Meeting Presentation Materials
FF. April 11 Public Meeting Minutes
GG. Opportunities & Constraints Map
HH. 2018 Delineated Wetlands Near Pink Lot
II. Parking Exhibits
JJ. Landscape Exhibits
KK. Parking Counts (January 1, 2024 to October 31, 2024)
LL. Aviation Policy and Plans Office (APO) Terminal Forecast (January 2024)
MM. November 14, 2020 Memo to City Manager Jennings
NN. Ultimate Facilities Plans
OO. January 22, 2025 Cover Letter

Plans

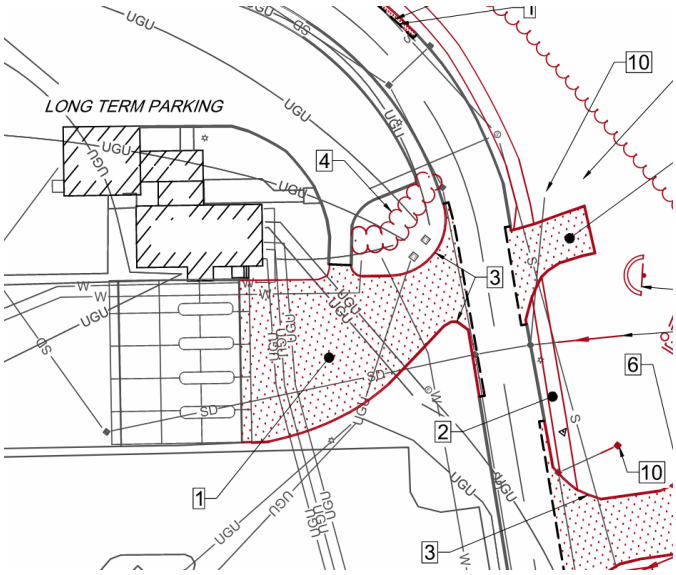
P1. Site Plan Set 2024-08-30
P2. Site Plan Set 2024-11-21

Public Comment

PC1: Emily Bernhard 2024-11-26
PC2: Carter Waldren 2025-01-08
PC3: Carter Waldren 2025-01-13
PC4: Carter Waldren 2025-01-20
PC5: Woody Howard 2025-01-22

General Comments

- The submitted site plan set shows work to straighten the exit driveway from the existing long-term surface and structured parking across from the site. Inclusion of this area as part of the site plan application would require review/compliance of the existing long-term parking site. City Staff recommend that the site plan set be updated to clarify that the proposed realignment of the driveway is to be completed as part of a separate project/building permit.



- The proposed fencing along Loop Road has raised concerns about the visibility of the *Glimpse* pieces proposed to be relocated. City Staff request a note be added to the site plan set stating that the final location of the pieces is to be reviewed by the Public Art Committee and is subject to change, to allow for these concerns to be addressed without necessitating a future site plan amendment.

Zoning Use Review (Article 6)			
Use Permissions (Table 6-E)			
Proposed Use	***Permitted, Conditional or Accessory Use***	***Zone***	***Use Standard***
Off-street parking	***Permitted***	***A-B***	***None***

Zoning Dimensional Review (Article 7)			
Dimensional Standards (Table 7-G)			
Standard	***Requirement***	***Proposed***	***Finding***
Lot area (min.)	***20,000 square feet***	***358,094 square feet***	***Complies***
Street frontage (min.)	***50 feet***	***1,450.17 feet***	***Complies***
Lot width (min.)	***50 feet***	***Not Applicable***	***Not Applicable***
Front Setback (min.)	***20 feet along Westbrook Street***	***Not Applicable***	***Not Applicable***
Rear Setback (min.)	***None***	***Not Applicable***	***Not Applicable***
Side Setback (min.)	***None***	***Not Applicable***	***Not Applicable***
Structure height (max.)	***75 feet***	***Not Applicable***	***Not Applicable***
Impervious surface ratio (max.)	***70%***	***48%***	***Complies***

Site Plan Review Standards (Sec. 14.6)

Transportation Standards (Sec. 14.6.1)

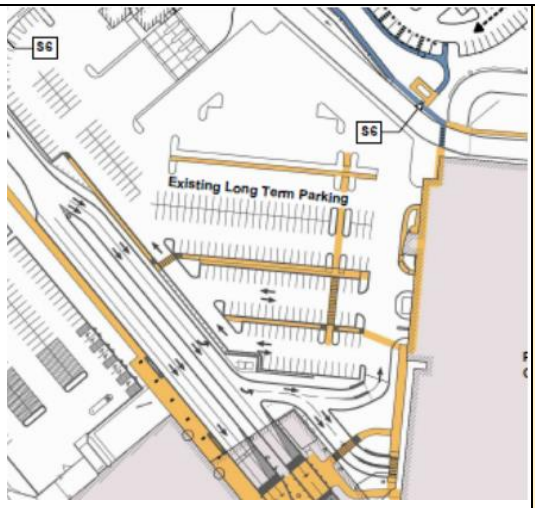
Standard	Discussion	Finding
Impact on Surrounding Street Systems	Overview: Sight distance calculations have been provided and meet minimum standards. A request was made to confirm that the conditions of the current Traffic Movement Permit (TMP) for the site have been met and that a new TMP does not need to be submitted. In the transportation memo, the response to Staff comments to confirm whether the conditions of the TMP were met states, *"Need responses from Paul Bradbury; email sent 5/10/24"*. Responses have not been received demonstrating that the conditions were met and is repeated as a comment. Enplanement data submitted demonstrates that a new TMP does not need to be submitted, but will likely need to be updated in 2025. City Staff are recommending a condition of approval that the update to the Traffic Movement Permit, in coordination with an updated to the Transportation Demand Management Plan for the campus to commence in 2025.	Not met
	Updates Requested • Submit confirmation that all of the conditions for the 2008 Terminal expansion TMP were satisfied.	
Access and Circulation	Overview: Sidewalks are required to be provided along all frontages. While the latest response letter states that there is an intent to submit a waiver, no sidewalk waiver request has been submitted for Jetport Boulevard. City Staff continue to request internal sidewalks of a similar design used in other surface parking lots of the Jetport campus to promote safer interactions between pedestrians & motorists. City Staff encourages revisions to the design of these internal sidewalks to align with desire lines to increase their use by pedestrians.	Not met
	Updates Requested • Update application materials to include a ≥6-foot wide internal sidewalk that connects to the sidewalk along the frontage of the site or submit a waiver request. • Update application materials to include a sidewalk along Jetport Boulevard or submit a waiver request.	
Public Transit Access	Overview: Given that an existing transit shelter is located within the airport terminal that is less than ¼ mile from the project site, the project is not required to install a transit shelter.	Met

Parking	Overview: Automobile and bicycle parking requirements are not explicitly listed for airports within Article 19 of the Land Use Code. All proposed spaces and aisles meet the minimum dimensional requirements. A waiver request has been submitted to allow the use of Level 1 chargers for the parking lot, with the submission of an EV demand study comparing the number of chargers to other airports in the region. Vehicles in the proposed parking lot are anticipated to be parked for periods of time commensurate with the Level 1 charging rates.	Met
Transportation Demand Management	Overview: The Jetport has an existing TDM plan for the 2008 terminal expansion and the proposed project does not meet a threshold for creating a separate TDM plan. Similar to the recommendation for the Traffic Movement Permit, City Staff will recommend a condition of approval that the campus TDM plan be updated in coordination with the Traffic Movement Permit update.	No action at this time
Environmental Quality Standards (Sec. 14.6.2)		
Standard	***Discussion***	***Finding***
Preservation of Significant Natural Features	Overview: A narrative has been submitted discussing the relocation of the proposed battery storage on the site to preserve a larger section of existing trees on the site. The proposed application proposes impacts to two wetlands (±8,618 square feet in area). A supporting assessment has been submitted that assesses the significance of the wetlands using functions & values established by the U.S. Army Corps of Engineers (ACOE). Based on the assessment, the Wetlands are not significant according to ACOE standards. The submitted narrative does not speak to preservation measures taken to avoid or minimize impacts to the wetlands on the site and should be updated to speak to this, since wetlands are identified as a significant natural feature in §14.6.2.(A) of the Land Use Code. Additionally, any modifications in the design as part of complying with Maine DEP's review of the NRPA & SLOD applications should also be noted. The project area does not propose development within a habitat block. Updates Requested • Update the supporting waiver justification to discuss steps taken to minimize impacts to the wetland on the site, along with any steps taken as part of the Maine DEP review to comply with State & Federal regulations. • Update the waiver table to include a waiver from §14.6.2(A)(1).	Not met
Landscape Preservation	Overview: The subject application proposes to remove the majority of trees >10" Diameter Breast Height (DBH) within the project area, while increasing the number of preserved trees from the previous submission through the relocation of the battery storage & removal of parking spaces. Some of the Ash trees proposed to be removed have been infected by Emerald Ash Borers.	Not met

	Submission of a waiver request & updated waiver table will be required to document what steps have been taken to minimize the removal of existing trees and how the overall landscape plan is meeting the landscape preservation replacement requirements of §14.6.2(B)(4) of the Land Use Code. **Updates Requested** • Submit an updated waiver table documenting the steps taken to minimize the removal of existing trees on site and how new plantings are being used to meet the landscape preservation replacement waiver requirements of §14.6.2(B)(4) of the Land Use Code.	
Site Landscaping and Buffers	**Overview:** The site has 2,295 feet of frontage as is required to provide a combination of 1 tree or six plantings per 30 feet (77 trees or 462 plantings). The site proposes preserving 25 trees and planting 167 new trees, exceeding the minimum requirement. In the response letter, the battery storage corral is proposed to be screened by landscaping and fencing. In the submitted site plan set, the type of fencing is not specified and will need to provide opaque screening to meet the standards of §14.6.2(C)(2)(a). 674 parking spaces are proposed, requiring the planting of 270 trees or 135 trees & 404 shrubs in landscaped islands at least 8 feet in width. As submitted, 25 trees & 9 shrubs are proposed to be planted in landscaped islands. Some of the islands not meeting the minimum width of 8 feet as required in §4.5.5 of the Technical Manual. City Arborist Mark Reiland has recommended that plantings in the parking lot should be excavated to a depth of at least 2 feet and backfill with several yards of high quality planting mix to improve establishment & long-term viability. The site has 1,243 feet of frontage along City rights-of-way and is required to provide a minimum of 36 street trees. The Applicant is proposing to utilize street alternatives to preserve 12 trees that are less than 20 feet from & visible from the right-of-way and plant 57 new trees within 20 feet from & visible from the right-of-way, exceeding the minimum required. **Updates Requested** • Update the site plan set to specify the type of fencing proposed for the battery storage corral. • Update the site plan set to meet the parking lot landscaping standards of §14.6.2(C)(3)(a) & landscape island width standard of §4.5.5 of the Technical Manual, or seek waivers from these standards through submission of an updated waiver table & supporting justification for the waiver(s) demonstrating that the site prevents the implementation of these standards. The supporting justification can, but does not have to, speak to how the intent of the standard is similarly achieved through trees & shrubs in the proposed landscaped peninsulas. • Update the landscape plan to note that plantings in the parking lot should be excavated to a depth of at least 2 feet and backfill with several yards of high quality planting mix.	Not met
Water Quality, Stormwater	**Overview:** The project proposes the use of two Contech stormfilters with storage to manage stormwater on-site. Additional information has been	Not met

Management and Erosion Control	provided to address the majority of comments from Lauren Swett on this system. Lauren Swett has requested review of the erosion control implementation when submitted as part of the construction phasing plan. The submitted design proposed directly discharging treated stormwater into Casco Bay and a waiver request has been submitted as part of the review of the SLOD amendment to meet Chapter 500 standards. As part of meeting the City of Portland standards, a corresponding waiver request shall be submitted for review to the City as part of meeting the City's standards of the Technical Manual. Copies of Maine DEP approvals for the NRPA and SLOD applications are requested to be submitted when available.	
	Updates Requested • Update the construction phasing plan to show ESC measures. • Submit an updated waiver table with a request for directly discharging treated stormwater into Casco Bay as part of meeting the City's stormwater standards. • Submit copies of NRPA and SLOD approvals, when available.	

Public Infrastructure and Community Safety Standards (Sec. 14.6.3)		
Standard	***Discussion***	***Finding***
Consistency with City Master Plans	Overview: On November 21, 2016, City Council accepted the Portland International Jetport Sustainable Airport Master Plan (Order 88-16/17). The Master Plan recommends strategies to improve the sustainability of the Jetport for operations and capital improvements. The subject project was included in the plan as an interim capital improvement. The Plan states that as of 2017, all capital improvement projects will use the Sustainability Action Evaluation Tool to identify opportunities to incorporate sustainability enhancements into the project, along with a life cycle cost analysis for the implementation of sustainability alternatives. The submitted application references that copies of these assessments were attached, but were not included as part of the comment response. Where feasible, City staff encourage the integration of sustainability enhancements, including, but not limited to ones identified in Table 7A of the Master Plan into the proposed project.	Not met
	Updates Requested • Submit a copy of Sustainability Action Evaluation Tool in Excel format • Submit a copy of the completed Sustainability Action Evaluation Tool for the subject project, including any corresponding life cycle cost analyses for sustainability alternatives.	

Public Safety and Fire Prevention	Overview: Entry and exit gates are proposed at least 30 feet from the City right-of-way and include Knox boxes to allow for emergency vehicle access. A signage/wayfinding plan has been submitted for the site, along with a response stating that the Applicant believes internal sidewalks would not be used by pedestrians in favor of the shortest path to Loop Road. DPW still finds the lack of internal sidewalk connections insufficient and recommends that the Jetport follows designs used for existing surface long-term parking as shown in the image to the right.  Updates Requested • Update the site plan set to provide internal sidewalks that reflect the design used in the image above, prioritizing a design where internal sidewalks follow desire lines.	Not met
Public Utilities	Overview: Electricity for the parking lots is proposed to be provided through existing underground service with the Jetport and the utility plan has been updated to show service. An ability to serve letter from Central Maine Power will be recommended as a condition of approval, if a letter is not received prior to action by the Planning Board. Connections to the City's storm drain are proposed, along with an anticipated waiver request to discharge directly to the Fore River. Two treatment & temporary detention tanks are proposed to discharge stormwater at the same or better rates than existing conditions.	No action at this time

Site Design Standards (Sec. 14.6.4)

Standard	***Discussion***	***Finding***
Massing, Ventilation and Wind Impact	Overview: Not applicable. The proposed application does not propose a structure that would create massing, ventilation, or wind impacts.	Not applicable
Shadow	Overview: Not applicable. The proposed application does not propose a structure that would create a shadow.	Not applicable
Snow and Ice Loading	Overview: Complies. The parking lot proposes snow removal to an off-site location that aligns with the campus snow management practices.	Met
View Corridors	Overview: Not applicable. The proposed application is not located along a view corridor.	Not applicable

Historic Resources	Overview: The proposed development is not located within or within 100 feet of a local historic district, landmark, cemetery, or landscape. A copy of the application has been referred to the Maine Historic Preservation Commission (MHPC) for a Section 106 consultation and MHPC has determined that the project will have no impact on historic properties.	Met
Exterior Lighting	Overview: An updated photometric plan has been submitted to specify that the proposed on-site lighting will include a combination of Beacon Viper Area/Site Lights that use LED lights and have zero up-light. Information on the hours each fixture will be operated and the timing devices used to control the hours set for illumination still needs to be provided. The proposed application continues to not comply with the following site lighting standards of §12.3 of the Technical Manual: • Surface parking average illuminance (0.5 fc required | 1.9 proposed) • Surface parking uniformity ratio (3:1 required | 3.8:1 proposed) • Surface parking maximum illuminance (4 fc required | 4.8 proposed) • Maximum lumens for fixture (20,000 maximum | 21,466-23,445 listed (24,005-25,053 listed on Beacon Viper Spec Sheets) As part of updating the application, please note that increased illuminance is permitted within a 10-foot perimeter of the credit card kiosks (Average: 10 fc | Maximum: 20 fc). Existing street lighting along the City right-of-way complies with the standards of Section 10 of the Technical Manual. Updates Requested • Update application materials to meet the standards of §12.3 of the Technical Manual or submit a narrative demonstrating how the photometric plan meets the standards of §12.3(11) of the Technical Manual. • Submit information on the hours each fixture will be operated & the timing devices used to set the hours of operation. • Confirm that the listed lumen levels on the photometric plan match the levels listed on the specification sheet for the on-site lighting.	Not met
Noise and Vibration	Overview: Not applicable. The site does not propose the installation of utility equipment that will result in negative noise or vibration.	Not applicable
Signage and Wayfinding	Overview: Updated signage is proposed to direct drivers to the parking lot from Loop Road and is shown on a wayfinding plan. As mentioned under the *Public Safety and Fire Prevention* section, DPW has requested changes to the internal sidewalks for the parking lot that may necessitate the relocation/addition of wayfinding signage. Sign permits will be required to be submitted to confirm compliance with Article 20 of the Land Use Code.	Not met
Design Standards	Overview: Not applicable. The proposed development is not subject to standards of the Design Manual.	Not applicable

Att. 2

Zachary Powell <zpowell@portlandmaine.gov>

1001 Westbrook St - PL-002853-2024

Ann Machado <amachado@portlandmaine.gov> Thu, Oct 10, 2024 at 1:55 PM
To: Zachary Powell <zpowell@portlandmaine.gov>

Zach -

I just took a look at this site plan.

I didn't see any zoning issues.

Feel free to reach out to me if you have any questions.

Ann

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

Zachary Powell <zpowell@portlandmaine.gov>

1001 Westbrook Street - Status Traffic Review Comments

1 message

Tom Errico <thomas.errico@tylin.com> Tue, Oct 15, 2024 at 11:06 AM
To: "zpowell@portlandmaine.gov" <zpowell@portlandmaine.gov>
Cc: Jeremiah Bartlett <JBartlett@portlandmaine.gov>, Kristoffer DeVolder <kdevolder@portlandmaine.gov>

Hi Zack – I have reviewed the revised application materials and have the following status review comments.

- The proposed project is proposing three driveway curb cuts and if the abutting streets are classified as public streets, a waiver for the number of driveways may be required.

Status: The applicant shall provide documentation for a waiver for the provision of three driveways to the site.

- The Traffic Movement Permit issued for the Terminal Expansion noted the following. The applicant shall provide documentation that the current TMP is valid.
  - *As related to conditions of approval numbered 2, 3, and 4 associated with the Traffic Movement Permit, at such time as the Jetport reaches enplanements of 1.1 million for 2 out of 4 years the Jetport shall have*

    used the capacity under the Traffic Movement Permit and shall be required to submit an updated Traffic Movement Permit Application to the City.

Status: Based upon enplanement data provided by the applicant the above noted threshold has not been met and accordingly an updated Traffic Movement Permit is not required. Based upon the information, year 2024 enplanements appear to be on track to meet the 1.1 million threshold and an updated TMP may be required. It is suggested that the applicant report final enplanement data at the conclusion of 2024 and update the TMP if required.

- The applicant shall confirm that all requirements of the TMP were met.

Status: To clarify, the applicant shall note if all mitigation requirements of the TMP were implemented.

- I concur with comments from DPW regarding pedestrian facility issues.

Status: Refer to DPW comments.

- Sight distance measurements shall be provided at proposed driveway locations.

Status: The requested information has been provided and acceptable sight distance will be provided. I have no further comment.

<u>Additional Comment</u>

- **The applicant shall perform a sidewalk waiver analysis for all property frontages that do not include an existing or proposed sidewalk. The waiver analysis shall comply with the city ordinance requirements.**

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

TYLin

12 Northbrook Drive
Building A, Suite One
Falmouth, ME 04105, United States

TYLin.com

Zachary Powell <zpowell@portlandmaine.gov>

1001 Westbrook Street Review

1 message

Lauren Swett <lswett@woodardcurran.com> Tue, Oct 15, 2024 at 2:21 PM
To: Zachary Powell <zpowell@portlandmaine.gov>
Cc: Kristoffer DeVolder <kdevolder@portlandmaine.gov>, Justin Pellerin <jrp@portlandmaine.gov>

Hi Zach,

I've reviewed the resubmission for 1001 Westbrook Street and have the following remaining minor comments.

- The Applicant should provide copies when received of MaineDEP approvals for NRPA and Site Location of Development Permits.
- The Applicant has noted that erosion control implementation will be shown on the Construction Phasing Plan. The currently submitted plan does not show these measures. This can be reviewed when submitted.

They've made a few tweaks to the stormwater storage systems and have addressed all my other stormwater comments and questions.

Thanks,

Lauren

Lauren Swett, PE*
Technical Manager | Principal

Woodard & Curran

207.558.3763 207.219.3591 woodardcurran.com

lswett@woodardcurran.com

12 Mountfort St, Portland, ME 04101

*Licensed in Maine, New Hampshire, and Georgia

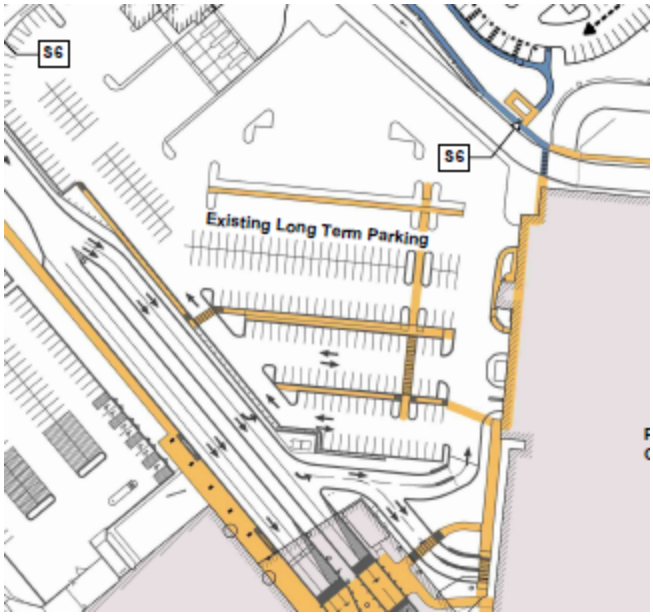
Zachary Powell <zpowell@portlandmaine.gov>

Comments for 1001 Westbrook Street (PL-002853-2024)

Kristoffer DeVolder <kdevolder@portlandmaine.gov> Wed, Oct 16, 2024 at 1:33 PM
To: Zachary Powell <zpowell@portlandmaine.gov>
Cc: Mark Reiland <mreiland@portlandmaine.gov>

Hello Zach,

Below are DPW's comments for PL-002853-2024 1001 Westbrook Street. Let me know if you have any questions.

- **PL-002853-2024 1001 Westbrook Ave** Major Site Plan
  - Comments for Review
  - DPW Transportation
    - DPW still has concerns regarding internal pedestrian circulation and believes that it is insufficient. See the existing Long Term Parking internal pedestrian access as an example of how prior projects have provided this at the Jetport.
    - 

    -
  - DPW Water Resources
    - No comments

Thank you,
Kris
[Quoted text hidden]
--
Kris DeVolder, PE
Sr. Engineer
City of Portland Department of Public Works
212 Canco Rd, City of Portland, ME 04103
kdevolder@portlandmaine.gov
Phone: (207) 874-8817

public works

Zachary Powell <zpowell@portlandmaine.gov>

Re: Portland Jetport Parking comments

Matt Grooms <mgrooms@portlandmaine.gov> Thu, Oct 24, 2024 at 11:52 AM
To: Mark Reiland <mreiland@portlandmaine.gov>
Cc: Zachary Powell <zpowell@portlandmaine.gov>

---------- Forwarded message ---------
From: **Mark Reiland** <mreiland@portlandmaine.gov>
Date: Thu, Oct 24, 2024 at 11:16 AM
Subject: Portland Jetport Parking comments
To: Matt Grooms <mgrooms@portlandmaine.gov>, Eric Freeman <efreeman@portlandmaine.gov>

Hi all,

I couldn't remember who the reviewer is, but ehre are comments for the Jetport Parking:

- Plan is approved by Parks Dept with following recommendation:
  - In the median/island plantings within the parking areas it would greatly improve establishment and long term viability if the planting islands were excavated to a depth of at least 24 inches and backfilled with several yards of high quality planting mix

Mark Reiland
City Arborist

City of Portland, Maine

212 Canco Road - Suite A
Portland, ME 04103

--
Matthew Grooms, AICP (he/him/his)
Development Review Services Manager
Planning & Urban Development Department
389 Congress Street
Portland, ME 04101
mgrooms@portlandmaine.gov
www.portlandmaine.gov
(207) 874-8699

MOTIONS AS PRESENTED AND VOTED BY THE PLANNING BOARD ON AUGUST 12, 2009 FOR THE PORTLAND JETPORT EXPANSION

On the basis of plans and materials submitted by the applicant and on the basis of information contained in Planning Report #16-09 and Planning Board Report #19-09 and on the basis of materials submitted under the request for reconsideration, and memorandum dated August 6, 2009, and materials and testimony of the August 12, 2009 public hearing relevant to standards for site plan regulations, the Planning Board finds that with the imposition of conditions the plan is in conformance with the site plan standards of the City of Portland Land Use Code and the Traffic Movement Permit, subject to the following conditions of approval:

Conditions of Approval:

1. Stormwater
   Prior to issuance of a Building Permit the applicant shall receive approval from the MDEP for all stormwater systems.

2. International Parkway/Jetport Boulevard Intersection
   A. The applicant shall install traffic improvement signs and pavement markings at the intersection within six months from the date of Planning Board approval. The improvements shall be subject to the approval of the Department of Public Services.

   B. A feasibility study shall be conducted that reviews options to address the anticipated capacity issues of the intersection within a year from the date of Planning Board approval. The potential mitigation options reviewed shall include: a full traffic signal warrant study conducted according to the MUCTD and MaineDOT requirements and coordinated with the Department of Public Services, construction of a roundabout, construction of a realigned intersection, maintaining a two-way STOP sign control and adding intersection capacity to attain acceptable levels of service.

   C. Prior to issuance of a Certificate of Occupancy permit, the applicant shall implement all recommendations from the feasibility study.

3. Congress Street/Westbrook Street Intersection
   A. The applicant shall contribute $10,600 towards the installation of street improvements identified by the Department of Public Services. Specific improvements as represented by the applicant shall include:

      i. Pedestrian countdown device;
      ii. A crosswalk with colored stamping, as approved by the Historic Preservation Department; and
      iii. Install a sidewalk between the Westbrook St. and Waldo St. with a crosswalk if the right-of-way is owned by the city.

B. The applicant shall install video detection equipment or contribute $9,400 for such installation in accordance with the Department of Public Services.

C. Prior to the Certificate of Occupancy the applicant shall ensure that all identified traffic mitigation measures are fully funded and implemented by this project through a financial contribution no less than $20,000.

4. Johnson Road/Turnpike Connector/Turnpike Northbound Ramps

A. Prior to issuance of a Certificate of Occupancy the applicant shall be responsible for interconnecting traffic signals at the Johnson Road/Jetport Boulevard/Turnpike Connector, Turnpike Connector/Turnpike NB Ramps, Turnpike Connector/SB Ramps, and Congress Street/Turnpike Connector/Hutchins Drive intersections. Work shall include installing necessary equipment, conducting traffic counts, and developing and inputting timing plans to allow for coordination, and field adjusting once all work has been completed.

B. Prior to issuance of a Certificate of Occupancy the applicant shall be responsible for constructing an eastbound right turn lane on the connector for right turning vehicles onto I-95 NB ramp. The length shall be the maximum allowable without requiring widening of the I-95 overpass.

5. Enplanements

As related to conditions of approval numbered 2, 3, and 4 associated with the Traffic Movement Permit, at such time as the Jetport reaches enplanements of 1.1 million for 2 out of 4 years the Jetport shall have used the capacity under the Traffic Movement Permit and shall be required to submit an updated Traffic Movement Permit Application to the City.

6. Travel Demand Management Plan

A. The applicant shall submit an annual TDM report for review and approval by the Planning Authority, with an initial report submitted within 12 months following the issuance of the Certificate of Occupancy for Terminal Expansion. The report shall summarize the current program elements and participation in the program.

B. Prior to the issuance of a Certificate of Occupancy, as part of the TDM, the applicant shall report to the Planning Board the steps taken to publicize that the preferred route taken to the Jetport are Congress St./Jetport Exit 46 from the Turnpike and the Westbrook Street/Jetport Exit 3 from 295 and other steps to increase public awareness in promoting these routes including but not limited to the following:

i. Alteration of the Jetport Directions Web page;
ii. Signage at the 5B exit informing drivers the "Best Route to Jetport" is Exit 3; and
iii. Inclusion of the preferred route in all marketing launching the "new, improved" Jetport.

7. Trail
The applicant will use good faith efforts to obtain FAA approval for location of a trail along the Fore River from Yellowbird Lane to the South Portland City line, which approval need not encompass an easement or permanent encumbrance upon the Jetport property and may be revocable if deemed necessary for future Jetport improvements, and shall pursue such approval with the FAA at offices of higher authority than the New England Region Office, or, failing approval of a trail in said location, shall pursue FAA approval for the alternate trail connection location as presented to the Planning Board by the applicant and depicted on Board A (unlabeled) at the August 11, 2009 public hearing, and shall dedicate such trail via easement to the City or City designee, subject to any FAA requirements related thereto. If FAA approval is not obtained for such trail location, then applicant shall submit one further alternate location for such trail in a location acceptable to the FAA if such location can be determined, and if no such location can be agreed upon after best efforts, then no such trail or easement shall be required.

8. North/South Runway
If the applicant decides to implement a proposal for expansion of the north/south runway, the applicant shall return to the Planning Board for review of that expansion concerning impacts to adjacent property owners and its affect on capacity of the airport facilities within the City of Portland.

9. Noise Compatibility Program
The Jetport shall comply with its adopted noise compatibility program approved by the FAA, as it may be revised from time to time.

Vote passed 4 in favor (Lewis, Patterson, Lowry, Tevanian) – 1 opposed (Silk)

Att. 4

SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Maine Department of Environmental Protection
38 M.R.S.A. §§480-A to 480-BB
NRPA Application

for:

Surface Parking Expansion at the Portland International Jetport Portland, Maine

Prepared for:

Portland International Jetport
1001 Westbrook Street
Portland, ME 04101

Prepared by:

Sebago Technics, Inc.
75 John Roberts Road, Suite 4A
South Portland, Maine 04106

February 2024

TABLE OF CONTENTS

NRPA Application/Signature Page

Attachment 1	Title, Right, or Interest
Attachment 2	Project Description/Site Location Map
Attachment 3	Public Notice/Public Informational Meeting
Attachment 4	Resource Information
Attachment 5	Avoidance and Minimization/Alternatives Analysis
Attachment 6	Erosion Control
Attachment 7	Existing Conditions Site Photographs
Attachment 8	Impact Figure
Attachment 9	Maine Historic Preservation Inquiry/Response

Department of Environmental Protection
Bureau of Land Resources
17 State House Station
Augusta, Maine 04333
Telephone: 207-287-7688

FOR DEP USE
ATS #_____
L- _____
Total Fees: _____
Date Received: _____

APPLICATION FOR A NATURAL RESOURCES PROTECTION ACT PERMIT

[1] **Name of Applicant:** City of Portland c/o Paul Bradbury	[5] **Name of Agent:** Sebago Technics, Inc
[2] **Applicant's Mailing Address:** 1001 Westbrook St, Portland ME	[6] **Agent's Mailing Address:** 75 John Roberts Rd, South Portland
[3] **Applicant's Daytime Phone:** 207-874-8877	[7] **Agent's Daytime Phone:** 207-200-2073
[4] **Applicant's Email Address:** phb@portlandmaine.gov	[8] **Agent's Email Address:** omccullough@sebagotechnics.com

[9] **Location of Activity (nearest Road, Street, Rt.#):** Jetport Boulevard & International Parkway	[10] **Town:** Portland	[11] **County:** Cumberland

[12] Type of Resource: (Check all that apply)
- ❒ River, stream or brook
- ❒ Great Pond
- ❒ Coastal Wetland
- ☑ Freshwater Wetland
- ❒ Wetland Special Significance
- ❒ Significant Wildlife Habitat
- ❒ Fragile Mountain

[13] Name of Resource: unknown

[14] Amount of Impact (sq. ft.):
Fill: 8,618 s.f.
Dredging/Veg Removal/Other:

[15] Type of Wetland: (Check all that apply)
- ☑ Forested
- ❒ Scrub Shrub
- ❒ Emergent
- ❒ Wet Meadow
- ❒ Peatland
- ❒ Open Water
- ❒ Other_____

FOR FRESHWATER WETLANDS

Tier 1	*Tier 2*	*Tier 3*
❒ 0 – 4,999 sq. ft. ❒ 5,000 – 9,999 sq. ft. ❒ 10,000 – 14,999 sq. ft.	❒ 15,000 – 43,560 sq. ft.	❒ > 43,560 sq. ft. or ☑ Smaller than 43,560 sq. ft., not eligible for Tier 1

[16] Proposed Start Date and Brief Activity Description:
Proj. start: fall 2024. the proposed project involves the construction of additional surface parking lots at the Portland International Jetport

[17] Size of Lot or Parcel & UTM Locations: ☑ _____ square feet, or 13+ acres UTM Northing:_____UTM Easting:_____

[18] Title, Right or Interest:
☑ Own ❒ Lease ❒ Purchase Option ❒ Written Agreement

[19] **Deed Reference Numbers:** Book: see Exhibit A Page:	[20] **Map and Lot Numbers:** Map: see Exhibit A Lot:
[21] **DEP Staff Previously Contacted:** Marybeth Richardson	[22] **Part of a larger project:** ❒ Yes ☑ No **After-the-Fact:** ❒ Yes ☑ No

[23] **Resubmission of Application?** ❒ Yes ☑ No	**If yes, previous application #:**	**Previous project manager:**
[24] **Written Notice of Violation?** ❒ Yes ☑ No	**If yes, name of DEP enforcement staff involved:**	[25] **Previous Wetland Alteration:** ☑ Yes ❒ No

[26] Detailed Directions to the Project Site:
Head south on I-95 to Jetport exit right on Skyway Dr, straight through light onto Jetport Blvd,

[27]

TIER 1	TIER 2/3 AND INDIVIDUAL PERMITS	
☑ Title, right or interest documentation ☑ Topographic Map ☑ Narrative Project Description ☑ Plan or Drawing (8 1/2" x 11") ☑ Photos of Area ☑ Statement of Avoidance & Minimization ☑ Statement/Copy of cover letter to MHPC	☑ Title, right or interest documentation ☑ Topographic Map ☑ Copy of Public Notice/Public Information Meeting Documentation ☑ Wetlands Delineation Report (Attachment 1) that contains the Information listed under Site Conditions ☑ Alternatives Analysis (Attachment 2) including description of how wetland impacts were Avoided/Minimized	☑ Erosion Control/Construction Plan ☑ Functional Assessment (Attachment 3), if required ❒ Compensation Plan (Attachment 4), if required ❒ Appendix A and others, if required ☑ Statement/Copy of cover letter to MHPC ❒ Description of Previously Mined Peatland, if required

FEES, CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2

[28] FEES

FEE: I will pay the Natural Resources Protection Act Permit fee (https://www.maine.gov/dep/feeschedule.pdf) by:

☐ **Credit Card –** Pay online through the **Payment Portal. (Attach payment confirmation when filing this application form.)**

☑ **Check** – Fill in all the information below and mail a copy of this form (without attachments) and a check made payable to "Treasurer, State of Maine," to: Maine DEP, 17 State House Station, Augusta, ME 04333-0017.

Name: Sebago Technics, Inc **Phone:** 200-2073 **Ext.** **Check #:** 89449 **Email Filing Date:** 02/29/2024

IMPORTANT
IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following:

DEP SIGNATORY REQUIREMENT

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor a permit be issued.

CORPS SIGNATORY REQUIREMENT

USC Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry shall be fines not more than $10,000 or imprisoned not more than five years or both. I authorize the Corps to enter the property that is subject to this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

DEP SIGNATORY REQUIREMENT

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Further, I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this application by emailing the decision to the address located on the front page of this application (see #4 for the applicant and #8 for the agent)."

_____ ___Date: _____
SIGNATURE OF AGENT/APPLICANT

Signature of Agent: _____ __Date: 02/29/2024

NOTE: Any changes in activity plans must be submitted to the DEP and the Corps in writing and must be approved by both agencies prior to implementation. Failure to do so may result in enforcement action and/or the removal of the unapproved changes to the activity.

Attachment 1

Title, Right, or Interest

EASEMENTS ON AIRPORT PROPERTY

MAP KEY	GRANTOR	GRANTEE	BOOK/PAGE PLAN NO.	INSTRUMENT	DATE	AREA	REMARKS
E100	STATE OF MAINE	PORTLAND PIPE LINE CORPORATION	3052/765	INDENTURE	08/14/68		
E101	CITY OF PORTLAND	PORTLAND GAS AND LIGHT COMPANY	2462/254	QUIT CLAIM	03/24/59		
E103	CITY OF PORTLAND	PORTLAND WATER DISTRICT	8333/36	EASEMENT	07/09/88		
E104	CITY OF PORTLAND	PORTLAND WATER DISTRICT	2318/11	EASEMENT	10/05/56		
E105	CITY OF PORTLAND	CHAPLIN CORPORATION	2392/289	QUIT CLAIM	01/17/58		DRAINAGE
E106	CITY OF PORTLAND	PORTLAND PIPE LINE COMPANY	1655/221	EASEMENT	10/09/41		
E107	BURTON DENSMORE & GERTRUDE L. DENSMORE	PORTLAND PIPE LINE COMPANY	1646/6	EASEMENT	07/14/41		SEE KEY MAP NO. 36
E108	WALTER C. & ELEANOR JOHNSON NIELSEN, NELLIE R. JOHNSON	PORTLAND PIPE LINE COMPANY	1646/198	EASEMENT	10/03/41		SEE KEY MAP NO. 3
E109	ISSAC FAIRWEATHER	PORTLAND PIPE LINE COMPANY	1646/4	EASEMENT	07/14/41		SEE KEY MAP NO. 18
E110	CITY OF PORTLAND	PORTLAND PIPE LINE CORPORATION	2889/575	EASEMENT	04/20/65		SEE KEY MAP NO. 61, 47, 40, 38 & 45
E111	WILFRED A. HAY, TRUSTEE OF CLINTON C. PHINNEY	SOCONY-VACUUM OIL COMPANY, INC.	1916/392	EASEMENT	07/03/48		SEE KEY MAP NO. 39
E112	FRANK P. CUMMINGS, TRUSTEE OF LEON F. CUMMINGS	SOCONY-VACUUM OIL COMPANY, INC.	1891/137	EASEMENT	12/19/47		SEE MAP KEY NO. 47 (20 FOOT WIDTH)
E113	FRNCIS B. EVANS	SOCONY-VACUUM OIL COMPANY, INC.	1943/446	EASEMENT	01/31/49		SEE KEY MAP NO. 41
E114	CITY OF PORTLAND	PORTLAND WATER DISTRICT	3028/473	INDENTURE	01/31/68		SEE KEY MAP NO. 46
E115	EDWARD S. FINKS AND DOROTHY L. FINKS	PORTLAND WATER DISTRICT	2383/121	WAR. DEED	11/12/57		SEE KEY MAP NO. 25 & 26
E116	CITY OF PORTLAND	PORTLAND WATER DISTRICT	4493/349	EASEMENT	09/14/79		SEE KEY MAP NO. 26 & 27
E117	CITY OF PORTLAND	PORTLAND PIPE LINE CORPORATION	13331/23	EASEMENT	09/10/97		SEE KEY MAP NO. 78
E118	CITY OF PORTLAND	MOBIL PIPE LINE COMPANY	15081/259	INDENTURE	10/01/99		SEE KEY MAP NO. 78
E119	CITY OF PORTLAND	PORTLAND WATER DISTRICT	12451/119	EASEMENT	04/16/96		
E120	CITY OF PORTLAND	CENTRAL MAINE POWER	28512/44	EASEMENT	09/08/10		
E121	CITY OF PORTLAND	CENTRAL MAINE POWER	28512/43	EASEMENT	09/08/10		

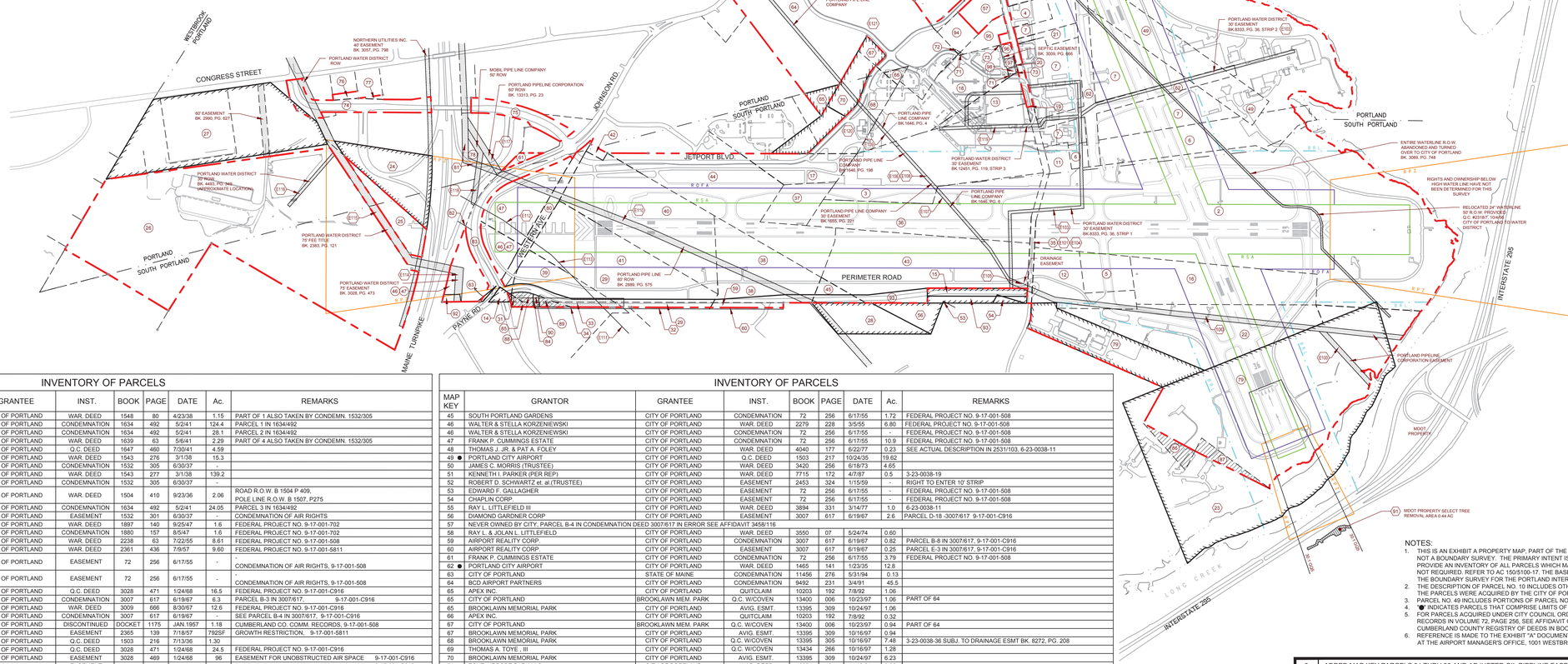
NORTH

Magnetic Variance 18° 34' West (February 2006) Annual Rate of Change 00° 6' East (February 2006)

S 14°-51'-00" W

LEGEND

EXISTING	FUTURE	ITEM
		RUNWAY PROTECTION ZONE
		EASEMENT (AVIGATIONAL)
		AIRPORT PROPERTY LINE
		CITY LINE
		BUILDING RESTRICTION LINE (BRL)
		RUNWAY OBSTACLE FREE AREA (ROFA)
		RUNWAY SAFETY AREA (RSA)
		LOT LINES
		RIGHT OF WAY EASEMENTS-UTILITIES
		MEMORANDUM OF AGREEMENT (MOA) FOR ACCESS
(xx)		PROPERTY PARCEL
xx		EASEMENT PARCEL / MOA AREA



INVENTORY OF PARCELS

MAP KEY	GRANTOR	GRANTEE	INST.	BOOK	PAGE	DATE	Ac.	REMARKS
1 ●	HAROLD SEIDERS	CITY OF PORTLAND	WAR. DEED	1548	80	4/23/38	1.15	PART OF 1 ALSO TAKEN BY CONDEMN. 1532/305
2 ●	HERBERT JACKSON	CITY OF PORTLAND	CONDEMNATION	1634	492	5/2/41	124.4	PARCEL 1 IN 1634/492
3 ●	FAIRWEATHER, NEILSON & LARRABEE	CITY OF PORTLAND	CONDEMNATION	1634	492	5/2/41	28.1	PARCEL 2 IN 1634/492
4 ●	GEORGE W. MILLS	CITY OF PORTLAND	WAR. DEED	1639	63	5/6/41	2.29	PART OF 4 ALSO TAKEN BY CONDEMN. 1532/305
5 ●	STATE OF MAINE	CITY OF PORTLAND	Q.C. DEED	1647	460	7/30/41	4.59	
6 ●	CLIFFORD STRANGE	CITY OF PORTLAND	WAR. DEED	1543	276	3/1/38	15.3	
6 ●	CLIFFORD STRANGE	CITY OF PORTLAND	CONDEMNATION	1532	305	6/30/37	-	
7 ●	PORTLAND CITY AIRPORT	CITY OF PORTLAND	WAR. DEED	1543	277	3/1/38	139.2	
7 ●	PORTLAND CITY AIRPORT	CITY OF PORTLAND	CONDEMNATION	1532	305	6/30/37	-	
8 ●	FLOELLA A. MAXWELL	CITY OF PORTLAND	WAR. DEED	1504	410	9/23/36	2.06	ROAD R.O.W. B 1504 P 409, POLE LINE R.O.W. B 1507, P275
9 ●	MILLIKEN HEIRS & CUMMINGS ESTATE	CITY OF PORTLAND	CONDEMNATION	1634	492	5/2/41	24.05	PARCEL 3 IN 1634/492
10 ●	ROBERT D. JACKSON	CITY OF PORTLAND	EASEMENT	1532	301	6/30/37	-	CONDEMNATION OF AIR RIGHTS
11	CLIFFORD STRANGE	CITY OF PORTLAND	WAR. DEED	1897	140	9/25/47	1.6	FEDERAL PROJECT NO. 9-17-001-702
11	CLIFFORD STRANGE	CITY OF PORTLAND	CONDEMNATION	1880	157	8/5/47	1.6	FEDERAL PROJECT NO. 9-17-001-702
12	STATE OF MAINE	CITY OF PORTLAND	WAR. DEED	2238	63	7/22/55	8.61	FEDERAL PROJECT NO. 9-17-001-508
13	ELEANOR J. NIELSON	CITY OF PORTLAND	WAR. DEED	2361	436	7/9/57	9.60	FEDERAL PROJECT NO. 9-17-001-5811
14	EDNA MAXFIELD	CITY OF PORTLAND	EASEMENT	72	256	6/17/55	-	CONDEMNATION OF AIR RIGHTS, 9-17-001-508
15	MERLE P. CHAPLIN	CITY OF PORTLAND	EASEMENT	72	256	6/17/55	-	CONDEMNATION OF AIR RIGHTS, 9-17-001-508
16	STATE OF MAINE	CITY OF PORTLAND	Q.C. DEED	3028	471	1/24/68	16.5	FEDERAL PROJECT NO. 9-17-001-C916
17	BROOKLAWN MEM. PARK	CITY OF PORTLAND	CONDEMNATION	3007	617	6/19/67	6.3	PARCEL B-3 IN 3007/617, 9-17-001-C916
18	BERTRAM J. FAIRWEATHER	CITY OF PORTLAND	WAR. DEED	3009	666	8/30/67	12.6	FEDERAL PROJECT NO. 9-17-001-C916
18	BERTRAM J. FAIRWEATHER	CITY OF PORTLAND	CONDEMNATION	3007	617	6/19/67	-	SEE PARCEL B-4 IN 3007/617, 9-17-001-C916
19	CUMBERLAND COUNTY COMMISSIONERS	CITY OF PORTLAND	DISCONTINUED	DOCKET	1175	JAN.1957	1.18	CUMBERLAND CO. COMM. RECORDS, 9-17-001-508
20	LLEWELLYN PRESSLEY	CITY OF PORTLAND	EASEMENT	2365	139	7/18/57	792SF	GROWTH RESTRICTION, 9-17-001-5811
21 ●	PORTLAND CITY AIRPORT	CITY OF PORTLAND	Q.C. DEED	1503	216	7/13/36	1.30	
22	STATE OF MAINE	CITY OF PORTLAND	Q.C. DEED	3028	471	1/24/68	24.5	FEDERAL PROJECT NO. 9-17-001-C916
23	STATE OF MAINE	CITY OF PORTLAND	EASEMENT	3028	469	1/24/68	96	EASEMENT FOR UNOBSTRUCTED AIR SPACE 9-17-001-C916
24	HARRY HARMON & GEORGE HUTCHINS	CITY OF PORTLAND	EASEMENT	3010	683	8/31/67	9.2	EASEMENT FOR UNOBSTRUCTED AIR SPACE 9-17-001-C916
24	HARRY HARMON & GEORGE HUTCHINS	CITY OF PORTLAND	EASEMENT	3007	617	6/19/67	2	PARCEL D-1 IN 3007/617, 9-17-001-C916
25	EDWARD S. & DOROTHY L. FINKS	CITY OF PORTLAND	WAR. DEED	2457	262	2/13/59	4.30	FEDERAL PROJECT NO. 9-17-001-5912
26	EDWARD S. & DOROTHY L. FINKS	CITY OF PORTLAND	WAR. DEED	2457	262	2/13/59	86.09	FEDERAL PROJECT NO. 9-17-001-5912
27	CITY OF PORTLAND	W.H. NICHOLS CO.	WAR. DEED	2996	627	4/4/67	28.77	PARCEL SOLD-FAA RELEASE 2/27/67 AVIG. ESMT. RETAINED
28	BERGEN ASSOCIATES INC.	CITY OF PORTLAND	EASEMENT	3007	617	6/19/67	5.62	PARCEL D-1 IN 3007/617, 9-17-001-C916
29	ADC BUILDING FUND INC. et. als.	CITY OF PORTLAND	CONDEMNATION	3007	617	6/19/67	1.01	PARCEL B-2 IN 3007/617, 9-17-001-C916
30	OTIS J. & DOROTHY J. AUGUST	CITY OF PORTLAND	WAR. DEED	3909	306	9/17/76	2.25	6-23-0038-10
31	ADC BUILDING FUND INC.	CITY OF PORTLAND	CONDEMNATION	3007	617	6/19/67	0.11	PARCEL B-6 IN 3007/617, 9-17-001-C916
32	ADC BUILDING FUND INC.	CITY OF PORTLAND	EASEMENT	3007	617	6/17/67	0.28	PARCEL E-2 IN 3007/617, 9-17-001-C916
33	ADC BUILDING FUND INC.	CITY OF PORTLAND	CONDEMNATION	3007	617	6/17/67	1.31	PARCEL B-1 IN 3007/617, 9-17-001-C916
34	ADC BUILDING FUND INC.	CITY OF PORTLAND	EASEMENT	3007	617	6/17/67	0.32	PARCEL E-1 IN 3007/617, 9-17-001-C916
35	CUMBERLAND COUNTY COMMISSIONERS	CITY OF PORTLAND	DISCONTINUED	21	226	1955	2.30	FEDERAL PROJECT NO. 9-17-001-508
36	BURTON DENSMORE	CITY OF PORTLAND	WAR. DEED	2236	399	7/12/55	20	FEDERAL PROJECT NO. 9-17-001-508
36	BURTON DENSMORE	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
37	BROOKLAWN MEM. PARK	CITY OF PORTLAND	WAR. DEED	2257	189	9/13/55	5.22	FEDERAL PROJECT NO. 9-17-001-508
37	BROOKLAWN MEM. PARK	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
38	CLINTON C. PHINNEY & ROBERT D. SCHWARTZ	CITY OF PORTLAND	Q.C. DEED	2255	428/9	11/28/55	15.2	FEDERAL PROJECT NO. 9-17-001-508
38	CLINTON C. PHINNEY & ROBERT D. SCHWARTZ	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
39	CLINTON C. PHINNEY & ROBERT D. SCHWARTZ	CITY OF PORTLAND	Q.C. DEED	2255	428/9	11/28/55	8.03	FEDERAL PROJECT NO. 9-17-001-508
39	CLINTON C. PHINNEY & ROBERT D. SCHWARTZ	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
40	JOHN M. DENSMORE	CITY OF PORTLAND	WAR. DEED	2257	271	10/27/55	49	FEDERAL PROJECT NO. 9-17-001-508
40	JOHN M. DENSMORE	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
41	JOHN M. DENSMORE	CITY OF PORTLAND	WAR. DEED	2257	271	10/27/55	49	FEDERAL PROJECT NO. 9-17-001-508
41	MOBIL PIPE LINE CO.	CITY OF PORTLAND	Q.C. DEED	3051	721	8/1/68	21.8	
41	FRANCIS B. EVANS	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
42	JOHN E. DENSMORE	CITY OF PORTLAND	WAR. DEED	2241	473	8/8/55	0.50	FEDERAL PROJECT NO. 9-17-001-508
42	JOHN E. DENSMORE	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	0.50	FEDERAL PROJECT NO. 9-17-001-508
43	MERLE P. CHAPLIN	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	24.1	FEDERAL PROJECT NO. 9-17-001-508
44	CHRISTIAN KRAGELUND	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	22.9	FEDERAL PROJECT NO. 9-17-001-508

INVENTORY OF PARCELS

MAP KEY	GRANTOR	GRANTEE	INST.	BOOK	PAGE	DATE	Ac.	REMARKS
45	SOUTH PORTLAND GARDENS	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	1.72	FEDERAL PROJECT NO. 9-17-001-508
46	WALTER & STELLA KORZENIEWSKI	CITY OF PORTLAND	WAR. DEED	2279	228	3/5/55	6.80	FEDERAL PROJECT NO. 9-17-001-508
46	WALTER & STELLA KORZENIEWSKI	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
47	FRANK P. CUMMINGS ESTATE	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	10.0	FEDERAL PROJECT NO. 9-17-001-508
48	THOMAS J. JR. & PAT A. FOLEY	CITY OF PORTLAND	WAR. DEED	4040	177	6/22/77	0.23	SEE ACTUAL DESCRIPTION IN 2531/103, 6-23-0038-11
49 ●	PORTLAND CITY AIRPORT	CITY OF PORTLAND	Q.C. DEED	1503	217	10/24/35	19.62	
50	JAMES C. MORRIS (TRUSTEE)	CITY OF PORTLAND	WAR. DEED	3420	256	6/18/73	4.65	
51	KENNETH I. PARKER (PER REP)	CITY OF PORTLAND	WAR. DEED	7715	172	4/7/87	0.5	3-23-0038-19
52	ROBERT D. SCHWARTZ et. al.(TRUSTEE)	CITY OF PORTLAND	EASEMENT	2453	324	1/15/59	-	RIGHT TO ENTER 10' STRIP
53	EDWARD F. GALLAGHER	CITY OF PORTLAND	EASEMENT	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
54	CHAPLIN CORP	CITY OF PORTLAND	EASEMENT	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
55	RAY L. LITTLEFIELD III	CITY OF PORTLAND	WAR. DEED	3894	331	3/14/77	1.0	6-23-0038-11
56	DIAMOND GARDNER CORP	CITY OF PORTLAND	EASEMENT	3007	617	6/19/67	2.6	PARCEL D-18 -3007/617 9-17-001-C916
57	NEVER OWNED BY CITY, PARCEL B-4 IN CONDEMNATION DEED 3007/617 IN ERROR SEE AFFIDAVIT 3458/116							
58	RAY L. & JOLA L. LITTLEFIELD	CITY OF PORTLAND	WAR. DEED	3550	07	5/24/74	0.60	
59	AIRPORT REALITY CORP.	CITY OF PORTLAND	CONDEMNATION	3007	617	6/19/67	0.82	PARCEL B-8 IN 3007/617, 9-17-001-C916
60	AIRPORT REALITY CORP.	CITY OF PORTLAND	EASEMENT	3007	617	6/19/67	0.25	PARCEL E-3 IN 3007/617, 9-17-001-C916
61	FRANK P. CUMMINGS ESTATE	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	3.79	FEDERAL PROJECT NO. 9-17-001-508
62 ●	PORTLAND CITY AIRPORT	CITY OF PORTLAND	WAR. DEED	1465	141	1/23/35	12.8	
63	CITY OF PORTLAND	STATE OF MAINE	CONDEMNATION	11456	276	5/31/94	0.13	
64	BCD AIRPORT PARTNERS	CITY OF PORTLAND	CONDEMNATION	9492	231	3/4/91	45.5	
65	APEX INC.	CITY OF PORTLAND	QUITCLAIM	10203	192	7/8/92	1.06	
65	CITY OF PORTLAND	BROOKLAWN MEM. PARK	Q.C. W/COVEN	13400	006	10/23/97	1.06	PART OF 64
65	BROOKLAWN MEMORIAL PARK	CITY OF PORTLAND	AVIG. ESMT	13395	309	10/24/97	1.06	
66	APEX INC.	CITY OF PORTLAND	QUITCLAIM	10203	192	7/8/92	0.32	
67	CITY OF PORTLAND	BROOKLAWN MEM. PARK	Q.C. W/COVEN	13400	006	10/23/97	0.94	PART OF 64
67	BROOKLAWN MEMORIAL PARK	CITY OF PORTLAND	AVIG. ESMT.	13395	309	10/16/97	0.94	
68	BROOKLAWN MEMORIAL PARK	CITY OF PORTLAND	Q.C. W/COVEN	13395	305	10/16/97	7.48	3-23-0038-36 SUBJ. TO DRAINAGE ESMT BK. 8272, PG. 208
69	THOMAS A. TOYE, III	CITY OF PORTLAND	Q.C. W/COVEN	13434	266	10/16/97	1.28	
70	BROOKLAWN MEMORIAL PARK	CITY OF PORTLAND	AVIG. ESMT.	13395	309	10/24/97	6.23	
71	TOYE AIRPORT PARK LLC	CITY OF PORTLAND	Q.C. DEED	16971	184	11/19/01	0.06	
72	TOYE REALTY HOLDINGS LLC	CITY OF PORTLAND	Q.C. W/COVEN	16971	190	11/19/01	0.03	
73	CITY OF PORTLAND	TOYE AIRPORT PARK LLC	QUITCLAIM	16971	193	11/19/01	0.02	
74	MAINE TURNPIKE AUTHORITY	CITY OF PORTLAND	Q.C. W/COVEN	21040	64	3/31/04	5.14	SUBJECT TO ALL EASEMENTS OF RECORD
75	MAINE TURNPIKE AUTHORITY	CITY OF PORTLAND	Q.C. W/COVEN	21040	64	3/31/04	3.47	SUBJECT TO ALL EASEMENTS OF RECORD
76	MAINE TURNPIKE AUTHORITY	CITY OF PORTLAND	Q.C. W/COVEN	21040	74	3/31/04	0.37	
77	MAINE TURNPIKE AUTHORITY	CITY OF PORTLAND	Q.C. W/COVEN	21040	74	3/31/04	0.13	
78	CITY OF PORTLAND	MAINE TURNPIKE AUTHORITY	Q.C. W/COVEN	21040	60	3/31/04	4.95	ACQUIRED UNDER FAAP 508, FAA APPROVED RELEASE ON 3-26-02
79	STATE OF MAINE	CITY OF PORTLAND	RELEASE DEED	17126	328	12/28/01	70.4	ACQUIRED AIP 3-23-0038-54
79	STATE OF MAINE	CITY OF PORTLAND	AVIG. ESMT.	17126	332	12/26/01		ACQUIRED AIP 3-23-0038-54
80	STATE OF MAINE	CITY OF PORTLAND	VACATION	19510	56	6/06/03	-	VACATION OF JOHNSON ROAD/WESTERN AVENUE, LAND SWAP
81	PORTLAND PIPE LINE CORPORATION	CITY OF PORTLAND	RELEASE	14138	238	9/10/98		RELEASE OF EASEMENT WITH COVENANT
82	MOBIL PIPE LINE COMPANY	CITY OF PORTLAND	RELEASE	15081	274	10/01/99		RELEASE OF EASEMENT WITH COVENANT
83	CITY OF PORTLAND	STATE OF MAINE	CONDEMNATION	15801	296	10/24/00	5.91	JOHNSON ROAD/WESTERN AVENUE RELOCATION, LAND SWAP
84	CITY OF SOUTH PORTLAND	CITY OF PORTLAND	RELEASE	23141	42	8/01/05	2.32	ORIGINAL DEED 4940/8, FAA RELEASE 4-23-82 BK 4947 PG.32
85	CITY OF SOUTH PORTLAND		CITY COUNCIL ORDER	23154	238	9/15/05		DISCONTINUANCE OF A PORTION OF JETPORT PLAZA ROAD (29')
86	CITY OF PORTLAND	STATE OF MAINE	CONDEMNATION	24337	300	9/05/06	1.44	LAND SWAP RUNWAY 36 APPROACH / FAA APPROVAL 3-1-07
87	STATE OF MAINE	CITY OF PORTLAND	CONDEMNATION	24337	303	9/05/06	1.44	LAND SWAP RUNWAY 36 APPROACH
88	JETPORT PROPERTIES, LLC	CITY OF PORTLAND	LEASE.	25698	194	12/07/07	0.77	LEASE / FAA APPROVAL 6-11-08
89	JETPORT PROPERTIES, LLC	CITY OF PORTLAND	LEASE	25698	194	12/07/07	0.40	LEASE / FAA APPROVAL 6-11-08
90	CITY OF PORTLAND	CITY OF PORTLAND	EASEMENT	25698	194	12/07/07	0.16	RIGHT-OF-WAY
91	STATE OF MAINE	CITY OF PORTLAND	MOA	-	-	7/01/11	0.44	OBSTRUCTION REMOVAL MEMORANDUM OF AGREEMENT FOR ACCESS
92	CITY OF PORTLAND	DULUTH HOLDINGS, INC.	LEASE (15 YEAR)	-	-	7/16/18	0.30	FAA APPROVAL BY LETTER DATED 2-23-18 FOR LAND USE CHANGE FROM AERONAUTICAL TO NON-AERONAUTICAL USE
93	CITY OF PORTLAND	CITY OF SOUTH PORTLAND	EASEMENT	23141	44	12/12/05	8.70	SUBJECT TO ALL EASEMENTS OF RECORD
94	CITY OF PORTLAND	TOYE REALTY HOLDINGS III, LLC	Q.C. W/COVEN	38899	127	11/16/21	2.00	TM 210A, BLK A, LOT 6
95	CITY OF PORTLAND	TOYE AIRPORT PARK, LLC	Q.C. W/COVEN	38899	51	11/16/21	1.78	PARCEL FOUR (TM 210A, BLK A, LOT 2)
96	CITY OF PORTLAND	TOYE AIRPORT PARK, LLC	Q.C. W/COVEN	38899	52	11/16/21	0.34	PARCEL THREE (TM 208, BLK A, LOT 5)
97	CITY OF PORTLAND	TOYE AIRPORT PARK, LLC	Q.C. W/COVEN	38899	53	11/16/21	0.23	PARCEL TWO (TM 208, BLK A, LOT 7)
98	CITY OF PORTLAND	TOYE AIRPORT PARK, LLC	Q.C. W/COVEN	38899	50	11/16/21	0.16	PARCEL ONE (TM 208, BLK A, LOT 6)

GRAPHIC SCALE

600 0 300 600 1200

1 inch = 600 feet

NOTES:

1. THIS IS AN EXHIBIT A PROPERTY MAP, PART OF THE AIRPORT IMPROVEMENT PROGRAM FEDERAL GRANT APPLICATION. IT IS NOT A BOUNDARY SURVEY. THE PRIMARY INTENT IS TO IDENTIFY ALL LAND WHICH IS DESIGNATED AIRPORT PROPERTY AND TO PROVIDE AN INVENTORY OF ALL PARCELS WHICH MAKE UP THE AIRPORT. PHYSICAL SURVEY OF BOUNDARIES IS GENERALLY NOT REQUIRED. REFER TO AC 150/5100-17. THE BASE PROPERTY LINE INFORMATION FOR THIS EXHIBIT 'A' WAS SOURCED FROM THE BOUNDARY SURVEY FOR THE PORTLAND INTERNATIONAL JETPORT LAST UPDATED JANUARY 26, 2022.
2. THE DESCRIPTION OF PARCEL NO. 10 INCLUDES OTHER AVIGATIONAL EASEMENTS WHICH WERE LATER EXTINGUISHED WHEN THE PARCELS WERE ACQUIRED BY THE CITY OF PORTLAND.
3. PARCEL NO. 49 INCLUDES PORTIONS OF PARCEL NO. 62 WHICH HAD BEEN PREVIOUSLY CONVEYED.
4. "●" INDICATES PARCELS THAT COMPRISE LIMITS OF AP-4 AFFECTED LAND (C.A.A. DOCKET NO. S-904-17-19).
5. FOR PARCELS ACQUIRED UNDER CITY COUNCIL ORDER, DATED JUNE 20, 1955, RECORDED IN THE PORTLAND CITY CLERKS RECORDS IN VOLUME 72, PAGE 256, SEE AFFIDAVIT OF ELIZABETH L. BOYNTON, DATED AUGUST 4, 1997, RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 13265, PAGE 102.
6. REFERENCE IS MADE TO THE EXHIBIT "A" DOCUMENT FOR THE PORTLAND INTERNATIONAL JETPORT ON FILE IN THE TERMINAL AT THE AIRPORT MANAGER'S OFFICE, 1001 WESTBROOK STREET, PORTLAND.

REV	DESCRIPTION	DATE	BY	APP'D
8	ADDED MAP KEY PARCELS 94 THRU 98 AND ADJUSTED OIL PIPELINE EASEMENT	03.11.22	LA	DDA
7	MAP KEY PARCEL # 92 ADDED 2-23-18 FAA APPROVAL DATE FOR NON AERONAUTICAL USE	04.17.19	LA	DDA
6	ADDED ILS CRITICAL AREAS TO ALP AND RE-POSTED WITH EXHIBIT A TO FAA OEAAA	09.27.18	LA	DDA
5	SUBMITTED TO CITY WITH FINAL MASTER PLAN DOCUMENT	07.09.18	LA	DDA
4	POSTED ALP SET TO FAA OEAAA STUDY #2018-ANE-22-NRA	01.12.18	LA	DDA
3	SUBMITTED TO FAA FOR APPROVAL	11.29.17	LA	DDA
2	ISSUED DRAFT ALP TO CITY AND FAA	11.17.16	LA	DDA
1	SUBMITTED TO CLIENT FOR REVIEW	07.26.16	LA	DDA

REVISIONS

THE CONTENTS OF THIS PLAN DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS DOCUMENT BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

APPROVAL BLOCK
City of Portland, Maine

Paul Bradbury 03/11/2022

PORTLAND INTERNATIONAL JETPORT

EXHIBIT 'A'

PORTLAND, MAINE

Stantec Consulting Services Inc.
482 Payne Road
Scarborough, ME
Tel. 207.883.3355
WWW.STANTEC.COM

PLANNED BY: Dwight Anderson / Amie Gray / Steve Benson
DETAILED BY: Lori Anthony
APPROVED BY: Dwight Anderson
FILE NAME: STANTEC-EXHIBIT_A

March 2022 SHEET EXHIBIT 'A'

Coffman Associates Airport Consultants

\\US0261-PPFSS01\workgroup\1953\inactive\fstr\Jetport\MASTER FILES\PROPERTY EXHIBIT\stantec-exhibit_a.dwg Iranthony 3/11/2022 12:06 PM

MAINE REAL ESTATE TAX-Paid

DLN: 1002140172253

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL BY THESE PRESENTS THAT **TOYE AIRPORT PARK, LLC**, a Maine limited liability company with a place of business in the City of South Portland, County of Cumberland, State of Maine, for consideration paid, grants to the **CITY OF PORTLAND**, a Maine municipal corporation with a principal office at 389 Congress Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any improvements thereon, located 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 AIRPORT PARK, LLC has caused this instrument to be signed and sealed this 16th day of November, 2021.

WITNESS:

TOYE AIRPORT PARK, LLC

By _____
Thomas A. Toye, III
Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

November 16, 2021

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.

_____
Attorney at Law/~~Notary Public~~
Drew A. Anderson
Printed Name

EXHIBIT A
TO
TOYE AIRPORT PARK, LLC DEED

City of Portland Assessor's reference as Map 208, Block A, Lots 5, 6 & 7 and Map 210A, Block A, Lot 2, which properties are located in the City of Portland, County of Cumberland and State of Maine and are more particularly bounded and described as follows:

PARCEL ONE (Tax Map 208, Block A, Lot 6):

A certain lot or parcel of land with the buildings thereon, situated in Portland, on the westerly side of Westbrook Street, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a stake on the west side of said Westbrook Street North four and one-half degrees East (N 4 ½° E) eight hundred six (806) feet from Abner Gould's corner; thence South seventy-four and one-half degrees West (S 74 ½° W) along the line of land now or formerly of Nellie R. Johnson one hundred six and fifty-seven hundredths (106.57) feet to a point; thence from said point North four and one-half degrees East (N 4 ½° E) and parallel with said Westbrook Street eighty-six (86) feet to a point; thence from said last mentioned point in an easterly direction and at right angles to the last described bound one hundred (100) feet to a point on the westerly side of Westbrook Street; thence from said point on the Westerly side of Westbrook Street South four and one-half degrees West (S 4 ½° W) along the side of said Westbrook Street fifty (50) feet to the point of beginning.

TOGETHER with that property conveyed by the City of Portland to Toye Airport Park, LLC, dated November 16, 2001 and recorded in said Registry of Deeds in Book 16971, Page 193 described as Parcel 2 and further bounded and described as follows:

A certain lot or parcel of land on the westerly side of Westbrook Street, in the City of Portland, County of Cumberland, State of Maine, being shown as "Area to be Conveyed to Thomas Toye, III" on a plan of land titled "Survey Plot Plan of Land to be Conveyed" for Dufresne-Henry, Inc. dated 11-15-01 by Sebago Technics, Inc., said parcel being more particularly bounded and described as follows:

Beginning at a 5/8-inch capped iron rebar at the southeasterly corner of land now or formerly of Thomas A. Toye, III by deed recorded at the Cumberland County Registry of

Deeds in Book 10097, Page 17;

Thence S 08°-54'-54" E, by and along said Westbrook Street, a distance of 11.71 feet to a point;

Thence S 55°-13'-45" W, passing through land of the Grantor, a distance of 21.88 feet to a point;

Thence N 83°-28'-06" W, passing through land of the Grantor, a distance of 22.38 feet to a point on the southerly line of said land of Toye, said point being the easterly corner of "Area A to be Conveyed";

Thence N 60°-44'-36" E, by and along said Toye, a distance of 44.00 feet to the point of beginning.

Meaning and intending to describe a certain lot or parcel of land containing 403 square feet, more or less, and being shown as "Land to be Conveyed to Thomas Toye III" on a plan of land titled "Survey Plot Plan of Land to be Conveyed" for Dufresne-Henry, Inc., dated through 11-15-01 by Sebago Technics, Inc.

EXCEPTED from the above property is that property conveyed by Toye Airport Park, LLC to the City of Portland by Warranty Deed, dated November 16, 2001 and recorded in the Cumberland County Registry of Deeds in Book 16971, Page 184 described as Parcel 1.

NOTE: The first course in the first described parcel of land has been incorrectly described as running North seventy-four and one-half degrees West (N 74 ½° W) dating back to at least 1909.

PARCEL TWO (Tax Map 208, Block A, Lot 7):

A certain lot or parcel of land, situated on the westerly side of Westbrook Street, in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows: Beginning on the westerly sideline of Westbrook Street at the northeasterly corner of land conveyed by Sarah D. Rich to Raymond L. Cousins, by deed dated August 28, 1922, and recorded in the Cumberland County Registry of Deeds in Book 1115, Page 5; thence northerly by the westerly sideline of Westbrook Street one hundred (100) feet to the southeasterly corner of land conveyed by Sarah D. Rich to Catherine M. Lindell, by deed dated September 28, 1929, and recorded in said Registry of Deeds in Book 1333, Page 260; thence westerly at right angles with Westbrook Street and by said Lindell land one hundred (100) feet to land conveyed by Sarah D. Rich to Isaac H. Fairweather; thence

southerly parallel with Westbrook Street and by said Fairweather land one hundred (100) feet to the northwesterly corner of said Cousins land; thence easterly by said Cousins land and at right angles with Westbrook Street one hundred (100) feet to the point of beginning, containing 10,000 square feet, or less.

PARCEL THREE (Tax Map 208, Block A, Lot 5):

A certain lot or parcel of land, with the buildings thereon, situated on the westerly side of Westbrook Street, in Portland, in the County of Cumberland and State of Maine, and bounded and described as follows:

Beginning at a point on said westerly side of Westbrook Street, distant northerly one hundred (100) feet from the point of intersection of said westerly side of Westbrook Street with the northerly sideline of a certain lot or parcel of land conveyed to Raymond L. Cousins by deed dated August 28, 1922, and recorded in said Registry of Deeds in Book 1115, Page 5; thence running northerly along said westerly side of Westbrook Street a distance of one hundred fifty (150) feet to a point; thence running westerly and along a line at right angles to said westerly side of Westbrook Street a distance of one hundred (100) feet to a point; thence running southerly and along a line parallel to said westerly sideline of said street a distance of one hundred fifty (150) feet to a point; thence running easterly and on a line again at right angles to said westerly side of said street a distance of one hundred (100) feet to a point of beginning.

TOGETHER with that property conveyed by the City of Portland to Toye Airport Park, LLC, dated November 16, 2001 and recorded in said Registry of Deeds in Book 16971, Page 193 described as Parcel 1 and further bounded and described as follows:

A certain lot or parcel of land situated on the westerly side of, but not adjacent to, Westbrook Street, in the City of Portland, County of Cumberland, State of Maine, and being depicted as "Area to be Conveyed to Thomas Toye III" on a plan of land titled "Survey Plot Plan of Land to be Conveyed" for Dufresne-Henry, Inc., dated through November 15, 2001 by Sebago Technics, Inc. (the "Plan"), said parcel being more particularly bounded and described as follows:

Beginning at the northwesterly corner of land now or formerly of Toye Airport Park, LLC, by deed recorded in the Cumberland County Registry of Deeds in Book 15957, Page 160, at land of the Grantor;

Thence S 08°-54'-54" E, by and along said land of Toye Airport Park, LLC, a distance of 17.43 feet to a point;

Thence N 78°-54'-06" W, passing through land of the Grantor, a distance of 50.84 feet to a point in the southerly line of other land of Thomas A. Toye III recorded in said Registry of Deeds in Book 6290, Page 27;

Thence N 81°-02'-37" E, by and along said other lands of Toye, a distance of 47.77 feet to the point of beginning.

Meaning and intending to describe a certain triangular parcel of land containing 416 square feet, more or less, and depicted as "Area to be Conveyed to Thomas Toye III" on a plan of land titled "Survey Plot Plan of Land to be Conveyed" for Dufresne-Henry, Inc., dated through 11-15-01, by Sebago Technics, Inc.

PARCEL FOUR (Tax Map 210A, Block A, Lot 2):

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

Beginning at a point on the westerly side of Westbrook Street, said point being distant northerly along said westerly side of said Westbrook Street 774.36 feet from the northerly terminus of the discontinuance of said Street by the County Commissioners as defined in Docket 1175 and dated January, 1957, on file in the office of said County Commissioners, Portland, Maine, said point being the northerly corner of land of the Norman Realty Holding Corporation; thence North eighty-two degrees forty-four minutes West (N 82° 44' W) by land of said Norman Realty Holding Corporation and at right angles to the said westerly sideline of said Westbrook Street a distance of 100.00 feet to a point; thence South seven degrees sixteen minutes West (S 7° 16' W) on a line parallel to and distant 100.00 feet westerly of the said westerly sideline of said Westbrook Street and at right angles to the last described course a distance of 100.00 feet to a point; thence North eighty-two degrees forty-four minutes West (N 82° 44' W) by land conveyed by Bertram J. Fairweather to the City of Portland by Warranty Deed dated August 30, 1967 and recorded in the Cumberland County Registry of Deeds in Book 3009, Page 666 and at right angles to the last-described course a distance of Four Hundred Seventy (470) Feet, more or less, to land as conveyed to John A. and Lorena A. Knight by deed dated May 26, 1955 and recorded in said Registry of Deeds in Book 2231, Page 116; thence North sixty-six degrees thirty-five and one-half minutes East (N 66° 35½' E) by land now or formerly of said Knight a distance of Five Hundred Twelve and One-Half (512½) Feet to a point; thence North eighty-one degrees fifty-two and one-half minutes East (N 81° 52½' E) by land of said Knight a distance of one hundred thirty-four (134) feet, more or less, to the westerly sideline of said Westbrook Street; thence South seven degrees sixteen minutes West (S 7° 16' W) by the westerly sideline of said Westbrook Street a distance of One Hundred Ninety-Seven (197) Feet, more or less, to said land of said Norman Realty

Holding Corporation and the point of beginning, containing 1.78 acres, more or less.

Together with a right-of-way fifteen (15) feet in width lying to the west of a line distant 100.00 feet westerly and parallel to the said westerly sideline of said Westbrook Street and to extend Two Hundred Twenty-Five (225) Feet to the south from the most southerly boundary line of the parcel above described and conveyed to the Grantee, within which a septic tank effluent drain may be maintained, repaired and replaced so long as said drain may be needed to serve the premises herein described and conveyed to the Grantee.

Also the Grantor herein conveys and assigns to the Grantee any rights it may have as a result of the provision in the deed from Bertram J. Fairweather to the City of Portland, dated August 30, 1967 and recorded in said Registry of Deeds in Book 3009, Page 666, whereby the City of Portland agreed that should there be constructed within a period of not more than ten (10) years from the date of said deed, a public airport access road, crossing the land therein conveyed to the City to a point on Congress Street; said City will convey to the assigns of the Grantor a right-of-way twenty (20) feet in width extending from the land herein above conveyed to this Grantee in a location lying to the South of the division line between the land now or formerly of John A. and Lorena A. Knight and extending in a westerly direction by said division line to the easterly sideline of said future airport access road, it being understood and agreed that such a right-of-way when granted shall be for the purpose of travel only and for no other purpose and that no building, structure or other encumbrance of any nature shall be placed, erected or maintained therein.

The above-described premises together with the rights of way are all and the same as reserved and covenanted by said Fairweather and City of Portland in the aforesaid 1967 deed between said parties.

EXCEPTED from the above property is that property conveyed by Toye Airport Park, LLC to the City of Portland by Warranty Deed, dated November 16, 2001 and recorded in the Cumberland County Registry of Deeds in Book 16971, Page 184 described as Parcel Two.

Meaning and intending to convey and hereby conveying the remaining premises as described in the Quitclaim Deed Without Covenant from Thomas A. Toye to Toye Airport Park, LLC, dated January 8, 2001 and recorded in said Registry of Deeds in Book 15957, Page 160 and the same premises as described in the Quitclaim Deed from the City of Portland to Toye Airport Park, LLC, dated November 16, 2001 and recorded in said Registry of Deeds in Book 16971, Page 193.

MAINE REAL ESTATE TAX-Paid

DLN: 1002140172279

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL BY THESE PRESENTS THAT **TOYE REALTY HOLDINGS III, LLC**, a Maine limited liability company with a place of business in the City of South Portland, County of Cumberland, State of Maine, for consideration paid, grants to the **CITY OF PORTLAND**, a Maine municipal corporation with a principal office at 389 Congress Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any improvements thereon, located 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 III, LLC has caused this instrument to be signed and sealed this 16th day of November, 2021.

WITNESS:

TOYE REALTY HOLDINGS III, LLC

By _____
Thomas A. Toye, III
Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

November 16, 2021

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.

_____
Attorney at Law/~~Notary Public~~
Drew A. Anderson
Printed Name

EXHIBIT A
TO
TOYE REALTY HOLDINGS III, LLC DEED

The property known as 0 Jetport Boulevard, together with any improvements thereon, situated in the City of Portland, Cumberland County and State of Maine, and currently identified by the City of Portland Assessor's reference as Map 210A, Block A, Lot 6, more particularly bounded and described as follows:

A certain lot or parcel of land situated on the southeasterly side of a strip of land now or formerly owned by the City of Portland, said strip running southwesterly from the westerly sideline of Westbrook Street, so called, in the City of Portland, County of Cumberland, State of Maine as shown on Standard Boundary Survey of Thomas A. Toye Property, Westbrook Street, Portland, Maine for Toye Realty Holdings LLC, dated November 27, 2000 and recorded in the Cumberland County Registry of Deeds in Plan Book 201, Page 22, being more particularly bounded and described as follows:

Beginning at a 5/8 inch capped iron rebar set on the northwesterly sideline of land now or formerly owned by the City of Portland by a deed dated August 30, 1967 and recorded in said Registry of Deeds in Book 3009, Page 666, said rebar being located N 50°-10'-25" E, a distance of 25.51 feet from a found 1¼ inch iron pipe found 12 inches high;

Thence N 38°-04'-35" W, by and along land now or formerly owned by the City of Portland by a deed dated February 4, 1991 and recorded in said Registry of Deeds in Book 9492, Page 231, a distance of 307.77 feet to a 5/8 inch capped iron rebar set on the southeasterly sideline of land now or formerly owned by the City of Portland by a deed recorded in said Registry of Deeds in Book 13434, Page 266;

Thence N 51°-55'-25" E, by and along said land of the City of Portland, a distance of 287.17 feet to a 5/8 inch capped iron rebar set at the northwesterly corner of land now or formerly owned by Portland Jetport Title Corp. by a deed dated June 10, 1991 and recorded in said Registry of Deeds in Book 9684, Page 257;

Thence S 38°-04'-35" E, by and along said land of Portland Jetport Title Corp., a distance of 299.0 feet to a 5/8 inch capped iron rebar set on the northwesterly sideline of land now or formerly owned by Thomas A. Toye III by a deed dated November 1, 1982 and recorded in said Registry of Deeds in Book 6290, Page 27;

Thence S 50°-10'-25" W, by and along said land of Thomas Toye and land of the City of Portland, a total distance of 287.30 feet to the point of beginning.

This property is subject to any easements of record.

EXCEPTED from the above property is that property conveyed by Toye Realty Holdings III, LLC to the City of Portland, dated November 16, 2001 and recorded in said Registry of Deeds in Book 16971, Page 190.

Meaning and intending to convey and hereby conveying the remaining property described in the Release 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.

TOYT110/1608103

Attachment 2

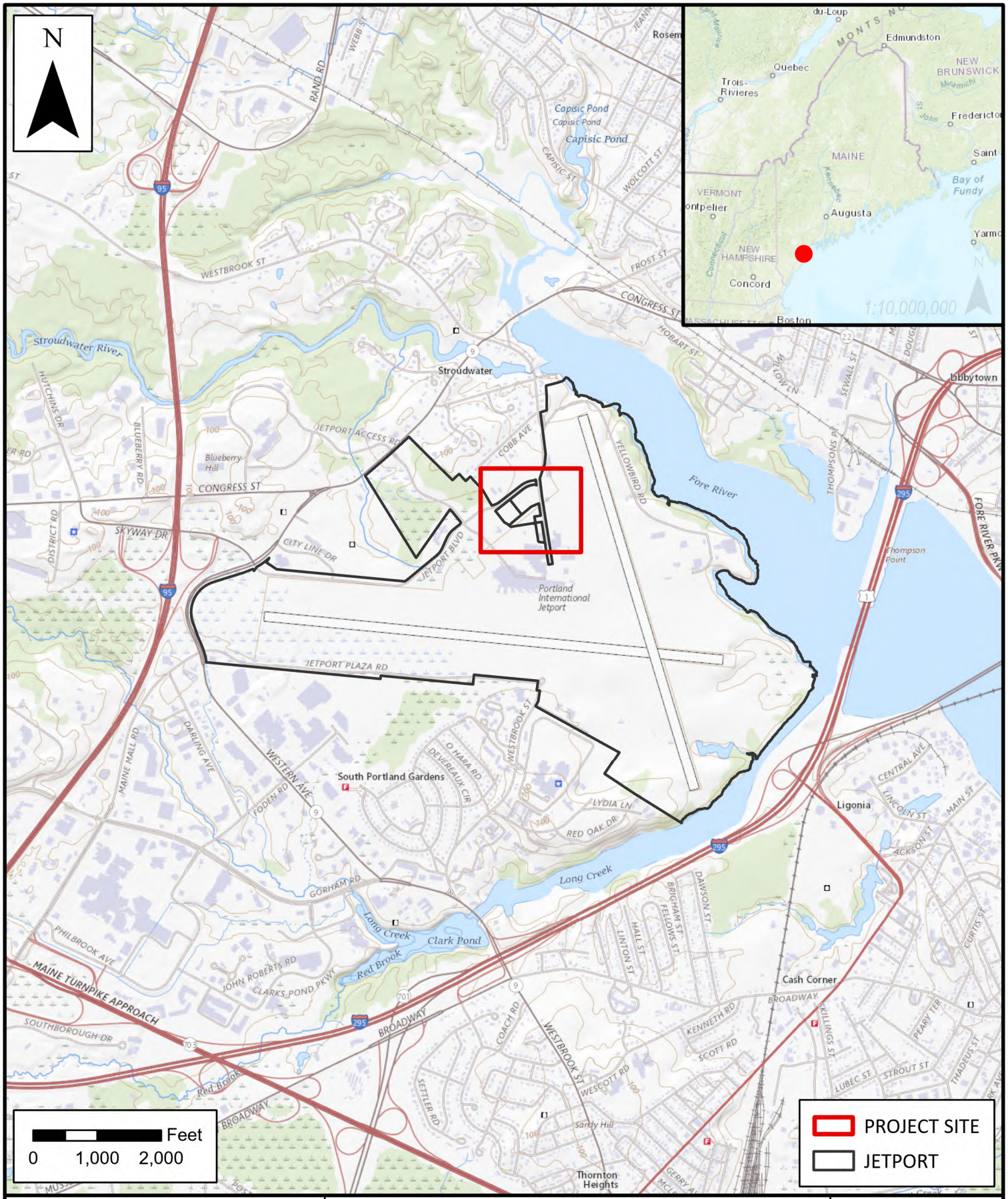
Project Description/Site Location Map

Attachment 2 Project Description

The proposed project is to be located on the Portland International Jetport campus near the intersection of Jetport Boulevard and International Parkway. The project involves improvements to an existing parking area as well as the construction of a new surface parking lot on undeveloped land. The development area is located somewhat centrally within the existing Jetport campus with the airport Loop Road, terminal, and runways to the south and southeast; a hotel, parking and undeveloped land to the north; and International Parkway, hotel, parking, and undeveloped land to the west. The Jetport has an existing Maine DEP permit, L-13760.

The project will be comprised of an expansion of the existing Jetport parking areas with an approximately 240,000 s.f. long-term parking area on the airport campus. The project proposes the construction of two paved parking lots which will provide 684 long-term parking spaces. One of the proposed new lots will convert an existing cell phone lot and gravel valet lot for use as long term parking. This lot will be comprised of 248 standard and 8 ADA compliant parking spaces. The second lot is proposed to include 416 standard and 12 ADA compliant parking spaces. Both lots will have parking spaces with Level One EV charges. The project also includes the construction of a concrete pad for a proposed battery storage system.

The project will result in the creation of 4.58 acres of net developed area, 2.85 acres of new net impervious, and approximately 8,618 s.f. of wetland impacts.



SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. - Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

LOCATION MAP

JETPORT PARKING

SCALE: 1:24,000

DATE: 2/29/2024

LOCATION:
1001 WESTBROOK ST
PORTLAND, ME

INFORMATION:
MAINE GEOLIBRARY
USGS QUADRANGLE

Attachment 3

Public Notice/Public Informational Meeting

FORM C

PUBLIC NOTICE FILING AND CERTIFICATION

The DEP Rules, Chapter 2, require an applicant to provide public notice for all Site Location projects with the exception of minor revisions and condition compliance applications. In the notice, the applicant must describe the proposed activity and where it is located. **"Abutter"** for the purposes of the notice provision means any person who owns property that is BOTH (1) adjoining and (2) within one mile of the delineated project boundary, including owners of property directly across a public or private right of way.

1. **Newspaper:** You must publish the Notice of Intent to File in a newspaper circulated in the area where the activity is located. The notice must appear in the newspaper within 30 days prior to the filing of the application with the Department. You may use the attached Notice of Intent to File form, or one containing identical information, for newspaper publication and certified mailing.

2. **Abutting Property Owners:** You must send a copy of the Notice of Intent to File by certified mail to the owners of the property abutting the activity. Their names and addresses can be obtained from the town tax maps or local officials. They must receive notice within 30 days prior to the filing of the application with the Department.

3. **Municipal Office:** You must send a copy of the Notice of Intent to File and a **duplicate of the entire application** to the Municipal Office.

   ATTACH a list of the names and addresses of the owners of abutting property.

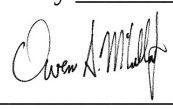
CERTIFICATION

By signing below, the applicant or authorized agent certifies that:

1. A Notice of Intent to File was published in a newspaper circulated in the area where the project site is located within 30 days prior to filing the application;
2. A certified mailing of the Notice of Intent to File was sent to all abutters within 30 days of the filing of the application;
3. A certified mailing of the Notice of Intent to File, and a duplicate copy of the application was sent to the town office of the municipality in which the project is located; and
4. Provided notice of, if required, and held a public informational meeting in accordance with Chapter 2, Rules Concerning the Processing of Applications, Section 14, prior to filing the application. Notice of the meeting was sent by certified mail to abutters and to the town office of the municipality in which the project is located at least ten days prior to the meeting. Notice of the meeting was also published once in a newspaper circulated in the area where the project site is located at least seven days prior to the meeting.

The Public Informational Meeting was held on December 12, 2023.
Date

Approximately 39+ members of the public attended the Public Informational Meeting.



Signature of Applicant or Authorized Agent

02-15-2024
Date

Notice of Intent to File

Please take notice that the Portland International Jetport of 1001 Westbrook Street, Portland, ME is intending to file an Amended Site Location of Development Act permit application with the Maine Department of Environmental Protection pursuant to the provisions of 38 M.R.S.A. §§ 481 thru 490 and a Natural Resource Protection Act permit application pursuant to the provisions of 38 M.R.S.A. §§ 480-A thru 480-BB on or about **February 20, 2024**.

The Portland International Jetport is proposing an expansion of its existing parking areas with an approximately 240,000 s.f. long term parking area to be located at the airport campus. The proposed project will result in approximately 8,618 s.f. of wetland impact.

A request for a public hearing or a request that the Board of Environmental Protection assume jurisdiction over this application must be received by the Department in writing, no later than 20 days after the application is found by the Department to be complete and is accepted for processing. A public hearing may or may not be held at the discretion of the Commissioner or Board of Environmental Protection. Public comment on the application will be accepted throughout the processing of the application.

The application will be filed for public inspection at the Department of Environmental Protection's office in Portland during normal working hours. A copy of the application may also be seen at the City of Portland municipal offices.

Written public comments may be sent to the Southern Maine Regional Office in Portland at MDEP, Southern Maine Regional Office, 312 Canco Road, Portland, Maine 04101 where the application is filed for public inspection.

Portland Press Herald
Maine Sunday Telegram
pressherald.com

Classified Advertising Proof

Mark Adams
Sebago Technics Inc
75 John Roberts Rd
Suite 4A
South Portland
ME
04106
+1 (207) 856-0277
apinvoices@sebagotechnics.com

Thank you for placing your advertisement with us.

Your order information and a preview of your advertisement are attached below for your review. If there are changes or questions, please contact the classified department at (207) 791-6100

Thank you

(207) 791-6100 jjensen@mainetoday.com Monday – Friday 8:00 am – 5pm

Order Number	**0468529**	Order Price	
Sales Rep.	**Joan Jensen**	PO No.	**19059 NOI / Julie Springer**
Account		Payment Type	**Invoice**

Publication	**Portland Press Herald**	Number of dates	**1**
First Run Date	**12/01/2023**	Last Run Date	**12/01/2023**

Publication	**Online Upsell PPH**	Number of dates	**1**
First Run Date	**12/01/2023**	Last Run Date	**12/01/2023**



Public Notice

Notice of Intent to File

Please take notice that the Portland International Jetport of 1001 Westbrook Street, Portland, ME is intending to file an Amended Site Location of Development Act permit application with the Maine Department of Environmental Protection pursuant

Protection pursuant to the provisions of 38 M.R.S.A. §§ 481 thru 490 and a Natural Resource Protection Act permit application pursuant to the provisions of 38 M.R.S.A. §§ 480-A thru 480-BB on or about **December 15, 2023.**

A **Public Informational Meeting** is to be held:

When: **December 12, 2023 at 6 p.m.**

Where: **1001 Westbrook Street, Jetport Conference Room A.**

The Jetport is proposing an expansion of its existing parking areas with an approximately 240,000 s.f. long term parking area and 29,000 s.f. cell phone lot to be located at the airport campus.

A request for a public hearing or a request that the Board of Environmental Protection assume jurisdiction over this application must be received by the Department in writing, no later than 20 days after the application is found by the Department to be complete and is accepted for processing. A public hearing may or may not be held at the discretion of the Commissioner or Board of Environmental Protection. Public comment on the application will be accepted throughout the processing of the application.

The application

The application will be filed for public inspection at the Department of Environmental Protection's office in Portland during normal working hours. A copy of the application may also be seen at the City of Portland municipal offices.

Written public comments may be sent to the Southern Maine Regional Office in Portland at MDEP, Southern Maine Regional Office, 312 Canco Road, Portland, Maine 04101 where the application is filed for public inspection.

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WYMAN DREW W &
COLLEEN L POWER JTS
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PORTLAND, ME 04102

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AHMADOV TARLAN R &
ZEMFIRA M AHMADOVA JTS
10 FOX HALL RD
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HANGAR GROUP LLC
100 AVIATION BLVD
SOUTH PORTLAND, ME 04106

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GREGORY LEE &
MICHAEL GREGORY JTS
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NAPIER DEBORAH L
111 COBB AVE
PORTLAND, ME 04102

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CAMPBELL KEVIN L &
CINDY A JTS
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PORTLAND, ME 04102

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EDGCOMBE JOSHUA J &
KAREN EDGCOMBE JTS
1144 WESTBROOK ST
PORTLAND, ME 04102

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SMITH NANCY S &
PAUL D JTS
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HARDING RICHARD B
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KINNEY ELISABETH MARY
1169 WESTBROOK ST
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AUGUSTA, ME 04333

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3RD FLOOR
PORTLAND, ME 04101

Street and Apt. No., or PO Box No.

City, State, ZIP+4®

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18 ARLINGTON RD
SOUTH PORTLAND, ME 04106

Street and Apt. No., or PO Box No.

City, State, ZIP+4®

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1900 CONGRESS ST
PORTLAND, ME 04102

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1914 CONGRESS ST
PORTLAND, ME 04102

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7022 2410 0003 1893 2770

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DUBOIS PAUL A &
KIMBERLY A DUBOIS JTS
1915 CONGRESS ST
PORTLAND, ME 04102

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PORTLAND LODGE #188 BPOE OF USA
1945 CONGRESS ST
PORTLAND, ME 04102

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GATEWAY BUSINESS PARK CONDO
1945 CONGRESS ST
PORTLAND, ME 04101

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MAIETTA JEFFREY
1967 CONGRESS ST
PORTLAND, ME 04102

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BROOKLAWN MEMORIAL PK
2002 CONGRESS ST
PORTLAND, ME 04102

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2015 CONGRESS ST LLC
2015 CONGRESS ST
PORTLAND, ME 04102

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UNUM CORP
2211 CONGRESS ST
PORTLAND, ME 04102

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7022 2410 0003 1893 2855

GIRI PORTLAND REAL ESTATE INC
225 SQUANTUM ST
STE 200
QUINCY, MA 02171

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GIRI PORTLAND WESTBROOK INC
225 W SQUANTUM ST
STE 200
QUINCY, MA 02171

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145 JETPORT BOULEVARD LLC
2300 CROWN COLONY DRIVE,
SUITE 203
QUINCY, MA 02169

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MAINE TURNPIKE AUTHORITY
2360 CONGRESS ST
PORTLAND, ME 04102

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To FRESHLY BROOD LLC
26 COLLINS MILLS ROAD
WEST GARDINER, ME 04345

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To PARKER KENNETH I & KAREN C
2-A GARRISON ST
PORTLAND, ME 04102

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To 758 WESTBROOK LLC
33 NUTE RD
MADBURY, NH 03823

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To DIODES US MANUFACTURING
INCORPORATED
333 WESTERN AV
SOUTH PORTLAND, ME 04106

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To TOYE REALTY HOLDINGS II LLC
3520 PIEDMONT RD NE
STE 410
ATLANTA, GA 30305

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Postage
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To CITY OF PORTLAND
389 CONGRESS ST
PORTLAND, ME 04101

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To RAYMOND JUDITH P &
TIMOTHY W RAYMOND
4 FIELDSTONE CT
PORTLAND, ME 04103

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To TEMPLE BETH EL
400 DEERING AVE
PORTLAND, ME 04103

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To JETPORT STATE BUILDING LLC
42 MARKET STREET
PORTLAND, ME 04101

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To MAINE TURNPIKE AUTHORITY
430 RIVERSIDE ST
PORTLAND, ME 04103

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To 2 MEADOWOOD LL
446 WESTERN AV
SOUTH PORTLAND, ME 04106

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CROMWELL SUSAN A &
TIMOTHY A WALSH JTS
49 ST GEORGE ST
PORTLAND, ME 04103

SCARBOROUGH ME
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MAINE, STATE OF
50 LYDIA LANE
SOUTH PORTLAND, ME 04106

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145 JETPORT BOULEVARD LLC
54 BARTOL ISLAND RD
FREEPORT, ME 04032

SCARBOROUGH ME
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TRANSPORT LEASING CORP
58 LOWELL JUNCTION RD
ANDOVER, MA 01810

SCARBOROUGH ME
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7022 2410 0003 1893 3043

PINGREE 2000 REAL ESTATE HOLDINGS LLC
600 CORPORATE PARK DR
SAINT LOUIS, MO 63105

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MAINE, STATE OF
677 WESTBROOK ST
SOUTH PORTLAND, ME 04106

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7022 2410 0003 1893 3067

AAM PORTLAND HOTEL LLC
78 BLANCHARD RD STE 100
BURLINGTON, MA 01803

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ROBBINS JAMES E & DEBRA WITS
8 GARRISON ST
PORTLAND, ME 04102

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7022 2410 0003 1893 3081

WALKART ELIZABETH
9 COBB AVE
PORTLAND, ME 04102

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7022 2410 0003 1893 3098

MAINE, STATE OF
C/O MAINE PROPERTIES,
197 US RT 1
SCARBOROUGH, ME 04074

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19059
Page 6 of 6
February 5, 2024

PORTLAND

OWNER	ADDRESS	CITY	STATE	ZIP
EDGCOMBE JOSHUA J & KAREN EDGCOMBE JTS	1144 WESTBROOK ST	PORTLAND	ME	04102
CAMPBELL KEVIN L & CINDY A JTS	1130 WESTBROOK ST	PORTLAND	ME	04102
PINGREE 2000 REAL ESTATE HOLDINGS LLC	600 CORPORATE PARK DR	SAINT LOUIS	MO	63105
GIRI PORTLAND WESTBROOK INC	225 W SQUANTUM ST STE 200	QUINCY	MA	02171
SMITH NANCY S & PAUL D JTS	1157 WESTBROOK ST	PORTLAND	ME	04102
BROOKLAWN MEMORIAL PK	2002 CONGRESS ST	PORTLAND	ME	04102
145 JETPORT BOULEVARD LLC	54 BARTOL ISLAND RD	FREEPORT	ME	04032
GIRI PORTLAND REAL ESTATE INC	225 SQUANTUM ST STE 200	QUINCY	MA	02171
GREGORY LEE & MICHAEL GREGORY JTS	101 COBB AVE	PORTLAND	ME	04102
RAYMOND JUDITH P & TIMOTHY W RAYMOND	4 FIELDSTONE CT	PORTLAND	ME	04103
AHMADOV TARLAN R & ZEMFIRA M AHMADOVA JT	10 FOX HALL RD	FALMOUTH	ME	04105
MITHRAS LLC	18 ARLINGTON RD	SOUTH PORTLAND	ME	04106
AAM PORTLAND HOTEL LLC	78 BLANCHARD RD STE 100	BURLINGTON	MA	01803
TOYE REALTY HOLDINGS II LLC	3520 PIEDMONT RD NE STE 410	ATLANTA	GA	30305
BROOKLAWN MEMORIAL PK	2002 CONGRESS ST	PORTLAND	ME	04102
FAITH TEMPLE	1914 CONGRESS ST	PORTLAND	ME	04102
CHRISTCHURCH OF PORTLAND	1900 CONGRESS ST	PORTLAND	ME	04102
WALKART ELIZABETH	9 COBB AVE	PORTLAND	ME	04102
WYMAN DREW W & COLLEEN L POWER JTS	1 COBB AVE	PORTLAND	ME	04102
HARDING RICHARD B	1168 WESTBROOK ST	PORTLAND	ME	04102
HIDER MARK S VN VET	1161 WESTBROOK ST	PORTLAND	ME	04102
KINNEY ELISABETH MARY	1169 WESTBROOK ST	PORTLAND	ME	04102
HAWKES ANDREA C & DONALD K HAWKES JTS	1181 WESTBROOK ST	PORTLAND	ME	04102
AINSWORTH THOMAS G & K MONAHAN AINSWORT	12 GARRISON ST EXT	PORTLAND	ME	04102
SILK DAVID P	1187 WESTBROOK ST	PORTLAND	ME	04102
ROBBINS JAMES E & DEBRA W JTS	8 GARRISON ST	PORTLAND	ME	04102
PARKER KENNETH I & KAREN C	2-A GARRISON ST	PORTLAND	ME	04102
TEMPLE BETH EL	400 DEERING AVE	PORTLAND	ME	04103
TRANSPORT LEASING CORP	58 LOWELL JUNCTION RD	ANDOVER	MA	01810
MAIETTA JEFFREY	1967 CONGRESS ST	PORTLAND	ME	04102
DIVERSIFIED PARTNERS LLC	17 SOUTH ST 3RD FLOOR	PORTLAND	ME	04101
PORTLAND LODGE #188 BPOE OF USA	1945 CONGRESS ST	PORTLAND	ME	04102
FANCY SAUCE LLC	17 SOUTH ST # 3	PORTLAND	ME	04102
CROMWELL SUSAN A & TIMOTHY A WALSH JTS	49 ST GEORGE ST	PORTLAND	ME	04103
MAIETTA NEIL R & JEFFREY N MAIETTA JTS	PO BOX 1025	GRAY	ME	04039
2015 CONGRESS ST LLC	2015 CONGRESS ST	PORTLAND	ME	04102
DUBOIS PAUL A & KIMBERLY A DUBOIS JTS	1915 CONGRESS ST	PORTLAND	ME	04102
DRICE MORAVIA	129 WILLIAM ST	PORTLAND	ME	04103
MAINE TURNPIKE AUTHORITY	430 RIVERSIDE ST	PORTLAND	ME	04103
CITY OF PORTLAND	389 CONGRESS ST	PORTLAND	ME	04101
440 WESTERN AVENUE ASSOCIATES LLP	131 JOHNSON RD STE 4	PORTLAND	ME	04102
STATE OF MAINE	16 STATE HOUSE STATION	AUGUSTA	ME	04333
NAPIER DEBORAH L	111 COBB AVE	PORTLAND	ME	04102
GATEWAY BUSINESS PARK CONDO	1945 CONGRESS ST	PORTLAND	ME	04101
UNUM CORP	2211 CONGRESS ST	PORTLAND	ME	04102

SOUTH PORTLAND

OWNER	ADDRESS	CITY	STATE	ZIP
MAINE, STATE OF	50 LYDIA LANE	SOUTH PORTLAND	ME	04106
MAINE, STATE OF	RICHARD BERMAN, 1 INDIA ST	PORTLAND	ME	04101
MAINE, STATE OF	677 WESTBROOK ST	SOUTH PORTLAND	ME	04106
HANGAR GROUP LLC	100 AVIATION BLVD	SOUTH PORTLAND	ME	04106
758 WESTBROOK LLC	33 NUTE RD	MADBURY	NH	03823
MAINE, STATE OF	C/O MAINE PROPERTIES, 197 US RT 1	SCARBOROUGH	ME	04074
BROOKLAWN MEMORIAL PARK	2002 CONGRESS STREET	PORTLAND	ME	04102-1904
JETPORT STATE BUILDING LLC	42 MARKET STREET	PORTLAND	ME	04101
145 JETPORT BOULEVARD LLC	2300 CROWN COLONY DRIVE, SUITE 203	QUINCY	MA	02169
TRANSPORT LEASING CORP	58 LOWELL JCT RD	ANDOVER	MA	01810
VEREIT REAL ESTATE L.P.	DBA: DULUTH TRADING COMPANY, 201 EAST FRONT ST	MT. HOREB	WI	53572
MAINE TURNPIKE AUTHORITY	2360 CONGRESS ST	PORTLAND	ME	04102
PORTLAND, CITY OF	389 CONGRESS ST	SOUTH PORTLAND	ME	04106
FRESHLY BROOD LLC	26 COLLINS MILLS ROAD	WEST GARDINER	ME	04345
DIODES US MANUFACTURING INCORPORATED	333 WESTERN AV	SOUTH PORTLAND	ME	04106
2 MEADOWOOD LLC	446 WESTERN AV	SOUTH PORTLAND	ME	04106
TEXAS INSTRUMENTS INCORPORATED	PO BOX 660199, MS A3000	DALLAS	TX	75265

PUBLIC INFORMATIONAL MEETING SIGN-IN

Proposed Parking Lot Expansion
Portland International Jetport

Date/Time of Meeting: December 12, 2023, 6 P.M.

Location: Lower Level Open Space Area
1001 Westbrook Street, Portland

Members of the Public in Attendance	
Printed Name	**E-mail**
1. Gretchen Halpert	ghalpert@stny.rr.com
2. Lynn Jennings	pipithird@gmail.com
3. Ron Faris	RFARIS@STNY.RR.COM
4. Dick Farnsworth	OMC@maine.rr.com
5. Andrea Hawkes	achawkes@yahoo.com
6. MARY DAVIS	td@maine.rr.com
7. Kathleen Stokes	kastokes@yahoo.com
8. Kay Wattler	kwaxler3@maine.rr.com
9. WENDY + MICHAEL TAYLOR	WDTAYLOR126@comcast.net
10. Joe & Carolyn Heasley	jheasley1@maine.rr.com
11. Diane Diconzo / Pat Cannell	dianediconzo@gmail.com
12. JANE MARIE WILBERG	MENTJE4463@GMAIL.COM
Developer and Consultant Team in Attendance:	
1. Owen McCullough	Sebago Technics, Inc.
2. Amy Ball Sigl	" " "
3. Trevor Gardine	" " "
4. Paul Bradbury	Airport Director
5. Tom Ainsworth	12 Garrison St.
6.	
7.	

attendees

Members of the Public in Attendance	
Printed Name	**E-mail**
13. Jennifer Stenberg	jensten.88@gmail.com
14. Frederick Falker	ffalker@verizon.net
15. Regina Phillips	rphillips@portmainemaine.gov
16. Gilbert N Mitchell	gibwoody@aol.com
17. Jim Stenberg	jim@jsengineer.com
18. Tricia Foley	tricia.p.f2005@yahoo.com
19. Luis Millones	luis.millones@gmail.com
20. Thomas Hamtrick	twhs31@gmail.com
21. Megan Hamtrick	meganmhamtrick@gmail.com
22. Ava Keniston	kenistonava1@gmail.com
23. Eleanor Keniston	Kenistonava1@gmail.com
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25. CHARLOTTE WITT	CHARLOTTE.WITT@UNH.EDU
26. Adam Bard	adamjbard@yahoo.com
27. Nancy Dano	nancyedano.com
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29. Michael Gregory	michaelhayesgregory@gmail.com
30. MARTHA JOHNSTON	mhjmhc89@gmail.com
31. Zemfira Ahmadova	zemo_usa@yahoo.com
32. Tarlan Ahmadov	tarlan.ahmadov@Gmail.com
33. Kim + Paul Dubois	pdubois1915@yahoo.com
34. Kerry Kinkel	thesagecounsel@gmail.com
35. Stephanie Walsh	stephlwalsh@gmail.com
36. Kim Kenney	KENNEYKIM@HOTMAIL.COM

Members of the Public in Attendance	
Name	**E-mail**
37. Stephanie Grohs	sgrohsmd@gmail.com
38. Jim Wilberg	jwwilberg@gmail.com
39. Woody Howard	g.t.howardcad.com
40.	
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Attachment 4

Resource Information:

Wetlands Report

Functions and Values Assessment

Vernal Pools Assessment

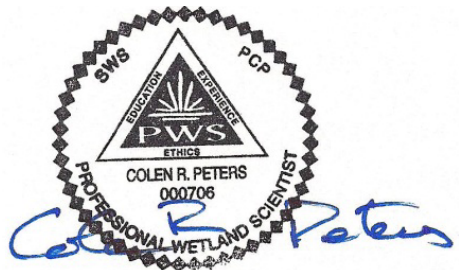
Wetland Functional Assessment

To: **Owens McCullough, P.E. Project Manager**

From: **Cole Peters, PWS**

Date: **February 5, 2024**

Project: 19059- Portland Jetport Parking Expansion



Parking expansion at the Portland International Jetport (PWM) will require 8,625 sq ft (0.198 acre) of wetland impact (the "Project"). Locations of impact are identified on the Grading Plan (Sheet C-203) with respective extents of the two areas which range between 2,807 and 5,818 sq ft (0.064 to 0.133 acre).

Surface drainage at this part of PWM is generally to the southwest toward an unnamed perennial tributary of the Stroudwater River. The mixed deciduous forested wetland (PFO1) at the Site occurs in the upper watershed of this stream more than approximately 900 ft from a defined stream channel (Figure 1). Wetland to be impacted by the Project lacks characteristics indicative of a "freshwater wetland of special significance" (Chapter 310 §4-A (1–8).

A field delineation of jurisdictional wetlands has been completed at PWM on both sides of Jetport Boulevard, northeast of International Parkway (Figure 1). The Federal Emergency Management Agency (FEMA) has prepared Flood Insurance Rate Maps (FIRM) for this part of Portland (Community Panel Number 230051 0012C, effective date 12/8/1998). No part of the area reviewed occurs within a FEMA designated 100-year floodplain (Zone A, AE). The City of Portland Zoning Map (June 24, 2022) identifies the area including the Site as the Airport Business (AB) District and no part of the area reviewed is subject to the City's Shoreland Zoning Ordinance.

An assessment of wetland functions and values that will be lost or degraded is necessary for alterations exceeding 15,000 square feet, in a freshwater wetland not of special significance (Chapter 310 §5-C (6)(a)(ii). The functional assessment presented below is based on field observations during the wetland delineation, referenced maps and other relevant, published information.

Functional Assessment Method:

A Descriptive Approach to assessing wetland functions and values described in a September 1999 supplement (the Supplement)[1] to *The Highway Methodology Workbook* by the New England Division of the U.S. Army Corps of Engineer (Corps) is an assessment method accepted by Maine Department of Environmental Protection (MDEP). Functions and values of wetlands at the Site are evaluated by this method and are discussed below.

The Supplement indicates "*Wetland functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society*". Wetland functions relate to the ecological significance of wetland properties without regard to subjective values. Wetland functions are generally considered to be the

[1] US Army Corps of Engineers, New England District, 1999. *The Highway Methodology Workbook Supplement: Wetland Functions and Values, A Descriptive Approach,* NAEEP-360-1-30A, 32 pgs.

result of biologic, geologic, hydrologic, biogeochemical, and/or physical processes that occur or take place in a wetland. Functions attributed to wetlands include the following:

- Groundwater Recharge/Discharge
- Floodflow Alteration (Storage & Desynchronization)
- Fish and Shellfish Habitat
- Sediment/Toxicant/Pathogen Retention
- Nutrient Removal/Retention/Transformation
- Production (Nutrient) Export
- Sediment/Shoreline Stabilization; and
- Wildlife Habitat

Wetland values are generally considered to be benefits derived from either these functions or other characteristics of a wetland. Perceived values arise from the functional ecological processes exhibited by wetlands but are determined also by human perceptions, the location of a specific wetland, the human pressures on a wetland, and the extent of the resource (Mitsch and Gosselink 2000)[2]. The value of a specific function, or combination thereof, is based on human judgment of the worth, merit, quality, or importance attributed to those functions. Values attributed to wetlands include the following:

- Recreation
- Education/Scientific Value
- Uniqueness/Heritage
- Visual Quality/Aesthetics; and
- Threatened or Endangered Species Habitat

The functions and values identified above may vary slightly in terminology, but encompass all the functions identified in, and addressed by, the Natural Resource Protection Act (NRPA) Wetland Protection Rules. As defined in these Rules, "functions" are:

> *The roles wetlands serve which are of value to society or the environment, including but not limited to, flood storage, flood water conveyance, ground water recharge and discharge, erosion control, wave attenuation, water quality protection, scenic and aesthetic use, food chain support, fisheries, wetland plant habitat, aquatic habitat and wildlife habitat* (Chapter 310 §3J).

A basic concept presented by the Supplement is an identification of "Considerations/Qualifiers" that can be used as indicators or descriptors of the presence of specific functions or values. From as few as three to as many as 32 of these Considerations/Qualifiers are identified in Appendix A of the Supplement for each of the respective wetland functions and values. These Considerations/ Qualifiers therefore become a checklist or outline of indicators of functions and values for wetland scientists to observe, compare against, and structure assessments. The Supplement indicates these Considerations are intended to be flexible and are ultimately based on "best professional judgment."

Site Wetland Functions and Values:

Functions and values of the wetland to be impacted by the Project are dependent on, and influenced by, various physical characteristics at the Site, which are indicative of relative levels of function and value.

[2] Mitch, W.J., and Gosselink, J.G., 2000. *Wetlands* (3rd ed.), Van Nostrand Reinhold Company, NY, 920 pgs.

These include size and proximity of wetlands to ongoing development activity, geologic setting, soil characteristics, presence and duration of hydrology, landscape position, and wetland cover type. Consequently, the effects of changes to these physical characteristics are evaluated in assessing whether an activity or project impacts wetland-specific functions and values.

Considerations/Qualifiers listed in Appendix A of the Supplement and observed in impacted wetlands at the Site are recorded for individual functions and values on the accompanying Wetland Function-Value Evaluation Form. The significance of these Considerations/Qualifiers to functions and values associated with these wetlands are discussed below and on the attached data form.

- **Groundwater Recharge/Discharge** – The Maine Geological Survey has not designated the unconsolidated deposits beneath the Site as a Significant Sand and Gravel Aquifer on this part of the Portland West Quadrangle (MGS Open-File No. 99-11). Recharge of underlying groundwater by the wetlands is therefore limited. No evidence of groundwater discharge was observed in the wetlands.

- **Floodflow Alteration (Storage and Desynchronization)** – Wetland where the Project is proposed does not occur in a 100-year floodplain mapped by the Federal Emergency Management Agency on the most recent Flood Insurance Rate Maps (Community Panel Number 230051 0012C, effective date 12/8/1998), for this part of Portland.

- **Fish and Shellfish Habitat** – Habitat for fish and shellfish does not occur in the non-riparian PFO wetland.

- **Sediment/Toxicant/Pathogen Retention** – This form of water quality improvement prevents degradation of water quality and *"relates to the effectiveness of the wetland as a trap for sediments, toxicants or pathogens in runoff from surrounding uplands or upstream eroding wetland areas*" (USACE NED, 1999). Wetlands have intrinsic abilities to modify or trap a wide spectrum of water-borne substances commonly considered pollutants or contaminents (Hammer, 1997)[3]. Wetlands at the Site provide this function to a limited extent, however this benefit to water quality improvement is generally constrained due to the absence of sources impacting water quality.

- **Nutrient Removal/Retention/Transformation** – "*This function relates to the effectiveness of the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries*" (USACE NED, 1999). Retention time in the wetland is influenced by physical characteristics of the wetland basin, and by the edaphic (soils), micro topographic, and vegetative conditions within the wetland. Wetlands at the Site provide this function to a limited extent, however this benefit to water quality improvement is generally constrained due to the absence of sources impacting water quality.

- **Production (Nutrient) Export** – "*This function relates to the effectiveness of a wetland to produce food or usable products for humans or other living organisms"* (USACE NED, 1999). No export can occur from the closed isolated depressions dominate by woody vegetation that lacks berries, fruit, nuts or other mast.

[3] Hammer, D.A., 1997. *Creating Freshwater Wetlands* (2nd ed.), Lewis Publishers, NY, 406 pgs.

- **Sediment/Shoreline Stabilization** – This function is typically associated with wetland areas that stabilize streambanks and shorelines of waterbodies from erosion and is therefore not provided by the wetland to be impacted.

- **Wildlife Habitat** – "*This function considers the effectiveness of a wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge*" (USACE NED, 1999). The forested wetland at the Site provides habitat cover for transitory wildlife that may travel through the area but the small, localized areas of wetlands do not provide habitat for most "wetland dependent wildlife" such as beaver, mink, muskrat, otter, and waterfowl. Although the August 2016 Portland Beginning with Habitat Map prepared MDIFW identifies presence of endangered New England Cottontail (NEC, *Sylvilagus transitionalis*) habitat in this part of the Jetport and the residential neighborhood to the northwest, based on previous work at PWM coordinated with MDIFW, the vegetative cover where work is proposed does not provide suitable habitat for NEC. Based on spring 2023 surveys conducted during the recommended period, significant vernal pools do not occur at the Site.

- **Recreation** – Wetlands support many types of direct recreation including hunting, trapping, fishing, wildlife watching, nature photography, berry picking, picnicking, hiking, walking, and boating (Hammer, 1997). Trails or other evidence of recreational use do not exist in the PFO1 wetland. This wetland value will not be impaired by the proposed Project.

- **Educational/Scientific Value** – The wetland does not contain attributes, nor does it occur in a location that merits being the topic and destination of school field trips. It is unknown whether scientific studies or research by students have taken place in the wetland but is unlikely.

- **Uniqueness/Heritage** – The PFO1 wetland at the Site is typical of one of the most common wetland types in southern Maine. This wetland type is not a critically imperiled (S1) or imperiled (S2) wetland community.

- **Visual Quality/Aesthetics** – Aesthetics, one of the most subjective values attributed to wetlands, generally is heightened by distant views or vistas with bodies of water. No open water or areas offering significant vistas are in the wetland.

- **Endangered Species Habitat** – The wetlands at the Site are not known to contain any federal or state-listed endangered or threatened species. As determined from the Portland Beginning with Habitat Map, no Rare or Exemplary Plant and Natural Communities tracked by the Maine Natural Areas Program (MNAP) in its Biological and Conservation Data system occur at the Site.

Conclusions:

As described above, all five values commonly attributed to wetlands are essentially absent from wetlands at the Site and therefore there is no effect or loss to result from the 8,625 sq ft (0.198 acre) of direct wetland impacts by placement of fill. In addition, three of the eight functions attributed to wetlands – Groundwater Recharge/Discharge, Fish and Shellfish Habitat, and Sediment Shoreline Protection – are also absent or not provided by wetlands at the Site and will also not be affected.

As justified by the absence of site-specific "Considerations/Qualifiers" indicative of the functions, the remaining five wetland functions at the Site are less than high or moderate quality.



Photo 1 – Wetlands that are to be impacted by the Project are located in the small patch of undeveloped woods in the upper right corner of this northward view across the Jetport Boulevard–International Parkway (left to right) intersection.



Photo 2 – Eastward view of the smaller (2,807 sq ft) isolated (no connection to surface drainage) PFO1 wetland located along the north side of International Parkway with the PWM terminal and existing long term parking area in the background.



Photo 3 – Eastward view of the larger (5,818 sq ft) isolated PFO1 wetland located near the center of the small patch of undeveloped woods, with the existing long term overnight parking lot in the background.

Wetland I.D. **#19059**

Total Area of Wetland: **8,624 sq ft** Human made? **No** Is wetland part of a wildlife corridor? **No** Or a "habitat island"? **No** Latitude: **43°39'00.46** Longitude: **70°18'50.09"**

Adjacent land use: **Portland International Jetport (PWM)** Distance to nearest roadway or other development: **< 20 ft** Prepared by: **Cole Peters, PWS** Date: **8/24/2023**

Dominant wetland systems present: **PFO1** Contiguous undeveloped buffer zone present: **None** Wetland Impact Type: **Fill - 8,624 sq ft (0.198 ac)**

Is the wetland a separate hydraulic system? **Yes, Isolated basin** If not, where does the wetland lie in the drainage basin? **High/Top** Evaluation based on: Office- **Yes** Field- **Yes**

How many tributaries contribute to the wetland? **None** Wildlife & vegetation diversity/abundance (**See accompanying report**) Corps manual wetland delineation completed: **Yes**

Function/Value	Suitability Y	Suitability N	#	PF	Comments-Rationales (Reference #)
Groundwater Recharge/ Discharge		X		---	The wetland does not occur on/over an MGS-designated Sand & Gravel Aquifer and groundwater recharge is limited by low permeability soils. No evidence of groundwater discharge was observed at the Site.
Floodflow Alteration		X		---	The wetland is in an isolated basin with a small catchment area and is not in a FEMA designated floodplain.
Fish and Shellfish Habitat		X		---	N/A- No stream or waterbody present.
Sediment/Toxicant Retention	X			No	Toxicant sources in the small watershed adjacent to wetland are not abundant.
Nutrient Removal	X			No	Nutrient sources in the small watershed adjacent to wetland are not abundant.
Production Export		X		---	No stream occurs within the wetland for downgradient export.
Sediment/Shoreline stabilization		X		--	N/A- Applies to wetlands along a streambank or shoreline.
Wildlife Habitat		X		---	Minimal wildlife habitat is provided by the wetland which is bordered on three sides by Jetport Drive, International Parkway and Loop Road that all lead to parking areas surrounding the terminal for Maine's busiest airport approximately 650 feet away.
Recreation		X		---	N/A- The forested wetland provides no recreational use.
Educational/Scientific		X		---	N/A- Site is undistinctive and not near schools.
Uniqueness/Heritage		X		---	N/A- PFO1 is a very common wetland type throughout southern Maine.
Visual Quality/Aesthetics		X		---	N/A- The forested wetland lacks a vista and is not discernably distinguishable from adjoining upland woods.
Endangered Species Habitat		X		---	No record or evidence observed.
Other				---	

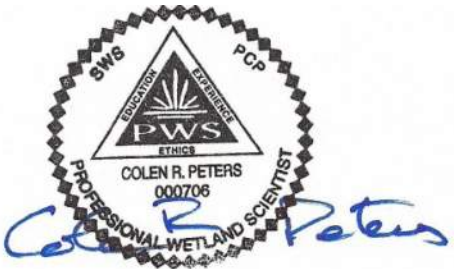
Wetland Delineation

To: **Owens McCullough, P.E. Project Manager**

From: **Cole Peters, PWS**

Date: **July 10, 2023**

Project: **19059- Portland Jetport Parking Expansion**



A field delineation of jurisdictional wetlands has been completed at the Portland International Jetport on both sides of Jetport Boulevard, northeast of International Parkway (Figure 1). The Federal Emergency Management Agency (FEMA) has prepared Flood Insurance Rate Maps (FIRM) for this part of Portland (Community Panel Number 230051 0012C, effective date 12/8/1998). No part of the area reviewed occurs within a FEMA designated 100-year floodplain (Zone A, AE). The City of Portland Zoning Map (June 24, 2022) identifies the area including the Site as the Airport Business (AB) District and no part of the area reviewed is subject to the City's Shoreland Zoning Ordinance.

Wetland Delineation:

Wetland boundaries were delineated at the Site by Cole Peters, PWS, and Anna Biddle, LSS, on May 31, 2023 with sequentially numbered pink flagging. The flagging was then located with a sub-meter accuracy global position system (GPS) unit to depict these boundaries on Figure 1.

Evidence indicative of wetland from three parameters – vegetation, soils and hydrology – was used to identify and delineate the wetlands in accordance with the 1987 *US Army Corps of Engineers Wetland Delineation Manual* and the subsequent *Regional Supplement to the US Army Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (January 2012). With the exception of unusual or atypical situations, evidence of wetland must be exhibited by all three parameters for an area or position to be designated as wetland. Characteristics of the delineated wetland are described below.

The freshwater wetland community on the Site is dominated by trees and shrubs that include: red maple (*Acer rubrum*), speckled alder (*Alnus incana*), arrowwood (*Viburnum recognitum*), glossy buckthorn (*Frangula alna*), and winterberry holly (*Ilex verticillata*). In open areas and the herbaceous understory are: meadowsweet (*Spirea latifolia*), bluejoint (*Calamagrostis canadensis*), tussock sedge (*Carex stricta*), and royal, cinnamon and sensitive ferns (*Osmunda regalis, Osmumdastrum cinnamomeum*, *Onoclea sensibilis*). All of these plants are identified as "Obligate" (OBL), "Facultative Wetland" (FACW) or "Facultative" (FAC) indicators of wetland by the 2016, *State of Maine National Wetland Plant List* prepared by the US Army Corps of Engineers and are therefore hydrophytes.

Dominant vegetation throughout upland areas of the Site consists of: white pine (*Pinus strobus,*), northern red oak (*Quercus rubra*), trembling aspen (*Populus tremuloides*), Tatarian honeysuckle (*Lonicera tatarica*), Japanese barberry (*Berberis thunbergii*), multiflora rose (*Rosa multiflora*), and bracken fern (*Pteridium aquilinum*). All of these plants are classified as "Facultative Upland" (FACU) or are not indicative of wetland, and when in predominance are indicative of upland.

The medium intensity soil survey prepared by the USDA Natural Resource Conservation Service (NRCS) indicates the poorly drained Swanton (Sz) Series occurs beneath wetlands delineated at the Site. The fine sandy loam of the Sz Series is designated as hydric and indicative of wetlands. A hand auger was also used to evaluate soils in areas delineated as wetlands. At sampling locations in areas dominated by hydrophytes, characteristics were representative of hydric soil indicator criteria F3: Depleted Matrix.

Hydrology is considered to be the "*driving force*" of wetlands (Mitch and Gosselink, 1986) and inherently is responsible for the adaptation of certain vegetation (hydrophytes) and the development of specific soil characteristics (hydric) indicative of wetlands. At the time of the survey, evidence of wetland hydrology observed at the Site included: localized standing water, saturated soils, sediment deposits, water-stained leaves, and drainage patterns indicative of wetlands.

The National Wetland Inventory (NWI) makes use of *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et. al, 1979) to differentiate types of wetlands. With this system, freshwater wetlands are classified based on dominant plant type as: Palustrine Forested (**PFO**), Palustrine Scrub-Shrub (**PSS**), Palustrine Emergent (**PEM**), Palustrine Open Water (**POW**), or Palustrine Unconsolidated Bottom (**PUB**). Wetlands classified by this system as PFO or PSS are more commonly known of as swamps whereas PEM typically represent marshes or meadows. POW and PUB generally lack vegetation and correspond to pond.

On the southeast side of Jetport Boulevard, deciduous trees generally dominate the two small isolated areas of deciduous forested wetlands (Photos 1, 2) (Figure 1) that are designated as PFO1 by the NWI Classification System. PFO1 wetland also occurs on the opposite side of Jetport Boulevard along International Parkway (Photo 3). The narrow, linear, parallel configuration of wetland indicate it was previously ditched, potentially for agriculture. Another area of wetland to the northeast borders the landscaped edge of Jetport Boulevard and extends onto adjoining property to the north (Photo 4). The wetland is dominated by a mixture of deciduous trees and shrubs designated by NWI as PFO1/PSS1. Based on depth, water near Jetport Boulevard in this wetland is likely to be permanent, potentially due to the absence of a drainage outlet.

Vernal Pools:

Vernal pools (**VP**s) are defined by the Maine Department of Environmental Protection (MDEP) as: "*a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and no viable populations of predatory fish*" (Chapter 335 §9). "Significant vernal pools" (**SVP**s) are recognized by the presence of fairy shrimp (*Eubrandhipus* spp.), or more than 40 wood frog (*Rana sylvatica*) egg masses or at least 10 blue spotted salamander (*Ambystoma laterale*) or 20 spotted salamander (*A. maculatum*) egg masses. VPs documented to be used by state-listed rare, endangered, or threatened species such as Blanding's turtles (*Emydoidea blanddingii*), spotted turtles (*Clemmys guttata*), ringed boghaunter dragonflies (*Williamsoni linterni*), Eastern ribbon snakes (*Thamnophis sauritus*), wood turtles (*Clemmys insculpta*), four-toed salamanders (*Hemidactylium scutalum*), swamp darner dragonflies (*Epiaeschna heros*), and comet darner dragonflies (*Anax longipes*), are also considered to be SVPs (Ch 335 §9B 1-4).

Under the provisions of Section 404 of the federal Clean Water Act, the US Army Corps of Engineers (USACE) regulates activities in "*waters of the United States"* including VPs, which are defined by the USACE New England District in the State of Maine General Permit (GP, reissued on October 14, 2020). The NED definition, while very similar to MDEP's, does not reference "natural" and does not recognize

or differentiate SVPs based on number of indicator species egg masses. Instead, the GP definition states: "*VPs are depressional wetland basins that typically go dry in most years and may contain inlets or outlets, typically of intermittent flow. Vernal pools range in both size and depth depending on landscape position and parent material(s). In most years, VPs support one or more of the following obligate species: wood frog (Rana sylvatica), spotted salamander (Ambystoma maculatum), blue spotted salamander (A. laterale) fairy shrimp (Eubrandhipus* spp.). *However, they should preclude sustainable populations of predatory fish."*

West of Penobscot Bay and southward from Augusta to Fryeburg, the Maine Department of Inland Fisheries and Wildlife (MDIFW) recommends evidence of VP indicator species egg masses be observed on separate dates during periods established for wood frogs (April 10th to April 25th) and spotted salamanders (April 20th to May 10th). Potential vernal pools (**PVP**s) can be identified outside (before/after) the recommended survey period, but are not necessarily indicative of regulatory jurisdiction. During the recommended survey periods VP and SVP characteristics are to be documented on MDIFW data forms and located with submeter accuracy GPS in order to identify the portion of Critical Terrestrial Habitat (**CTH**) within 250 feet around an SVP referred to as *Significant Vernal Pool Habitat* (**SVPH** Ch 335 §9A (7)).

Vernal pool surveys were conducted at the Site on April 11, and 23, 2023. Depressions do not occur in the three areas of PFO1 wetland for ponding of surface water to a depth and duration that is suitable for the occurrence of any form of vernal pool or indicator species egg masses. Ponded water in the PFO1/PSS1 wetland is suggestive of a vernal pool however, no amphibian indicator egg masses were observed here during either survey date. During the second survey, a solitary mallard (*Anas platyrhynchos*) drake was feeding in the pool.

Regulatory Assessment:

Activities in and adjacent to wetlands are regulated by the MDEP under the provisions of the Natural Resources Protection Act (NRPA) and associated Permit by Rule (Chapter 305), Wetland and Waterbodies Protection (Chapter 310) and Significant Wildlife Habitat (Chapter 335) Rules. Certain characteristics are relevant to whether a wetland is regulated as a "wetland of special significance" (WOSS).

Wetlands at the Site:

- do not contain a "critically imperiled (S1)" (Ch 310 §3F) or an "imperiled (S2)" (Ch 310 §3L) community as defined by the Natural Areas Program;
- do not contain significant wildlife habitat (38 MRSA §480-B (10) mapped by MDIFW;
- are not located within 250 feet of a "coastal wetland" (38 MRSA §480-B (2));
- are not located within 250 feet of a "great pond" (38 MRSA §465-A);
- do not contain more than 20,000 square feet of open water or aquatic or emergent marsh vegetation;
- do not occur in a 100-year floodplain mapped by the Federal Emergency Management Agency (FEMA) (38 MRSA §480-B(2-D));
- are not a "peatland" (Ch 310 §3P); and

- do not occur within 25 feet of a "river, stream or brook" (38 MRSA §480-B (9)).

Wetlands at the Site are therefore not "wetlands of special significance" (WOSS- Ch 310 §4A (1-8)).

Typically, activities requiring alteration of less than 4,300 square feet of non-WOSS wetland would be a "minor alteration" and would not require a NRPA permit (38 M.R.S.A. §480 Q (17)). In excess of this but less than 15,000 square feet would require a Tier 1 permit and a Tier 2 permit would be necessary for impacts between 15,000 square feet and an acre (43,560 square feet). The cumulative extent of previous approved wetland impacts is relevant to determining the applicable Tier of NRPA permitting. Excluding specific activities authorized by Permit by Rule (PBR - Chapter 305) provisions of the NRPA, activities exceeding one acre would require a Tier 3 permit.

Wetlands at the Site are also regulated by the US Army Corps of Engineers as "*waters of the United States*" under the provisions of Section 404 of the Clean Water Act. To authorize minimal-impact activities in wetlands, including placement of fill, the Corps makes use of a General Permit (GP) for the State of Maine. Such impacts to wetlands are broken down into two permit categories under the GP based on the following area thresholds: Category 1 – less than 15,000 square feet and Category 2 – 15,000 square feet to three acres. Activities eligible for Category 1 activities can be authorized with a Self-Verification Notification (SVN) Form submitted to the Corps. Category 2 activities are reviewed in conjunction with the US Fish and Wildlife Service, and the US Environmental Protection Agency and as appropriate the National Marine Fisheries Services, and require an application and written approval from the Corps of Engineers.



Photograph 1: Southwestward view of the 2,810± sq ft isolated forested wetland (PFO1) with International Parkway in the background.



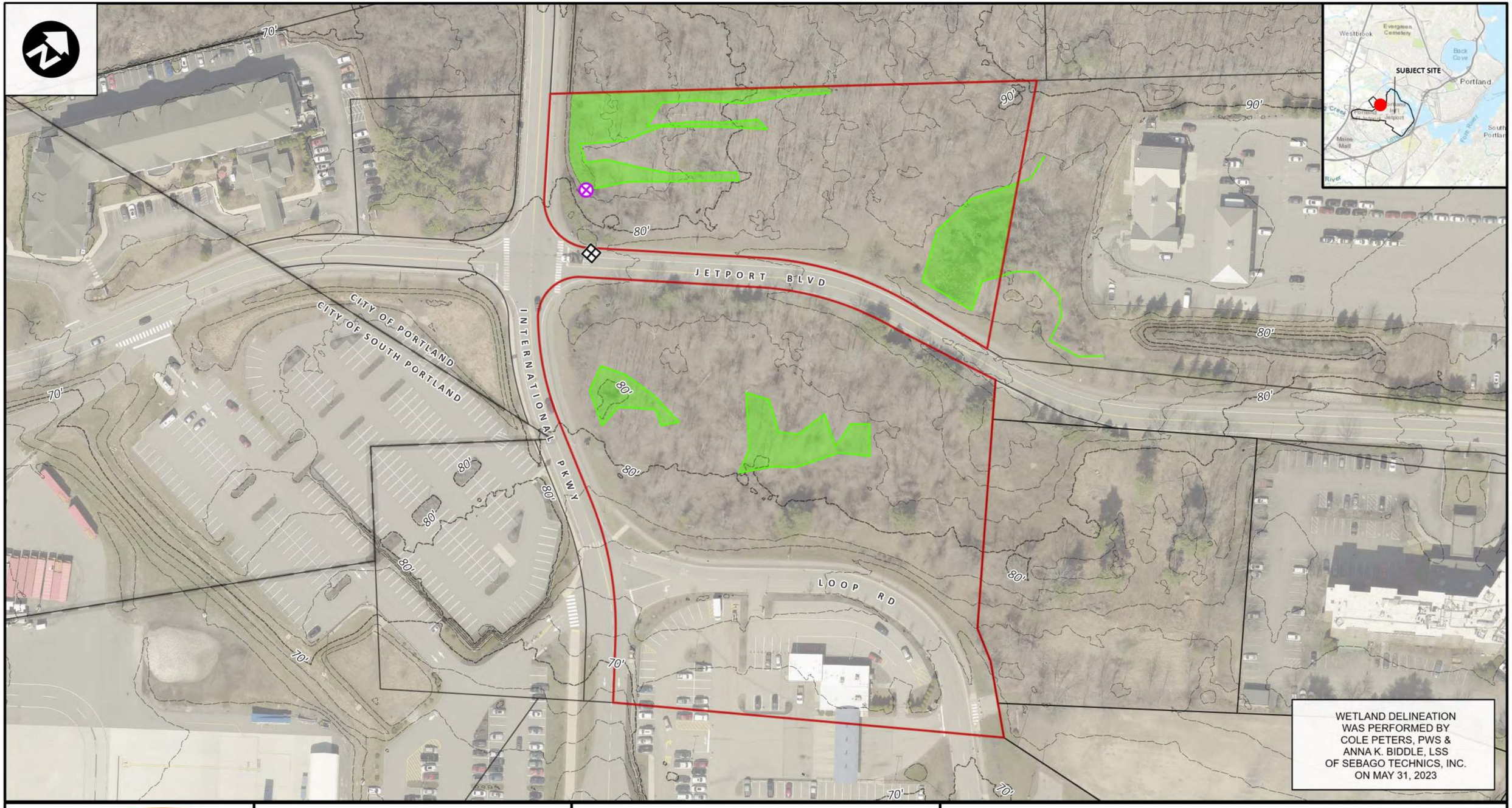
Photograph 2: Eastward view of the 5,820± isolated forested wetland (PFO1) with the Loop Road at center-right.



Photograph 3 Westward down gradient view of the forested wetland (PFO1) on the north side of Jetport Boulevard that appears to have been historically ditched.



Photograph 4: Northward view of ponded water in the deciduous forested and scrub shrub (PFO1/PSS1) wetland on the north side of Jetport Boulevard. No amphibian egg masses indicative of vernal pools were observed in the wetland during surveys conducted on April 11 and 21, 2023.



SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd. - Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

0 100 200 300
Feet
1" = 100' when printed at 11 x 17

FIGURE 1: NATURAL RESOURCES MAP

TAX MAP 210A, LOTS B-1 & A-7

INFORMATION: MAINE GEOLIBRARY
2020 USGS LIDAR TOPOGRAPHY
2021 SPRING ORTHOIMAGERY

THIS IS NOT A BOUNDARY SURVEY.
WETLAND FEATURES WERE DELINEATED
USING GPS TECHNOLOGY CAPABLE OF SUB-METER ACCURACY.

LOCATION: JETPORT BOULEVARD
PORTLAND, ME

DATE: 7/10/2023
PROJECT NUMBER: 19059

19059.aprx

- AREA OF INTEREST (AOI)
- TOWN BOUNDARY
- CATCH BASIN
- CULVERT OUTLET - 24" RCP
- DELINEATED WETLAND BOUNDARY
- WETLANDS WITHIN AOI
- 2' CONTOUR
- 10' CONTOUR

Map Projection : NAD 1983 StatePlane Maine West FIPS 1802 Feet

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JANET T. MILLS
GOVERNOR

MELANIE LOYZIM
COMMISSIONER

February 9, 2024

Paul Bradbury
Portland International Jetport
1001 Westbrook Street
Portland, ME 04102

Re: Vernal Pool Significance Determination, Pool ID # 5273–Portland

Dear Paul Bradbury:

Vernal pools are temporary to semi-permanent wetlands occurring in shallow depressions that typically fill during the spring and dry during the summer or in drought years. They provide important breeding and foraging habitat for a wide variety of specialized wildlife species including several rare, threatened, and endangered species.

After conducting a field survey at your request, it has been determined that the vernal pool identified above on your property is NOT SIGNIFICANT because either: 1. the feature does not meet the definition of a vernal pool under the Significant Wildlife Habitat rules, 06-096 CMR 335(9) or 2. the vernal pool does not meet the biological standards for exceptional wildlife use of the Significant Wildlife Habitat rules, 06-096 CMR 335(9)(B). Therefore, activities within 250 feet of the pool are not regulated under the Natural Resources Protection Act (NRPA) unless there are other protected natural resources nearby such as streams or freshwater wetlands. I have attached a copy of the database printout that verifies the State's findings with respect to your survey.

I want to also advise you that the pool area on your property can be considered a freshwater wetland and therefore direct pool alterations may require permitting under the NRPA.

If you have any questions or need further clarification, please contact Mark Stebbins at 207-592-4810 or email at: Mark.N.Stebbins@maine.gov

Sincerely,

Robert Wood
Director, Bureau of Land Resources

cc. town file

IFW Recommendations for Significant Vernal Pool Determinations

The following is a list of pools and IFW's recommendations for whether or not they qualify as Significant Vernal Pools, one of Maine's Significant Wildlife Habitats.

Data current as of: Friday, February 09, 2024

IFW's Pool ID: 5273 Twp: Portland
Observer's ID: VP-1

UTM Coordinates of Pool Center: 394121 E, 4833920 N
ProjectType: 19059-PWM parking

Landowner:	Paul Bradbury - Portland International Jetport	Contact:	Cole Peters - Sebago Technics, Inc
	1001 Westbrook Street		75 John Roberts Road,Suite 4A
	Portland, ME 04102		South Portland, ME 04106
	(207) 756-8029 phb@portlandmaine.gov		(207) 200-2100 Cpeters@sebagotechnics.com

Survey Date: 4/11/2023 Additional Survey Dates: 04/21/2023

IFW's Recommendation: RED: NOT SIGNIFICANT, does not meet the vernal pool definition

IFW Comments:

Attachment 5

Avoidance & Minimization/Alternatives Analysis

Avoidance & Minimization:

The proposed project involves the construction of a much-needed expanded parking area on the Jetport campus. The proposed project area is located within a planned area of airport facility growth as outlined in the approved airport masterplan. In siting the parking expansion, the location of existing surface lots, feasibility of use in respect to the airport layout, and proximity to abutting properties was considered. Every effort was made to avoid or minimize impacts on the natural resources located on the subject parcel. A previously developed lot is being repurposed to provide additional long-term parking. The proposed development has a robust landscaping plan to provide buffering to abutting properties and to replace diseased trees that are to be removed.

Alternatives Analysis:

The proposed project is part of the Jetports long term Sustainable Airport Master Plan. This plan was created to best meet the needs of those utilizing the airport while being compatible with the surrounding environment. For the purposes of this project three proposed action alternatives were reviewed: No Action Alternative; Alternate Location Alternative; Proposed Alternative.

No Action Alternative

The Portland Jetport is currently facing a parking crisis. There has been no substantial increase in available parking since 2012. There is insufficient parking for the number of people using the airport. This lack of parking results in people driving around the airport loop road multiple times in search of a parking space. The no action alternative is not practical. As a transportation facility serving a large demographic parking requirements for the airport must be responsive to customer needs.

Alternate Location Alternative

The applicant reviewed other potential areas on the airport campus, as well as the expansion of the airport parking garage. A parking garage expansion is not a financially practical option at this time. The number of enplanements currently and projected for the near future do not justify the cost of a parking garage expansion. Other available open space on the campus would either impact more wetlands or be sited closer to abutting residential properties. The Alternate locations alternative is not practical.

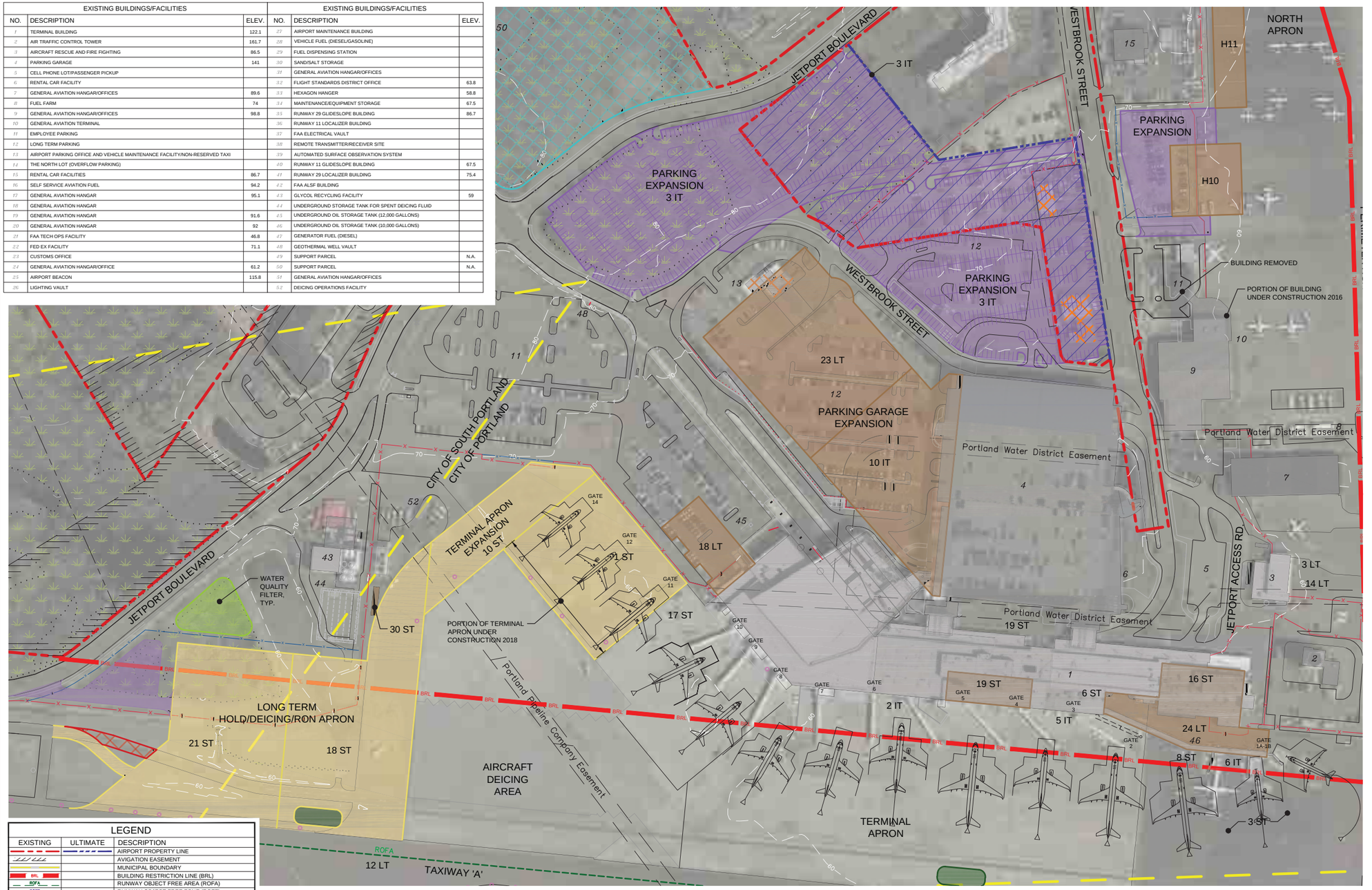
Proposed Alternative

The proposed alternative provides for parking consistent with the Jetport Parking Masterplan (attached) and is located next to the existing surface parking lot. This approach provides for an efficient means of adding surface parking to the Jetport. The parking lot will be accessed from existing roadway infrastructure and will integrate with existing surface parking and pedestrian pathways to the terminal.

The proposed alternative includes converting an existing developed area, an undeveloped area, a paved cell phone lot and a gravel valet lot, into one of the new long term parking areas.

By developing the two lots in this configuration it allows for the increased parking near the terminal building and provides for an efficient continuation of existing parking avoid fragmentation of parking while fitting appropriately within the Jetport campus.

EXISTING BUILDINGS/FACILITIES			EXISTING BUILDINGS/FACILITIES		
NO.	DESCRIPTION	ELEV.	NO.	DESCRIPTION	ELEV.
1	TERMINAL BUILDING	122.1	27	AIRPORT MAINTENANCE BUILDING	
2	AIR TRAFFIC CONTROL TOWER	161.7	28	VEHICLE FUEL (DIESEL/GASOLINE)	
3	AIRCRAFT RESCUE AND FIRE FIGHTING	86.5	29	FUEL DISPENSING STATION	
4	PARKING GARAGE	141	30	SAND/SALT STORAGE	
5	CELL PHONE LOT/PASSENGER PICKUP		31	GENERAL AVIATION HANGAR/OFFICES	
6	RENTAL CAR FACILITY		32	FLIGHT STANDARDS DISTRICT OFFICE	63.8
7	GENERAL AVIATION HANGAR/OFFICES	89.6	33	HEXAGON HANGER	58.8
8	FUEL FARM	74	34	MAINTENANCE/EQUIPMENT STORAGE	67.5
9	GENERAL AVIATION HANGAR/OFFICES	98.8	35	RUNWAY 29 GLIDESLOPE BUILDING	86.7
10	GENERAL AVIATION TERMINAL		36	RUNWAY 11 LOCALIZER BUILDING	
11	EMPLOYEE PARKING		37	FAA ELECTRICAL VAULT	
12	LONG TERM PARKING		38	REMOTE TRANSMITTER/RECEIVER SITE	
13	AIRPORT PARKING OFFICE AND VEHICLE MAINTENANCE FACILITY/NON-RESERVED TAXI		39	AUTOMATED SURFACE OBSERVATION SYSTEM	
14	THE NORTH LOT (OVERFLOW PARKING)		40	RUNWAY 11 GLIDESLOPE BUILDING	67.5
15	RENTAL CAR FACILITIES	86.7	41	RUNWAY 29 LOCALIZER BUILDING	75.4
16	SELF SERVICE AVIATION FUEL	94.2	42	FAA ALSF BUILDING	
17	GENERAL AVIATION HANGAR	95.1	43	GLYCOL RECYCLING FACILITY	59
18	GENERAL AVIATION HANGAR		44	UNDERGROUND STORAGE TANK FOR SPENT DEICING FLUID	
19	GENERAL AVIATION HANGAR	91.6	45	UNDERGROUND OIL STORAGE TANK (12,000 GALLONS)	
20	GENERAL AVIATION HANGAR	92	46	UNDERGROUND OIL STORAGE TANK (10,000 GALLONS)	
21	FAA TECH OPS FACILITY	46.8	47	GENERATOR FUEL (DIESEL)	
22	FED EX FACILITY	71.1	48	GEOTHERMAL WELL VAULT	
23	CUSTOMS OFFICE		49	SUPPORT PARCEL	N.A.
24	GENERAL AVIATION HANGAR/OFFICE	61.2	50	SUPPORT PARCEL	N.A.
25	AIRPORT BEACON	115.8	51	GENERAL AVIATION HANGAR/OFFICES	
26	LIGHTING VAULT		52	DEICING OPERATIONS FACILITY	



ULTIMATE SHORT TERM BUILDING/FACILITIES	
NO.	DESCIPTION
1 ST	TERMINAL APRON EXPANSION NORTHWEST END - PHASE 1
2 ST	ENVIRONMENTAL ASSESSMENT AND PERMITTING FOR AIRPORT IMPROVEMENTS - NS
3 ST	GATE 1 APRON RECONSTRUCTION AND CONSTRUCT TW C SNOW SHOULDERS NORTH
4 ST	RUNWAY INCURSION WARNING SYSTEM - NS
5 ST	3RD FLOOR BYPASS AUTO EXIT PORTALS - NS
6 ST	GATE 1 - 6 REHABILITATION VERTICAL CIRCULATION IMPROVEMENT
7 ST	PRE CONDITIONED AIR/LIFTS FOR LOADING BRIDGES - NS
8 ST	GATE 1 ADDITIONAL LOADING BRIDGES
9 ST	CENTRAL AIR HANDLING UNITS - NS
10 ST	TERMINAL APRON EXPANSION NORTHWEST END - PHASE 2
11 ST	ENVIRONMENTAL ASSESSMENT MITIGATION MEASURES - NS
12 ST	ARFF VEHICLE - NS
13 ST	SNOW REMOVAL TRACTOR FOR AIRFIELD LIGHTS/SIGNS - NS
14 ST	MAINTENANCE BUILDING GENERATOR AND ENCLOSURE
15 ST	CLICK TO ACTIVATE RUNWAY LIGHTS - NS
16 ST	ADMINISTRATION OFFICES ABOVE BAGAGE CLAIM - EAST END
17 ST	ADDITIONAL LOADING BRIDGE FOR GATE 11
18 ST	LONG TERM HOLD/DEICING/RON APRON - PHASE 1
19 ST	FIS FACILITY
20 ST	SNOW MELT EQUIPMENT FOR CONTAINMENT SNOW - SRE/MAINTENANCE - NS
21 ST	LONG TERM HOLD/DEICING/RON APRON - PHASE 2
22 ST	RUNWAY 11 TAXIWAY BYPASS AND PERIMETER SERVICE ROAD REALIGNMENT
23 ST	TREE REMOVAL FOR GQS ON RUNWAY 36 END
24 ST	EXPAND BAGGAGE CLAIM - PHASE 2 - NS
25 ST	LOADING BRIDGE - NS
26 ST	CONSTRUCT AIR CARGO TAXIWAY - PHASE 1
27 ST	REHABILITATE CARGO APRON
28 ST	DISPLACEMENT PLOWS - NS
29 ST	AIRPORT SECURITY FENCE AND GATE UPGRADES (NORTH EAST AREA)
30 ST	DEICING OPERATIONS FACILITY RELOCATION
NS - NOT SHOWN	

ULTIMATE INTERMEDIATE TERM BUILDINGS/FACILITIES	
NO.	DESCRIPTION
1 IT	CONSTRUCT TAXIWAY C REALIGNMENT - PHASE 1
2 IT	LOADING BRIDGE
3 IT	LAND ACQUSITION AND PARKING EXPANSION
4 IT	CONSTRUCT AIR CARGO TAXIWAY - PHASE 2
5 IT	LOADING BRIDGES
6 IT	REPLACE REGIONAL BOARDING RAMPS AT GATE 1B AND 1C
7 IT	RELOCATE TAXIWAY A EAST OF RUNWAY 18-36
8 IT	CONSTRUCT TAXIWAY C REALIGNMENT - PHASE 2
9 IT	RELOCATE SERVICE ACCESS ROAD EAST OF CARGO
10 IT	PARKING GARAGE EXPANSION - PHASE 3
NS - NOT SHOWN	

ULTIMATE LONG TERM BUILDINGS/FACILITIES	
NO.	DESCRIPTION
1 LT	CONSTRUCT AIR CARGO APRON - PHASE 1 (NORTH)
2 LT	CONSTRUCT AIR CARGO APRON - PHASE 2 (SOUTH)
3 LT	ARFF VEHICLE
4 LT	CONSTRUCT TAXIWAY B RUNWAY 36 TO 29
5 LT	EXTEND CARGO APRON EAST INTERPORT LOCATION
6 LT	ROTARY SNOWPLOW 5000 TPH - NS
7 LT	EXPAND MAINTENANCE BUILDING
8 LT	CONSTRUCT AIRCRAFT ENGINE RUN-UP PAD
9 LT	SRE 18' FRT MTD BROOM - NS
10 LT	STRENGTHEN/REHAB RUNWAY 11-29
11 LT	DISPLACEMENT PLOWS/SPREADERS - NS
12 LT	STRENGTHEN/REHAB TAXIWAY A, D, E, AND F
13 LT	2,000 GALLON LIQUID SPREADER - NS
14 LT	ARFF VEHICLE
15 LT	CONSTRUCT SOUTH APRON TAXIWAY
16 LT	CONSTRUCT SOUTH GENERAL AVIATION APRON - PHASE 1
17 LT	CONSTRUCT SOUTH GENERAL AVIATION APRON - PHASE 2
18 LT	TERMINAL WESTERLY EXPANSION
19 LT	REHABILITATE RUNWAY 18-36, TAXIWAY B AND TAXIWAY J
20 LT	CONSTRUCT SOUTH GENERAL AVIATION APRON - PHASE 3
21 LT	RAMP EXPANSION EAST OF AIR TRAFFIC CONTROL TOWER
22 LT	SNOW PLOWS - NS
23 LT	PARKING GARAGE EXPANSION - PHASE 4
24 LT	TERMINAL EASTERLY EXPANSION/RENOVATION
NS - NOT SHOWN	

THIRD PARTY TENANT DEVELOPMENT	
NO.	DESCRIPTION
CB1	AIR CARGO BUILDING
CB2	AIR CARGO BUILDING
H1	CONVENTIONAL HANGAR
H2	CONVENTIONAL HANGAR
H3	CONVENTIONAL HANGAR
H4	CONVENTIONAL HANGAR
H5	CONVENTIONAL HANGAR
H6	CONVENTIONAL HANGAR
H7	CONVENTIONAL HANGAR
H8	GENERAL AVIATION HANGAR/OFFICES
H9	GENERAL AVIATION HANGAR/OFFICES
H10	CONVENTIONAL HANGAR
H11	CONVENTIONAL HANGAR
H12	CONVENTIONAL HANGAR
NS - NOT SHOWN	

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AVIGATION EASEMENT
		MUNICIPAL BOUNDARY
BRL		BUILDING RESTRICTION LINE (BRL)
ROFA		RUNWAY OBJECT FREE AREA (ROFA)
ROFZ		RUNWAY OBJECT FREE ZONE (ROFZ)
RSA		RUNWAY SAFETY AREA (RSA)
POFZ		PRECISION OBSTACLE FREE ZONE (POFZ)
		BUILDING REMOVAL
		PAVEMENT REMOVAL
		ILS CRITICAL AREA
		PROPERTY ACQUISITION
		AIRPORT BUSINESS
		AIRPORT BUFFER AREA
		BUILDING / STRUCTURES
		FACILITY CONSTRUCTION - AIRFIELD
		FACILITY CONSTRUCTION - OTHER
		WATER QUALITY FILTER
		NO TAXI ISLAND
X	X	FENCING
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
PAPI--4		NAVIGATIONAL AID LIGHTS (PAPI)
REIL		RUNWAY END IDENTIFICATION LIGHT (REIL)
		AIRFIELD LIGHTS
		SEGMENTED CIRCLE / WIND INDICATOR
		WIND INDICATOR (LIGHTED)
1080		TOPOGRAPHY
		WETLAND

NORTH

Magnetic Declination 15° 26' 09" West (March 2016)
Annual Rate of Change 00° 05' East (March 2016)

GRAPHIC SCALE
100 0 50 100 200
(IN FEET)
1 inch = 100 ft.

REV.	DESCRIPTION	DATE	BY	APP'D
4	SUBMITTED TO CITY, MDOT AND FAA FOR FINAL APPROVAL	07.09.18	DDA	DDA
3	SUBMITTED TO FAA FOR APPROVAL	11.29.17	DDA	DDA
2	ISSUED DRAFT ALP TO CITY AND FAA	11.17.16	DDA	DDA
1	ISSUED TO CLIENT FOR REVIEW	07.26.16	DDA	DDA

REVISIONS

THE CONTENTS OF THIS PLAN DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS DOCUMENT BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

PORTLAND INTERNATIONAL JETPORT

TERMINAL AREA

PORTLAND, MAINE

Stantec Consulting Services Inc.
482 Payne Road
Scarborough, ME
Tel: 207.883.3355
WWW.STANTEC.COM

PLANNED BY: Dwight Anderson / Steve Benson
DETAILED BY: Lori Anthony / Tim Kahmann
APPROVED BY: Mike Dmyterko
FILE NAME: op_m116_site / 195350010

July 2018

SHEET 5.0

Coffman Associates Airport Consultants

V:\1953\active\195350010\cadd\alp\dwg\op_m116_site.dwg lranthony 7/9/2018 4:58 PM

Attachment 6

Erosion Control

EROSION CONTROL MEASURES

PRE-CONSTRUCTION PHASE

PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS (SILT FENCE) WILL BE STAKED/INSTALLED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. THE PLACEMENT OF SEDIMENT BARRIERS SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THIS EROSION CONTROL PLAN AND DETAILS IN THIS PLAN SET. THIS NETWORK IS TO BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED.

PRIOR TO ANY CLEARING OR GRUBBING, A CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED AT THE INTERSECTION OF THE PROPOSED ENTRANCES AND EXISTING ROADWAY TO AVOID TRACKING OF MUD, DUST AND DEBRIS FROM THE SITE.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE A DETAILED SCHEDULE AND MARKED UP PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE MUNICIPAL STAFF. THREE COPIES OF THE SCHEDULE AND MARKED UP PLAN SHALL BE PROVIDED TO THE MUNICIPALITY THREE DAYS PRIOR TO THE SCHEDULED PRE-CONSTRUCTION MEETING. SPECIAL ATTENTION SHALL BE GIVEN TO THE 14 DAY LIMIT OF DISTURBANCE IN THE SCHEDULE ADDRESSING TEMPORARY AND PERMANENT VEGETATION MEASURES.

CONSTRUCTION AND POST-CONSTRUCTION PHASE

AREAS UNDERGOING ACTUAL CONSTRUCTION SHALL ONLY EXPOSE THAT AMOUNT OF MINERAL SOIL NECESSARY FOR PROGRESSIVE AND EFFICIENT CONSTRUCTION. AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD, SUCH AS ACTIVE EXCAVATION AND ACTIVE GRADING. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS ACTIVELY OCCURRING OR CAN BE MULCHED IN THE SAME DAY. OPEN AREAS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL AS SHOWN ON THE DESIGN PLANS AND AS DESCRIBED WITHIN THIS EROSION CONTROL PLAN WITHIN SEVEN (7) DAYS OF DISTURBANCE. AREAS LOCATED WITHIN 100 FEET OF STREAMS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL WITHIN SEVEN (7) DAYS. REFER TO WINTER EROSION CONTROL NOTES FOR THE TREATMENT OF OPEN AREAS AFTER OCTOBER 1ST OF THE CONSTRUCTION YEAR.

THE CONTRACTOR MUST INSTALL ANY ADDED MEASURES WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE DEPENDENT UPON THE ACTUAL SITE AND WEATHER CONDITIONS. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, IN ORDER TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION.

EROSION CONTROL APPLICATIONS & MEASURES
THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET.

1. TEMPORARY MULCHING:

ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 14 DAYS SHALL BE MULCHED. DISTURBED AREAS ADJACENT TO NATURAL RESOURCES THAT ARE NOT GRADED WITHIN SEVEN (7) DAYS SHALL BE MULCHED. ALSO, AREAS, WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED, SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING. EROSION CONTROL BLANKETS ARE RECOMMENDED TO BE USED AT THE BASE OF GRASSED WATERWAYS AND ON SLOPES GREATER THAN 33%. MULCH ANCHORING SHOULD BE USED ON SLOPES GREATER THAN 5% AFTER SEPTEMBER 15TH OF THE CONSTRUCTION YEAR (SEE WINTER EROSION CONTROL NOTES).
TYPES OF MULCH:

HAY OR STRAW: SHALL BE APPLIED AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE).

EROSION CONTROL MIX: SHALL BE PLACED EVENLY AND MUST PROVIDE 100% SOIL COVERAGE. EROSION CONTROL MIX SHALL BE APPLIED SUCH THAT THE THICKNESS ON SLOPES 3:1 OR LESS IS 2 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THE THICKNESS ON SLOPES BETWEEN 3:1 AND 2:1 SHALL BE 4 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THIS SHALL NOT BE USED ON SLOPES GREATER THAN 2:1.

EROSION CONTROL BLANKET: SHALL BE INSTALLED SUCH THAT CONTINUOUS CONTACT BETWEEN THE MAT AND THE SOIL IS OBTAINED. INSTALL BLANKETS AND STAPLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

2. SOIL STOCKPILES:

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES. SEDIMENT BARRIERS SHALL BE INSTALLED DOWNGRADIENT OF STOCKPILES, AND STORMWATER SHALL BE PREVENTED FROM RUNNING ONTO THE STOCKPILE.

3. NATURAL RESOURCES PROTECTION:

ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES SHALL BE MULCHED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1 OF THIS SECTION) WITHIN 7 DAYS OF EXPOSURE OR PRIOR TO ANY STORM EVENT. SEDIMENT BARRIERS (AS DESCRIBED IN PART 4 OF THIS SECTION) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE.

4. SEDIMENT BARRIERS:

PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. SEDIMENT BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

HAY BALES: SHALL NOT BE INSTALLED ADJACENT TO WETLAND. INSTALL PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.

EROSION CONTROL MIX: SHALL NOT BE USED ADJACENT TO WETLANDS. INSTALL PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER. EROSION CONTROL MIX BERMS SHALL NOT BE USED AT THE BOTTOM OF STEEP SLOPES (>8%) OR SLOPES WITH FLOWING WATER.

CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

5. TEMPORARY CHECK DAMS:

SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

STONE CHECK DAMS: STONE DAMS SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

HAY BALE CHECK DAMS: BALES SHALL BE WIRE-BOUND OR STRING-TIED. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER. HAY BALES SHALL BE PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL, STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS.

6. STORMDRAIN INLET PROTECTION:

INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLET OR CURB INLET PRIOR TO PERMANENT STABILIZATION OF THE IMMEDIATE AND UPSTREAM DISTURBED AREAS. THEY SHALL BE CONSTRUCTED IN A MANNER THAT WILL FACILITATE CLEAN-OUT AND DISPOSAL OF TRAPPED SEDIMENTS AND MINIMIZE INTERFERENCE WITH CONSTRUCTION ACTIVITIES. ANY RESULTANT PONDING OF WATER FROM THE PROTECTION METHOD MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.

HAY BALE DROP INLET PROTECTION: WE DO NOT RECOMMEND THE USE OF HAY BALES AS INLET PROTECTION.

CONCRETE BLOCK AND STONE INLET SEDIMENT FILTER (DROP OR CURB INLET): SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE HEIGHT OF THE CONCRETE BLOCK BARRIER CAN VARY BUT MUST BE BETWEEN 12 AND 24 INCHES TALL. A MINIMUM OF 1 INCH CRUSHED STONE SHALL BE USED.

MANUFACTURED SEDIMENT BARRIERS AND FILTER (DROP OR CURB INLET): MANUFACTURED FILTERS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

7. STABILIZED CONSTRUCTION ENTRANCE/EXIT:

PRIOR TO CLEARING AND/OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICIALLY SWEPT TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. THE TERM "SWEEP" IS UNDERSTOOD TO MEAN REMOVAL AND RECOVERY OF TRACKED SEDIMENT WITH A STREET SWEEPER, NOT BRUSHING THE MATERIAL INTO SWALES OR STRUCTURES WITH A MECHANICAL BROOM. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS. THE CONTRACTOR SHALL MAINTAIN THE STABILIZED CONSTRUCTION ENTRANCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

DUST CONTROL:

DUST CONTROL DURING CONSTRUCTION SHALL BE ACHIEVED BY THE USE OF A WATERING TRUCK TO PERIODICALLY SPRINKLE THE EXPOSED ROADWAY AREAS AS NECESSARY TO REDUCE DUST DURING THE DRY MONTHS. APPLYING OTHER DUST CONTROL PRODUCTS SUCH AS CALCIUM CHLORIDE OR OTHER MANUFACTURED PRODUCTS ARE ALLOWED IF AUTHORIZED BY THE PROPER LOCAL, STATE AND/OR FEDERAL REGULATING AGENCIES. HOWEVER, IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO MITIGATE DUST AND SOIL LOSS FROM THE SITE. IF OFFSITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NOT LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS.

TEMPORARY VEGETATION:

TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDBED PREPARATION AND APPLICATION OF SEED SHALL BE CONDUCTED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUALS FOR CONTRACTORS AND ENGINEERS, LATEST REVISION. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

PERMANENT VEGETATION:

REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE APPLICATION OF SEED SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR, PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

SEEDBED PREPARATION:

A. FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.

B. SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P205-K20 OR EQUAL)	18.4 LBS./1,000 S.F.
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS./1,000 S.F.

C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDBED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

APPLICATION OF SEED:

A. SEEDING: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS: (MDOT SEED MIX METHOD #1 - PARK MIXTURE)

SEED TYPE	APPLICATION RATE
CREEPING RED FESCUE	1.8 LBS/1,000 S.F. (78.4 LBS/ACRE)
KENTUCKY BLUEGRASS	1.0 LBS/1,000 S.F. (43.6 LBS/ACRE)
CHEWINGS FESCUE	0.60 LBS/1,000 S.F. (26.1 LBS/ACRE)
PERENNIAL RYEGRASS	0.40 LBS/1,000 S.F. (17.4 LBS/ACRE)
ANNUAL RYEGRASS	0.20 LBS/1,000 S.F. (8.70 LBS/ACRE)
TOTAL	4.00 LBS/1,000 S.F. (174.20 LBS/ACRE)

NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND SEED MIXTURES. MDEP RECOMMENDED SEED MIXTURES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 2016 OR LATEST REVISION.

B. HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. RECOMMENDED SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

C. MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS.

SODDING:
FOLLOWING SEEDBED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES, AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW, STARTING AT THE LOWEST ELEVATION. SOD SHOULD BE ROLLED OR TAMPED DOWN TO EVEN OUT THE JOINTS ONCE LAID DOWN. WHERE FLOW IS PREVALENT THE SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE ESTABLISHED BETWEEN APRIL 1ST AND NOVEMBER 15TH OF THE CONSTRUCTION YEAR, HOWEVER, REFER TO THE WINTER EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% (10H:1V) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE CONTRACTOR WILL COVER THE SLOPE WITH A LAYER OF WOOD WASTE COMPOST AS DESCRIBED IN ITEM 2(C.) OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM 2(D.) OF THIS STANDARD.
B. STABILIZE THE SLOPE WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE 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 WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).
C. STABILIZE THE SLOPE WITH WOOD WASTE COMPOST -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF WOOD WASTE COMPOST ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE WOOD WASTE COMPOST, THE CONTRACTOR WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. THE CONTRACTOR WILL NOT USE WOOD WASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
D. STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE CONTRACTOR WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOIL S -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15%. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE CONTRACTOR WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 3(C.) OF THIS STANDARD.
B. STABILIZE THE SOIL WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
C. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE CONTRACTOR WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE CONTRACTOR WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE CONTRACTOR WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

1. MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, AND AT LEAST EVERY SEVEN (7) DAYS, THE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES. THE CONTRACTOR SHALL PERFORM REPAIRS NO LATER THAN THE END OF THE NEXT WORKDAY, TO ALLOW CONTINUED PROPER FUNCTIONING OF THE EROSION CONTROL MEASURE. THE CONTRACTOR SHALL PROVIDE THE NECESSARY REGULATING AGENCIES WITH WRITTEN DOCUMENTATION DESCRIBING DATES OF INSPECTIONS AND NECESSARY FOLLOW-UP WORK TO MAINTAIN EROSION CONTROL MEASURES MEETING THE REQUIREMENTS OF THIS PLAN WITHIN SEVEN (7) DAYS.

2. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDINGS, THE CONTRACTOR SHALL INSPECT THE WORK AREA SEMIMONTHLY UNTIL THE SEEDINGS HAVE BEEN ESTABLISHED. ESTABLISHED MEANS A MINIMUM OF 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH. RESEEDING SHALL BE CARRIED OUT BY THE CONTRACTOR WITH FOLLOW-UP INSPECTIONS IN THE EVENT OF ANY FAILURES UNTIL VEGETATION IS ADEQUATELY ESTABLISHED.

HOUSEKEEPING:

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.

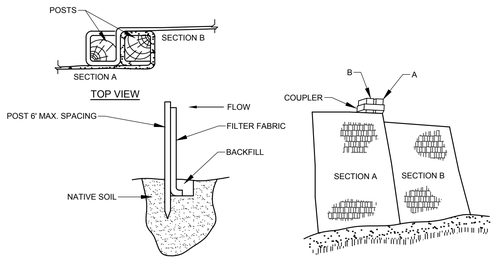
2. GROUNDWATER PROTECTION. DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE-TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.

3. FUGITIVE SEDIMENT AND DUST. ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF-SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.

4. DEBRIS AND OTHER MATERIALS. MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

5. EXCAVATION DE-WATERING. EXCAVATION DE-WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

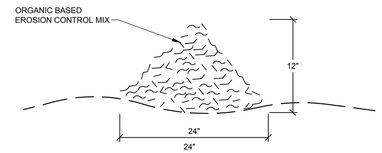
6. AUTHORIZED NON-STORMWATER DISCHARGES. IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE:
A. DISCHARGES FROM FIREFIGHTING ACTIVITY;
B. FIRE HYDRANT FLUSHINGS;
C. VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAG



INSTALLATION:

1. EXCAVATE A 6"x 6" TRENCH ALONG THE LINE OF PLACEMENT FOR THE FILTER BARRIER.
2. UNROLL A SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH.
3. DRIVE POSTS INTO THE GROUND UNTIL APPROXIMATELY 2" OF FABRIC IS LYING ON THE TRENCH BOTTOM.
4. LAY THE TOE-IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL THE TRENCH AND TAMP THE SOIL. TOE-IN CAN ALSO BE ACCOMPLISHED BY LAYING THE FABRIC FLAP ON UNDISTURBED GROUND AND PILING AND TAMPING FILL AT THE BASE. BUT MUST BE ACCOMPANIED BY AN INTERCEPTION DITCH.
5. JOIN SECTION AS SHOWN ABOVE.
6. BARRIER SHALL BE MIRAFI SILT FENCE OR EQUAL.

FILTER BARRIER
NOT TO SCALE



COMPOSITION:

EROSION CONTROL MIX SHALL BE MANUFACTURED ON OR OFF THE PROJECT SITE SUCH THAT ITS COMPOSITION IS IN ACCORDANCE WITH THE MDEP MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL, LAST REVISED 3/2003 OR LATER. IT MUST CONSIST PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.

INSTALLATION:

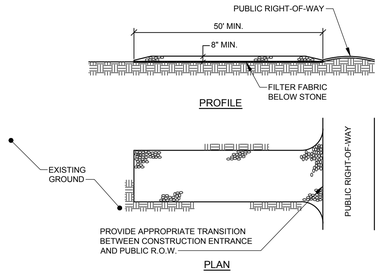
1. THE BARRIER MUST BE PLACED ACROSS THE SLOPE, ALONG THE CONTOUR.

2. EXISTING GROUND SHALL BE PREPARED SUCH THAT THE BARRIER MAY LIE NEARLY FLAT ALONG THE GROUND TO AVOID THE CREATION OF VOIDS AND BRIDGES IN ORDER TO MINIMIZE THE POTENTIAL OF WASH OUTS UNDER THE BARRIER

3. THE BARRIER SHALL BE A MINIMUM OF 1 FOOT HIGH (AS MEASURED ON THE UPHILL SIDE) AND 2 FEET WIDE FOR SLOPES LESS THAN 5% IN GRADE AND SHALL BE WIDER TO ACCOMMODATE THE ADDITIONAL RUNOFF.

4. EROSION CONTROL MIX CAN BE INSTALLED WHERE SILT FENCE IS ILLUSTRATED ON THE DESIGN PLANS IN AREAS EXCEPT IN, BUT NOT LIMITED TO, THE FOLLOWING AREAS: WETLAND AREAS, AT POINTS OF CONCENTRATED FLOW, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS AND CLOSED STORM SYSTEMS AND AT THE BOTTOM OF STEEP SLOPES THAT ARE MORE THAN 50 FEET FROM TOP TO BOTTOM.

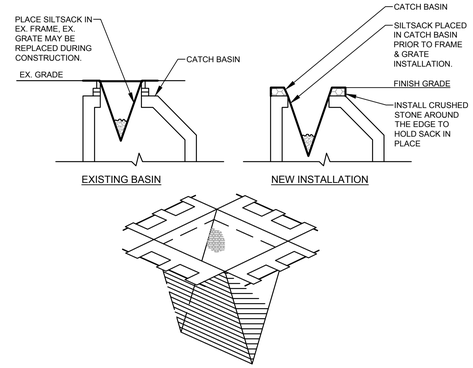
EROSION CONTROL MIX BERM
NOT TO SCALE



NOTES:

1. STONE SIZE- AASHTO DESIGNATION M43, SIZE NO. 2 (2 1/2" TO 1 1/2"). USE CRUSHED STONE.
2. LENGTH- AS SHOWN ON PLANS, MIN. 50 FEET.
3. THICKNESS- NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH- NOT LESS THAN FULL WIDTH OF ALL POINT OF INGRESS OR EGRESS.
5. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



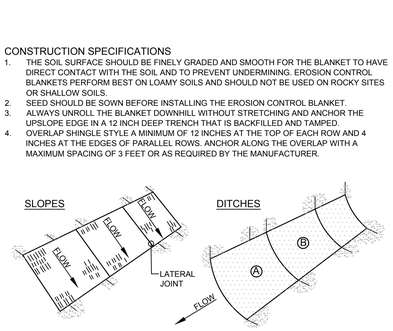
NOTES:

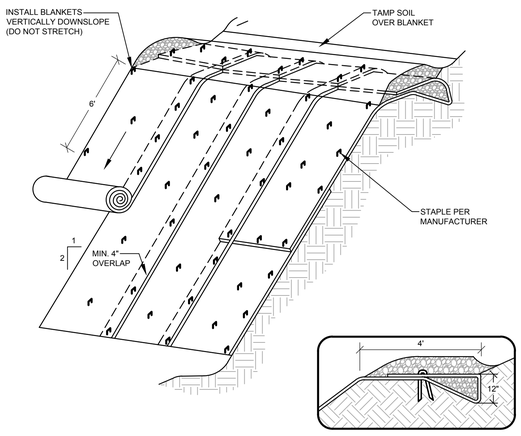
PRIOR TO FINAL GRADING AND PAVING OPERATIONS BEGIN A CATCH BASIN INSERT (SUCH AS A SILT SACK OR A DANDY BAG II) MUST BE INSTALLED IN EACH BASIN PER MANUFACTURES INSTRUCTIONS. HAY BALES SHOULD BE REMOVED ONCE INSERTS ARE INSTALLED.

CATCH BASIN PROTECTION DETAIL
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. THE SOIL SURFACE SHOULD BE FINELY GRADED AND SMOOTH FOR THE BLANKET TO HAVE DIRECT CONTACT WITH THE SOIL AND TO PREVENT UNDERMINING. EROSION CONTROL BLANKETS PERFORM BEST ON LOAMY SOILS AND SHOULD NOT BE USED ON ROCKY SITES OR SHALLOW SOILS.
2. SEED SHOULD BE SOWN BEFORE INSTALLING THE EROSION CONTROL BLANKET.
3. ALWAYS UNROLL THE BLANKET DOWNHILL WITHOUT STRETCHING AND ANCHOR THE UPSLOPE EDGE IN A 12 INCH DEEP TRENCH THAT IS BACKFILLED AND TAMPED.
4. OVERLAP SHINGLE STYLE A MINIMUM OF 12 INCHES AT THE TOP OF EACH ROW AND 4 INCHES AT THE EDGES OF PARALLEL ROWS. ANCHOR ALONG THE OVERLAP WITH A MAXIMUM SPACING OF 3 FEET OR AS REQUIRED BY THE MANUFACTURER.

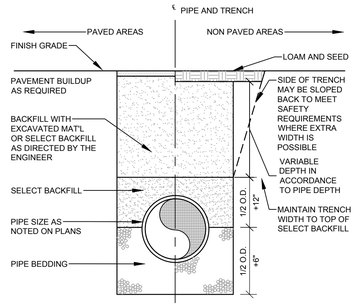




NOTES:

1. BURY THE TOP END OF THE MESH MATERIAL IN A 6" TRENCH AND BACKFILL AND TAMP. TRENCHING SECURE END WITH STAPLES AT 6" SPACING, 4" DOWN FROM EXPOSED END.
2. FLOW DIRECTION JOINTS TO HAVE UPPER END OF LOWER STRIP BURIED WITH UPPER LAYERS OVERLAPPED 4" AND STAPLED. OVERLAP B OVER A.
3. LATERAL JOINTS TO HAVE 4" OVERLAP OF STRIPS. STAPLE 18" ON CENTER.
4. STAPLE OUTSIDE LATERAL EDGE 2" ON CENTER.
5. WIRE STAPLES TO BE MIN OF #11 WIRE 6" LONG AND 1-1/2" WIDE.
6. USE NORTH AMERICAN GREEN DS 150 OR APPROVED EQUAL.

EROSION CONTROL BLANKET
NOT TO SCALE



TRENCH BACKFILL SCHEDULE		
PIPE TYPE	PIPE BEDDING MATERIAL	SELECT BACKFILL
CORRUGATED METAL DUCTILE IRON REINFORCED CONCRETE	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
SOLID PVC-SDR 35 HDPE	MDOT 703.13 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL, OR MDOT 703.13 3/4" CRUSHED STONE
PERFORATED PVC-SDR 35 HDPE	MDOT 703.13 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL, OR MDOT 703.13 3/4" CRUSHED STONE

NOTE:
ALL BRACING AND SHEETING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL MEET ALL STATE AND O.S.H.A. SAFETY STANDARDS.

TRENCH SECTION
NOT TO SCALE

AMY BELL SEGAL, RLA 2265

PAUL D. OSTROWSKI PE 11175

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS MADE HEREON BY OTHERS, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

EROSION CONTROL DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-501

NOT FOR CONSTRUCTION

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19059 D.dwg - TAB:C-501 Details

Attachment 7

Existing Conditions Site Photographs







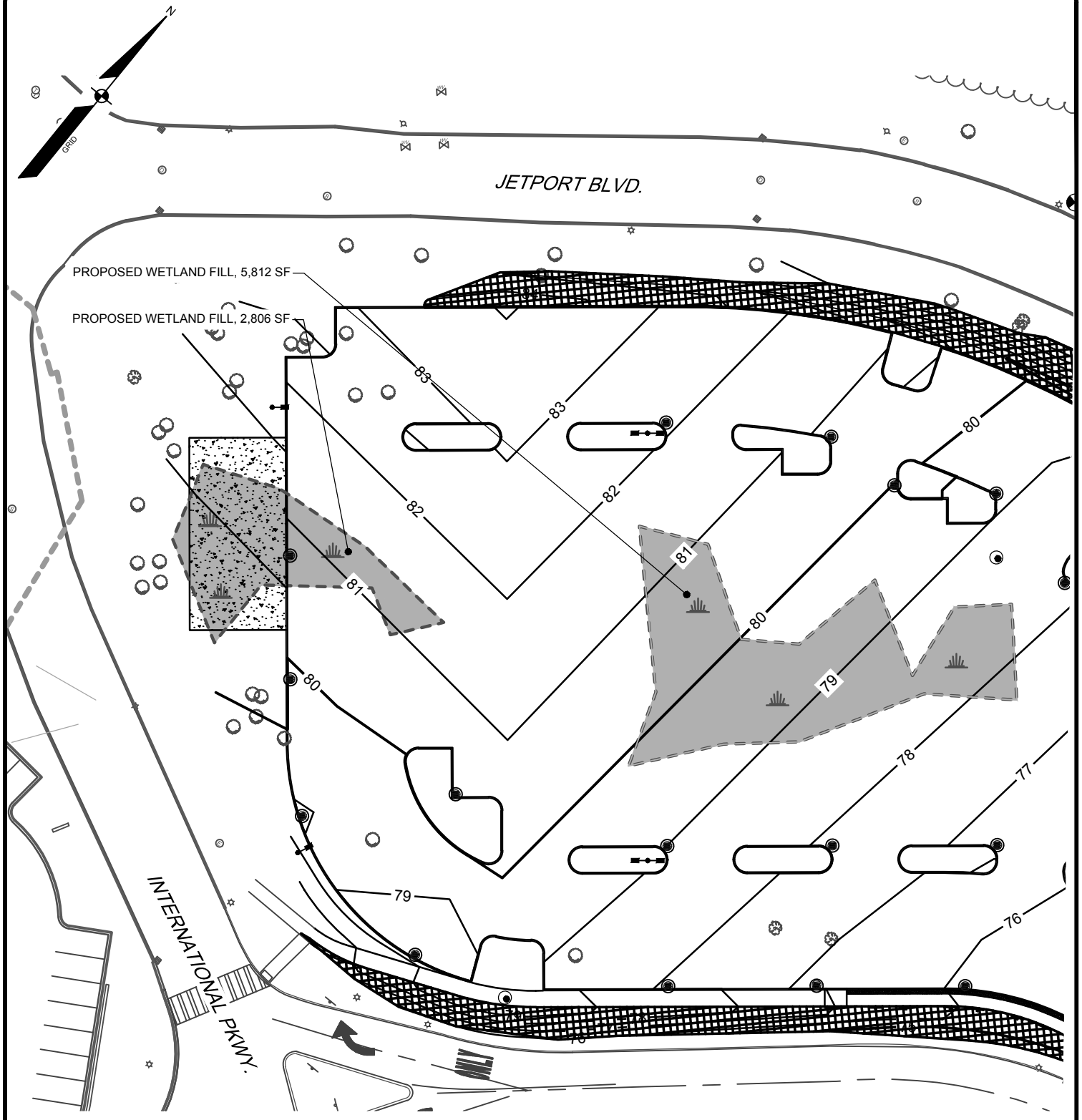






Attachment 8

Impact Figure



SEBAGO TECHNICS
SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite 4A
South Portland, ME 04106
207-200-2100
South Portland - Bridgton - Sanford - Bath

WETLAND FILL FIGURE

OF PORTLAND INTL JETPORT PARKING EXPANSION

SCALE: 1" = 50'

DATE: 02/01/2024

LOCATION:
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTL JETPORT - PWM
1001 WESTBROOK ST, PORTLAND, ME

SHEET:
1 OF 1

19059 G.dwg, TAB:Wetland Impact Figure

Attachment 9

Maine Historic Preservation Inquiry/Response

SEBAGO TECHNICS

RECEIVED
AUG 18 2023
By 1227-23

August 18, 2023
19059

Mr. Kirk F. Mohney, Director, and State Historic Preservation Officer
Maine Historic Preservation Commission
65 State House Station
Augusta, Maine 04333

mhpcprojectreview@maine.gov

Re: Portland International Airport
Parking Lot Expansion and Runway Improvements
1001 Westbrook Street, Portland

Dear Mr. Mohney:

On behalf of our client, Sebago Technics respectfully requests a site review for the proposed improvements at the Portland International Airport in Portland/South Portland. The proposed improvements include the expansion of an existing parking lot (see figure for Project Area A) and the reconfiguration of an existing taxiway (see figure for Project Area B). As part of the site review for permitting and design, we request a review by the Maine Historic Preservation Commission for any properties or structures of historical significance in the proposed site's vicinity.

Improvements to the Project A area include the expansion of an existing surface lot to provide greatly needed additional parking spaces. Improvements in Project Area B will include reconstruction of Taxiways A and F with new taxiway and shoulder pavement and select electrical component replacement/addition including in-pavement taxiway centerline lights, runway guard lights, signs and wiring for the associated taxiways. The taxiway segments to be reconstructed are 75 feet wide and wider at radii leading onto the Runway, with up to 15-foot-wide shoulders which will be widened to up to 30 feet to meet current FAA standards. A new taxiway stub near the mid-point of the existing taxiway stubs E and D is also proposed. All improvements will occure on the existing Jetport campus. Improvements to the taxiway will improve movement within and functionality of the Jetport. There are no proposed additional runways or extensions.

A review of the National Register of Historic Places identified the Stroudwater Neighborhood as being in the vicinity of the Jetport. Included with this neighborhood is the Tate House which was constructed in 1755. The Brooklawn Memorial Cemetary (not listed) which was opened in 1935 is located in the vicinity of the Jetport. Neither of these sites are within the viewshed of the project or are abutters to the proposed improvement areas. Review of the City of Portland/South Portland property records found no abutting or viewshed properties with structures 50+ years of age.

Please see the attached aerial which illustrates the two project areas. If you have any questions, please do not hesitate to contact me at rgabryszewski@sebagotechnics.com or (207) 200-2065. I look forward to hearing from you.

Sincerely,

SEBAGO TECHNICS, INC.

Rebecca Gabryszewski
Senior Team Leader, Entitlements Group

enc.

Based on the information submitted, I have concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

Kirk F. Mohney — 8/29/23

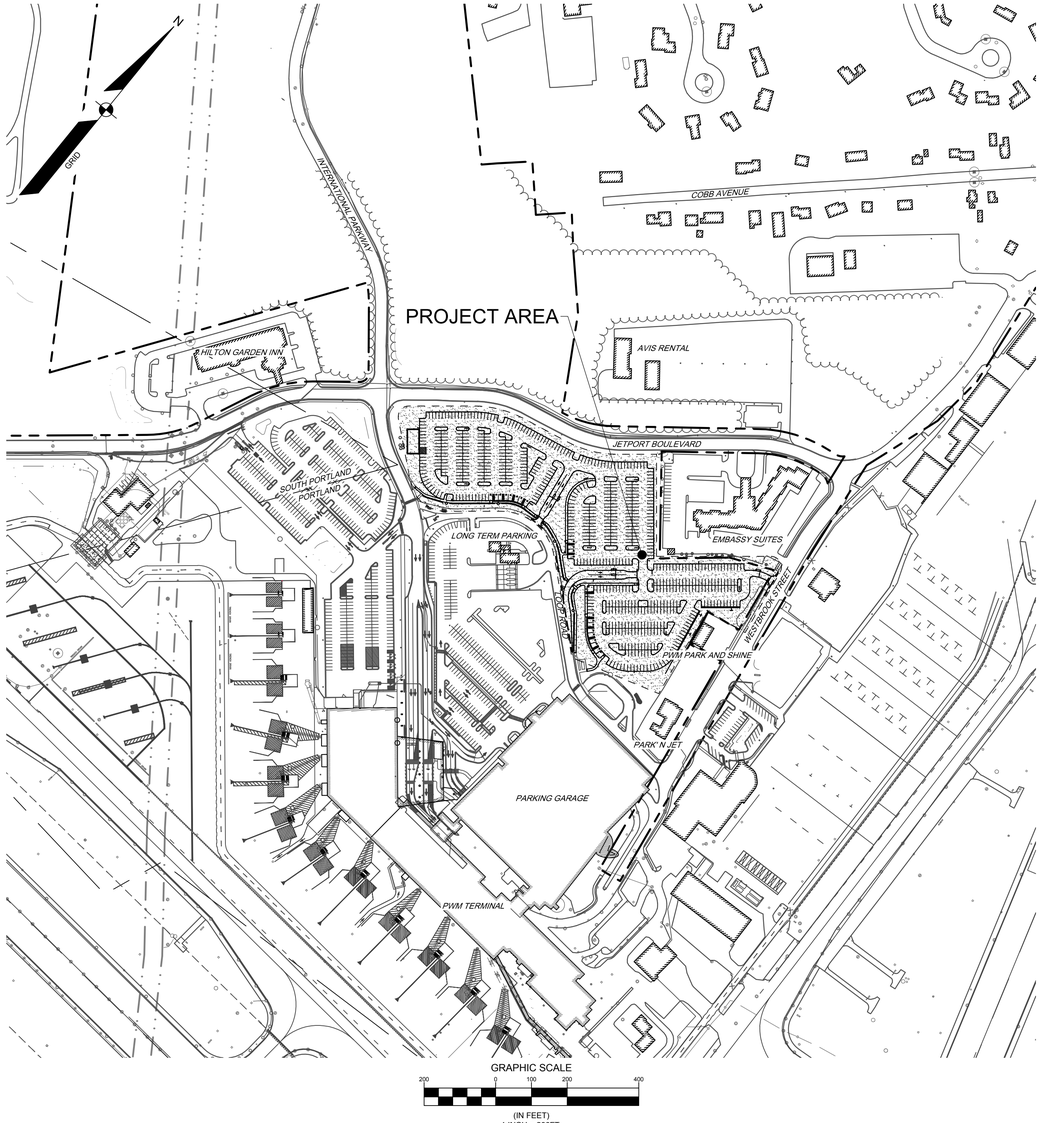
Kirk F. Mohney,
State Historic Preservation Officer
Maine Historic Preservation Commission
Date

MHPC # 1227-23

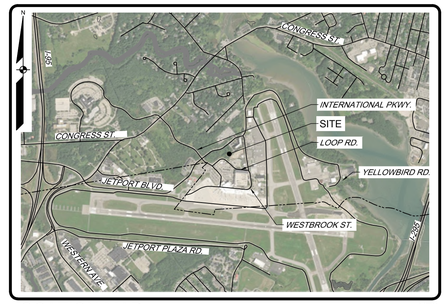
75 John Roberts Road – Suite 1A, South Portland, ME 04106-6963 • 207-200-2100 • Fax: 207-856-2206

PORTLAND INTERNATIONAL JETPORT
PARKING EXPANSION

1001 WESTBROOK STREET
PORTLAND, MAINE 04102



GRAPHIC SCALE
200 0 100 200 400
(IN FEET)
1 INCH = 200FT.



LOCATION MAP NTS

Sheet List Table

SHEET	TITLE
G-001	COVER SHEET
G-002	NOTES & LEGEND
C-003	DEMOLITION PLAN
C-100	OVERALL SITE PLAN
C-101	SITE PLAN
C-102	SITE PLAN
C-103	SITE PLAN
C-200	OVERALL GRADING PLAN
C-201	GRADING PLAN
C-202	GRADING PLAN
C-203	GRADING PLAN
C-300	OVERALL UTILITY PLAN
C-301	UTILITY PLAN
C-302	UTILITY PLAN
C-303	UTILITY PLAN
C-304	PIPE AND STRUCTURE DATA TABLES
L-100	OVERALL LANDSCAPE PLAN
L-101	TREE REMOVAL & PRESERVATION PLAN
L-102	LANDSCAPE PLAN
L-103	LANDSCAPE PLAN
L-104	LANDSCAPE PLAN
C-500	EROSION CONTROL NOTES
C-501	EROSION CONTROL DETAILS
C-502	SITE DETAILS
C-503	SITE DETAILS
C-504	SITE DETAILS
C-505	SITE DETAILS
C-506	SITE DETAILS
C-507	SITE DETAILS
1 OF 5	BOUNDARY SURVEY
2 OF 5	BOUNDARY SURVEY
3 OF 5	BOUNDARY SURVEY
4 OF 5	BOUNDARY SURVEY
5 OF 5	BOUNDARY SURVEY

APPLICANT:

PORTLAND INTERNATIONAL JETPORT
PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

ENGINEER/SURVEYOR/
LANDSCAPE ARCHITECT:

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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COVER SHEET
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 200'
PROJECT	19059

SHEET G-001

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19059 C.dwg, TAB:G-001 Cover

NOT FOR CONSTRUCTION

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	DEED LINE/R.O.W.	
	TIE LINE	
	SETBACK	
	EASEMENT	
	BUFFER	
	FLOODPLAIN	
	FLOODWAY	
	CENTERLINE	
⊡	MONUMENT	■
⊙	IRON PIPE/ROD	●
◎	DRILL HOLE	◉
C1/L1	DEED CALL	
C1/L1	CURVE/LINE NO.	C1/L1
	SOILS	
	ZONE LINE	
	ZONE LINE ON PL	
BENCHMARK DESCRIPTION WITH ELEVATION	BENCHMARK	
	SURVEY CONTROL	
TP-1	TEST PIT	
MW-1	MONITORING WELL	
B-1	BORING	
	BUILDING	
	DECK/STEPS/ OVERHANG	
	EDGE WETLAND	
	WETLANDS	
	UPLANDS	
	STREAM	
	LEDGE	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
120 118	CONTOURS	120
×120.00	SPOT GRADE	+120.00
	CHAIN LINK FENCE	
X	BARB WIRE FENCE	X
	STOCKADE FENCE	
	GUARD RAIL	
	STONE WALL	
	RETAINING WALL	
	DECIDUOUS TREE	X
	CONIFEROUS TREE	X
	MULCH LINE	
	BOLLARD	●
	SIGN	
	RAILROAD	
G	GAS	G
GV	GAS GATE VALVE	GV
GM	GAS METER	
G	GAS MANHOLE	
W	WATER	W
WV	WATER GATE VALVE	WV
	WATER SHUT OFF	
	HYDRANT	
W	WATER MANHOLE	
W	WELL	W
S	SANITARY SEWER	S
FM	FORCE MAIN	FM
S	SANITARY MANHOLE	
	SEWER CLEAN OUT	
SD	STORM DRAIN	SD
UD	UNDER DRAIN	UD
D	DRAINAGE MANHOLE	
	CATCH BASIN	
OHU	OVERHEAD UTILITY	OHU
UGU	UNDERGROUND UTILITY	UGU
T	TRANSFORMER PAD	T
E	ELECTRICAL MANHOLE	E
EM	ELECTRIC METER	
H	HVAC UNIT	
T	TELEPHONE MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	
	DRAINAGE DITCH	
	EROSION CONTROL BLANKET	
	FILTER BARRIER	FB
	RIPRAP	
	CHECK DAM	
	INLET PROTECTION	
	BOULDER	

GENERAL NOTES

1. BOOK AND PAGE CITATIONS SHOWN HEREON REFER TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. NO MONUMENTS WERE SET AS OF THE DATE OF THIS PLAN.
3. A WRITTEN REPORT OF FINDINGS AND OPINIONS AS REQUIRED BY SECTION 10.A.3.D OF THE TECHNICAL STANDARDS OF PRACTICE OF THE STATE OF MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS WAS NOT PREPARED.
4. THE PURPOSE OF THIS SURVEY WAS TO DEFINE THE PERIMETER BOUNDARY OF THE PORTLAND INTERNATIONAL JETPORT PARCEL AND ACCESSORY PARCELS IN THE VICINITY OF THE JETPORT. INTERIOR PARCEL BOUNDARIES WERE NOT RESEARCHED OR DEFINED EXCEPT WHERE REQUIRED TO DEFINE THE PERIMETER BOUNDARY. EASEMENTS DEPICTED ON THIS PLAN WERE NOT COMPLETELY RESEARCHED OR LOCATED IN THE FIELD BUT SHOW THEIR GENERAL LOCATION RELATIVE TO THE PERIMETER BOUNDARY.
5. CURRENT OWNER:

   CITY OF PORTLAND
   389 CONGRESS ST.
   PORTLAND, MAINE 04101
6. ALL WORK SHALL CONFORM TO THE APPLICABLE CODES AND ORDINANCES.
7. CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIM OR HERSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIM OR HERSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
8. CONTRACTOR SHALL NOTIFY ENGINEER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND IN THE FIELD.
9. PROVIDE ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND OWNER'S REQUIREMENTS UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
10. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
11. CONTRACTOR SHALL CLEAN AND REMOVE DEBRIS AND SEDIMENT DEPOSITED ON PUBLIC STREETS, SIDEWALKS, ADJACENT AREAS, OR OTHER PUBLIC WAYS DUE TO CONSTRUCTION.
12. CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN CONSTRUCTION TO PROTECT EXISTING STRUCTURES, PHYSICAL FEATURES, AND MAINTAIN SITE STABILITY DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE ALL AREAS TO ORIGINAL CONDITION AND AS DIRECTED BY DESIGN DRAWINGS.
13. SITE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.
14. ALL PAVEMENT MARKINGS AND DIRECTIONAL SIGNAGE SHOWN ON THE PLAN SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS.
15. ALL PAVEMENT JOINTS SHALL BE SAWCUT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
16. NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.
17. IMMEDIATELY UPON COMPLETION OF CUTS/FILLS, THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH EROSION CONTROL NOTES AND AS SPECIFIED ON PLANS.
18. THE CONTRACTOR SHALL BE FULLY AND SOLELY RESPONSIBLE FOR THE REMOVAL, REPLACEMENT AND RECTIFICATION OF ALL DAMAGED AND DEFECTIVE MATERIAL AND WORKMANSHIP IN CONNECTION WITH THE CONTRACT WORK. THE CONTRACTOR SHALL REPLACE OR REPAIR AS DIRECTED BY THE ENGINEER ALL SUCH DAMAGED OR DEFECTIVE MATERIALS WHICH APPEAR WITHIN A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.
19. ALL WORK PERFORMED BY THE GENERAL CONTRACTOR AND/OR TRADE SUBCONTRACTOR SHALL CONFORM TO THE REQUIREMENTS OF LOCAL, STATE OR FEDERAL LAWS, AS WELL AS ANY OTHER GOVERNING REQUIREMENTS, WHETHER OR NOT SPECIFIED ON THE DRAWINGS.
20. WHERE THE TERMS "APPROVED EQUAL", "OTHER APPROVED", "EQUAL TO", "ACCEPTABLE" OR OTHER GENERAL QUALIFYING TERMS ARE USED IN THESE NOTES, IT SHALL BE UNDERSTOOD THAT REFERENCE IS MADE TO THE RULING AND JUDGEMENT OF SEBAGO TECHNICS, INC.
21. THE GENERAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PROTECTION FOR THE WORK UNTIL TURNED OVER TO THE OWNER.
22. THE GENERAL CONTRACTOR SHALL MAINTAIN A CURRENT AND COMPLETE SET OF CONSTRUCTION DRAWINGS ON SITE DURING ALL PHASES OF CONSTRUCTION FOR USE OF ALL TRADES.
23. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.
24. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. ANY MODIFICATION TO SUIT FIELD DIMENSION AND CONDITION SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ANY WORK.
25. BEFORE THE FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL REMOVE ALL EQUIPMENT AND MATERIALS, REPAIR OR REPLACE PRIVATE OR PUBLIC PROPERTY WHICH MAY HAVE BEEN DAMAGED OR DESTROYED DURING CONSTRUCTION, CLEAN THE AREAS WITHIN AND ADJACENT TO THE PROJECT WHICH HAVE BEEN OBSTRUCTED BY HIS/HER OPERATIONS, AND LEAVE THE PROJECT AREA NEAT AND PRESENTABLE.
26. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING FLOW THROUGH THE EXISTING CLOSED STORM DRAINAGE SYSTEM DURING CONSTRUCTION AND SHALL SUBMIT A WORK PLAN FOR APPROVAL BY THE DESIGN ENGINEER.
27. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE MAY OF 2023 BY COLE PETERS, PROFESSIONAL WETLAND SCIENTIST OF SEBAGO TECHNICS, INC. AND LOCATED BY GROUND SURVEY. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND NORTHEAST REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS.

UTILITY DEMOLITION NOTES

1. PROTECT EXISTING BOUNDARY LINE MONUMENTATION. IF DISTURBED, EXISTING MONUMENTATION TO BE RESET BY A PROFESSIONAL LAND SURVEYOR.
2. DEMOLITION OF UTILITIES REQUIRING TREE REMOVAL SHALL BE COORDINATED WITH THE OWNER AND IN ACCORDANCE WITH PROJECT PLANS.
3. UTILITY DEMOLITION SHALL BE COMPLETED IN COORDINATION WITH NEW INFRASTRUCTURE. CONTRACTOR SHALL ENSURE EXISTING SURFACE DRAINAGE IS MAINTAINED DURING CONSTRUCTION.
4. EXISTING SEWER AND STORM DRAINAGE INFRASTRUCTURE TO REMAIN ACTIVE DURING CONSTRUCTION AND UPON COMPLETION OF PROJECT. DEMOLITION/CONSTRUCTION ACTIVITIES SHALL NOT INTERFERE OR IMPEDE EXISTING FLOWS. CONTRACTOR SHALL PROVIDE BYPASS PUMPING AS REQUIRED DURING SEWER AND STORM DEMOLITION AND NEW CONSTRUCTION. DAMAGE TO EXISTING SEWER INFRASTRUCTURE SHALL BE REPAIRED BY CONTRACTOR AT THEIR EXPENSE.
5. DEMOLITION SHOWN IS FOR MAJOR SITE ELEMENTS TO BE DEMOLISHED. OTHER MINOR DEMOLITION MAY BE REQUIRED AS PART OF CONSTRUCTION AND SHALL BE CONSIDERED INCIDENTAL TO THE COST OF CONSTRUCTION. COORDINATE ALL DEMOLITION WORK WITH SITE AND BUILDING DRAWINGS.
6. PRIOR TO ANY DEMOLITION, THE CONTRACTOR SHALL SUBMIT A SEQUENCE OF DEMOLITION PLANS TO THE OWNER. THIS PLAN SHALL DEPICT LOCATIONS OF PROPOSED TERMINATIONS AND ANY TEMPORARY SERVICES THAT WILL BE NEEDED.
7. CONTRACTOR REQUIRED TO CONFIRM/MAINTAIN BENCHMARKS. IF IMPACTED CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION/RELOCATION AND COORDINATION WITH PROJECT TEAM.

GRADING & EROSION NOTES

1. SIDESLOPES SHALL NOT BE STEEPER THAN 3:1 (H:V) EXCEPT AS OTHERWISE IDENTIFIED ON THIS PLAN. ALL SIDESLOPES STEEPER THAN 3:1 (H: V) SHALL BE LINED WITH EROSION CONTROL BLANKET, OR ADDITIONAL MEASURES AS INDICATED.
2. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENT CONTROL BMPS" MANUAL PUBLISHED BY BUREAU OF LAND AND WATER QUALITY MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
3. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE LOAM AND SEED PER DETAIL.
4. SEE UTILITY DRAWINGS FOR PIPE AND STRUCTURE DATA TABLES.

CONSTRUCTION PLAN

1. PROVIDE EROSION CONTROL MEASURES PRIOR TO SITE DISTURBANCE.
2. WETLANDS, ASSOCIATED SETBACKS AND STREAM SETBACKS TO BE STAKED BY OWNER PRIOR TO SITE DISTURBANCE.
3. GRADING AND CLEARING LIMITS SHALL NOT ENCROACH ON ADJACENT PROPERTIES UNLESS NOTED OTHERWISE ON THE PLANS.
4. OPEN AREAS SHALL BE LIMITED TO AREAS BEING WORKED IN. THE AREA STRIPPED OF EXISTING VEGETATION AT ANY GIVEN TIME SHALL BE MINIMIZED AND BE PHASED WHERE PRACTICAL SO THAT AREAS ARE REVEGETATED AND PERMANENTLY STABILIZED BEFORE ADDITIONAL AREAS ARE STRIPPED OF EXISTING VEGETATION. STABILIZE CONSTRUCTION AREAS BY USE OF RIPRAP, SEED, MULCH, OR OTHER GROUND COVER WITHIN ONE WEEK FROM THE TIME IT WAS ACTIVELY WORKED. SURFACES SHALL BE STABILIZED PRIOR TO DIRECTING STORMWATER RUNOFF TOWARD STORMWATER BMPS. PLEASE REFER TO DRAINAGE PLANS FOR WATERSHED AREAS.

LANDSCAPE NOTES

1. PLANT QUANTITIES SHOWN ON PLANT LISTS ARE FOR CONVENIENCE TO THE CONTRACTOR ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ALL PLANT MATERIAL INSTALLATION AS SHOWN ON PLANS.
2. SIZE AND GRADING STANDARDS OF PLANT MATERIALS SHALL CONFORM TO THE LATEST EDITION OF "U.S.A. STANDARD FOR NURSERY STOCK," BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
3. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
4. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING, STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE BY THE OWNER.
5. PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR BY THE CONTRACTOR AND A PERIOD OF TWO YEARS THEREAFTER BY THE OWNER FROM DATE OF INSTALLATION. DURING THE ONE YEAR GUARANTEE PERIOD, DEAD PLANT MATERIAL SHALL BE REPLACED AT NO COST TO THE OWNER. AT THE END OF THE ONE YEAR PERIOD, THE CONTRACTOR SHALL OBTAIN FINAL ACCEPTANCE FROM THE OWNER.
6. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
7. EXISTING TREES TO BE PRESERVED WILL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
8. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF THE UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER.
9. ALL SHRUB BEDS SHALL BE MULCHED WITH 3" CLEAN SHREDDED DARK BROWN BARK MULCH.
10. THE CONTRACTOR SHALL PROVIDE 4" LOAM FOR ALL AREAS TO BE SODDED OR SEEDED. PLANTING AREAS SHALL RECEIVE 12" ROLLED THICKNESS OF LOAM. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
11. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT (AND MUNICIPAL AUTHORITY, IF APPLICABLE) PRIOR TO INSTALLATION ON SITE.
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR PERENNIAL AND ANNUAL FLOWER BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
13. DURING CLEANING OF SITE AND PRIOR TO TREE AND SHRUB INSTALLATION, CONTRACTOR SHALL REMOVE INVASIVE PLANTS. AREAS WHERE INVASIVE PLANTS ARE REMOVED AND NO OTHER PLANTING IS PROPOSED, AREA SHALL BE LOAM AND SEEDED.

UTILITY NOTES

1. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION. PROTECT EXISTING ONSITE SEWER PIPE AND ADJUST MANHOLE RIMS TO GRADE WHERE APPLICABLE.
2. ALL GRAVITY CONDUIT PIPES SHALL BE INSTALLED USING A PIPE LASER AND TARGET SYSTEM THROUGH THE PIPE. ON PIPE RUNS 50 FEET OR LESS, THE CONTRACTOR SHALL REQUEST ENGINEER'S APPROVAL TO USE OR NOT USE A GROUND LASER.
3. MAINTAIN MINIMUM 5'-6" OF COVER ABOVE TOP OF WATER SERVICE PIPE.
4. MAINTAIN MINIMUM 10 FEET HORIZONTAL SEPARATION BETWEEN WATER SERVICES AND OTHER UTILITIES. MAINTAIN MINIMUM 18 INCHES VERTICAL SEPARATION BETWEEN WATER SERVICES AND OTHER UTILITIES.
5. LOWER OR RAISE WATER SERVICES AS REQUIRED TO MAINTAIN MINIMUM 12 INCH VERTICAL SEPARATION FROM OTHER UTILITIES. WATER SERVICES CROSSING SEWERS SHALL MAINTAIN 12 INCH MINIMUM SEPARATION BETWEEN THE BOTTOM OF WATER LINE AND TOP OF SEWER UNLESS NOTED OTHERWISE ON THE PLANS.
6. PIPE:
   - SEWER PIPE SHALL BE SDR 35 PVC OR APPROVED EQUAL.
   - STORMDRAIN SHALL BE ADS N-12 DUAL WALL HDPE PIPE WITH SMOOTH-WALLED INTERIOR OR APPROVED EQUAL UNLESS NOTED OTHERWISE ON THE UTILITY PLANS.
   - WATER PIPE AND FITTINGS SHALL CONFORM TO THE DISTRICT HAVING JURISDICTION'S SPECIFICATIONS. MAIN WATER SERVICE PIPE SHALL BE DUCTILE IRON, CLASS 52 PUSH-ON PIPE MEETING THE REQUIREMENTS OF AWWA/ANSI C-111/A21.11 (LATEST REVISION). PIPE SHALL BE CEMENT-LINED AWWA/ANSI C104/A21.4 WITH LINING TWICE THE THICKNESS SPECIFIED, AND COATED TWICE WITH A BITUMINOUS SEAL COATING. PROVIDE THRUST BLOCKS AT ALL WATER SERVICE BENDS.
7. COORDINATE ALL UTILITY LOCATIONS AND INVERTS AT BUILDING WITH ARCHITECTURAL, STRUCTURAL AND PLUMBING DRAWINGS.
8. WATER SERVICE ENTRANCE DESIGNS TO INCLUDE METERS AND BACKFLOW PREVENTERS TO MEET ALL STANDARDS AND REQUIREMENTS OF THE DISTRICT HAVING JURISDICTION.
9. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY GRADE CHANGES THAT WILL IMPACT STORM DRAINAGE INFRASTRUCTURE OR OTHER UTILITIES.
10. UTILITIES WITHIN 5 FEET FROM FACE OF BUILDING ARE COORDINATED ON RELEVANT M.E.P. DRAWINGS. CONTRACTOR SHALL COORDINATE INVERTS, CONNECTIONS AND MATERIALS WITH ALL DRAWINGS.
11. CONTRACTOR SHALL FURNISH AND INSTALL TRENCHING, MATERIALS AND BACKFILL FOR ALL UTILITIES. ELECTRICAL AND TELECOM/DATA PROVIDERS WILL PULL PRIMARY SERVICE TO TRANSFORMER AND PANEL. CONTRACTOR RESPONSIBLE FOR TIMING AND COORDINATION WITH UTILITIES AND DRAWINGS. COORDINATE WITH ELECTRICAL DRAWINGS FOR CONDUIT SCHEDULE, TYPE AND SIZES.
12. COORDINATE ALL WATER RELATED WORK WITH DISTRICT HAVING JURISDICTION.
13. THE CONTRACTOR IS HEREBY CAUTIONED THAT ALL SITE FEATURES SHOWN HEREON ARE BASED ON FIELD OBSERVATIONS BY THE SURVEYOR AND BY INFORMATION PROVIDED BY UTILITY COMPANIES. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT DIG SAFE (811) AT LEAST THREE (3) BUT NOT MORE THAN THIRTY (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES.
14. CONTRACTOR SHALL BE AWARE THAT DIG SAFE ONLY NOTIFIES ITS "MEMBER" UTILITIES ABOUT THE DIG. WHEN NOTIFIED, DIG SAFE WILL ADVISE CONTRACTOR OF MEMBER UTILITIES IN THE AREA. CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND CONTACTING NON-MEMBER UTILITIES DIRECTLY. NON-MEMBER UTILITIES MAY INCLUDE TOWN OR CITY WATER AND SEWER DISTRICTS AND SMALL LOCAL UTILITIES, AS WELL AS USG PUBLIC WORKS SYSTEMS.
15. CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF 23 MRSA 3360-A. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITIES TO OBTAIN AUTHORIZATION PRIOR TO RELOCATION OF ANY EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS. IF A UTILITY CONFLICT ARISES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER, THE MUNICIPALITY AND APPROPRIATE UTILITY COMPANY PRIOR TO PROCEEDING WITH ANY RELOCATION.

TYPICAL ABBREVIATIONS

AC	ACRE
AFG	ABOVE FINISH GRADE
APPROX.	APPROXIMATELY
BC	BOTTOM OF CURB
BCC	BITUMINOUS CONCRETE CURB
BIT	BITUMINOUS
BLDG	BUILDING
BW	BOTTOM OF WALL
CB	CATCH BASIN
CONC	CONCRETE
CONT	CONTINUOUS
DI	DUCTILE IRON
DIA	DIAMETER
DMH	DRAIN MANHOLE
E.W.	EACH WAY
ELEV	ELEVATION
FFE	FINISH FLOOR ELEVATION
FIN. GR.	FINISH GRADE
FTG	FOOTING
HDPE	HIGH DENSITY POLYETHYLENE
HGT	HEIGHT
HMA	HOT MIX ASPHALT
INV	INVERT
LF	LINEAR FEET
OC	ON CENTER
PVC	POLYVINYL CHLORIDE
PWD	PORTLAND WATER DISTRICT
R	RADIUS
R.O.W.	RIGHT OF WAY
S.F.	SQUARE FEET
SCH	SCHEDULE
SCSC	SLIPFORM CONCRETE SLOPED CURB
SCVC	SLIPFORM CONCRETE VERTICAL CURB
SD	STORM DRAIN
SGC	SLOPED GRANITE CURB
SMH	SEWER MANHOLE SPECS SPECIFICATIONS
SS	SANITARY SEWER
SSGC	SALVAGED SLOPED GRANITE CURB
SVGC	SALVAGED VERTICAL GRANITE CURB
TC	TOP OF CURB
TW	TOP OF WALL
TYP	TYPICAL
VGC	VERTICAL GRANITE CURB
VIF	VERIFY IN FIELD

AMY BELL SEGAL RLA 2265

STATE OF MAINE — LICENSED LANDSCAPE ARCHITECT — Amy Bell Segal — No. 2265 — REGISTERED LANDSCAPE ARCHITECT — 02/29/2024

PAUL D. OSTROWSKI PE 11175

STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — REGISTERED PROFESSIONAL ENGINEER — 02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS AUTHORIZED BY OTHERS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

NOTES & LEGEND

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET G-002

NOT FOR CONSTRUCTION

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19059 NL.dwg - TAB:G-002 Notes & Legend

AVIS RENTAL

JETPORT BLVD.

INTERNATIONAL PKWY.

LONG TERM PARKING

EMBASSY SUITES

JETPORT ACCESS ROAD

PWM PARK AND SHINE

WESTBROOK ST.

PARKING GARAGE

PARK' N JET

DEMOLITION PLAN KEY NOTES

1. REMOVE VEHICULAR ASPHALT PAVING
2. REMOVE PEDESTRIAN ASPHALT PAVING
3. REMOVE GRANITE CURB
4. REMOVE CLEAR TREES TO PROPOSED LIMIT OF TREE CLEARING & REMOVE STUMPS
5. REMOVE GRAVEL SURFACE
6. REMOVE LIGHT POLE & BASE
7. REMOVE SIGN
8. REMOVE CONCRETE ENTRY ISLAND & ENTRY/EXIT GATE EQUIPMENT
9. REMOVE INDIVIDUAL TREE & STUMP
10. REMOVE DRAINAGE STRUCTURE
11. REMOVE DRAINAGE STRUCTURE COVER
12. REMOVE STORM DRAIN PIPE
13. REMOVE SCULPTURE AND STORE AT LOCATION SPECIFIED BY OWNER
14. REMOVE & SALVAGE WAYFINDING SIGN FOR REINSTALLATION
15. REMOVE OVERHEAD UTILITY LINE
16. REMOVE CHAINLINK FENCE
17. REMOVE EXISTING UTILITY POLE

DEMOLITION LEGEND

DEMO PAVEMENT

DEMO GRAVEL

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 INCH = 50 FT.

NOT FOR CONSTRUCTION

AMY BELL SEGAL RLA 2265

LICENSED LANDSCAPE ARCHITECT
Amy Bell Segal
No. 2265
STATE OF MAINE
02/29/2024

PAUL D. OSTROWSKI PE 11175

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

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WWW.SEBAGOTECHNICS.COM
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DEMOLITION PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET C-003

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19059 DEMO.dwg, TAB:C-002 DEMO PLAN 1

TOTAL PARKING SPACES

STANDARD PARKING SPACES	= 664
ADA PARKING SPACES	= 20
TOTAL PARKING SPACES	= 684

PROPOSED LONG TERM PARKING
237 PARKING SPACES

PROPOSED LONG TERM PARKING
195 PARKING SPACES

PROPOSED LONG TERM PARKING
252 PARKING SPACES

AVIS RENTAL

JETPORT BLVD.

INTERNATIONAL PKWY.

PROPOSED PRIMARY EXIT

LONG TERM PARKING

PROPOSED ENTRY

PROPOSED SECONDARY EXIT

EMBASSY SUITES

PWM PARK AND SHINE

WESTBROOK ST.

JETPORT ACCESS ROAD

PARKING GARAGE

PARK' N JET

SHEET C-102
SHEET C-202
SHEET C-302
SHEET L-103

SHEET C-103
SHEET C-203
SHEET C-303
SHEET L-104

SHEET C-101
SHEET C-201
SHEET C-301
SHEET L-102

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

NOT FOR CONSTRUCTION

AMY BELL SEGAL RLA 2265
LICENSED LANDSCAPE ARCHITECT
Amy Bell Segal
No. 2265
STATE OF MAINE
02/29/2024

PAUL D. OSTROWSKI PE 11175
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02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite A
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OVERALL SITE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET C-100

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19059 S.dwg TAB:C-100 Overall Site

MATCH LINE - SEE SHEET C-102

JETPORT ACCESS ROAD

WESTBROOK ST.

PWM PARK AND SHINE

PARK' N JET

SNOW STORAGE

EXISTING VEGETATION TO REMAIN

CURB MATERIAL TRANSITION POINT

4" WHITE PARKING PAINT STRIPING

VEHICULAR PAVEMENT

VEHICULAR GUARDRAIL, TYP.

TRASH RECEPTACLE, TYP. BY OTHERS

PAVEMENT SAWCUT

EXISTING LIGHT POLE, TO REMAIN

ENTRY GATE ISLAND, SEE DETAIL

DIRECTIONAL ARROW, TYP.

6' CROSSWALK

ADA DETECTABLE WARNING PANELS, TYP.

INSTALL PEDESTRIAN FENCE, TYP.

PEDESTRIAN PAVEMENT

SECONDARY EXIT GATE ISLAND, SEE DETAIL

QUEUING FOR ONE PASSENGER VEHICLE

GATE ARM, TYP.

STOP BAR

SEE LUMINAIRE SCHEDULE FOR ADDITIONAL LIGHTING INFORMATION

PROPOSED SIDEWALK TO CONNECT TO EXISTING SIDEWALK AND RAMP

EX DMH-8438

20" ASH

20" PINE

(18) 9' X 18' PARKING SPACES

(28) 9' X 18' PARKING SPACES

(26) 9' X 18' PARKING SPACES

(12) 9' X 18' PARKING SPACES

(10) 9' X 18' PARKING SPACES

(6) 9' X 18' PARKING SPACES
(8) 11' X 18' ADA PARKING SPACES

(22) 9' X 18' PARKING SPACES

(19) 9' X 18' PARKING SPACES

(17) 9' X 18' PARKING SPACES

(8) 9' X 18' PARKING SPACES

(36) 9' X 18' PARKING SPACES

CURB ABBREVIATIONS

VSCC -	VERTICAL SLIPFORM CONCRETE CURB
SSCC -	SLOPED SLIPFORM CONCRETE CURB
FSCC -	FLUSH SLIPFORM CONCRETE CURB
VGC -	VERTICAL GRANITE CURB
FGC -	FLUSH GRANITE CURB

TIPDOWN ABBREVIATIONS

TD1 -	SLIPFORM CONCRETE TIPDOWN
TD2 -	VERTICAL GRANITE TIPDOWN

SIGN SCHEDULE

S-1 -	STOP SIGN
S-2 -	DO NOT ENTER SIGN
S-3 -	ADA ACCESSIBLE PARKING SIGN [*MOUNTED ON BOLLARD*]

LUMINAIRE SCHEDULE

LABEL	MOUNTING HEIGHT	LLF	LUM. LUMENS	LUM. WATTS	DESCRIPTION
A5	30'-0" AFG	0.900	23445	240	VP-2-72L-240-3K7-5QW
B5	30'-0" AFG	0.900	23445	240	VP-2-72L-240-3K7-5QW
A4	30'-0" AFG	0.900	21466	240	VP-2-72L-240-3K7-4W

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

NOT FOR CONSTRUCTION

AMY BELL SEGAL, RLA 2265
LICENSED LANDSCAPE ARCHITECT
Amy Bell Segal
No. 1265
STATE OF MAINE
02/29/2024

PAUL D. OSTROWSKI, PE 11175
STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

SITE PLAN

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

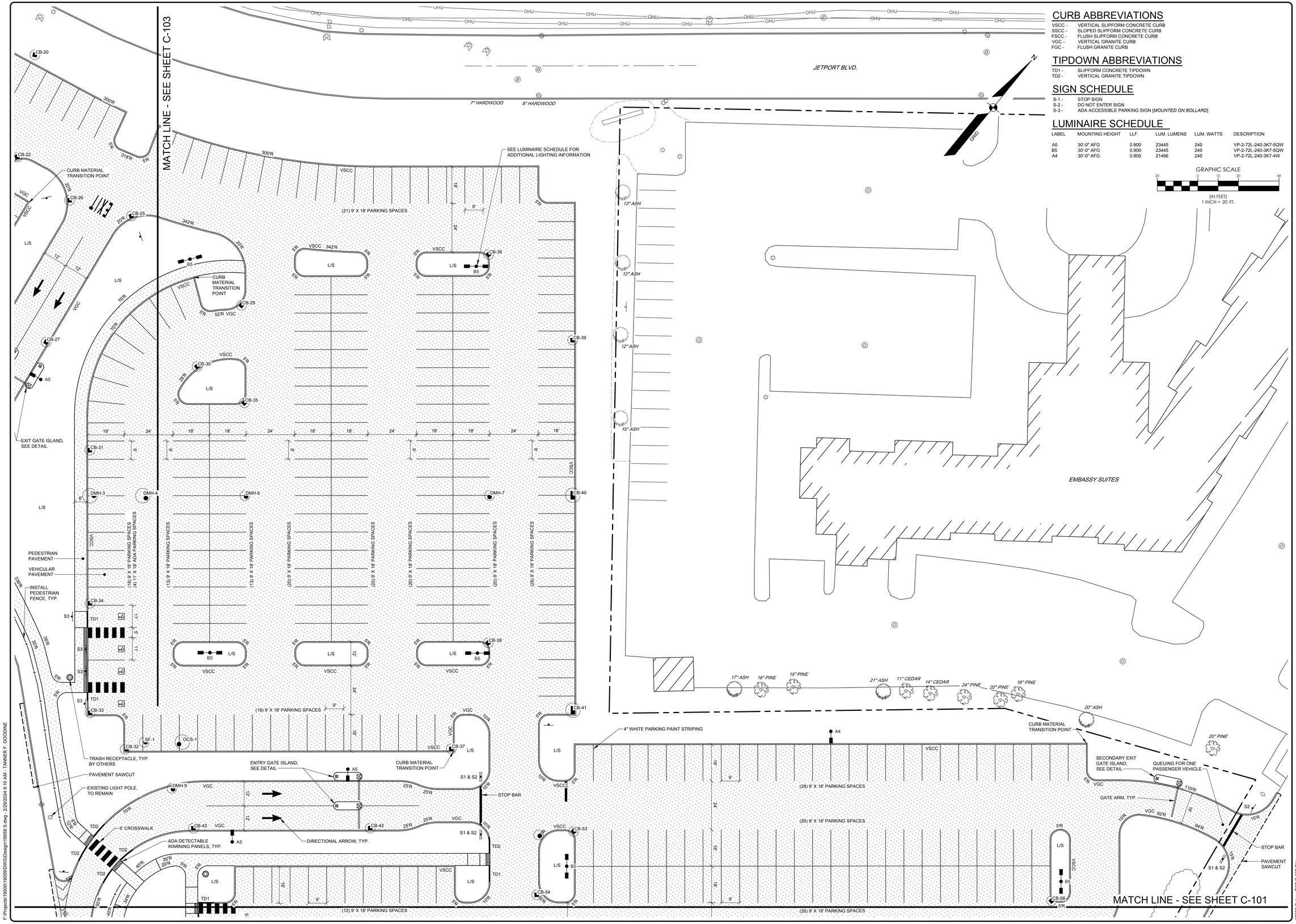
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-101

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19059 S.dwg, TAB:C-101 Site



CURB ABBREVIATIONS

VSCC -	VERTICAL SLIPFORM CONCRETE CURB
SSCC -	SLOPED SLIPFORM CONCRETE CURB
FSCC -	FLUSH SLIPFORM CONCRETE CURB
VGC -	VERTICAL GRANITE CURB
FGC -	FLUSH GRANITE CURB

TIPDOWN ABBREVIATIONS

TD1 -	SLIPFORM CONCRETE TIPDOWN
TD2 -	VERTICAL GRANITE TIPDOWN

SIGN SCHEDULE

S-1 -	STOP SIGN
S-2 -	DO NOT ENTER SIGN
S-3 -	ADA ACCESSIBLE PARKING SIGN (*MOUNTED ON BOLLARD*)

LUMINAIRE SCHEDULE

LABEL	MOUNTING HEIGHT	LLF	LUM. LUMENS	LUM. WATTS	DESCRIPTION
A5	30'-0" AFG	0.900	23445	240	VP-2-72L-240-3K7-5QW
B5	30'-0" AFG	0.900	23445	240	VP-2-72L-240-3K7-5QW
A4	30'-0" AFG	0.900	21466	240	VP-2-72L-240-3K7-4W

NOT FOR CONSTRUCTION

AMY BELL SEGAL RLA 2265
LICENSED LANDSCAPE ARCHITECT — Amy Bell Segal — No. 2265 — STATE OF MAINE — 02/29/2024

PAUL D. OSTROWSKI PE 11175
STATE OF MAINE — REGISTERED PROFESSIONAL ENGINEER — PAUL D. OSTROWSKI — No. 11175 — 02/29/2024

REV.	BY	DATE	STATUS
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OF:
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1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
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CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-102

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19059 S.dwg, TAB:C-102 Site

4" WHITE PARKING PAINT STRIPING
VEHICULAR PAVEMENT
SEE LUMINAIRE SCHEDULE FOR ADDITIONAL LIGHTING INFORMATION
BATTERY STORAGE CORRAL & CONCRETE PAD BY OTHERS
SLIPFORM TRANSITION CURB
NO PARKING PAINT STRIPING
(22) 9' X 18' PARKING SPACES
(24) 9' X 18' PARKING SPACES
(12) 9' X 18' PARKING SPACES
(14) 9' X 18' PARKING SPACES
(16) 9' X 18' PARKING SPACES
(15) 9' X 18' PARKING SPACES
(11) 9' X 18' PARKING SPACES
(6) 9' X 18' PARKING SPACES
(13) 9' X 18' PARKING SPACES
(18) 9' X 18' PARKING SPACES
(4) 11' X 18' ADA PARKING SPACES
(11) 9' X 18' PARKING SPACES
(8) 11' X 18' ADA PARKING SPACES
TRASH RECEPTACLE, TYP. BY OTHERS
PEDESTRIAN PAVEMENT
INSTALL PEDESTRIAN FENCE, TYP.
REINSTALL CUSTOM WAYFINDING SIGN ON NEW CONCRETE BASE
ADA DETECTABLE WARNING PANELS, TYP.
DIRECTIONAL ARROW, TYP.
EXIT GATE ISLAND, SEE DETAIL
PAVEMENT SAWCUT
STOP BAR
6' CROSSWALK
CURB MATERIAL TRANSITION POINT
INSTALL PEDESTRIAN FENCE, TYP.
LONG TERM PARKING
JETPORT BLVD.
INTERNATIONAL PKWY.
MATCH LINE - SEE SHEET C-102
13" MAPLE
11" MAPLE
9" MAPLE
10" MAPLE
7" MAPLE

CURB ABBREVIATIONS

VSCC - VERTICAL SLIPFORM CONCRETE CURB
SSCC - SLOPED SLIPFORM CONCRETE CURB
FSCC - FLUSH SLIPFORM CONCRETE CURB
VGC - VERTICAL GRANITE CURB
FGC - FLUSH GRANITE CURB

TIPDOWN ABBREVIATIONS

TD1 - SLIPFORM CONCRETE TIPDOWN
TD2 - VERTICAL GRANITE TIPDOWN

SIGN SCHEDULE

S-1 - STOP SIGN
S-2 - DO NOT ENTER SIGN
S-3 - ADA ACCESSIBLE PARKING SIGN [*MOUNTED ON BOLLARD*]
S-4 - STOP & LEFT TURN PROHIBITION SIGN

LUMINAIRE SCHEDULE

LABEL	MOUNTING HEIGHT	LLF	LUM. LUMENS	LUM. WATTS	DESCRIPTION
A5	30'-0" AFG	0.900	23445	240	VP-2-72L-240-3K7-5QW
B5	30'-0" AFG	0.900	23445	240	VP-2-72L-240-3K7-5QW
A4	30'-0" AFG	0.900	21466	240	VP-2-72L-240-3K7-4W

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

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AMY BELL SEGAL RLA 2265
LICENSED LANDSCAPE ARCHITECT — Amy Bell Segal — No. 2265 — STATE OF MAINE — 02/29/2024

PAUL D. OSTROWSKI PE 11175
STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — REGISTERED PROFESSIONAL ENGINEER — 02/29/2024

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75 John Roberts Rd.
Suite A
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SITE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-103

19059 S.dwg - TAB-C-103 Site

NOT FOR CONSTRUCTION

PROPOSED WETLAND IMPACT, 5,812 SF

PROPOSED WETLAND IMPACT, 2,806 SF

JETPORT BLVD.

INTERNATIONAL PKWY.

AVIS RENTAL

EMBASSY SUITES

LONG TERM PARKING

JETPORT ACCESS ROAD

PARKING GARAGE

PWM PARK AND SHINE

PARK 'N JET

WEST BOOTH ST.

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 INCH = 50 FT.

NOT FOR CONSTRUCTION

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19059 G.dwg, TAB:C-200 Overall Grading

AMY BELL SEGAL, RLA 2265

PAUL D. OSTROWSKI, PE 11175

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

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Tel. 207-200-2100

OVERALL GRADING PLAN

OF:

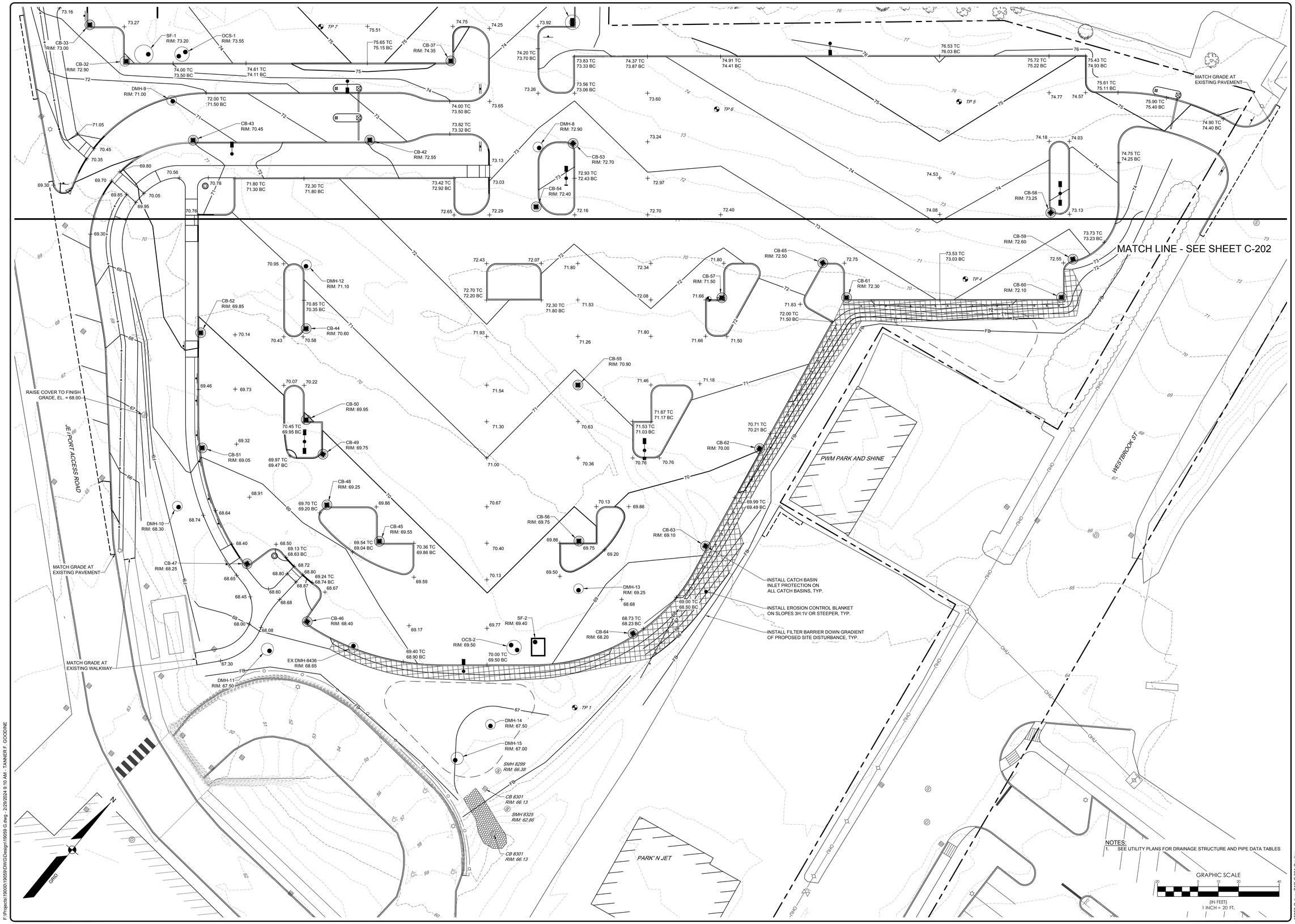
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:

PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
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DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET C-200



STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

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1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
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CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

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SCALE	1" = 20'
PROJECT	19059

SHEET C-201

NOT FOR CONSTRUCTION

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19059 G.dwg, TAB C-201 Grading

MATCH LINE - SEE SHEET C-203

MATCH LINE - SEE SHEET C-201

JETPORT BLVD.

EMBASSY SUITES

GRID

CB-20 RIM: 77.45
78.15 TC 77.65 BC
77.60
78.51
79.21 TC 78.71 BC
TP 25
CB-22 RIM: 77.20
78.35
78.68
CB-25 RIM: 77.80
CB-26 RIM: 77.60
77.23 TC 76.73 BC
77.57 TC 77.07 BC
78.38 TC 77.88 BC
79.11 TC 78.61 BC
78.71 TC 78.21 BC
79.13 TC 78.63 BC
CB-29 RIM: 78.15
77.85
CB-30 RIM: 77.15
77.36 TC 76.86 BC
76.86
74.47
74.02
CB-27 RIM: 74.60
77.81 TC 77.31 BC
77.67
CB-35 RIM: 77.25
76.53
76.35
76.01 TC 75.51 BC
75.87
CB-31 RIM: 75.25
-28 d: 73.30
TP 11
DMH-3 RIM: 74.80
DMH-4 RIM: 75.35
DMH-6 RIM: 76.40
DMH-7 RIM: 76.50
TP 10
TP 9
CB-34 RIM: 73.80
74.02
74.08
73.40
73.67
73.16
TP 8
73.16
73.27
CB-33 RIM: 73.00
SF-1 RIM: 73.20
OCS-1 RIM: 73.55
CB-32 RIM: 72.90
74.00 TC 73.50 BC
74.61 TC 74.11 BC
DMH-9 RIM: 71.00
72.00 TC 71.50 BC
71.05
70.45
70.35
69.80
70.56
69.70
69.30
70.78
69.85
70.05
69.95
70.76
71.80 TC 71.30 BC
72.30 TC 71.80 BC
CB-43 RIM: 70.45
CB-42 RIM: 72.55
73.82 TC 73.32 BC
73.42 TC 72.92 BC
72.65
72.29
TP 7
75.51
75.65 TC 75.15 BC
CB-37 RIM: 74.35
74.75
74.25
79.54 TC 79.04 BC
79.18
79.53
80.33
81.90
80.90
81.41 TC 80.91 BC
79.71 TC 79.21 BC
TP 23
80.55
79.29
79.00 TC 78.50 BC
78.53 TC 78.03 BC
79.41
80.07
79.59
CB-36 RIM: 78.90
79.11
79.83
79.29
78.57
79.47
CB-39 RIM: 77.10
76.74 TC 76.24 BC
CB-40 RIM: 75.80
CB-41 RIM: 73.55
74.20 TC 73.70 BC
73.92
73.83 TC 73.33 BC
74.37 TC 73.87 BC
74.91 TC 74.41 BC
73.56 TC 73.06 BC
73.26
73.60
TP 6
73.24
72.97
72.16
72.70
72.40
DMH-8 RIM: 72.90
CB-53 RIM: 72.70
72.93 TC 72.43 BC
CB-54 RIM: 72.40
CB-38 RIM: 75.00
74.32
74.08
74.76
75.52
75.28
76.23
75.75
75.51
74.79
CB 8267 RIM: 79.95
DMH 8265 RIM: 80.50
CB 8135 RIM: 79.95
CB 8267 RIM: 75.37
DMH 8265 RIM: 75.64
CB 8263 RIM: 75.25
FB
INSTALL FILTER BARRIER DOWN GRADIENT OF PROPOSED SITE DISTURBANCE, TYP.
INSTALL EROSION CONTROL BLANKET ON SLOPES 3H:1V OR STEEPER, TYP.
INSTALL CATCH BASIN INLET PROTECTION ON ALL CATCH BASINS, TYP.
76.53 TC 76.03 BC
75.72 TC 75.22 BC
75.43 TC 74.93 BC
75.61 TC 75.11 BC
74.77
74.57
TP 5
75.90 TC 75.40 BC
74.90 TC 74.40 BC
MATCH GRADE AT EXISTING PAVEMENT
74.18
74.03
74.75 TC 74.25 BC
74.53
CB-58 RIM: 73.25
73.13
74.08

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

NOT FOR CONSTRUCTION

PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

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GRADING PLAN

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

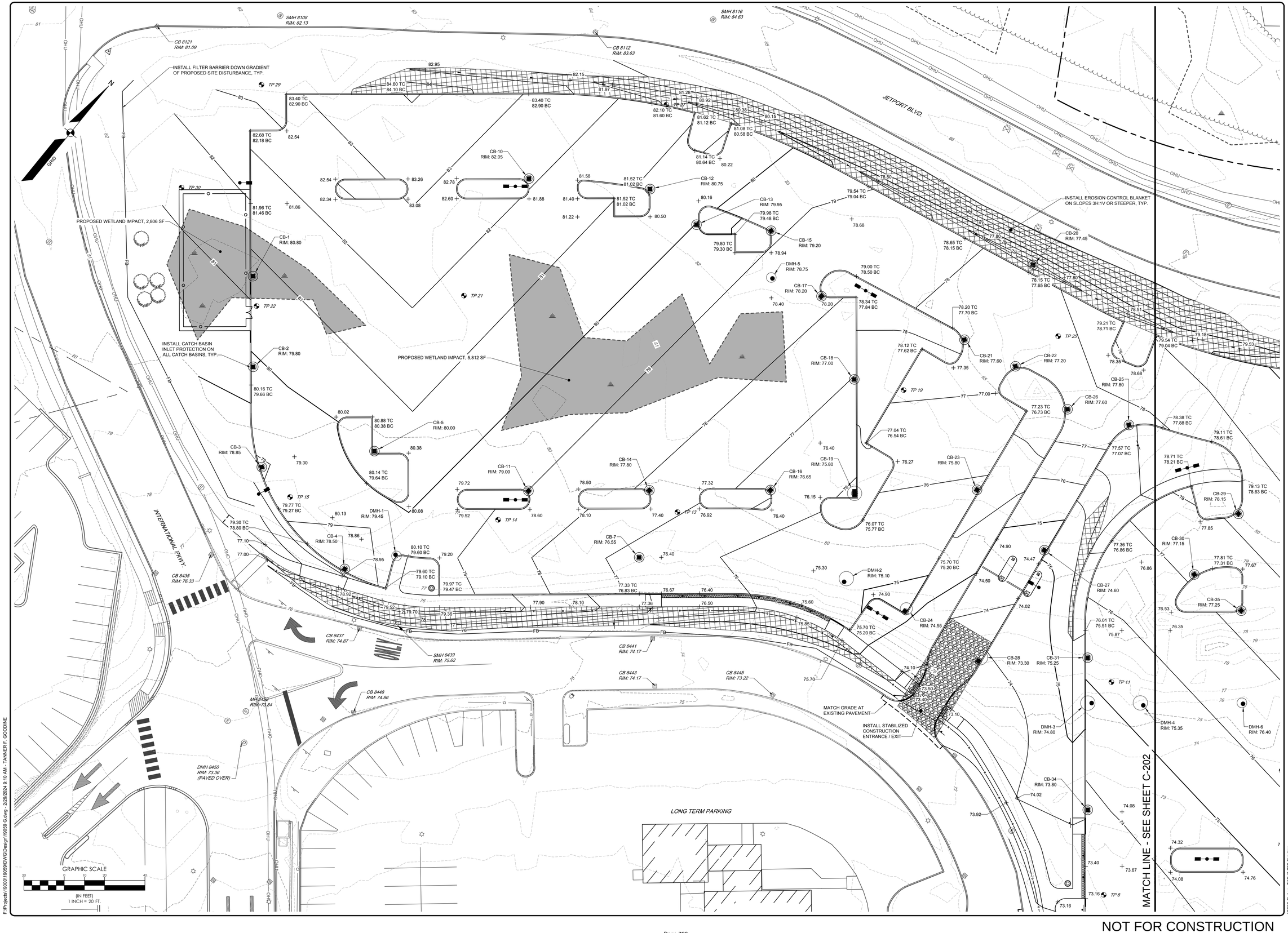
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
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DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-202

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19059 G.dwg, TAB C-202 Grading



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19059 G.dwg, TAB-C-203 Grading

PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

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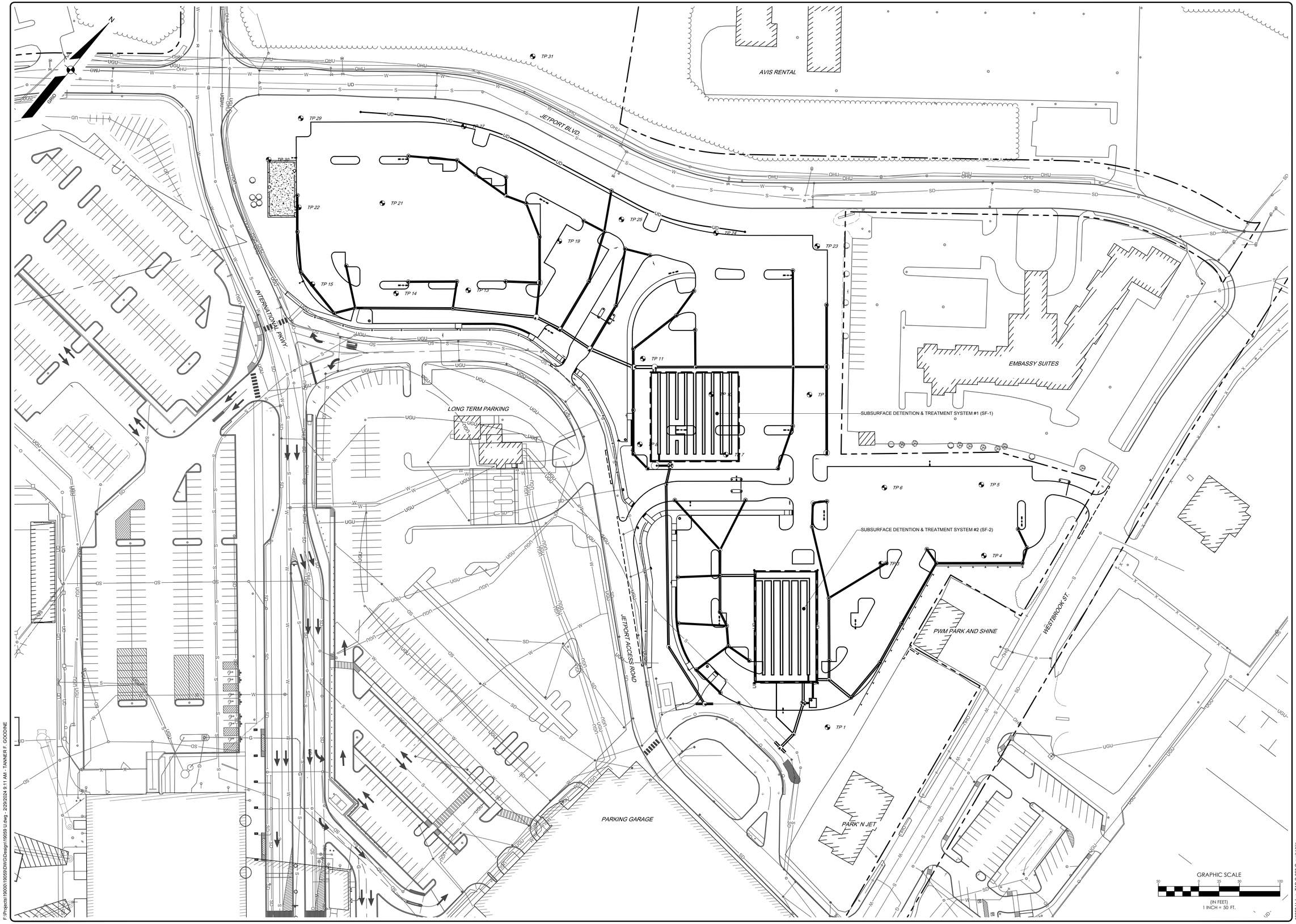
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CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
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DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-203

NOT FOR CONSTRUCTION



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PAUL D. OSTROWSKI PE 11175

AMY BELL SEGAL RLA 2265

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

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OVERALL UTILITY PLAN

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

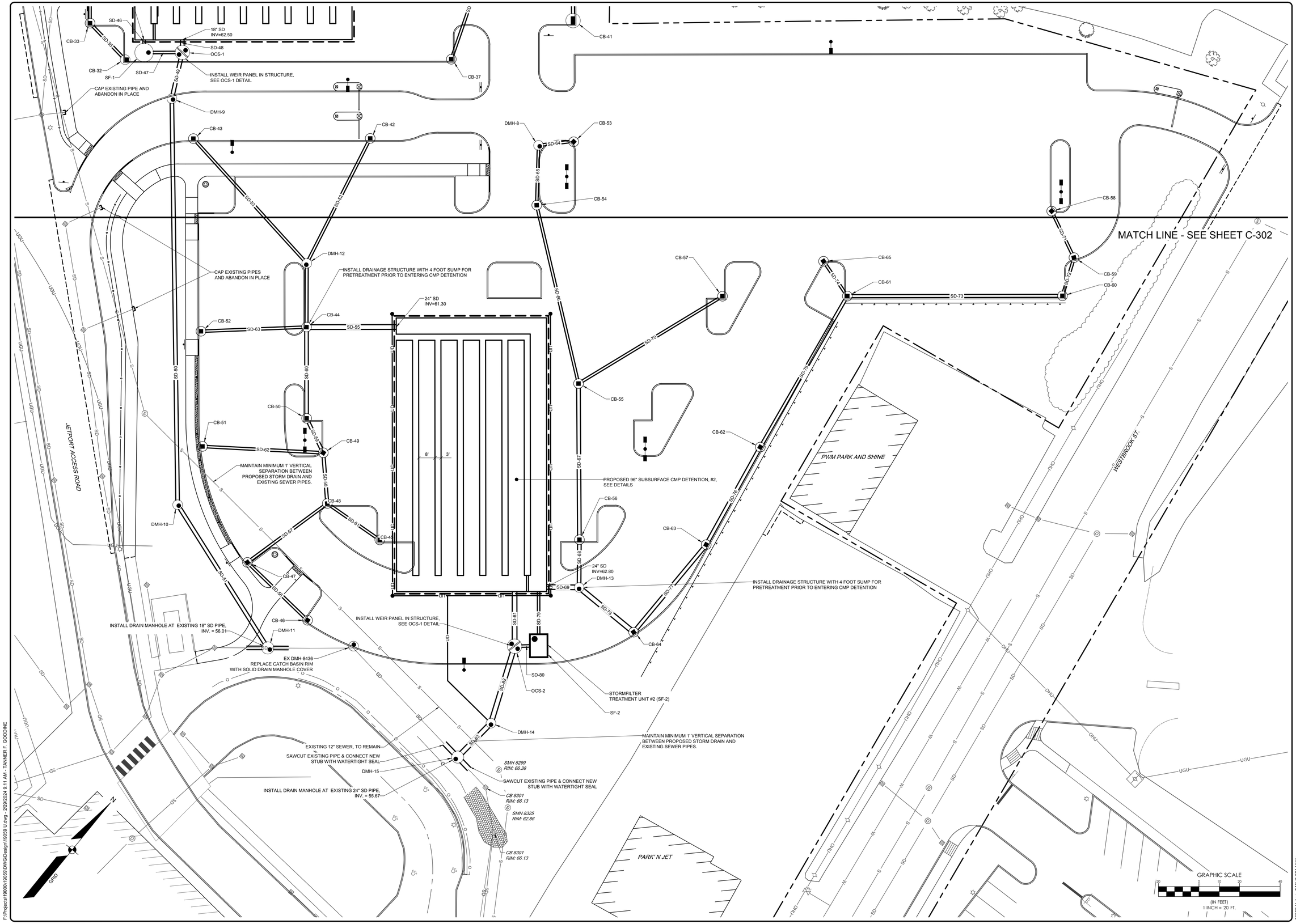
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CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

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DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET C-300

19059 U.dwg, TAB C-300 Overall Utility

NOT FOR CONSTRUCTION



NOT FOR CONSTRUCTION

PAUL D. OSTROWSKI, PE 11175
AMY BELL SEGAL, RLA 2265

STATE OF MAINE
PAUL D. OSTROWSKI
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02/29/2024

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UTILITY PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

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PROJECT	19059

SHEET C-301

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19059 U.dwg, TAB:C-301 Utility

MATCH LINE - SEE SHEET C-303

JETPORT BLVD.

EMBASSY SUITES

CB-20
CB-22
CB-25
CB-26
CB-27
CB-28
CB-29
CB-30
CB-31
CB-32
CB-33
CB-34
CB-35
CB-36
CB-37
CB-38
CB-39
CB-40
CB-41
CB-42
CB-43
CB-53
CB-54
CB-58
DMH-3
DMH-4
DMH-6
DMH-7
DMH-8
DMH-9
SMH 8139
RIM: 80.64
CB 8267
RIM: 79.95
DMH 8265
RIM: 80.50
CB 8135
RIM: 79.95
CB 8267
RIM: 75.37
DMH 8265
RIM: 75.64
CB 8263
RIM: 75.25
SD-21
SD-25
SD-26
SD-27
SD-28
SD-29
SD-30
SD-32
SD-33
SD-34
SD-35
SD-36
SD-37
SD-38
SD-39
SD-40
SD-41
SD-43
SD-44
SD-46
SD-47
SD-48
SD-52
SD-53
SD-64
SD-65
INSTALL STONE DRIP EDGE, SEE DETAIL
INSTALL DRAINAGE CLEANOUT
INSTALL DRAINAGE STRUCTURE WITH 4 FOOT SUMP FOR PRETREATMENT PRIOR TO ENTERING CMP DETENTION
PROPOSED SUBSURFACE CMP DETENTION, #1, SEE DETAIL
36" SD INV=65.10
12" SD INV=62.50
18" SD INV=62.50
OCS-1
SF-1
INSTALL WEIR PANEL IN STRUCTURE, SEE OCS-1 DETAIL
CAP EXISTING PIPE AND ABANDON IN PLACE
8'
3'
GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

MATCH LINE - SEE SHEET C-301

NOT FOR CONSTRUCTION

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19059 U.dwg, TAB C-302 Utility

PAUL D. OSTROWSKI PE 11175

AMY BELL SEGAL RLA 2265

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REGISTERED PROFESSIONAL ENGINEER
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REV.	BY	DATE	STATUS
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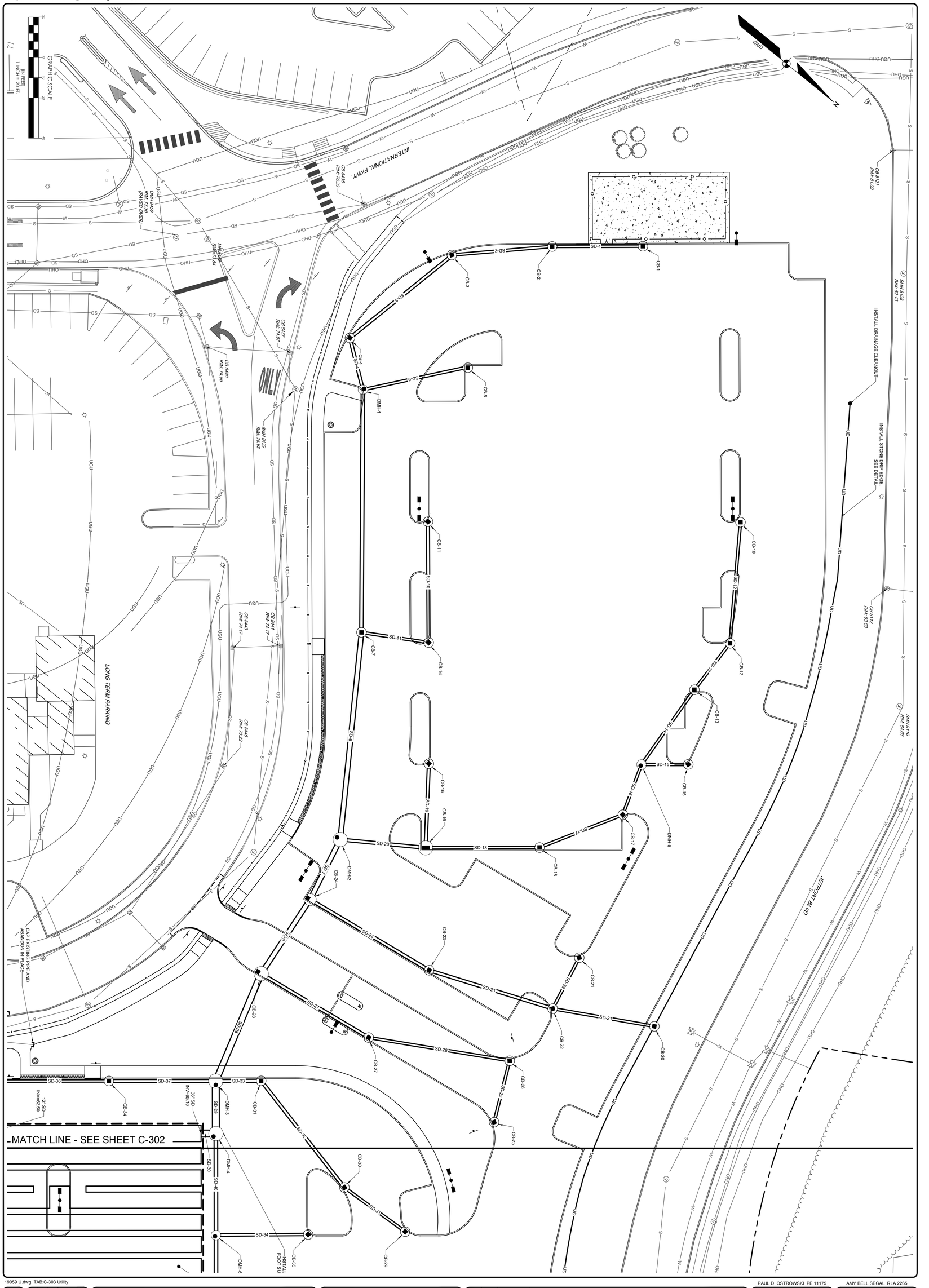
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

UTILITY PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-302

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Page 803

NOT FOR CONSTRUCTION

19059 U.dwg, TAB-C-303 Utility

PAUL D. OSTROWSKI PE 11175

AMY BELL SEGAL RLA 2265

SHEET C-303

PROJECT	DESIGNED	TFG
19059	DRAWN	EPR
SCALE	CHECKED	PDO
1" = 20'	DATE	02/29/2024

UTILITY PLAN

OF:

PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:

PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

REV:	BY:	DATE:	STATUS:
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
LICENSED PROFESSIONAL ENGINEER

02/29/2024

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-1	80.80		77.20 (SD-1)	48" DIA.
CB-2	79.80	76.20 (SD-1)	76.10 (SD-2)	48" DIA.
CB-3	78.85	75.25 (SD-2)	75.00 (SD-3)	48" DIA.
CB-4	78.50	74.25 (SD-3)	74.00 (SD-4)	48" DIA.
CB-5	80.00		75.50 (SD-9)	48" DIA.
CB-7	76.55	71.75 (SD-11) 71.50 (SD-5)	71.00 (SD-6)	48" DIA.
CB-10	82.05		78.45 (SD-12)	48" DIA.
CB-11	79.00		74.25 (SD-10)	48" DIA.
CB-12	80.75	76.90 (SD-12)	76.80 (SD-13)	48" DIA.
CB-13	79.95	76.35 (SD-13)	76.10 (SD-14)	48" DIA.
CB-14	77.80	72.60 (SD-10)	72.50 (SD-11)	48" DIA.
CB-15	79.20		75.60 (SD-15)	48" DIA.
CB-16	76.65		72.90 (SD-19)	48" DIA.
CB-17	78.20	74.20 (SD-16)	74.10 (SD-17)	48" DIA.
CB-18	77.00	73.40 (SD-17)	73.30 (SD-18)	48" DIA.
CB-19	75.80	72.20 (SD-18) 72.15 (SD-19)	70.00 (SD-20)	72" DOUBLE GRATE
CB-20	77.45	74.45 (UD-1) 74.45 (UD-2)	74.35 (SD-21)	48" DIA.
CB-21	77.60		73.65 (SD-22)	48" DIA.
CB-22	77.20	73.35 (SD-22) 73.35 (SD-21)	73.10 (SD-23)	48" DIA.
CB-23	75.80	71.85 (SD-23)	71.75 (SD-24)	48" DIA.
CB-24	74.55	70.70 (SD-24) 68.10 (SD-7)	68.00 (SD-8)	60" DIA.
CB-25	77.80		74.00 (SD-25)	48" DIA.
CB-26	77.60	73.20 (SD-25)	73.10 (SD-26)	48" DIA.
CB-27	74.60	71.00 (SD-26)	69.30 (SD-27)	48" DIA.
CB-28	73.30	68.15 (SD-27) 67.40 (SD-8)	66.90 (SD-28)	72" DIA.
CB-29	78.15		74.55 (SD-31)	48" DIA.
CB-30	77.15	73.30 (SD-31)	73.05 (SD-32)	48" DIA.
CB-31	75.25	70.75 (SD-32)	70.50 (SD-33)	48" DIA.
CB-32	72.90		68.95 (SD-35)	48" DIA.

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-33	73.00	68.80 (SD-35)	68.70 (SD-36)	48" DIA.
CB-34	73.80	68.25 (SD-36)	68.00 (SD-37)	48" DIA.
CB-35	77.25		73.65 (SD-34)	48" DIA.
CB-36	78.90		75.30 (SD-38)	48" DIA.
CB-37	74.35		70.75 (SD-41)	48" DIA.
CB-38	75.00	70.15 (SD-41)	70.05 (SD-42)	48" DIA.
CB-39	77.10		73.50 (SD-43)	48" DIA.
CB-40	75.80	72.20 (SD-43) 68.90 (SD-44)	68.65 (SD-45)	72" DOUBLE GRATE
CB-41	73.55		69.95 (SD-44)	72" DOUBLE GRATE
CB-42	72.55		67.30 (SD-52)	48" DIA.
CB-43	70.45		66.77 (SD-53)	48" DIA.
CB-44	70.60	62.30 (SD-60) 65.50 (SD-54) 65.45 (SD-63)	61.80 (SD-55)	48" DIA.
CB-45	69.55		65.95 (SD-61)	48" DIA.
CB-46	68.40		64.80 (SD-56)	48" DIA.
CB-47	68.25	64.40 (SD-56)	64.30 (SD-57)	48" DIA.
CB-48	69.25	65.65 (SD-61) 63.80 (SD-57)	63.55 (SD-58)	48" DIA.
CB-49	69.75	63.30 (SD-58) 64.80 (SD-62)	63.20 (SD-59)	48" DIA.
CB-50	69.95	63.05 (SD-59)	62.80 (SD-60)	48" DIA.
CB-51	69.05		65.45 (SD-62)	48" DIA.
CB-52	69.85		66.05 (SD-63)	48" DIA.
CB-53	72.70		69.10 (SD-64)	48" DIA.
CB-54	72.40	68.40 (SD-65)	68.30 (SD-66)	48" DIA.
CB-55	70.90	66.50 (SD-66) 66.50 (SD-70)	66.00 (SD-67)	48" DIA.
CB-56	69.75	64.70 (SD-67)	64.20 (SD-68)	48" DIA.
CB-57	71.50		67.90 (SD-70)	48" DIA.
CB-58	73.25		69.55 (SD-71)	48" DIA.
CB-59	72.60	69.00 (SD-71)	68.90 (SD-72)	48" DIA.
CB-60	72.10	68.30 (SD-72)	68.20 (SD-73)	48" DIA.
CB-61	72.30	67.16 (SD-73) 67.93 (SD-74)	67.05 (SD-75)	48" DIA.

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-62	70.00	66.06 (SD-75)	65.81 (SD-76)	48" DIA.
CB-63	69.10	64.81 (SD-76)	64.71 (SD-77)	48" DIA.
CB-64	68.20	64.15 (SD-77)	63.65 (SD-78)	48" DIA.
CB-65	72.50		68.50 (SD-74)	48" DIA.
DMH-1	79.45	73.70 (SD-4) 74.20 (SD-9)	73.60 (SD-5)	48" DIA.
DMH-2	75.10	69.35 (SD-20) 68.60 (SD-6)	68.50 (SD-7)	72" DIA.
DMH-3	74.80	66.25 (SD-28) 70.00 (SD-33) 67.50 (SD-37)	65.75 (SD-29)	72" DIA.
DMH-4	75.35	65.35 (SD-29) 66.30 (SD-40)	65.25 (SD-30)	72" DIA.
DMH-5	78.75	76.10 (SD-14) 75.30 (SD-15)	75.20 (SD-16)	48" DIA.
DMH-6	76.40	66.82 (SD-39) 72.50 (SD-34)	66.72 (SD-40)	48" DIA.
DMH-7	76.50	72.90 (SD-38) 69.30 (SD-42) 68.20 (SD-45)	67.95 (SD-39)	48" DIA.
DMH-8	72.90	68.95 (SD-64)	68.85 (SD-65)	48" DIA.
DMH-9	71.00	60.30 (SD-49)	60.20 (SD-50)	48" DIA.
DMH-10	68.30	58.60 (SD-50)	58.50 (SD-51)	48" DIA.
DMH-11	67.50	56.01 (SD-51) 56.01 (EX. SD-1)	56.01 (EX. SD-2)	60" DIA.
DMH-12	71.10	65.95 (SD-52) 65.95 (SD-53)	65.85 (SD-54)	48" DIA.
DMH-13	69.25	63.70 (SD-68) 63.30 (SD-78)	63.20 (SD-69)	48" DIA.
DMH-14	67.50	57.20 (SD-82) 58.92 (GW-1)	57.10 (SD-83)	48" DIA.
DMH-15	67.00	56.87 (SD-83) 55.67 (EX. SD-3)	55.67 (EX. SD-4)	60" DIA.
EX DMH-8436	68.65			SEE SHEET C-301
OCS-1	73.55	62.50 (SD-48) 60.50 (SD-47)	60.40 (SD-49)	72" DIA.
OCS-2	69.50	57.60 (SD-80) 60.00 (SD-81)	57.50 (SD-82)	72" DIA.
SF-1	73.20	62.50 (SD-46)	60.60 (SD-47)	96" DIA.
SF-2	69.40	60.00 (SD-79)	57.70 (SD-80)	72 x 96 inch Rectangular Structure

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
EX. SD-1	18"	8'	0.40%
EX. SD-2	18"	8'	0.30%
EX. SD-3	24"	7'	0.38%
EX. SD-4	24"	6'	0.41%
GW-1	6"	28'	0.50%
SD-1	12"	43'	2.33%
SD-2	12"	48'	1.77%
SD-3	15"	61'	1.23%
SD-4	15"	22'	1.36%
SD-5	18"	118'	1.77%
SD-6	24"	100'	2.39%
SD-7	24"	28'	1.44%
SD-8	24"	39'	1.56%
SD-9	12"	49'	2.64%
SD-10	15"	58'	2.85%
SD-11	12"	32'	2.37%
SD-12	12"	58'	2.66%
SD-13	12"	27'	1.66%
SD-14	12"	43'	0.00%
SD-15	12"	19'	1.56%
SD-16	12"	23'	4.42%
SD-17	12"	40'	1.73%
SD-18	12"	52'	2.14%
SD-19	15"	37'	2.04%
SD-20	15"	37'	1.78%
SD-21	12"	47'	2.12%
SD-22	12"	25'	1.22%
SD-23	15"	60'	2.08%
SD-24	15"	64'	1.64%
SD-25	12"	29'	2.72%

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
SD-26	12"	67'	3.14%
SD-27	15"	57'	2.02%
SD-28	30"	52'	1.25%
SD-29	36"	20'	1.99%
SD-30	36"	4'	3.44%
SD-31	12"	33'	3.76%
SD-32	15"	63'	3.64%
SD-33	15"	18'	2.85%
SD-34	12"	44'	2.63%
SD-35	12"	21'	0.72%
SD-36	12"	50'	0.90%
SD-37	15"	48'	1.04%
SD-38	12"	115'	2.09%
SD-39	18"	117'	0.97%
SD-40	18"	45'	0.92%
SD-41	12"	51'	1.17%
SD-42	12"	69'	1.09%
SD-43	12"	72'	1.82%
SD-44	15"	103'	1.02%
SD-45	15"	36'	1.25%
SD-46	12"	2'	0.00%
SD-47	12"	12'	0.84%
SD-48	18"	3'	0.00%
SD-49	18"	18'	0.54%
SD-50	18"	196'	0.82%
SD-51	18"	79'	3.15%
SD-52	12"	65'	2.07%
SD-53	12"	79'	1.04%
SD-54	15"	27'	1.27%
SD-55	24"	42'	1.18%

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
SD-56	12"	37'	1.08%
SD-57	12"	45'	1.11%
SD-58	15"	23'	1.08%
SD-59	15"	15'	1.01%
SD-60	18"	41'	1.22%
SD-61	12"	28'	1.09%
SD-62	12"	56'	1.17%
SD-63	12"	50'	1.20%
SD-64	12"	13'	1.12%
SD-65	12"	28'	1.64%
SD-66	12"	86'	2.08%
SD-67	18"	77'	1.69%
SD-68	18"	22'	2.32%
SD-69	24"	14'	2.86%
SD-70	12"	83'	1.69%
SD-71	12"	21'	2.56%
SD-72	12"	18'	3.39%
SD-73	15"	104'	1.00%
SD-74	12"	21'	2.74%
SD-75	15"	82'	1.21%
SD-76	18"	51'	1.96%
SD-77	18"	54'	1.04%
SD-78	24"	33'	1.07%
SD-79	12"	23'	0.00%
SD-80	12"	6'	1.70%
SD-81	24"	24'	0.00%
SD-82	24"	35'	0.86%
SD-83	24"	19'	1.19%
UD-1	6"	34'	1.61%
UD-2	6"	26'	2.15%

PAUL D. OSTROWSKI PE 11175

AMY BELL SEGAL RLA 2265

STATE OF MAINE PAUL D. OSTROWSKI No. 11175 LICENSED PROFESSIONAL ENGINEER 02/29/2024

REV.:	BY:	DATE:	STATUS:
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd.
Suite 1A
South Portland, ME 04106
Tel. 207-200-2100

PIPE AND STRUCTURE DATA TABLES

OF:

PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:

PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

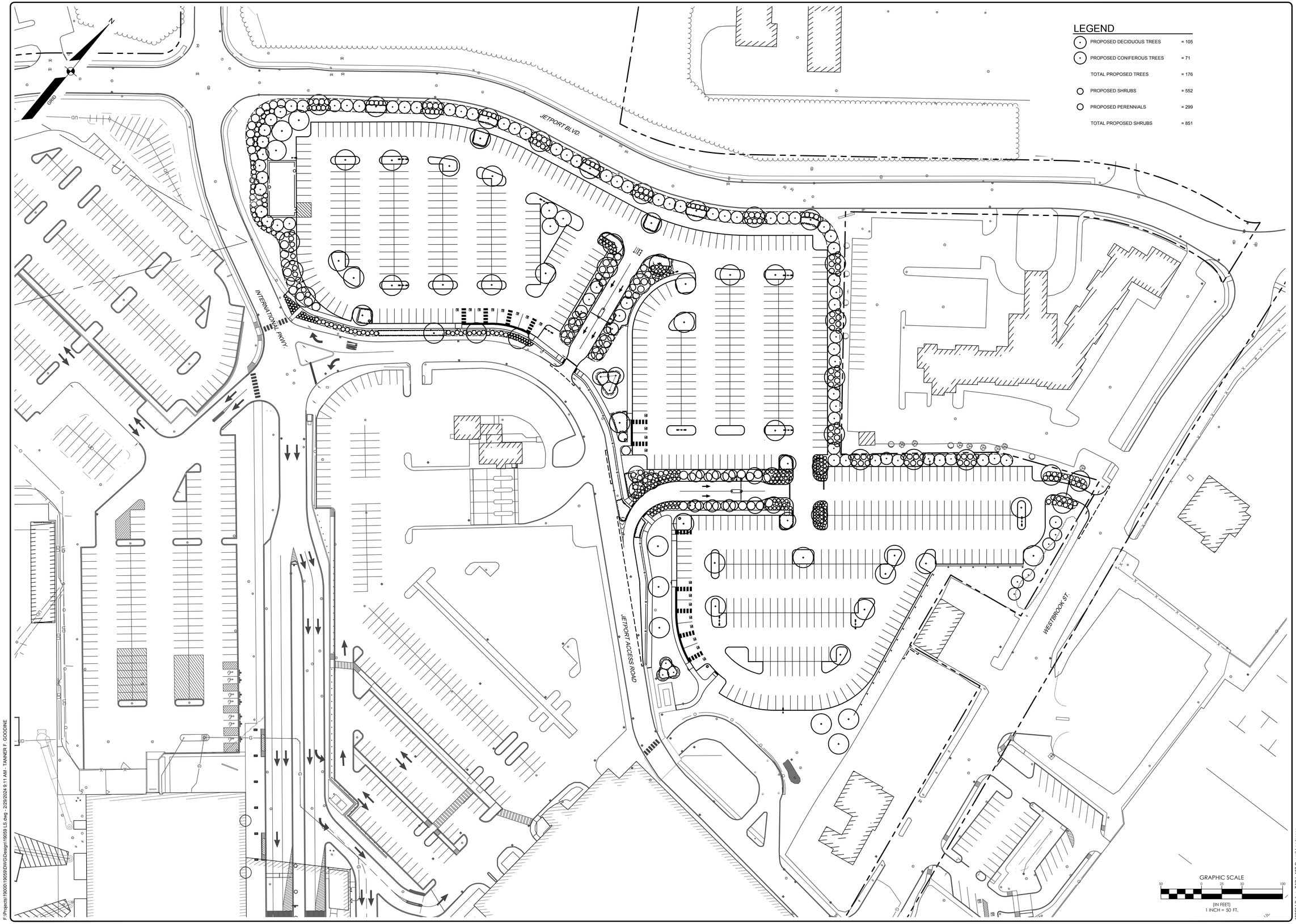
DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-304

19059 U.dwg - TAB:Structure & Pipe Data

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19059 LS.dwg - TAB:L-100 Overall Landscape

AMY BELL SEGAL RLA 2265

PAUL D. OSTROVSKI PE 11175

LICENSED LANDSCAPE ARCHITECT
Amy Bell Segal
No. 2265
STATE OF MAINE
02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

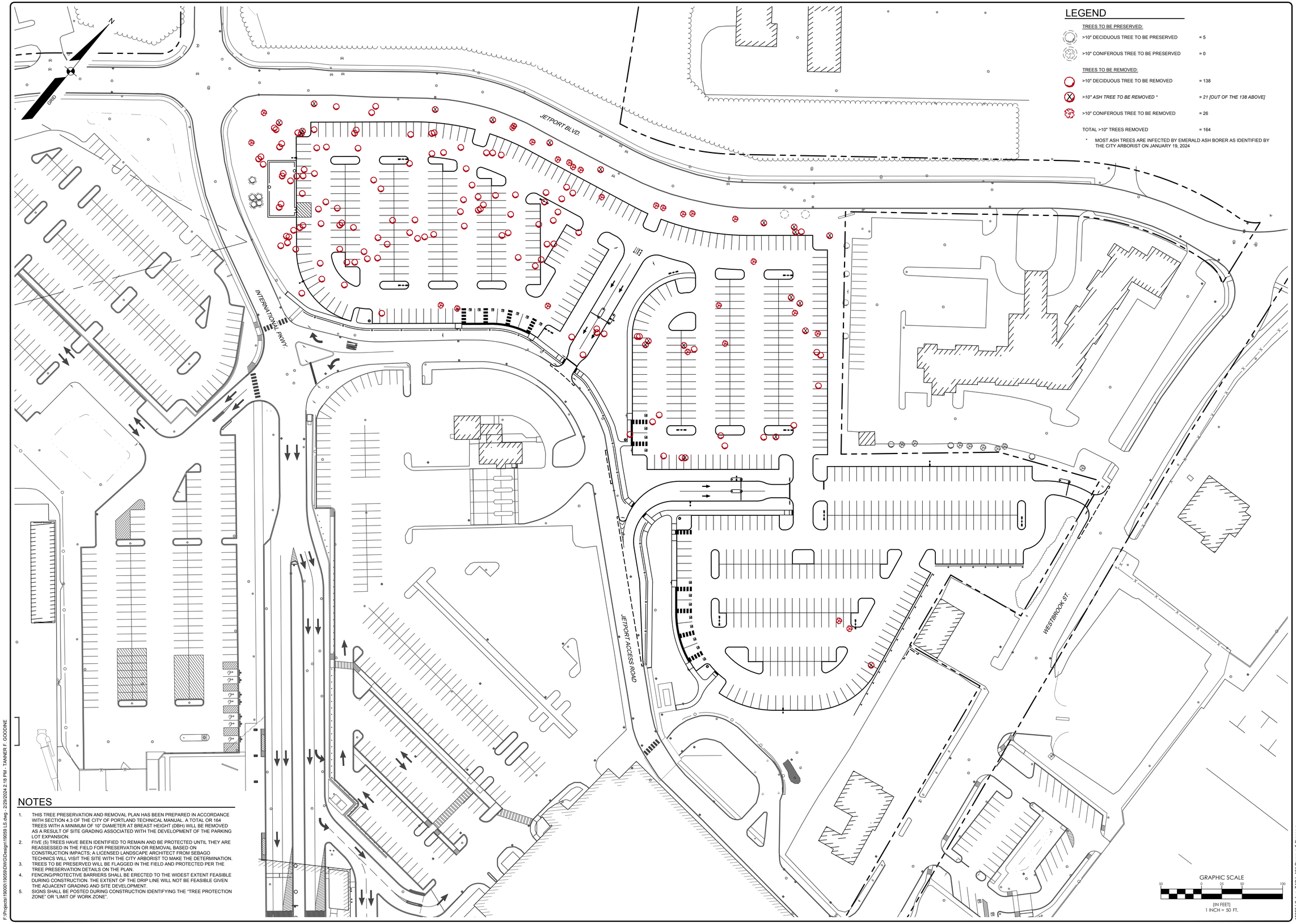
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75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel. 207-200-2100

OVERALL LANDSCAPE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET L-100



LEGEND

TREES TO BE PRESERVED:

>10" DECIDUOUS TREE TO BE PRESERVED	= 5
>10" CONIFEROUS TREE TO BE PRESERVED	= 0

TREES TO BE REMOVED:

>10" DECIDUOUS TREE TO BE REMOVED	= 138
*>10" ASH TREE TO BE REMOVED **	*= 21 [OUT OF THE 138 ABOVE]*
>10" CONIFEROUS TREE TO BE REMOVED	= 26
TOTAL >10" TREES REMOVED	= 164

* MOST ASH TREES ARE INFECTED BY EMERALD ASH BORER AS IDENTIFIED BY THE CITY ARBORIST ON JANUARY 19, 2024

NOTES

1. THIS TREE PRESERVATION AND REMOVAL PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 4.3 OF THE CITY OF PORTLAND TECHNICAL MANUAL. A TOTAL OR 164 TREES WITH A MINIMUM OF 10" DIAMETER AT BREAST HEIGHT (DBH) WILL BE REMOVED AS A RESULT OF SITE GRADING ASSOCIATED WITH THE DEVELOPMENT OF THE PARKING LOT EXPANSION.
2. FIVE (5) TREES HAVE BEEN IDENTIFIED TO REMAIN AND BE PROTECTED UNTIL THEY ARE REASSESSED IN THE FIELD FOR PRESERVATION OR REMOVAL BASED ON CONSTRUCTION IMPACTS; A LICENSED LANDSCAPE ARCHITECT FROM SEBAGO TECHNICS WILL VISIT THE SITE WITH THE CITY ARBORIST TO MAKE THE DETERMINATION.
3. TREES TO BE PRESERVED WILL BE FLAGGED IN THE FIELD AND PROTECTED PER THE TREE PRESERVATION DETAILS ON THE PLAN.
4. FENCING/PROTECTIVE BARRIERS SHALL BE ERECTED TO THE WIDEST EXTENT FEASIBLE DURING CONSTRUCTION. THE EXTENT OF THE DRIP LINE WILL NOT BE FEASIBLE GIVEN THE ADJACENT GRADING AND SITE DEVELOPMENT.
5. SIGNS SHALL BE POSTED DURING CONSTRUCTION IDENTIFYING THE "TREE PROTECTION ZONE" OR "LIMIT OF WORK ZONE".

NOT FOR CONSTRUCTION

AMY BELL SEGAL RLA 2265

PAUL D. OSTROVSKI PE 11175

LICENSED LANDSCAPE ARCHITECT
Amy Bell Segal
No. 1265
STATE OF MAINE
02/29/2024

REV.	BY	DATE	STATUS
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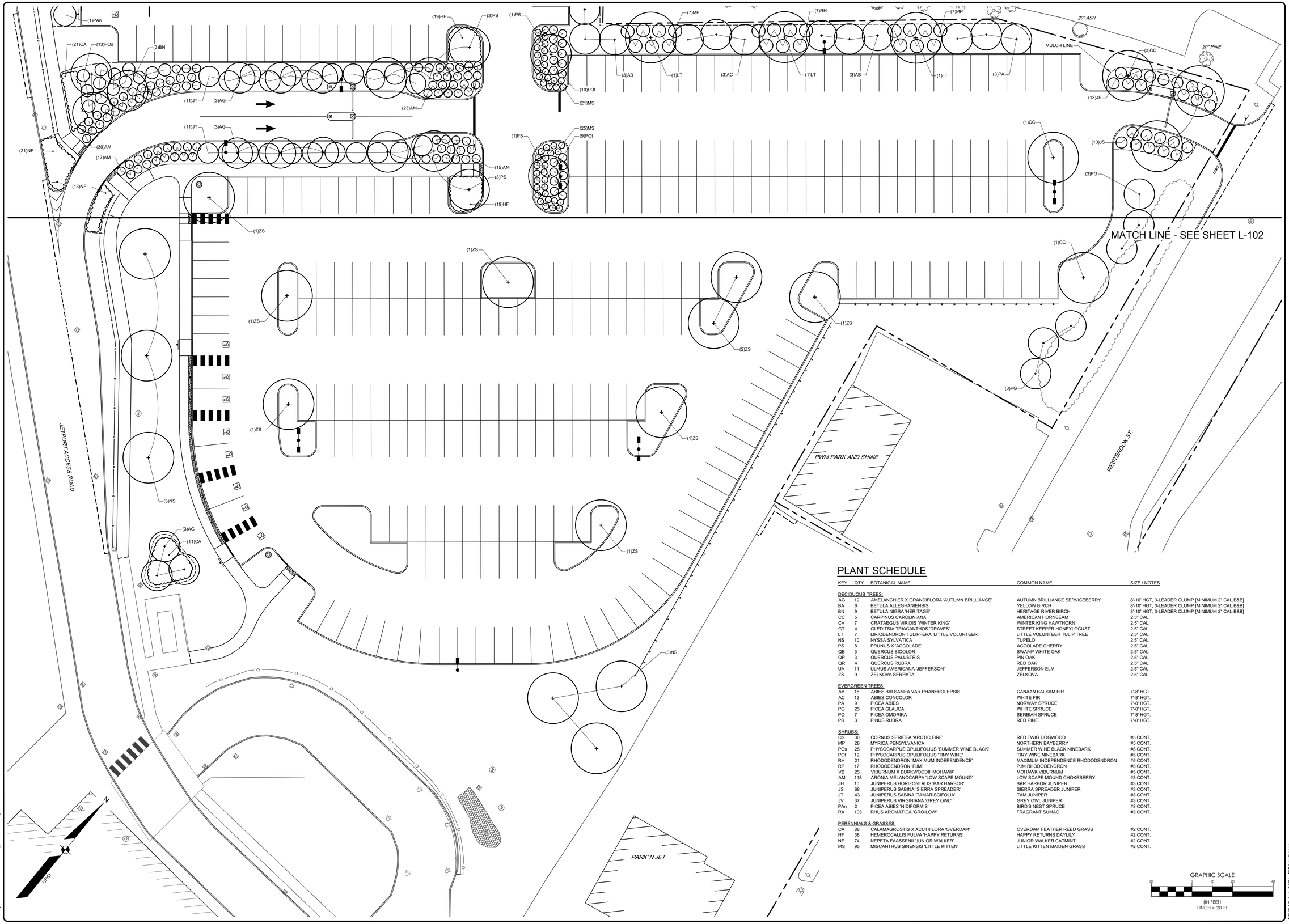
TREE REMOVAL & PRESERVATION PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET L-101

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19059 LS.dwg - TAB:L-101 Remove & Preserve



PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE / NOTES
DECIDUOUS TREES:				
AG	19	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
BA	6	BETULA ALLEGHANIENSIS	YELLOW BIRCH	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
BN	9	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
CC	5	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2.5" CAL.
CV	7	CRATAEGUS VIRIDIS 'WINTER KING'	WINTER KING HAWTHORN	2.5" CAL.
GT	4	GLEDITSIA TRIACANTHOS 'DRAVES'	STREET KEEPER HONEYLOCUST	2.5" CAL.
LT	7	LIRIODENDRON TULIPFERA 'LITTLE VOLUNTEER'	LITTLE VOLUNTEER TULIP TREE	2.5" CAL.
NS	10	NYSSA SYLVATICA	TUPELO	2.5" CAL.
PS	8	PRUNUS X 'ACCOLADE'	ACCOLADE CHERRY	2.5" CAL.
QB	3	QUERCUS BICOLOR	SWAMP WHITE OAK	2.5" CAL.
QP	3	QUERCUS PALUSTRIS	PIN OAK	2.5" CAL.
QR	4	QUERCUS RUBRA	RED OAK	2.5" CAL.
UA	11	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2.5" CAL.
ZS	9	ZELKOVA SERRATA	ZELKOVA	2.5" CAL.
EVERGREEN TREES:				
AB	15	ABIES BALSAMEA VAR PHANEROLEPSIS	CANAAN BALSAM FIR	7'-8' HGT.
AC	12	ABIES CONCOLOR	WHITE FIR	7'-8' HGT.
PA	9	PICEA ABIES	NORWAY SPRUCE	7'-8' HGT.
PG	25	PICEA GLAUCA	WHITE SPRUCE	7'-8' HGT.
PO	7	PICEA OMORIKA	SERBIAN SPRUCE	7'-8' HGT.
PR	3	PINUS RUBRA	RED PINE	7'-8' HGT.
SHRUBS:				
CS	30	CORNUS SERICEA 'ARCTIC FIRE'	RED TWIG DOGWOOD	#5 CONT.
MP	28	MYRICA PENSYLVANICA	NORTHERN BAYBERRY	#5 CONT.
POs	25	PHYSOCARPUS OPULIFOLIUS 'SUMMER WINE BLACK'	SUMMER WINE BLACK NINEBARK	#5 CONT.
POt	19	PHYSOCARPUS OPULIFOLIUS 'TINY WINE'	TINY WINE NINEBARK	#5 CONT.
RH	21	RHODODENDRON 'MAXIMUM INDEPENDENCE'	MAXIMUM INDEPENDENCE RHODODENDRON	#5 CONT.
RP	17	RHODODENDRON 'PJM'	PJM RHODODENDRON	#5 CONT.
VB	25	VIBURNUM X BURKWOODII 'MOHAWK'	MOHAWK VIBURNUM	#5 CONT.
AM	118	ARONIA MELANOCARPA 'LOW SCAPE MOUND'	LOW SCAPE MOUND CHOKEBERRY	#3 CONT.
JH	10	JUNIPERUS HORIZONTALIS 'BAR HARBOR'	BAR HARBOR JUNIPER	#3 CONT.
JS	68	JUNIPERUS SABINA 'SIERRA SPREADER'	SIERRA SPREADER JUNIPER	#3 CONT.
JT	43	JUNIPERUS SABINA 'TAMARISCIFOLIA'	TAM JUNIPER	#3 CONT.
JV	37	JUNIPERUS VIRGINIANA 'GREY OWL'	GREY OWL JUNIPER	#3 CONT.
PAn	2	PICEA ABIES 'NIDIFORMIS'	BIRD'S NEST SPRUCE	#3 CONT.
RA	105	RHUS AROMATICA 'GRO-LOW'	FRAGRANT SUMAC	#3 CONT.
PERENNIALS & GRASSES:				
CA	88	CALAMAGROSTIS X ACUTIFLORA 'OVERDAM'	OVERDAM FEATHER REED GRASS	#2 CONT.
HF	38	HEMEROCALLIS FULVA 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	#2 CONT.
NF	74	NEPETA FAASSENII 'JUNIOR WALKER'	JUNIOR WALKER CATMINT	#2 CONT.
MS	95	MISCANTHUS SINENSIS 'LITTLE KITTEN'	LITTLE KITTEN MAIDEN GRASS	#2 CONT.

GRAPHIC SCALE
0 5 10 20 40
(IN FEET)
1 INCH = 20 FT.

NOT FOR CONSTRUCTION

F:\Projects\19000\19059\DWG\Design\19059 LS.dwg - 2/29/2024 9:12 AM - TANNER F. GOODINE

AMY BELL SEGAL RLA 2265
PAUL D. OSTROVSKI PE 11175

Amy Bell Segal No. 2265 LICENSED LANDSCAPE ARCHITECT STATE OF MAINE
02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

LANDSCAPE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET L-102

19059 LS.dwg, TAB L-102 Landscape

PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE / NOTES
DECIDUOUS TREES:				
AG	19	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
BA	6	BETULA ALLEGHANIENSIS	YELLOW BIRCH	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
BN	9	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
CC	5	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2.5" CAL.
CV	7	CRATAEGUS VIRIDIS 'WINTER KING'	WINTER KING HAWTHORN	2.5" CAL.
GT	4	GLEDITSIA TRIACANTHOS 'DRAVES'	STREET KEEPER HONEYLOCUST	2.5" CAL.
LT	7	LIRIODENDRON TULIPFERA 'LITTLE VOLUNTEER'	LITTLE VOLUNTEER TULIP TREE	2.5" CAL.
NS	10	NYSSA SYLVATICA	TUPELO	2.5" CAL.
PS	8	PRUNUS X 'ACCOLADE'	ACCOLADE CHERRY	2.5" CAL.
QB	3	QUERCUS BICOLOR	SWAMP WHITE OAK	2.5" CAL.
QP	3	QUERCUS PALUSTRIS	PIN OAK	2.5" CAL.
QR	4	QUERCUS RUBRA	RED OAK	2.5" CAL.
UA	11	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2.5" CAL.
ZS	9	ZELKOVA SERRATA	ZELKOVA	2.5" CAL.
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POt	19	PHYSOCARPUS OPULIFOLIUS 'TINY WINE'	TINY WINE NINEBARK	#5 CONT.
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RA	105	RHUS AROMATICA 'GRO-LOW'	FRAGRANT SUMAC	#3 CONT.
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GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

MATCH LINE - SEE SHEET L-103

MATCH LINE - SEE SHEET L-101

EMBASSY SUITES

MULCH LINE

GRID

7" HARDWOOD

8" HARDWOOD

13" ASH

12" ASH

12" ASH

15" ASH

17" ASH

16" PINE

15" PINE

21" ASH

11" CEDAR

14" CEDAR

24" PINE

20" PINE

16" PINE

20" ASH

20" PINE

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Page 808

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19059 LS.dwg T:\AB\L-103 Landscape

AMY BELL SEGAL RLA 2265

PAUL D. OSTROVSKI PE 11175

REV.	BY	DATE	STATUS
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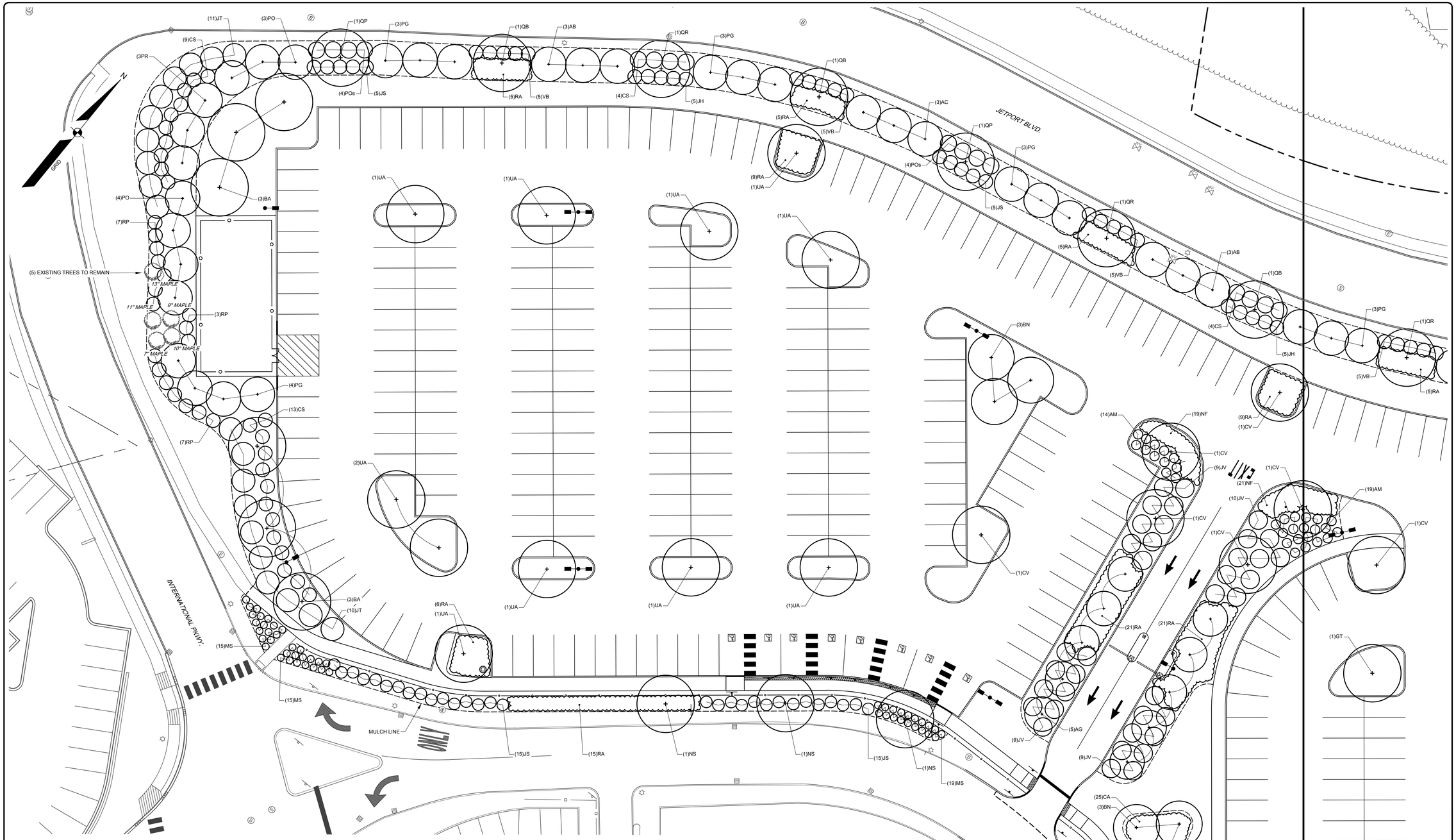
LANDSCAPE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET L-103

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

LICENSED LANDSCAPE ARCHITECT
Amy Bell Segal
No. 2265
STATE OF MAINE
02/29/2024



PLANT SCHEDULE

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(IN FEET)
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19059 LS.dwg, TAB:L-104 Landscape

AMY BELL SEGAL, RLA 2265
PAUL D. OSTROVSKI, PE 11175

LICENSED LANDSCAPE ARCHITECT
Amy Bell Segal
No. 2265
STATE OF MAINE
02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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LANDSCAPE PLAN
OF:
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1001 WESTBROOK STREET
PORTLAND, MAINE 04102
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DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET L-104

EROSION CONTROL MEASURES

PRE-CONSTRUCTION PHASE

PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS (SILT FENCE) WILL BE STAKED/INSTALLED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. THE PLACEMENT OF SEDIMENT BARRIERS SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THIS EROSION CONTROL PLAN AND DETAILS IN THIS PLAN SET. THIS NETWORK IS TO BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED.

PRIOR TO ANY CLEARING OR GRUBBING, A CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED AT THE INTERSECTION OF THE PROPOSED ENTRANCES AND EXISTING ROADWAY TO AVOID TRACKING OF MUD, DUST AND DEBRIS FROM THE SITE.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE A DETAILED SCHEDULE AND MARKED UP PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE MUNICIPAL STAFF. THREE COPIES OF THE SCHEDULE AND MARKED UP PLAN SHALL BE PROVIDED TO THE MUNICIPALITY THREE DAYS PRIOR TO THE SCHEDULED PRE-CONSTRUCTION MEETING. SPECIAL ATTENTION SHALL BE GIVEN TO THE 14 DAY LIMIT OF DISTURBANCE IN THE SCHEDULE ADDRESSING TEMPORARY AND PERMANENT VEGETATION MEASURES.

CONSTRUCTION AND POST-CONSTRUCTION PHASE

AREAS UNDERGOING ACTUAL CONSTRUCTION SHALL ONLY EXPOSE THAT AMOUNT OF MINERAL SOIL NECESSARY FOR PROGRESSIVE AND EFFICIENT CONSTRUCTION. AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD, SUCH AS ACTIVE EXCAVATION AND ACTIVE GRADING. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS ACTIVELY OCCURRING OR CAN BE MULCHED IN THE SAME DAY. OPEN AREAS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL AS SHOWN ON THE DESIGN PLANS AND AS DESCRIBED WITHIN THIS EROSION CONTROL PLAN WITHIN SEVEN (7) DAYS OF DISTURBANCE. AREAS LOCATED WITHIN 100 FEET OF STREAMS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL WITHIN SEVEN (7) DAYS. REFER TO WINTER EROSION CONTROL NOTES FOR THE TREATMENT OF OPEN AREAS AFTER OCTOBER 1ST OF THE CONSTRUCTION YEAR.

THE CONTRACTOR MUST INSTALL ANY ADDED MEASURES WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE DEPENDENT UPON THE ACTUAL SITE AND WEATHER CONDITIONS. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, IN ORDER TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION.

EROSION CONTROL APPLICATIONS & MEASURES
THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET.

1. TEMPORARY MULCHING:

ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 14 DAYS SHALL BE MULCHED. DISTURBED AREAS ADJACENT TO NATURAL RESOURCES THAT ARE NOT GRADED WITHIN SEVEN (7) DAYS SHALL BE MULCHED. ALSO, AREAS, WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED, SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING. EROSION CONTROL BLANKETS ARE RECOMMENDED TO BE USED AT THE BASE OF GRASSED WATERWAYS AND ON SLOPES GREATER THAN 33%. MULCH ANCHORING SHOULD BE USED ON SLOPES GREATER THAN 5% AFTER SEPTEMBER 15TH OF THE CONSTRUCTION YEAR (SEE WINTER EROSION CONTROL NOTES).
TYPES OF MULCH:

HAY OR STRAW: SHALL BE APPLIED AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE).

EROSION CONTROL MIX: SHALL BE PLACED EVENLY AND MUST PROVIDE 100% SOIL COVERAGE. EROSION CONTROL MIX SHALL BE APPLIED SUCH THAT THE THICKNESS ON SLOPES 3:1 OR LESS IS 2 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THE THICKNESS ON SLOPES BETWEEN 3:1 AND 2:1 SHALL BE 4 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THIS SHALL NOT BE USED ON SLOPES GREATER THAN 2:1.

EROSION CONTROL BLANKET: SHALL BE INSTALLED SUCH THAT CONTINUOUS CONTACT BETWEEN THE MAT AND THE SOIL IS OBTAINED. INSTALL BLANKETS AND STAPLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

2. SOIL STOCKPILES:

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES. SEDIMENT BARRIERS SHALL BE INSTALLED DOWNGRADIENT OF STOCKPILES, AND STORMWATER SHALL BE PREVENTED FROM RUNNING ONTO THE STOCKPILE.

3. NATURAL RESOURCES PROTECTION:

ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES SHALL BE MULCHED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1 OF THIS SECTION) WITHIN 7 DAYS OF EXPOSURE OR PRIOR TO ANY STORM EVENT. SEDIMENT BARRIERS (AS DESCRIBED IN PART 4 OF THIS SECTION) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE.

4. SEDIMENT BARRIERS:

PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. SEDIMENT BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

HAY BALES: SHALL NOT BE INSTALLED ADJACENT TO WETLAND. INSTALL PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.

EROSION CONTROL MIX: SHALL NOT BE USED ADJACENT TO WETLANDS. INSTALL PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER. EROSION CONTROL MIX BERMS SHALL NOT BE USED AT THE BOTTOM OF STEEP SLOPES (>8%) OR SLOPES WITH FLOWING WATER.

CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

5. TEMPORARY CHECK DAMS:

SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

STONE CHECK DAMS: STONE DAMS SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

HAY BALE CHECK DAMS: BALES SHALL BE WIRE-BOUND OR STRING-TIED. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER. HAY BALES SHALL BE PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL, STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS.

6. STORMDRAIN INLET PROTECTION:

INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLET OR CURB INLET PRIOR TO PERMANENT STABILIZATION OF THE IMMEDIATE AND UPSTREAM DISTURBED AREAS. THEY SHALL BE CONSTRUCTED IN A MANNER THAT WILL FACILITATE CLEAN-OUT AND DISPOSAL OF TRAPPED SEDIMENTS AND MINIMIZE INTERFERENCE WITH CONSTRUCTION ACTIVITIES. ANY RESULTANT PONDING OF WATER FROM THE PROTECTION METHOD MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.

HAY BALE DROP INLET PROTECTION: WE DO NOT RECOMMEND THE USE OF HAY BALES AS INLET PROTECTION.

CONCRETE BLOCK AND STONE INLET SEDIMENT FILTER (DROP OR CURB INLET): SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE HEIGHT OF THE CONCRETE BLOCK BARRIER CAN VARY BUT MUST BE BETWEEN 12 AND 24 INCHES TALL. A MINIMUM OF 1 INCH CRUSHED STONE SHALL BE USED.

MANUFACTURED SEDIMENT BARRIERS AND FILTER (DROP OR CURB INLET): MANUFACTURED FILTERS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

7. STABILIZED CONSTRUCTION ENTRANCE/EXIT:

PRIOR TO CLEARING AND/OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICIALLY SWEPT TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. THE TERM "SWEEP" IS UNDERSTOOD TO MEAN REMOVAL AND RECOVERY OF TRACKED SEDIMENT WITH A STREET SWEEPER, NOT BRUSHING THE MATERIAL INTO SWALES OR STRUCTURES WITH A MECHANICAL BROOM. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS. THE CONTRACTOR SHALL MAINTAIN THE STABILIZED CONSTRUCTION ENTRANCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

DUST CONTROL:

DUST CONTROL DURING CONSTRUCTION SHALL BE ACHIEVED BY THE USE OF A WATERING TRUCK TO PERIODICALLY SPRINKLE THE EXPOSED ROADWAY AREAS AS NECESSARY TO REDUCE DUST DURING THE DRY MONTHS. APPLYING OTHER DUST CONTROL PRODUCTS SUCH AS CALCIUM CHLORIDE OR OTHER MANUFACTURED PRODUCTS ARE ALLOWED IF AUTHORIZED BY THE PROPER LOCAL, STATE AND/OR FEDERAL REGULATING AGENCIES. HOWEVER, IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO MITIGATE DUST AND SOIL LOSS FROM THE SITE. IF OFFSITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NOT LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS.

TEMPORARY VEGETATION:

TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDBED PREPARATION AND APPLICATION OF SEED SHALL BE CONDUCTED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUALS FOR CONTRACTORS AND ENGINEERS, LATEST REVISION. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

PERMANENT VEGETATION:

REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE APPLICATION OF SEED SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR, PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

SEEDBED PREPARATION:

A. FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.

B. SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P205-K20 OR EQUAL)	18.4 LBS./1,000 S.F.
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS./1,000 S.F.

C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDBED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

APPLICATION OF SEED:

A. SEEDING: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS: (MDOT SEED MIX METHOD #1 - PARK MIXTURE)

SEED TYPE	APPLICATION RATE
CREEPING RED FESCUE	1.8 LBS/1,000 S.F. (78.4 LBS/ACRE)
KENTUCKY BLUEGRASS	1.0 LBS/1,000 S.F. (43.6 LBS/ACRE)
CHEWINGS FESCUE	0.60 LBS/1,000 S.F. (26.1 LBS/ACRE)
PERENNIAL RYEGRASS	0.40 LBS/1,000 S.F. (17.4 LBS/ACRE)
ANNUAL RYEGRASS	0.20 LBS/1,000 S.F. (8.70 LBS/ACRE)
TOTAL	4.00 LBS/1,000 S.F. (174.20 LBS/ACRE)

NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND SEED MIXTURES. MDEP RECOMMENDED SEED MIXTURES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 2016 OR LATEST REVISION.

B. HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. RECOMMENDED SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

C. MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS.

SODDING:
FOLLOWING SEEDBED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES, AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW, STARTING AT THE LOWEST ELEVATION. SOD SHOULD BE ROLLED OR TAMPED DOWN TO EVEN OUT THE JOINTS ONCE LAID DOWN. WHERE FLOW IS PREVALENT THE SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE ESTABLISHED BETWEEN APRIL 1ST AND NOVEMBER 15TH OF THE CONSTRUCTION YEAR, HOWEVER, REFER TO THE WINTER EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% (10H:1V) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE CONTRACTOR WILL COVER THE SLOPE WITH A LAYER OF WOOD WASTE COMPOST AS DESCRIBED IN ITEM 2(C.) OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM 2(D.) OF THIS STANDARD.
B. STABILIZE THE SLOPE WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE 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 WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).
C. STABILIZE THE SLOPE WITH WOOD WASTE COMPOST -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF WOOD WASTE COMPOST ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE WOOD WASTE COMPOST, THE CONTRACTOR WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. THE CONTRACTOR WILL NOT USE WOOD WASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
D. STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE CONTRACTOR WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOIL S -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15%. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE CONTRACTOR WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 3(C.) OF THIS STANDARD.
B. STABILIZE THE SOIL WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
C. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE CONTRACTOR WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE CONTRACTOR WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE CONTRACTOR WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

1. MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, AND AT LEAST EVERY SEVEN (7) DAYS, THE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES. THE CONTRACTOR SHALL PERFORM REPAIRS NO LATER THAN THE END OF THE NEXT WORKDAY, TO ALLOW CONTINUED PROPER FUNCTIONING OF THE EROSION CONTROL MEASURE. THE CONTRACTOR SHALL PROVIDE THE NECESSARY REGULATING AGENCIES WITH WRITTEN DOCUMENTATION DESCRIBING DATES OF INSPECTIONS AND NECESSARY FOLLOW-UP WORK TO MAINTAIN EROSION CONTROL MEASURES MEETING THE REQUIREMENTS OF THIS PLAN WITHIN SEVEN (7) DAYS.

2. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDINGS, THE CONTRACTOR SHALL INSPECT THE WORK AREA SEMIMONTHLY UNTIL THE SEEDINGS HAVE BEEN ESTABLISHED. ESTABLISHED MEANS A MINIMUM OF 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH. RESEEDING SHALL BE CARRIED OUT BY THE CONTRACTOR WITH FOLLOW-UP INSPECTIONS IN THE EVENT OF ANY FAILURES UNTIL VEGETATION IS ADEQUATELY ESTABLISHED.

HOUSEKEEPING:

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.

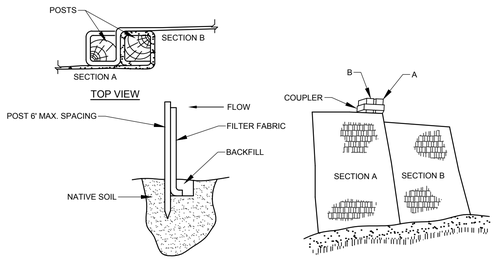
2. GROUNDWATER PROTECTION. DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE-TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.

3. FUGITIVE SEDIMENT AND DUST. ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF-SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.

4. DEBRIS AND OTHER MATERIALS. MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

5. EXCAVATION DE-WATERING. EXCAVATION DE-WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

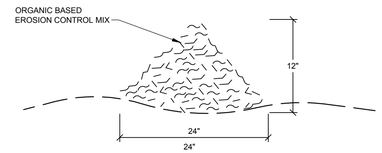
6. AUTHORIZED NON-STORMWATER DISCHARGES. IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE:
A. DISCHARGES FROM FIREFIGHTING ACTIVITY;
B. FIRE HYDRANT FLUSHINGS;
C. VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAG



INSTALLATION:

1. EXCAVATE A 6"x 6" TRENCH ALONG THE LINE OF PLACEMENT FOR THE FILTER BARRIER.
2. UNROLL A SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH.
3. DRIVE POSTS INTO THE GROUND UNTIL APPROXIMATELY 2" OF FABRIC IS LYING ON THE TRENCH BOTTOM.
4. LAY THE TOE-IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL THE TRENCH AND TAMP THE SOIL. TOE-IN CAN ALSO BE ACCOMPLISHED BY LAYING THE FABRIC FLAP ON UNDISTURBED GROUND AND PILING AND TAMPING FILL AT THE BASE. BUT MUST BE ACCOMPANIED BY AN INTERCEPTION DITCH.
5. JOIN SECTION AS SHOWN ABOVE.
6. BARRIER SHALL BE MIRAFI SILT FENCE OR EQUAL.

FILTER BARRIER
NOT TO SCALE



COMPOSITION:

EROSION CONTROL MIX SHALL BE MANUFACTURED ON OR OFF THE PROJECT SITE SUCH THAT ITS COMPOSITION IS IN ACCORDANCE WITH THE MDEP MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL, LAST REVISED 3/2003 OR LATER. IT MUST CONSIST PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.

INSTALLATION:

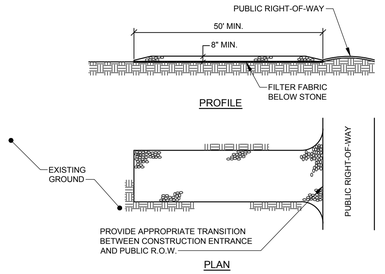
1. THE BARRIER MUST BE PLACED ACROSS THE SLOPE, ALONG THE CONTOUR.

2. EXISTING GROUND SHALL BE PREPARED SUCH THAT THE BARRIER MAY LIE NEARLY FLAT ALONG THE GROUND TO AVOID THE CREATION OF VOIDS AND BRIDGES IN ORDER TO MINIMIZE THE POTENTIAL OF WASH OUTS UNDER THE BARRIER

3. THE BARRIER SHALL BE A MINIMUM OF 1 FOOT HIGH (AS MEASURED ON THE UPHILL SIDE) AND 2 FEET WIDE FOR SLOPES LESS THAN 5% IN GRADE AND SHALL BE WIDER TO ACCOMMODATE THE ADDITIONAL RUNOFF.

4. EROSION CONTROL MIX CAN BE INSTALLED WHERE SILT FENCE IS ILLUSTRATED ON THE DESIGN PLANS IN AREAS EXCEPT IN, BUT NOT LIMITED TO, THE FOLLOWING AREAS: WETLAND AREAS, AT POINTS OF CONCENTRATED FLOW, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS AND CLOSED STORM SYSTEMS AND AT THE BOTTOM OF STEEP SLOPES THAT ARE MORE THAN 50 FEET FROM TOP TO BOTTOM.

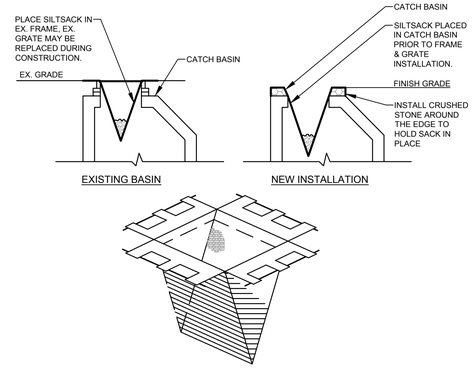
EROSION CONTROL MIX BERM
NOT TO SCALE



NOTES:

1. STONE SIZE- AASHTO DESIGNATION M43, SIZE NO. 2 (2 1/2" TO 1 1/2"). USE CRUSHED STONE.
2. LENGTH- AS SHOWN ON PLANS, MIN. 50 FEET.
3. THICKNESS- NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH- NOT LESS THAN FULL WIDTH OF ALL POINT OF INGRESS OR EGRESS.
5. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



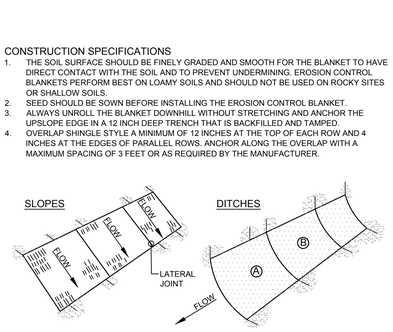
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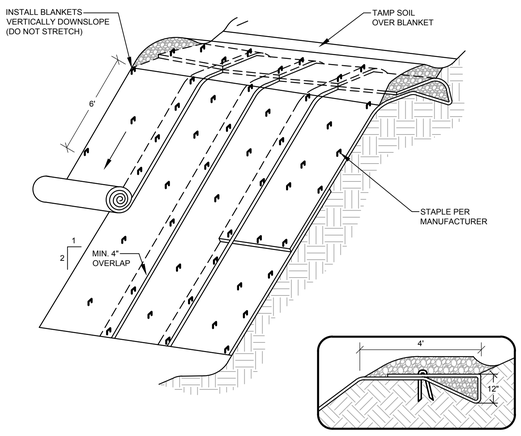
PRIOR TO FINAL GRADING AND PAVING OPERATIONS BEGIN A CATCH BASIN INSERT (SUCH AS A SILT SACK OR A DANDY BAG II) MUST BE INSTALLED IN EACH BASIN PER MANUFACTURES INSTRUCTIONS. HAY BALES SHOULD BE REMOVED ONCE INSERTS ARE INSTALLED.

CATCH BASIN PROTECTION DETAIL
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. THE SOIL SURFACE SHOULD BE FINELY GRADED AND SMOOTH FOR THE BLANKET TO HAVE DIRECT CONTACT WITH THE SOIL AND TO PREVENT UNDERMINING. EROSION CONTROL BLANKETS PERFORM BEST ON LOAMY SOILS AND SHOULD NOT BE USED ON ROCKY SITES OR SHALLOW SOILS.
2. SEED SHOULD BE SOWN BEFORE INSTALLING THE EROSION CONTROL BLANKET.
3. ALWAYS UNROLL THE BLANKET DOWNHILL WITHOUT STRETCHING AND ANCHOR THE UPSLOPE EDGE IN A 12 INCH DEEP TRENCH THAT IS BACKFILLED AND TAMPED.
4. OVERLAP SHINGLE STYLE A MINIMUM OF 12 INCHES AT THE TOP OF EACH ROW AND 4 INCHES AT THE EDGES OF PARALLEL ROWS. ANCHOR ALONG THE OVERLAP WITH A MAXIMUM SPACING OF 3 FEET OR AS REQUIRED BY THE MANUFACTURER.

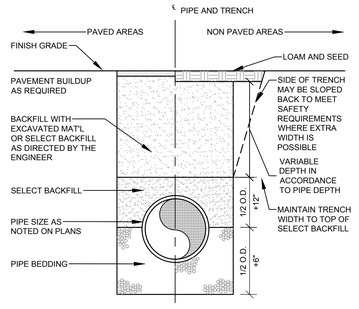




NOTES:

1. BURY THE TOP END OF THE MESH MATERIAL IN A 6" TRENCH AND BACKFILL AND TAMP. TRENCHING SECURE END WITH STAPLES AT 6" SPACING, 4" DOWN FROM EXPOSED END.
2. FLOW DIRECTION JOINTS TO HAVE UPPER END OF LOWER STRIP BURIED WITH UPPER LAYERS OVERLAPPED 4" AND STAPLED. OVERLAP B OVER A.
3. LATERAL JOINTS TO HAVE 4" OVERLAP OF STRIPS. STAPLE 18" ON CENTER.
4. STAPLE OUTSIDE LATERAL EDGE 2" ON CENTER.
5. WIRE STAPLES TO BE MIN OF #11 WIRE 6" LONG AND 1-1/2" WIDE.
6. USE NORTH AMERICAN GREEN DS 150 OR APPROVED EQUAL.

EROSION CONTROL BLANKET
NOT TO SCALE



TRENCH BACKFILL SCHEDULE		
PIPE TYPE	PIPE BEDDING MATERIAL	SELECT BACKFILL
CORRUGATED METAL DUCTILE IRON REINFORCED CONCRETE	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
SOLID PVC-SDR 35 HDPE	MDOT 703.13 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL, OR MDOT 703.13 3/4" CRUSHED STONE
PERFORATED PVC-SDR 35 HDPE	MDOT 703.13 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL, OR MDOT 703.13 3/4" CRUSHED STONE

NOTE:
ALL BRACING AND SHEETING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL MEET ALL STATE AND O.S.H.A. SAFETY STANDARDS.

TRENCH SECTION
NOT TO SCALE

NOT FOR CONSTRUCTION

AMY BELL SEGAL, RLA 2265

PAUL D. OSTROWSKI PE 11175

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

EROSION CONTROL DETAILS

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

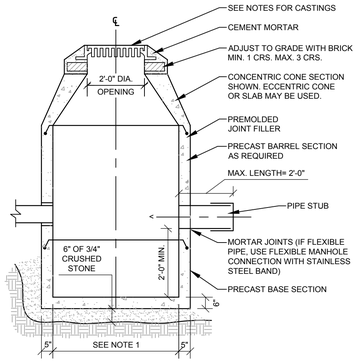
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-501

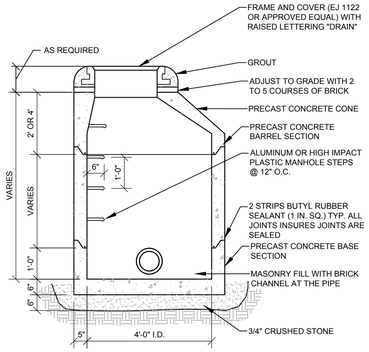
19059 D.dwg - TAB-C-501 Details

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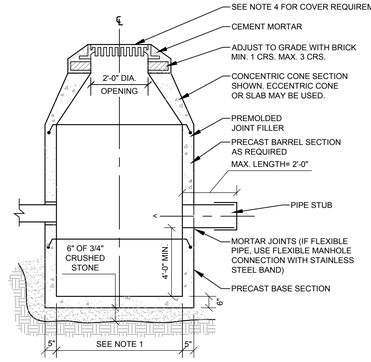


NOTES:
1. 4'-0" I.D. TYPICAL, SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON PLANS.
4. CATCH BASIN FRAME AND GRATE TO BE EJ 5520M5, OR APPROVED EQUAL.

CATCH BASIN
NOT TO SCALE

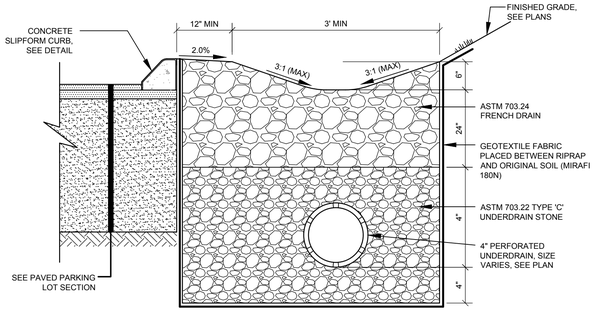


PRECAST MANHOLE
NOT TO SCALE

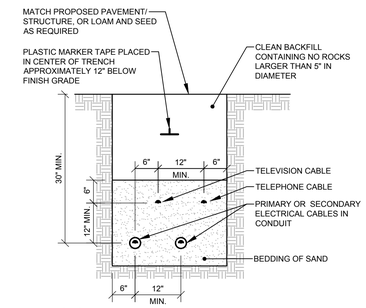


NOTES:
1. 4'-0" I.D. TYPICAL. SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON PLANS.
4. COVER FOR PRETREATMENT DRAINAGE STRUCTURES SHALL BE A SOLID MANHOLE COVER OR A CATCH BASIN GRATE AS SPECIFIED ON PLANS.
5. CATCH BASIN FRAME AND GRATE TO BE EJ 5520M5, OR APPROVED EQUAL.
6. DRAIN MANHOLE COVER TO BE EJ 1122 OR APPROVED EQUAL WITH RAISED LETTERING "DRAIN".

PRE-TREATMENT DRAINAGE STRUCTURE
NOT TO SCALE

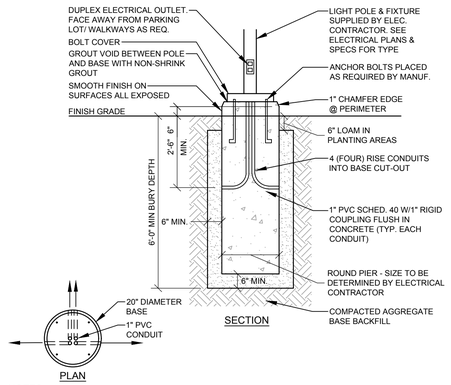


STONE DRIP EDGE
NOT TO SCALE



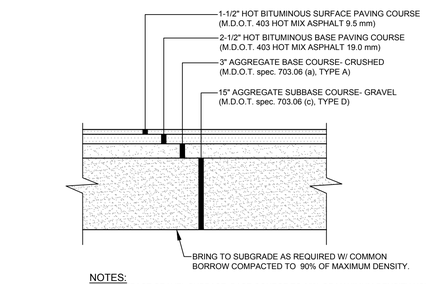
NOTES:
CABLES TO BE ENCASED IN SCHEDULE 40 PVC CONDUIT.

UNDERGROUND CABLE INSTALLATION
NOT TO SCALE



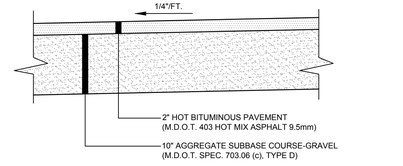
NOTES:
1. CONCRETE f'c=5000 psi. @ 28 DAYS WITH STEEL REINFORCEMENT
2. CONDUIT AND ANCHOR BOLTS PLACED AS REQUIRED PROVIDED BY ELECTRICAL CONTRACTOR
3. PROVIDE 2 COATS BITUMINOUS DAMPROOFING FOR ALL CONCRETE BELOW GRADE.
4. INSTALL BASE 3'-0" ABOVE FINISH GRADE IN LOCATIONS WHERE POLES ARE IN PARKING LOT PAVEMENT. MAINTAIN MINIMUM BURY DEPTH.
5. LIGHT POLE BASE AS MANUFACTURED BY SUPERIOR CONCRETE OR APPROVED EQUAL

24" ROUND LIGHT POLE BASE
NOT TO SCALE

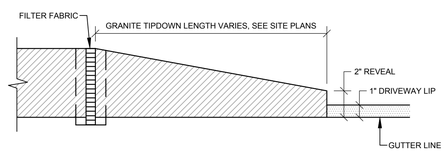


NOTES:
1. COMPACT GRAVEL SUBBASE, BASE COURSE TO 95% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. CONTRACTOR SHALL SET GRADE STAKES MARKING SUBBASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.

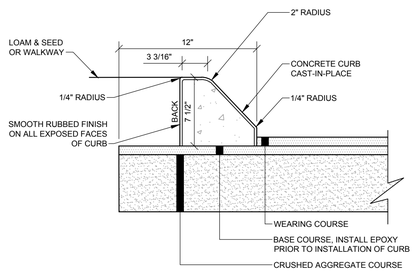
VEHICULAR PAVEMENT SECTION
NOT TO SCALE



PEDESTRIAN PAVEMENT SECTION
NOT TO SCALE

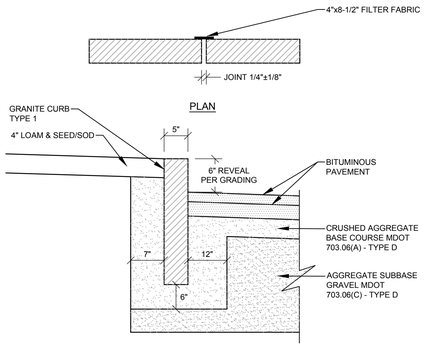


TIPDOWN CURB INSTALLATION
NOT TO SCALE



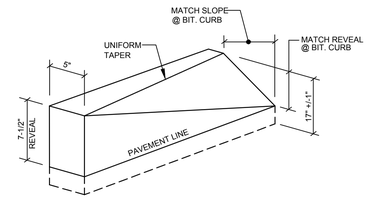
NOTES:
1. SEE TYPICAL ACCESS DRIVE SECTION FOR ROADWAY MATERIAL SPECIFICATIONS AND DEPTHS.
2. TIPDOWNS SHALL BE PROVIDED AS SHOWN ON PLANS.

SLIPFORM CURB SECTION - MOLD 1
NOT TO SCALE



NOTES:
1. EXCAVATION INCIDENTAL TO COST OF CURB
2. SUBBASE SHALL BE COMPACTED TO A FIRM EVEN SURFACE PRIOR TO SETTING OF CURB

VERTICAL GRANITE CURB
NOT TO SCALE



VERTICAL TO SLOPED CURB GRANITE TRANSITION STONES
NOT TO SCALE

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PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — REGISTERED PROFESSIONAL ENGINEER — 02/29/2024

SEBAGO TECHNICS
75 John Roberts Rd.
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South Portland, ME 04106
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SITE DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
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CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

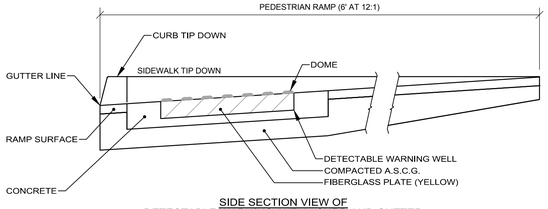
DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-502

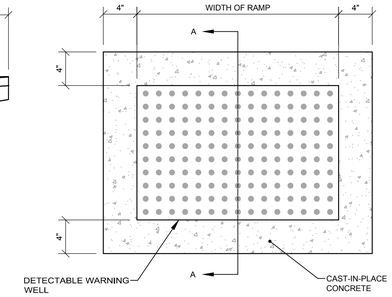
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19059 D.dwg, TAB:C-502 Details

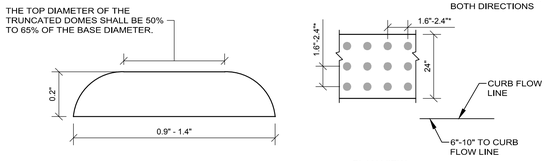
NOT FOR CONSTRUCTION



SIDE SECTION VIEW OF
DETECTABLE WARNING, WELL, CURB AND GUTTER

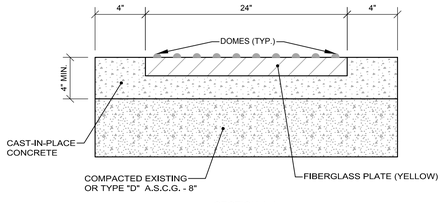


PLAN VIEW OF DETECTABLE WARNING AND WELL



ELEVATION VIEW PLAN VIEW

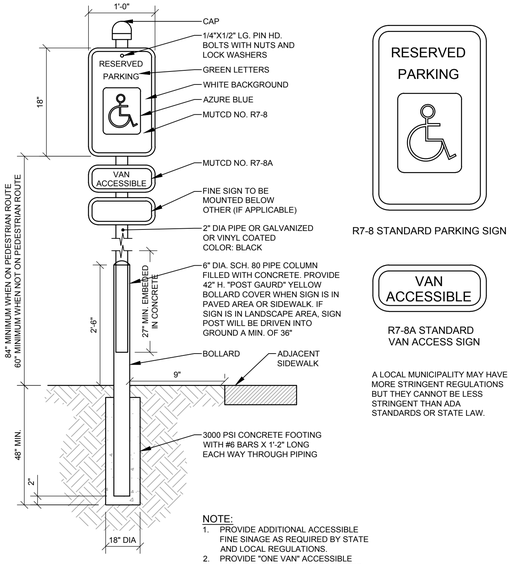
DOME AND DETECTABLE WARNING DETAILS



SECTION A-A

NOTE: ALL DETECTABLE WARNING AREAS SHALL START 6" - 10" FROM THE FLOW LINE OF THE CURB, BE 24" IN DEPTH, AND COVER THE COMPLETE WIDTH OF THE RAMP AREA ONLY.

TRUNCATED DOME PAVING
NOT TO SCALE



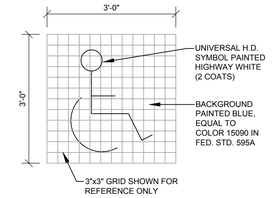
NOTE:
1. PROVIDE ADDITIONAL ACCESSIBLE FINE SINAGE AS REQUIRED BY STATE AND LOCAL REGULATIONS.
2. PROVIDE "ONE VAN" ACCESSIBLE SIGN PER 25 HC SPACES REQUIRED.
3. WHENEVER POSSIBLE SIGN SHALL BE MOUNTED CENTERED ON PARKING SPACE UNLESS SPECIFIED OTHERWISE.
4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PRIOR TO ORDERING MATERIALS.

RESERVED PARKING SIGN - BOLLARD (S-3)
NOT TO SCALE

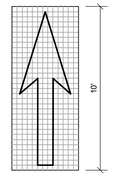
R7-8 STANDARD PARKING SIGN

R7-8A STANDARD
VAN ACCESS SIGN

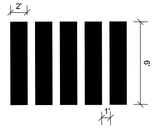
A LOCAL MUNICIPALITY MAY HAVE MORE STRINGENT REGULATIONS BUT THEY CANNOT BE LESS STRINGENT THAN ADA STANDARDS OR STATE LAW.



ADA RESERVED PARKING
NOT TO SCALE

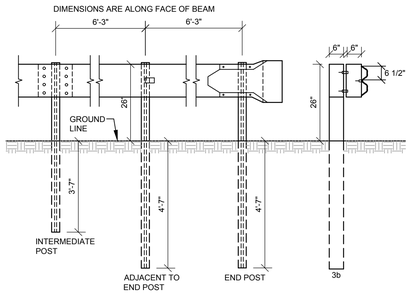


PAVEMENT ARROW DETAIL
NOT TO SCALE



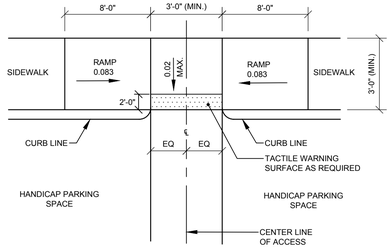
PAVEMENT MARKING NOTES
1. ALL PAVEMENT MARKINGS SHALL BE IN CONFORMANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, U.S. DOT, FHWA, LATEST EDITION.
2. ALL PAVEMENT MARKING LINES SHALL BE PAINT AND 4" WIDE, EXCEPT FOR:
   SWSL-12"
   SYCL-12"
   CROSSWALK BARS - 24"
3. PAVEMENT WORD AND SYMBOL MARKINGS SHALL BE WHITE PAINT.
4. SOLID WHITE STOP LINE SHALL BE A MINIMUM OF 4' BEHIND THE EDGE OF CROSSWALK.

CROSSWALK DETAIL
NOT TO SCALE

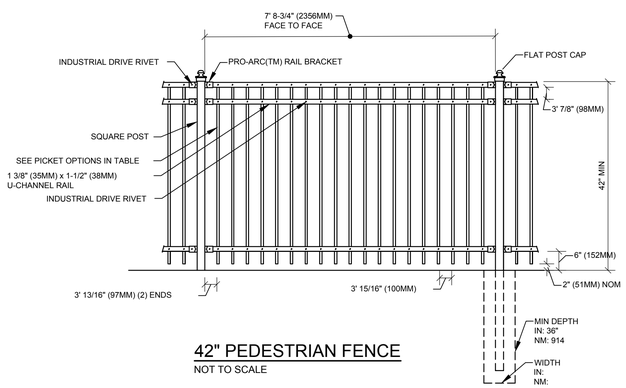


NOTES:
1. INTERMEDIATE POST SPACING SHALL BE 6'-3" UNLESS OTHERWISE SHOWN.
2. POSTS AND OFFSET BRACKETS FOR TYPE 3b GUARD RAIL SHALL BE W 6x9.
3. ALL HOLES IN BEAM TO BE SHOP-PUNCHED BEFORE GALVANIZING.

GUARDRAIL TYPE 3b
NOT TO SCALE



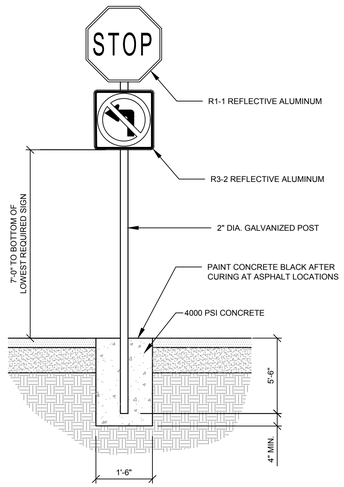
ADA ACCESSIBLE RAMP
NOT TO SCALE



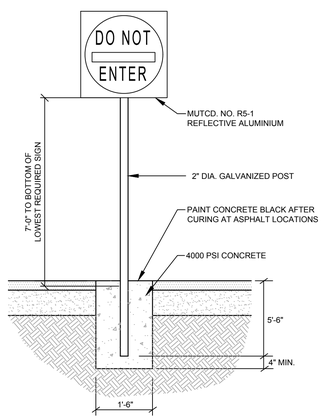
42" PEDESTRIAN FENCE
NOT TO SCALE

NOTES:
1. METRIC DIMENSIONS ARE NOMINAL EQUIVALENTS TO U.I.S. DIMENSIONS.
2. SPECIFICATIONS SHOWN CAN BE CHANGED BY MAST HALCO ONL.Y
3. FOOTING WIDTH TO BE (4)X POST WIDTH
4. FOR MATCHING GATE SEE DRAWING 6-5010M (SINGLE) OR 6-5015M (DOUBLE)
5. IMPERIAL "B" GUARDRAIL BY MASTER HALCO. Co. (1-800-229-5615)
6. ALL SURFACES SHALL BE BLACK POWDER COATED FINISH BY MANUFACTURER.

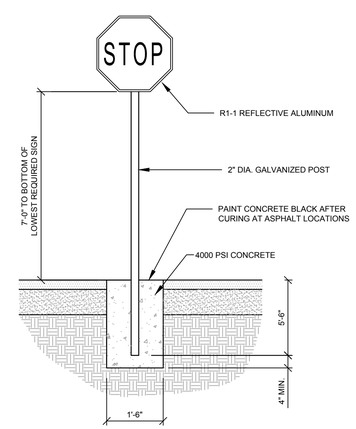
PICKET SIZE	GAUGE
3/4" [19MM]	14 GA



STOP & LEFT TURN PROHIBITION SIGN (S-4)



DO NOT ENTER SIGN (S-2)



STOP SIGN (S-1)

PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

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SITE DETAILS
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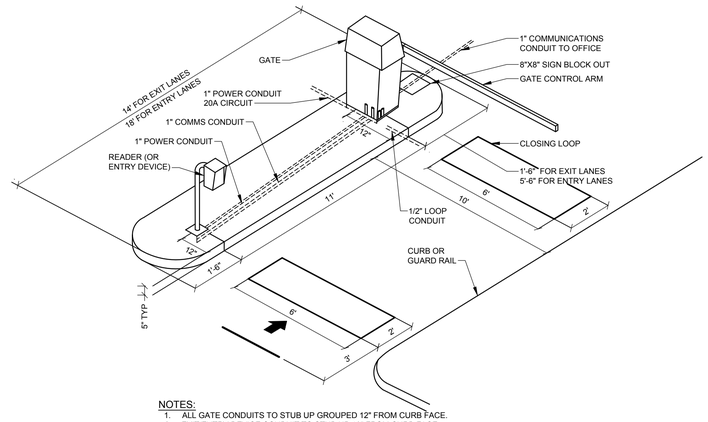
DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-503

19059 D.dwg, TAB:C-503 Details

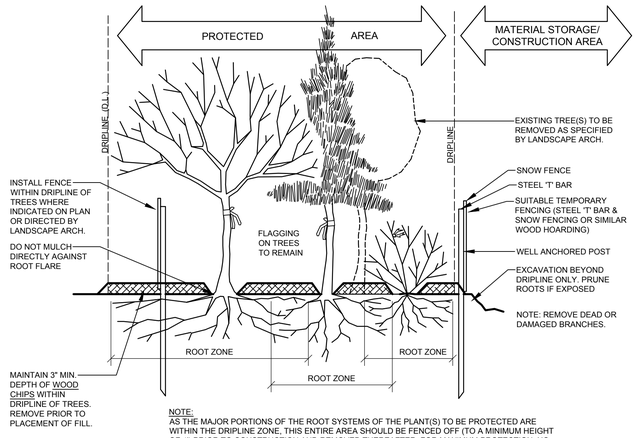
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NOT FOR CONSTRUCTION



NOTES:
1. ALL GATE CONDUITS TO STUB UP GROUPED 12" FROM CURB FACE.
2. EXIT/ENTRY DEVICE CONDUIT TO STUB UP 12" FROM CURB FACE.
3. DISTANCE BETWEEN GATE AND REVENUE DEVICE SHOULD BE 11' ON CENTER.
4. EACH LANE SHOULD HAVE ITS OWN 20A CIRCUIT.
5. CONTRACTOR TO VERIFY WITH PARKING GATE VENDOR THE DIMENSIONS AND PLACEMENT OF CONDUITS AND BLOCK OUTS PRIOR TO PLACING CONCRETE FOR THESE ISLANDS

PARKING ENTRY ISLAND
NOT TO SCALE

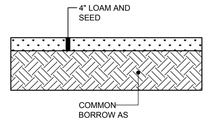


NOTE:
AS THE MAJOR PORTIONS OF THE ROOT SYSTEMS OF THE PLANT(S) TO BE PROTECTED ARE WITHIN THE DRIPLINE ZONE, THIS ENTIRE AREA SHOULD BE FENCED OFF (TO A MINIMUM HEIGHT OF 4') PRIOR TO CONSTRUCTION AND REMOVED THEREAFTER. FOR MAXIMUM PROTECTION, NO VEHICLE TRESPASS, EXCAVATION, FILL, WASTE DISCHARGE OR OR MATERIAL STORAGE SHOULD BE ALLOWED IN THIS ZONE.

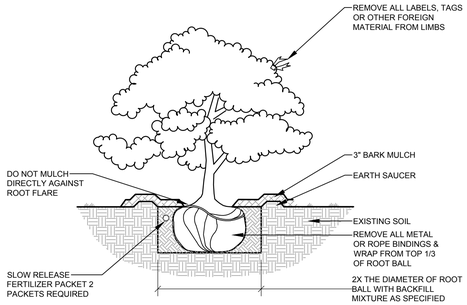
TREE PROTECTION DETAIL
NOT TO SCALE
CROSS-SECTION OF TYPICAL PLANT GROUPING

LANDSCAPE NOTES

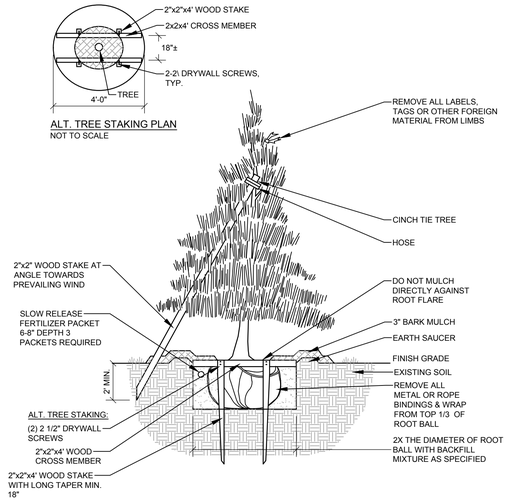
1. PLANT QUANTITIES SHOWN ON PLANS ARE FOR CONVENIENCE TO THE CONTRACTOR ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ALL PLANT MATERIAL INSTALLATION AS SHOWN ON PLANS.
2. SIZE AND GRADING STANDARDS OF PLANT MATERIALS SHALL CONFORM TO THE LATEST EDITION OF "U.S.A. STANDARD FOR NURSERY STOCK," BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
3. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
4. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING, STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE BY THE OWNER.
5. PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR BY THE CONTRACTOR AND A PERIOD OF TWO YEARS THEREAFTER BY THE OWNER FROM DATE OF INSTALLATION. DURING THE ONE YEAR GUARANTEE PERIOD, DEAD PLANT MATERIAL SHALL BE REPLACED AT NO COST TO THE OWNER. AT THE END OF THE ONE YEAR PERIOD, THE CONTRACTOR SHALL OBTAIN FINAL ACCEPTANCE FROM THE OWNER.
6. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
7. EXISTING TREES TO BE PRESERVED WILL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
8. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF THE UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER.
9. ALL SHRUB BEDS SHALL BE MULCHED WITH 3" CLEAN SHREDDED DARK BROWN BARK MULCH.
10. THE CONTRACTOR SHALL PROVIDE 4" LOAM FOR ALL AREAS TO BE SODDED OR SEEDED. PLANTING AREAS SHALL RECEIVE 12" ROLLED THICKNESS OF LOAM. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
11. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT (AND MUNICIPAL AUTHORITY, IF APPLICABLE) PRIOR TO INSTALLATION ON SITE.
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR PERENNIAL AND ANNUAL FLOWER BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
13. DURING CLEANING OF SITE AND PRIOR TO TREE AND SHRUB INSTALLATION, CONTRACTOR SHALL REMOVE INVASIVE PLANTS. AREAS WHERE INVASIVE PLANTS ARE REMOVED AND NO OTHER PLANTING IS PROPOSED SHALL BE LOAMED AND SEEDED.



LOAM & SEED SECTION
NOT TO SCALE

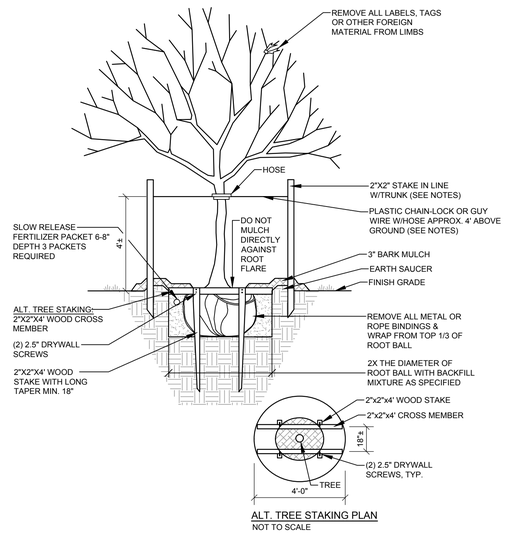


DECIDUOUS & EVERGREEN SHRUB
NOT TO SCALE



NOTES:
INSTALL STAKES AND GUYS TO TREES IF THE FOLLOWING APPLY:
1. THE TREE IS OF SUBSTANTIAL SIZE.
2. THE PLANTING LOCATION IS EXTREMELY WINDY, AS ON OPEN UNDEVELOPED SITES.
3. THE PLANTING LOCATION IS COMPRISED OF SAND OR OTHER LOOSE TEXTURED SOILS.
4. IF STAKES AND GUYS ARE REQUIRED, REMOVE AFTER ONE YEAR TIME.

EVERGREEN TREES
NOT TO SCALE



DECIDUOUS TREES
NOT TO SCALE

AMY BELL SEGAL, RLA 2265
LICENSED LANDSCAPE ARCHITECT — Amy Bell Segal — No. 2265 — STATE OF MAINE — 02/29/2024

PAUL D. OSTROWSKI, PE 11175
STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — REGISTERED PROFESSIONAL ENGINEER — 02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

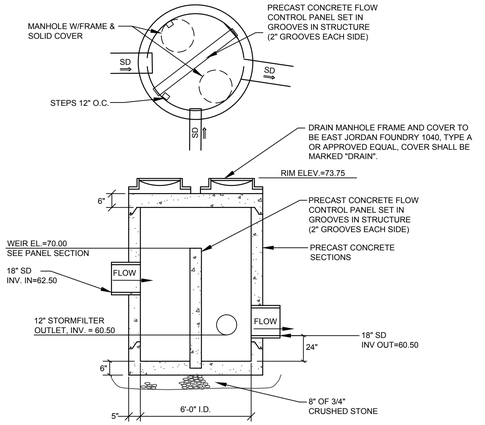
SITE DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

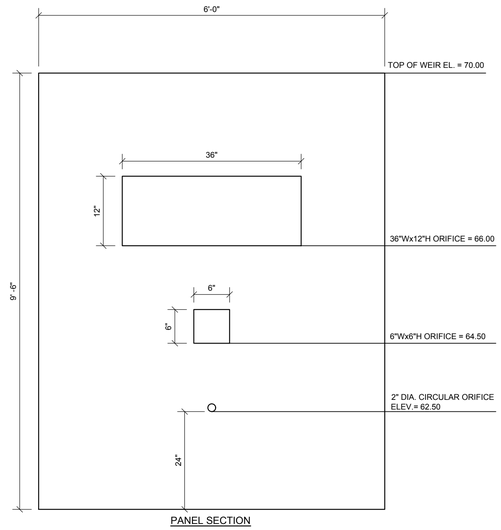
SHEET C-504

NOT FOR CONSTRUCTION

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19059 D.dwg - TAB:C-504 Details

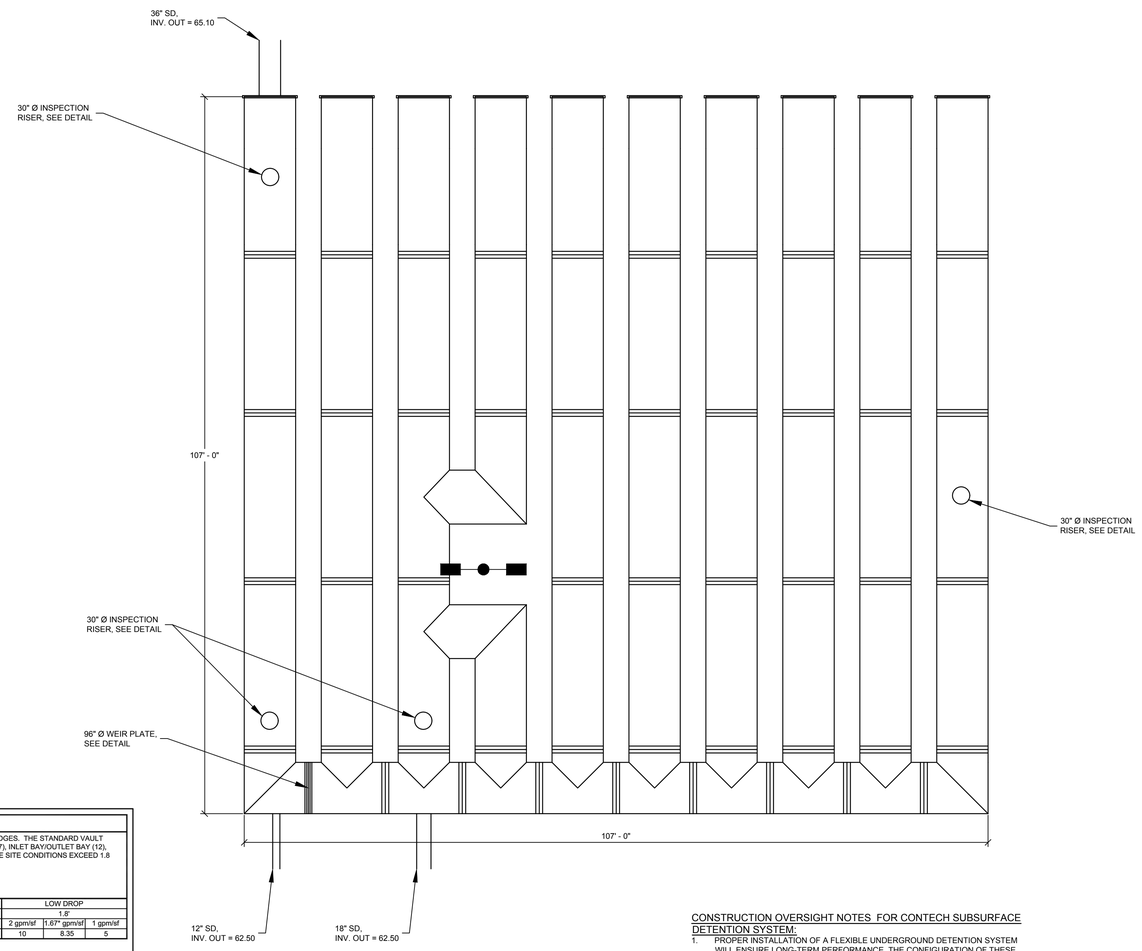


NOTES:
1. SUBMIT SHOP DRAWINGS FOR OWNER/ENGINEER APPROVAL.
2. STRUCTURE SHALL BE DESIGNED FOR H-20 LOADING.



PANEL SECTION

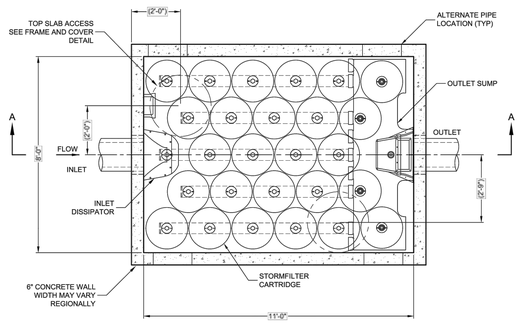
OUTLET CONTROL STRUCTURE (OCS-1)
NOT TO SCALE



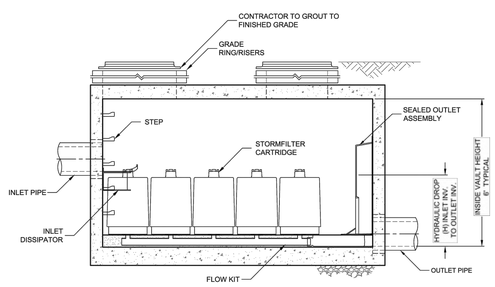
CONTECH SUBSURFACE DETENTION SYSTEM SF-1
NOT TO SCALE

CONSTRUCTION OVERSIGHT NOTES FOR CONTECH SUBSURFACE DETENTION SYSTEM:

1. PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THE SUBMITTAL DRAWINGS, ARE APPROPRIATE FOR YOUR SITE.
2. INSPECTIONS BY A PROFESSIONAL ENGINEER SHALL CONSIST OF WEEKLY VISITS TO THE SITE TO INSPECT THE CONSTRUCTION AND STABILIZATION OF THE PROPOSED SUBSURFACE DETENTION SYSTEM TO BE BUILT ON THE SITE. INSPECTIONS SHALL CONSIST OF AN APPROPRIATE NUMBER OF VISITS TO THE SITE TO INSPECT THE INSTALLATION OF THE SUBSURFACE DETENTION SYSTEM CONSTRUCTION FROM INITIAL GROUND DISTURBANCE TO BACKFILL OVER THE SYSTEM.



PLAN VIEW
VAULT STYLE: OUTLET SUMP (NIB)



SECTION A-A

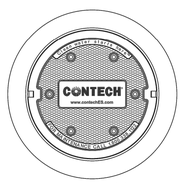
STORMFILTER DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD VAULT STYLE IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (26). VAULT STYLE OPTIONS INCLUDE INLET BAY (17), INLET BAY/OUTLET BAY (12), OUTLET BAY (21), FULL HEIGHT BAFFLE WALL (17), STORMFILTER 8X11 PEAK HYDRAULIC CAPACITY IS 1.8 CFS. IF THE SITE CONDITIONS EXCEED 1.8 CFS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			1.8'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	10	8.35	5

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
CARTRIDGE HEIGHT (27", 18", LOW DROP(LD))	*
NUMBER OF CARTRIDGES REQUIRED	*
CARTRIDGE FLOW RATE	*
MEDIA TYPE (PERLITE, ZPG, PSORB)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE #1	*	*	
INLET PIPE #2	*	*	*
OUTLET PIPE	*	*	*

UPSTREAM RIM ELEVATION	*
DOWNSTREAM RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

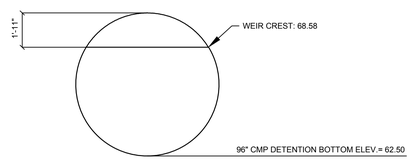
* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR SITE SPECIFIC DRAWINGS WITH DETAILED VAULT DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
7. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).
8. STORMFILTER STRUCTURE SHALL BE PRECAST CONFORMING TO ASTM C-857 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER VAULT (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL VAULT SECTIONS AND ASSEMBLE VAULT.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

SF0811
STORMFILTER
STANDARD DETAIL



96" Ø WEIR PLATE DETAIL
NOT TO SCALE

NOT FOR CONSTRUCTION

PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

STATE OF MAINE PAUL D. OSTROWSKI No. 11175 REGISTERED PROFESSIONAL ENGINEER 02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

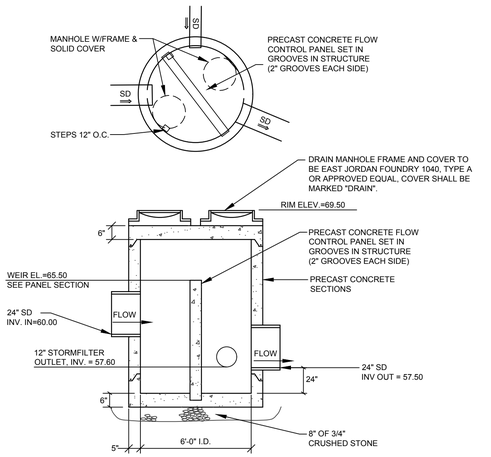
SITE DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

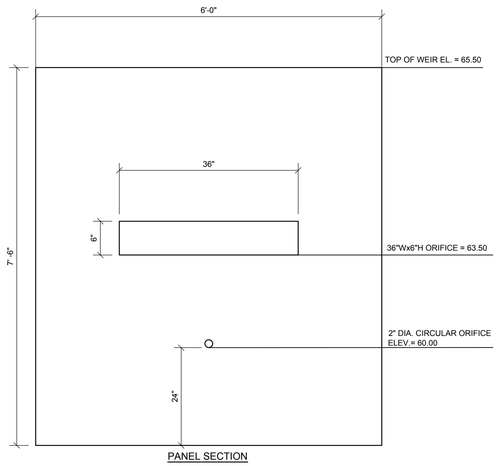
SHEET C-505

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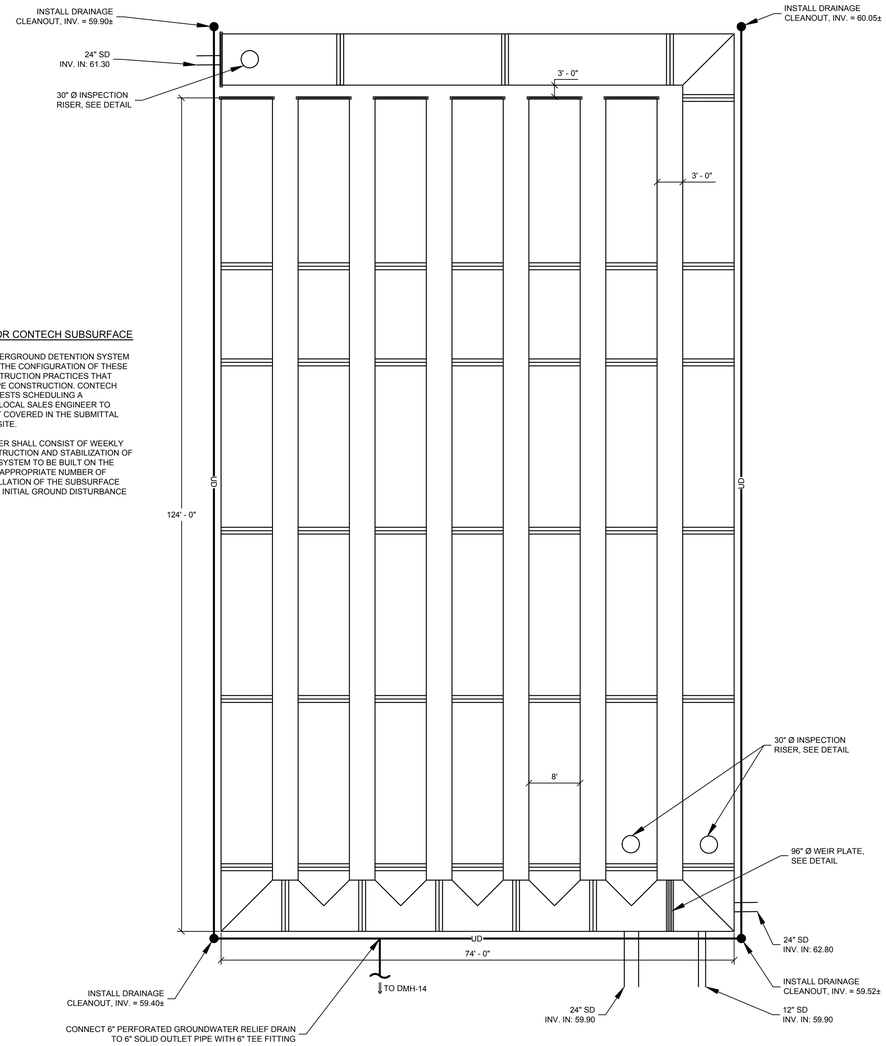


NOTES:
1. SUBMIT SHOP DRAWINGS FOR OWNER/ENGINEER APPROVAL.
2. STRUCTURE SHALL BE DESIGNED FOR H-20 LOADING.



PANEL SECTION

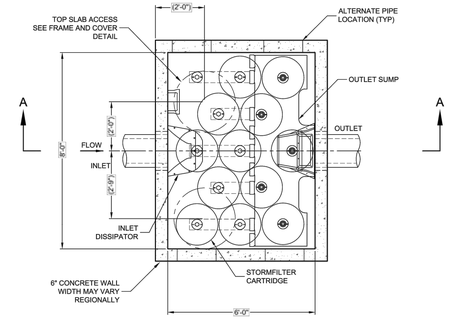
OUTLET CONTROL STRUCTURE (OCS-2)
NOT TO SCALE



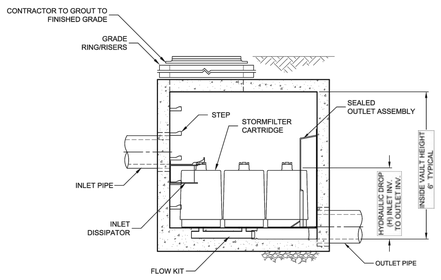
CONTECH SUBSURFACE DETENTION SYSTEM SF-2
NOT TO SCALE

CONSTRUCTION OVERSIGHT NOTES FOR CONTECH SUBSURFACE DETENTION SYSTEM:

1. PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THE SUBMITTAL DRAWINGS, ARE APPROPRIATE FOR YOUR SITE.
2. INSPECTIONS BY A PROFESSIONAL ENGINEER SHALL CONSIST OF WEEKLY VISITS TO THE SITE TO INSPECT THE CONSTRUCTION AND STABILIZATION OF THE PROPOSED SUBSURFACE DETENTION SYSTEM TO BE BUILT ON THE SITE. INSPECTIONS SHALL CONSIST OF AN APPROPRIATE NUMBER OF VISITS TO THE SITE TO INSPECT THE INSTALLATION OF THE SUBSURFACE DETENTION SYSTEM CONSTRUCTION FROM INITIAL GROUND DISTURBANCE TO BACKFILL OVER THE SYSTEM.



SECTION B-B
VAULT STYLE: OUTLET SUMP (NIB)



SECTION A-A

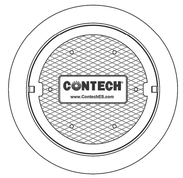
STORMFILTER DESIGN NOTES

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CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			1.8'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	10	8.35	5

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
CARTRIDGE HEIGHT (27", 18", LOW DROP(LD))	*
NUMBER OF CARTRIDGES REQUIRED	*
CARTRIDGE FLOW RATE	*
MEDIA TYPE (PERLITE, ZPG, PSORB)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE #1	*	*	*
INLET PIPE #2	*	*	*
OUTLET PIPE	*	*	*

UPSTREAM RIM ELEVATION	*
DOWNSTREAM RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

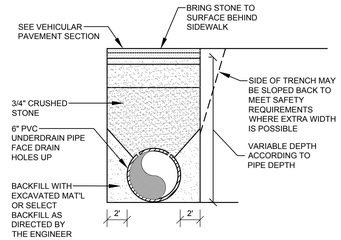
* PER ENGINEER OF RECORD

GENERAL NOTES
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4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
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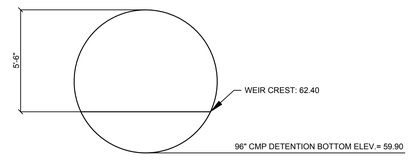
INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER VAULT (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL VAULT SECTIONS AND ASSEMBLE VAULT.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

SF806
STORMFILTER
STANDARD DETAIL



GROUNDWATER RELIEF DRAIN
NOT TO SCALE



96" Ø WEIR PLATE DETAIL
NOT TO SCALE

NOT FOR CONSTRUCTION

AMY BELL SEGAL, RLA 2265

PAUL D. OSTROWSKI, PE 11175

STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER PAUL D. OSTROWSKI No. 11175 02/29/2024

REV.:	BY:	DATE:	STATUS:
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AS APPROVED BY OTHERS, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

SITE DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

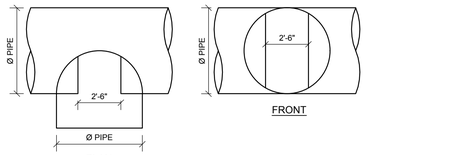
DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-506

19059 D.dwg, 1 TAB-C-506 Details

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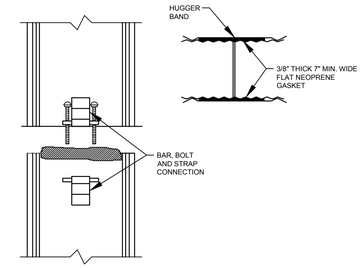
I:\STORMWATER\CCOMMOP\10 G STORMFILTER\40 STANDARD DRAWINGS\VAULT TOWG\SF806LDTL SEALED OUTLET RISER.DWG 9/20/2021 2:09 PM



NOTE:
LADDERS ARE OPTIONAL AND ARE NOT REQUIRED FOR ALL SYSTEMS.

NOTE:
MANWAY DETAIL APPLICABLE FOR CMP SYSTEMS WITH DIAMETERS 48" AND LARGER. MANWAYS MAY BE REQUIRED ON SMALLER SYSTEMS DEPENDING ON ACTUAL SITE SPECIFIC CONDITIONS.

INSPECTION RISER DETAIL
NOT TO SCALE

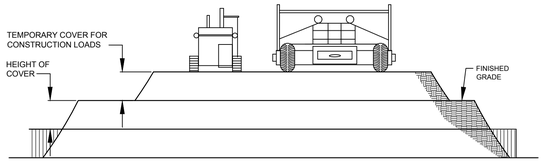


CONNECTION DETAIL SINGLE BOLT, BAR AND STRAP

NOTES

1. BANDS ARE NORMALLY FURNISHED AS FOLLOWS:
   12" THRU 48", 1-PIECE
   54" THRU 96", 2-PIECE
   102" THRU 144", 3-PIECES
2. BAND FASTENERS ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDS
3. REROLLED ANNULAR END CORRUGATIONS ARE NORMALLY 2 2/3" x 1/2". DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES

12" HUGGER BAND DETAIL
NOT TO SCALE



CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM
NOT TO SCALE

1. MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT

FOUNDATION/BEDDING PREPARATION

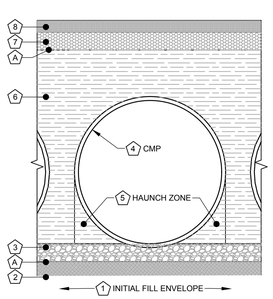
2. PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION. THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER.

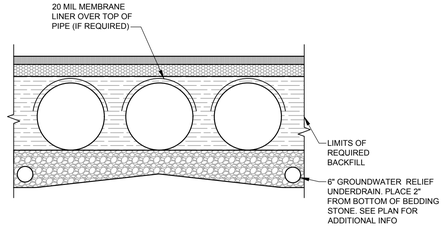
3. HAUNCH ZONE MATERIAL SHALL BE PLACED AND UNIFORMLY COMPACTED WITHOUT SOFT SPOTS.

BACKFILL

WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO LIFT (16") DIFFERENTIAL BETWEEN ANY OF THE LENGTH OF THE DETENTION SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON THE PIPE.

OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS, AS APPROVED BY SITE ENGINEER.





DETENTION SYSTEMS - CMP DETENTION / CMP DRAINAGE

	MATERIAL LOCATION	DESCRIPTION	MATERIAL DESIGNATION	DESIGNATION
8	RIGID OR FLEXIBLE PAVEMENT (IF APPLICABLE)			
7	ROAD BASE (IF APPLICABLE)			
A	GEOTEXTILE LAYER	NON-WOVEN GEOTEXTILE	CONTECT C-40 OR C-45	ENGINEER DECISION FOR CONSIDERATION TO PREVENT SOIL MIGRATION INTO VARYING SOIL TYPES
6	BACKFILL	WELL GRADED GRANULAR MATERIAL WHICH MAY CONTAIN SMALL AMOUNTS OF SILT OR CLAY.	AASHTO M 145- A-1, A-2, A-3	PLACED IN 8" ± LOOSE LIFTS AND COMPACTED TO 90% STANDARD PROCTOR PER AASHTO T 99
3	BEDDING STONE	WELL GRADED GRANULAR BEDDING MATERIAL WITH MAXIMUM PARTICLE SIZE OF 3"	AASHTO M43- 3, 357, 4, 467, 5, 56, 57	ENGINEER TO DETERMINE IF BEDDING IS REQUIRED. PIPE MAY BE PLACED ON THE TRENCH BOTTOM OF A RELATIVELY LOOSE, NATIVE SUITABLE WELL GRADED AND GRANULAR MATERIAL. FOR ARCH PIPES IT IS RECOMMENDED TO BE SHAPED TO A RELATIVELY FLAT BOTTOM OR FINE-GRADE THE FOUNDATION TO A SLIGHT V-SHAPE. UNSUITABLE MATERIAL SHOULD BE OVER-EXCAVATED AND RE-PLACED WITH A 4"-6" LAYER OF WELL GRADED AND GRANULAR STONE PER THE MATERIAL DESIGNATION. SEE AASHTO 26.3.8.1/26.5.3 BEDDING INFO.
A	GEOTEXTILE LAYER	NON-WOVEN GEOTEXTILE	CONTECH C-40 OR C-45	ENGINEER DECISION FOR CONSIDERATION TO PREVENT SOIL MIGRATION INTO VARYING SOIL TYPES
	NOTE: BACKFILL USING CONTROLLED LOW-STRENGTH MATERIAL (CLSM, "FLASH FILL" OR "FLOWABLE FILL") WHEN THE SPACING BETWEEN THE PIPES WILL NOT ALLOW FOR PLACEMENT AND ADEQUATE COMPACTION OF THE BACKFILL.			

DETENTION SYSTEM
NOT TO SCALE

SPECIFICATION FOR CORRUGATED STEEL PIPE-ALUMINIZED TYPE 2 STEEL

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE CORRUGATED STEEL PIPE (CSP) DETAILED IN THE PROJECT PLANS.

MATERIAL
THE ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M274 OR ASTM A929.

PIPE
THE CSP SHALL BE MANUFACTURED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF AASHTO M36 OR ASTM A760. THE PIPE SIZES, GAGES AND CORRUGATIONS SHALL BE AS SHOWN ON THE PROJECT PLANS.

ALL FABRICATION OF THE PRODUCT SHALL OCCUR WITHIN THE UNITED STATES.

HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH RECOMMENDATIONS OF THE NATIONAL CORRUGATED STEEL PIPE ASSOCIATION (NCSPA)

INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II OR ASTM A798 AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

MATERIAL SPECIFICATION
NOT TO SCALE

NOT FOR CONSTRUCTION

AMY BELL SEGAL, RLA 2265

PAUL D. OSTROWSKI, PE 11175

STATE OF MAINE PAUL D. OSTROWSKI No. 11175 REGISTERED PROFESSIONAL ENGINEER 02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS MADE HEREON BY OTHERS, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

SITE DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-507

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19059 D.dwg - TAB:C-507 Details



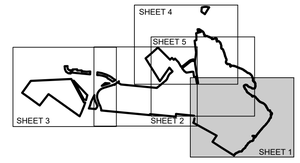
MONUMENT #	NORTHING	EASTING	DESCRIPTION
1	294607.0	2918656.4	5/8 REBAR BENT BASE
2	293077.4	2916874.8	5/8 REBAR FLUSH (9' SWLY OF LINE)
3	294785.1	2914796.2	REBAR 2317 FLUSH WITH PAVE
4	295127.0	2913819.7	5/8 REBAR
5	295179.4	2913257.8	5/8 REBAR BELOW GRADE
6	295235.4	2912660.7	5/8 REBAR BELOW GRADE
7	295262.5	2912377.2	5/8 REBAR BELOW GRADE
8	295357.1	2910852.3	2" PIPE
9	295359.4	2910829.0	5/8 REBAR PLS 1245
10	295365.5	2910763.7	5/8 REBAR
11	297030.2	2910591.5	3/4 REBAR
12	296924.0	2910751.3	IRON ROD WITH COPPER CAP
13	296885.9	2911158.5	5/8 REBAR BASE
14	296798.7	2912082.8	3/4 PIPE BASE
15	296742.0	2912678.0	5/8 REBAR
16	296734.1	2912757.3	5/8 REBAR FLAT ON GROUND
17	NONE	NONE	NONE
18	297073.1	2913169.6	5/8 REBAR PLS 2147
19	297140.0	2913250.7	3/4 REBAR
20	297253.6	2913337.6	3/4 REBAR PLS 2147
21	297406.7	2913406.4	3/4 REBAR PLS 2147
22	297551.5	2913520.1	MAGNAIL W/WASHER PLS 1205
23	297629.9	2913617.2	5/8 REBAR PLS 2317
24	297664.5	2913621.2	5/8 REBAR PLS 2147
25	297812.9	2913501.6	5/8 REBAR PLS 2117
26	297857.8	2913458.0	5/8 REBAR BASE
27	297397.9	2913136.8	5/8 REBAR BENT
28	297195.6	2912994.3	5/8 REBAR PLS 2147
29	297102.8	2912929.2	5/8 REBAR
30	297338.2	2912782.3	5/8 REBAR
31	298384.4	2912133.9	3/4 REBAR BELOW GRADE
32	298991.5	2912816.5	5/8 REBAR
33	298315.8	2913498.0	5/8 REBAR
34	298345.7	2913529.0	1 PIPE
35	298412.2	2913602.5	1 PIPE
36	298302.6	2913704.4	5/8 REBAR PLS 1038
37	298370.9	2913778.0	5/8 REBAR
38	298296.1	2913844.1	5/8 REBAR PLS 2038
39	298163.7	2913969.5	3/4 REBAR
40	297920.4	2914110.9	5/8 REBAR PLS 2147
41	297861.8	2914245.9	5/8 REBAR
42	298289.9	2914671.2	5/8 REBAR PLS 2147
43	298324.0	2914799.1	5/8 REBAR PLS 2147
44	298235.6	2914810.7	5/8 REBAR PLS 509
45	298011.8	2914394.7	5/8 REBAR PLS 2147
46	297834.5	2914168.8	5/8 REBAR (MISSING IN MAY 2015)
47	299405.4	2914970.0	GRANITE MONUMENT FOUND
48	299600.2	2914970.8	5/8 REBAR 2082
49	299646.9	2914968.1	5/8 REBAR 2082
50	299774.9	2914960.8	5/8 REBAR 2082
51	299817.0	2915065.2	1 1/2 PIPE
52	299850.5	2915186.1	1 PIPE
53	299870.8	2915228.8	CONC. MON-FLUSH
54	299913.3	2915266.2	1 PIPE
55	299944.7	2915216.5	3/4 REBAR 1280 INSIDE PIPE
56	300001.8	2915085.8	3/4 REBAR
57	295936.6	2909077.0	MTA-GRANITE
58	296386.8	2906704.0	3/4 REBAR PLS 2082
59	295750.3	2906211.4	1 PIPE
60	296168.2	2905641.9	3/4 REBAR PLS 2082
61	296459.5	2905230.3	GRANITE MONUMENT FOUND
62	296484.2	2905244.0	3/4 REBAR PLS 2082
63	296734.3	2905428.1	3/4 PIPE
64	297124.3	2905708.2	GRANITE MONUMENT FOUND
65	296326.0	2908871.6	MTA-GRANITE
66	297139.5	2908113.9	5/8 REBAR MTA
67	297555.3	2907807.7	5/8 REBAR MTA
68	297638.4	2907681.3	5/8 REBAR MTA
69	297770.5	2907622.4	5/8 REBAR MTA
70	297777.8	2908305.6	3/4 REBAR
71	297703.1	2908309.0	5/8 REBAR PLS 1118
72	297715.0	2908556.5	5/8 REBAR PLS 1118
73	297652.2	2909035.8	MTA-GRANITE
74	297492.0	2909027.9	MTA-GRANITE
75	297600.3	2907920.0	MTA-GRANITE
76	297603.7	2909438.3	5/8 REBAR MTA
77	297261.7	2910013.6	5/8 REBAR MTA
78	297310.0	2909984.4	MTA-GRANITE
79	297453.2	2909423.7	MTA-GRANITE
80	295554.5	2909336.2	3/4 REBAR 2282
81	295584.6	2908958.4	1" PIPE

NOTES

1. BOOK AND PAGE CITATIONS SHOWN HEREON REFER TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. NO MONUMENTS WERE SET AS OF THE DATE OF THIS PLAN.
3. A WRITTEN REPORT OF FINDINGS AND OPINIONS AS REQUIRED BY SECTION 10.A.3.D OF THE TECHNICAL STANDARDS OF PRACTICE OF THE STATE OF MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS WAS NOT PREPARED.
4. THE PURPOSE OF THIS SURVEY WAS TO DEFINE THE PERIMETER BOUNDARY OF THE PORTLAND INTERNATIONAL JETPORT PARCEL AND ACCESSORY PARCELS IN THE VICINITY OF THE JETPORT. INTERIOR PARCEL BOUNDARIES WERE NOT RESEARCHED OR DEFINED EXCEPT WHERE REQUIRED TO DEFINE THE PERIMETER BOUNDARY. EASEMENTS DEPICTED ON THIS PLAN WERE NOT COMPLETELY RESEARCHED OR LOCATED IN THE FIELD BUT SHOW THEIR GENERAL LOCATION RELATIVE TO THE PERIMETER BOUNDARY.
5. AERIAL PHOTOGRAPHY SHOWN WAS TAKEN IN 2015.
6. CURRENT OWNER: CITY OF PORTLAND
389 CONGRESS ST.
PORTLAND, MAINE 04101

LEGEND

- 1 — MONUMENT FOUND WITH REFERENCE NUMBER
- 79 — HIGHWAY MONUMENT FOUND WITH REFERENCE NUMBER
- 64 — STONE/GRANITE FOUND WITH REFERENCE NUMBER
- EASEMENT BOUNDARY
- PROPERTY LINE
- INTERIOR PARCEL BOUNDARY
- APPROXIMATE ABUTTER BOUNDARY
- E105 / 12 — PARCEL NUMBERING CORRESPONDS WITH DRAWING "PORTLAND INTERNATIONAL JETPORT EXHIBIT 'A'" DATED 7-9-2018, BY COFFMAN ASSOCIATES



SHEET INDEX

NOT TO SCALE



GRID NORTH

MAINE COORDINATE SYSTEM OF 1983 (2011)
WEST ZONE

SCALE: 1"= 200'

200' 0 200' 400' 600' 800'

SURVEY STANDARD

THIS PLAN WAS PREPARED FROM INFORMATION OBTAINED BY A SURVEY CONFORMING SUBSTANTIALLY TO THE REQUIREMENTS OF TECHNICAL STANDARDS CONTAINED IN CHAPTER 90, PART 2, OF THE RULES OF THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS, EFFECTIVE APRIL 1, 2001.

CLARK G. STAPLES, MAINE LICENSED PROFESSIONAL LAND SURVEYOR No. 2332

STATE OF MAINE — CLARK G. STAPLES — NO. 2332 — PROFESSIONAL LAND SURVEYOR

BOUNDARY SURVEY

OF LANDS OF

THE CITY OF PORTLAND

IN THE VICINITY OF

THE PORTLAND INTERNATIONAL JETPORT

-PORTLAND & SOUTH PORTLAND-

CUMBERLAND COUNTY, MAINE

FOR

Stantec

GOOD DEEDS
LAND SURVEYING • DEED RESEARCH
109 MAIN STREET
BELFAST, ME 04915
(207) 338-5743

DWG: 14078 MASTER PLAN 20220126.DWG

DATE: JANUARY 26, 2022

SCALE: 1"=200'

SHEET: 1 OF 5

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51	299817.0	2915065.2	1 1/2 PIPE
52	299850.5	2915186.1	1 PIPE

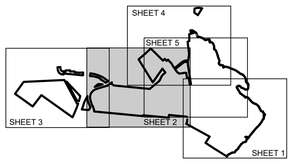
MONUMENT #	NORTHING	EASTING	DESCRIPTION
53	299870.8	2915228.8	CONC. MON-FLUSH
54	299913.3	2915266.2	1 PIPE
55	299944.7	2915216.5	3/4 REBAR 1280 INSIDE PIPE
56	300001.8	2915085.8	3/4 REBAR
57	295936.6	2909077.0	MT A-GRANITE
58	296388.8	2906704.0	3/4 REBAR PLS 2082
59	295750.3	2906211.4	1 PIPE
60	296168.2	2905641.9	3/4 REBAR PLS 2082
61	296459.5	2905230.3	GRANITE MONUMENT FOUND
62	296484.2	2905244.0	3/4 REBAR PLS 2082
63	296734.3	2905428.1	3/4 PIPE
64	297124.3	2905708.2	GRANITE MONUMENT FOUND
65	296326.0	2908871.6	MT A-GRANITE
66	297139.5	2908113.9	5/8 REBAR MT A
67	297555.3	2907807.7	5/8 REBAR MT A
68	297638.4	2907681.3	5/8 REBAR MT A
69	297770.5	2907622.4	5/8 REBAR MT A
70	297777.8	2908305.6	3/4 REBAR
71	297703.1	2908309.0	5/8 REBAR PLS 1118
72	297715.0	2908556.5	5/8 REBAR PLS 1118
73	297652.2	2909035.8	MT A-GRANITE
74	297492.0	2909027.9	MT A-GRANITE
75	297600.3	2907920.0	MT A-GRANITE
76	297603.7	2909438.3	5/8 REBAR MT A
77	297261.7	2910013.6	5/8 REBAR MT A
78	297310.0	2909984.4	MT A-GRANITE
79	297453.2	2909423.7	MT A-GRANITE
80	295554.5	2909336.2	3/4 REBAR 2282
81	295584.6	2908958.4	1" PIPE

NOTES

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   389 CONGRESS ST.
   PORTLAND, MAINE 04101

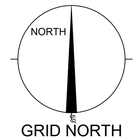
LEGEND

- 1 — MONUMENT FOUND WITH REFERENCE NUMBER
- 79 (H) — HIGHWAY MONUMENT FOUND WITH REFERENCE NUMBER
- 64 — STONE/GRANITE FOUND WITH REFERENCE NUMBER
- EASEMENT BOUNDARY
- PROPERTY LINE
- INTERIOR PARCEL BOUNDARY
- APPROXIMATE ABUTTER BOUNDARY
- E105 / 12 — PARCEL NUMBERING CORRESPONDS WITH DRAWING "PORTLAND INTERNATIONAL JETPORT EXHIBIT 'A'" DATED 7-9-2018, BY COFFMAN ASSOCIATES



SHEET INDEX

NOT TO SCALE



GRID NORTH

MAINE COORDINATE SYSTEM OF 1983 (2011)
WEST ZONE

SCALE: 1"= 200'

200' 0 200' 400' 600' 800'

SURVEY STANDARD

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CLARK G. STAPLES, MAINE LICENSED PROFESSIONAL LAND SURVEYOR No. 2332

STATE OF MAINE — CLARK G STAPLES — NO. 2332 — PROFESSIONAL LAND SURVEYOR

BOUNDARY SURVEY

OF LANDS OF

THE CITY OF PORTLAND

IN THE VICINITY OF

THE PORTLAND INTERNATIONAL JETPORT

-PORTLAND & SOUTH PORTLAND-

CUMBERLAND COUNTY, MAINE

FOR

Stantec

GOOD DEEDS
LAND SURVEYING • DEED RESEARCH
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BELFAST, ME 04915
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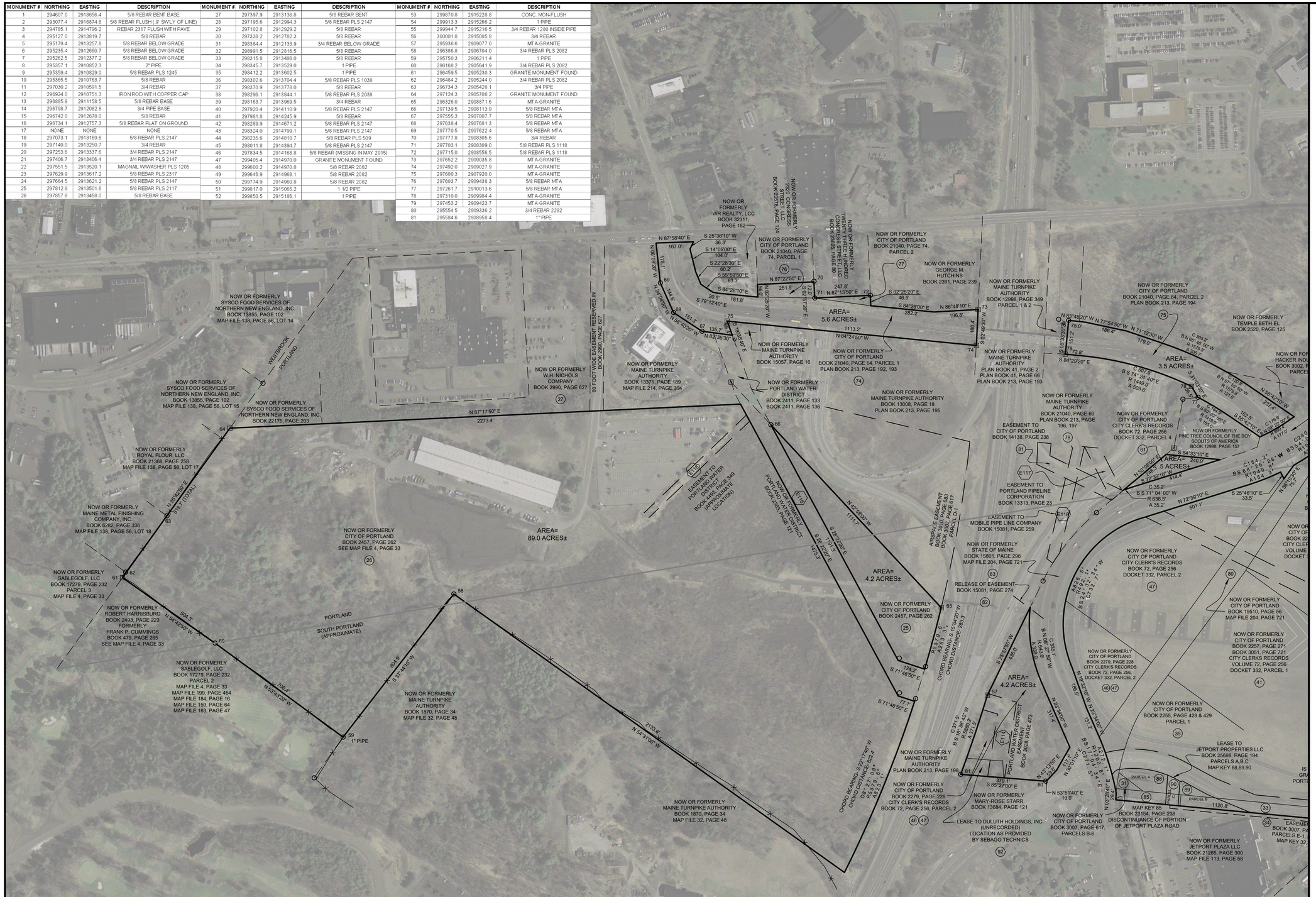
DWG: 14078 MASTER PLAN 20220126.DWG

DATE: JANUARY 26, 2022

SCALE: 1"=200'

SHEET: 2 OF 5

MONUMENT #	NORTHING	EASTING	DESCRIPTION
1	294607.0	2918656.4	5/8 REBAR BENT BASE
2	293077.4	2916874.8	5/8 REBAR FLUSH (9' SWLY OF LINE)
3	294785.1	2914796.2	REBAR 2317 FLUSH WITH PAVE
4	295127.0	2913819.7	5/8 REBAR
5	295179.4	2913257.8	5/8 REBAR BELOW GRADE
6	295235.4	2912660.7	5/8 REBAR BELOW GRADE
7	295262.5	2912377.2	5/8 REBAR BELOW GRADE
8	295357.1	2910852.3	2" PIPE
9	295359.4	2910829.0	5/8 REBAR PLS 1245
10	295365.5	2910763.7	5/8 REBAR
11	297030.2	2910591.5	3/4 REBAR
12	296924.0	2910751.3	IRON ROD WITH COPPER CAP
13	296885.9	2911158.5	5/8 REBAR BASE
14	296798.7	2912082.8	3/4 PIPE BASE
15	296742.0	2912678.0	5/8 REBAR
16	296734.1	2912757.3	5/8 REBAR FLAT ON GROUND
17	NONE	NONE	NONE
18	297073.1	2913169.6	5/8 REBAR PLS 2147
19	297140.0	2913250.7	3/4 REBAR
20	297253.6	2913337.6	3/4 REBAR PLS 2147
21	297406.7	2913406.4	3/4 REBAR PLS 2147
22	297551.5	2913520.1	MAGNAIL WWASHER PLS 1205
23	297629.9	2913617.2	5/8 REBAR PLS 2117
24	297664.5	2913621.2	5/8 REBAR PLS 2147
25	297812.9	2913501.6	5/8 REBAR PLS 2117
26	297857.8	2913458.0	5/8 REBAR BASE
27	297397.9	2913136.8	5/8 REBAR BENT
28	297195.6	2912994.3	5/8 REBAR PLS 2147
29	297102.8	2912929.2	5/8 REBAR
30	297338.2	2912782.3	5/8 REBAR
31	298384.4	2912133.9	3/4 REBAR BELOW GRADE
32	298991.5	2912816.5	5/8 REBAR
33	298315.8	2913498.0	5/8 REBAR
34	298345.7	2913529.0	1 PIPE
35	298412.2	2913602.5	1 PIPE
36	298302.6	2913704.4	5/8 REBAR PLS 1038
37	298370.9	2913778.0	5/8 REBAR
38	298296.1	2913844.1	5/8 REBAR PLS 2038
39	298163.7	2913969.5	3/4 REBAR
40	297920.4	2914110.9	5/8 REBAR PLS 2147
41	297981.8	2914245.9	5/8 REBAR
42	298289.9	2914671.2	5/8 REBAR PLS 2147
43	298324.0	2914799.1	5/8 REBAR PLS 2147
44	298235.6	2914810.7	5/8 REBAR PLS 509
45	298011.8	2914394.7	5/8 REBAR PLS 2147
46	297834.5	2914168.8	5/8 REBAR (MISSING IN MAY 2015)
47	299405.4	2914970.0	GRANITE MONUMENT FOUND
48	299600.2	2914970.8	5/8 REBAR 2082
49	299646.9	2914968.1	5/8 REBAR 2082
50	299774.9	2914960.8	5/8 REBAR 2082
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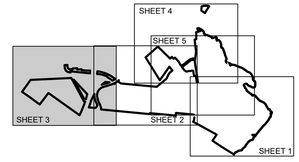


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   PORTLAND, MAINE 04101

LEGEND

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- 79 (H) — HIGHWAY MONUMENT FOUND WITH REFERENCE NUMBER
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SHEET INDEX
NOT TO SCALE



GRID NORTH
MAINE COORDINATE SYSTEM OF 1983 (2011)
WEST ZONE

SCALE: 1"= 200'

200' 0 200' 400' 600' 800'

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STATE OF MAINE — CLARK G STAPLES — NO. 2332 — PROFESSIONAL LAND SURVEYOR

BOUNDARY SURVEY

OF LANDS OF

THE CITY OF PORTLAND

IN THE VICINITY OF

THE PORTLAND INTERNATIONAL JETPORT

-PORTLAND & SOUTH PORTLAND-

CUMBERLAND COUNTY, MAINE

FOR

Stantec

GOOD DEEDS
LAND SURVEYING • DEED RESEARCH
109 MAIN STREET
BELFAST, ME 04915
(207) 338-5743

DWG: 14078 MASTER PLAN 20220126.DWG

DATE: JANUARY 26, 2022

SCALE: 1"=200'

SHEET: 3 OF 5

MONUMENT #	NORTHING	EASTING	DESCRIPTION
1	294607.0	2918656.4	5/8 REBAR BENT BASE
2	293077.4	2916874.8	5/8 REBAR FLUSH (9' SWLY OF LINE)
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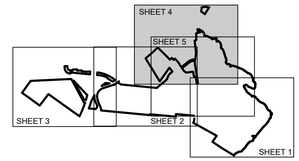


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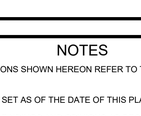
LEGEND

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- ——— EASEMENT BOUNDARY
- ——— PROPERTY LINE
- ——— INTERIOR PARCEL BOUNDARY
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SHEET INDEX

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CLARK G. STAPLES, MAINE LICENSED
PROFESSIONAL LAND SURVEYOR No. 2332

STATE OF MAINE
CLARK
G
STAPLES
NO. 2332
REGISTERED
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LAND SURVEYOR

BOUNDARY SURVEY

OF LANDS OF

THE CITY OF PORTLAND

IN THE VICINITY OF

THE PORTLAND INTERNATIONAL JETPORT

-PORTLAND & SOUTH PORTLAND-

CUMBERLAND COUNTY, MAINE

FOR

Stantec

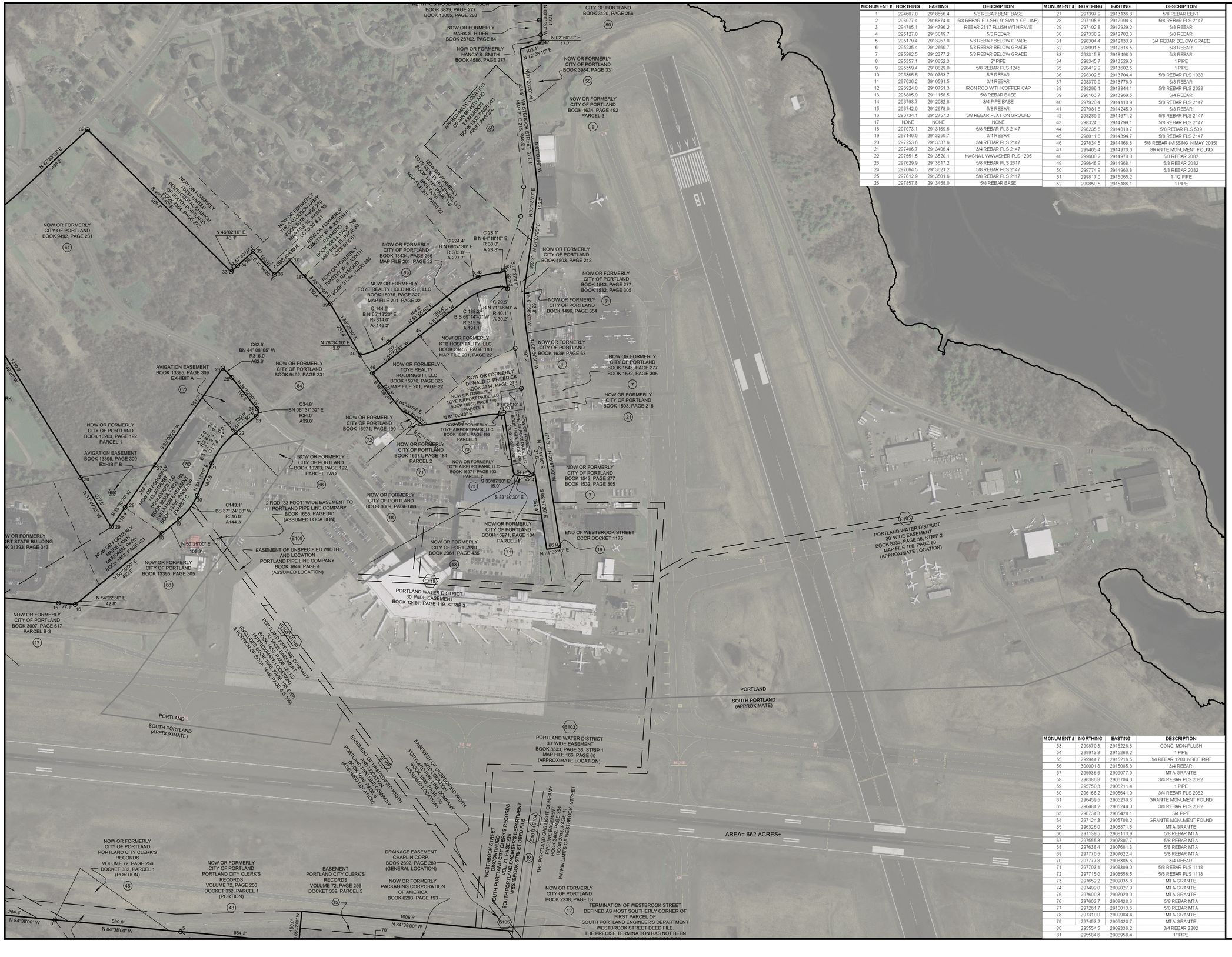
GOOD DEEDS
LAND SURVEYING • DEED RESEARCH
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(207) 338-5743

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DATE: JANUARY 26, 2022

SCALE: 1"=200'

SHEET: 4 OF 5


KEITH R. & ROSEMARY B. MASON BOOK 3839, PAGE 277 BOOK 13005, PAGE 288
NOW OR FORMERLY MARK S. HIDER BOOK 28702, PAGE 84
NOW OR FORMERLY NANCY S. SMITH BOOK 4586, PAGE 277
CITY OF PORTLAND BOOK 3420, PAGE 256
NOW OR FORMERLY CITY OF PORTLAND BOOK 3984, PAGE 331
NOW OR FORMERLY CITY OF PORTLAND BOOK 1634, PAGE 492 PARCEL 3
APPROXIMATE LOCATION OF NEW RIGHTS OF WAY AS DESCRIBED IN BOOK 13005, PAGE 301 FIRST PARCEL
381.5' WESTBROOK STREET 27.71' MAP FILE 215, PAGE 9
NOW OR FORMERLY TOYE REALTY HOLDINGS II, LLC BOOK 15976, PAGE 327, MAP FILE 201, PAGE 22
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TERMINATION OF WESTBROOK STREET DEFINED AS MOST SOUTHERLY CORNER OF FIRST PARCEL OF SOUTH PORTLAND ENGINEER'S DEPARTMENT WESTBROOK STREET DEED FILE. THE PRECISE TERMINATION HAS NOT BEEN
PORTLAND
SOUTH PORTLAND (APPROXIMATE)
PORTLAND
SOUTH PORTLAND (APPROXIMATE)
AREA= 662 ACRES±
N 47°23'00" E 439.8'
N 46°02'10" E 43.1'
S 47°47'59" E 169.6'
S 42°49'20" E 169.8'
S 43°23'40" E 182.4'
S 37°09'31" E 181.4'
N 78°34'10" E 3.5'
S 84°38'00" W 284.8'
N 84°38'00" W 599.8'
N 84°38'00" W 564.3'
S 5°21'22" W 150.0'
N 84°38'00" W 1006.6'
N 5°21'22" E 70'
S 83°30'30" E 381.5'
N 0°07'30" W 177.1'
N 2°50'20" E 17.7'
N 12°08'10" E 103.6'
N 7°20'20" W 381.5'
N 7°06'00" W 381.5'
N 5°49'20" E 155.7'
N 8°07'20" E 338.2'
S 0°27'44" E 381.5'
N 10°52'30" W 381.5'
N 5°49'20" W 259.7'
N 5°49'20" W 174.3'
S 5°49'20" E 174.3'
S 83°30'30" E 381.5'
N 81°02'40" E 66.0'
N 81°02'40" E 22.4'
S 33°07'30" E 15.0'
S 83°30'30" E 54.6'
S 81°02'40" W 20.0'
N 81°02'40" E 20.0'
S 8°57'20" E 287.2'
S 5°49'20" E 269.4'
S 84°06'50" E 269.4'
S 5°49'20" E 269.4'
N 81°02'40" E 269.4'
S 8°57'20" E 269.4'
N 10°52'30" W 269.4'
N 5°49'20" W 269.4'
S 5°49'20" E 269.4'
S 84°06'50

Att. 5

SEBAGO TECHNICS

CIVIL ENGINEERING ▪ SURVEYING ▪ LANDSCAPE ARCHITECTURE

Site Location of Development Amendment Permit Application Parking Expansion Portland International Jetport

Prepared for
City of Portland
1001 Westbrook Street
Portland, ME 04101

Prepared by
Sebago Technics
75 John Roberts Rd.
South Portland, ME 04106

February 2024

75 John Roberts Road – Suite 4A, South Portland, ME 04106-6963 • 207-200-2100 • Fax: 207-856-2206

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Section 20 Blasting
Section 21 Air Emissions
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Section 25 Notices

Department of Environmental Protection
Bureau of Land & Water Quality
17 State House Station
Augusta, Maine 04333
Telephone: 207-287-3901

FOR DEP USE **FORM A PAGE 1**
ATS # _____
L-_____
Total Fees: _____
Date: Received _____

****

SITE LOCATION OF DEVELOPMENT PERMIT APPLICATION 38 M.R.SA. §§481-490

PLEASE TYPE OR PRINT IN *INK ONLY*

This application is for: (CHECK THE ONE THAT APPLIES)	☐ **20 acre development** ☐ **Planning Permit** ☐ **Metallic Mining**	☐ **Marine Oil Terminal** ☐ **Structure** ☐ **Subdivision**	■ **Major Amendment** ☐ **Minor Amendment**

1. Name of Applicant:	City of Portland c/o Paul Bradbury	**6. Name of Agent (if applicable):**	Sebago Technics, Inc
2. Applicant's Mailing Address:	1001 Westbrook St, Portland, ME	**7. Agent's Mailing Address:**	75 John Roberts Rd, S. Portland
3. Applicant's Daytime Phone #:	207-874-8877	**8. Agent's Daytime Phone # :**	207-200-2073
4. Applicant's Fax # (if available):	207-774-7740	**9. Agent's Fax # (if available):**	
5. Applicant's *e-mail address* (REQUIRED -license will be sent via: e-mail):	phb@portlandmaine.gov	**10. Agent's *e-mail address* (REQUIRED - license will be sent via e-mail):**	omccullough@sebagotechnics.com

PROJECT INFORMATION

11. Name of Development:	Portland International Jetport Parking Expansion						
12. Map and Lot #'s:	**Map #:** attached	**Lot #:**	**13. Deed Reference #'s:**		**Book #:** attached	**Page #:**	
14. Location of Project City/Town:	Portland	**15. County:**	Cumberland	**16. UTM Northing**		**17. UTM Easting**	
18. Brief Description of Project including total parcel size:	Construction of additional surface parking areas at the existing Portland International Jetport. Project area is approximately 13 acres - see attached for total area of jetport						

19. Type of Direct Watershed: (Check all that apply)

☐ Lake not most at risk ☐ River, stream or brook ☐ Coastal wetland
☐ Lake most at risk ☐ Urban impaired stream ☐ Wellhead or public water
☐ Lake most at risk, severely blooming ■ Freshwater wetland

20. Name of Waterbody Project Site drains to:	Fore River		
21. Amount of Developed Area:	Total acres: 11.77	Existing Developed area: 7.19 acres	New Developed area: 4.58 acres NET
22. Amount of Impervious Area:	Total acres: 9.16	Existing Impervious areas 6.31 acres	New Impervious area: 2.85 acres NET

23. Development started prior to obtaining a license?:	☐ **Yes** ■ **No**		
24. .Development or any portion of the site subject to enforcement action?	☐ **Yes** ■ **No**	**If yes**, name of enforcement staff involved?	
25. Common scheme of development?:	☐ **Yes** ■ **No**	**26. Title, Right or Interest:**	☒ **own** ☐ **lease** ☐ **purchase option** ☐ **written agreement**
27. Natural Resources Protection Act permit required?:	■ **Yes** ☐ **No**	**If yes:** ☐ **PBR** ☐ **Tier 1** ■ **Full Permit** ☐ **Tier 2**	
28. Existing DEP Permit number (if applicable):	L-13760		
29. Names of DEP staff person(s) present at the pre-application meeting:	Marybeth Richardson		
30. Does agent have an interest in project? If yes, what is the interest?	☐ **Yes** ■ **No**		

CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2

IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following :

CERTIFICATIONS / SIGNATURES

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

Further, I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this application by emailing the decision to the electronic address located on the front page of this application (see #5 for the applicant and #10 for the agent)"..

Signed:_____ _____ **Title** Sr VP Strategy & Client Dev **Date:**_____

Notice of Intent to Comply with Maine Construction General Permit	**With this Site Law application form and my signature, I am filing notice of my intent to carry out work which meets the requirements of the Maine Construction General Permit (MCGP). I have read and will comply with all of the MCGP standards.** **If this form is not being signed by the landowner or lessee of the property, attach documentation showing authorization to sign.** **Signed**_____ **Date:** 02-29-24

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

CERTIFICATION

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

Signature: _____ _____

Name (print): Owens McCullough, P.E.

Date: 02-29-24

Re/Cert/Lic No.: _____

Engineer 7122

Geologist_____

Soil Scientist _____

Land Surveyor _____

Site Evaluator _____

Active Member of the Maine Bar _____

Professional Landscape Architect _____

Other_____

Section 1

Development Description

Section 1

Development Description

A. Narrative

The proposed project site is located at the Portland International Jetport near the intersection of Jetport Boulevard and International Parkway. The parcel is identified as City parcel number 210AA007, 210AA006001, and 210AA002001 and is also referenced in numerous deeds. Please see Section 2 for Exhibit A for deed information. Prior improvements to the site were permitted through the Maine DEP Site Location of Development Act (L-13760) and a Natural Resources Protection Act. The project area is currently undeveloped land and is approximately 13 acres. The site is located on the airport campus and is bounded by a hotel to the East, airport parking and facilities to the west and south, Jetport Blvd and vacant land to the north. The parcel is located within the City of Portland's Airport Business Zone.

The project will be comprised of an expansion of the existing Jetport parking areas with an approximately 240,000 s.f. long-term parking area on the airport campus. The project proposes the construction of two paved parking lots which will provide 684 long-term parking spaces. One of the proposed new lots will convert an existing cell phone lot and gravel valet lot for use as long term parking. This lot will be comprised of 248 standard and 8 ADA compliant parking spaces. The second lot is proposed to include 416 standard and 12 ADA compliant parking spaces. The project also includes the construction of a concrete pad for a proposed battery storage system. Please see this Section for more detailed information regarding the proposed battery storage system.

The project will result in the creation of a net increase of 4.58 acres of developed area, 2.85 acres of new impervious, and approximately 8,618 s.f. of wetland impacts.

The project site is located in the Fore River watershed, which is not defined by the Maine Department of Environmental Protection (Maine DEP) as an Urban Impaired Stream under Chapter 502, Appendix B. The project must be in compliance with the Basic, General, and Flooding regulations outlined in Maine DEP's Chapter 500 Standards.

B. Topographic Map

Attached as Figure 1.

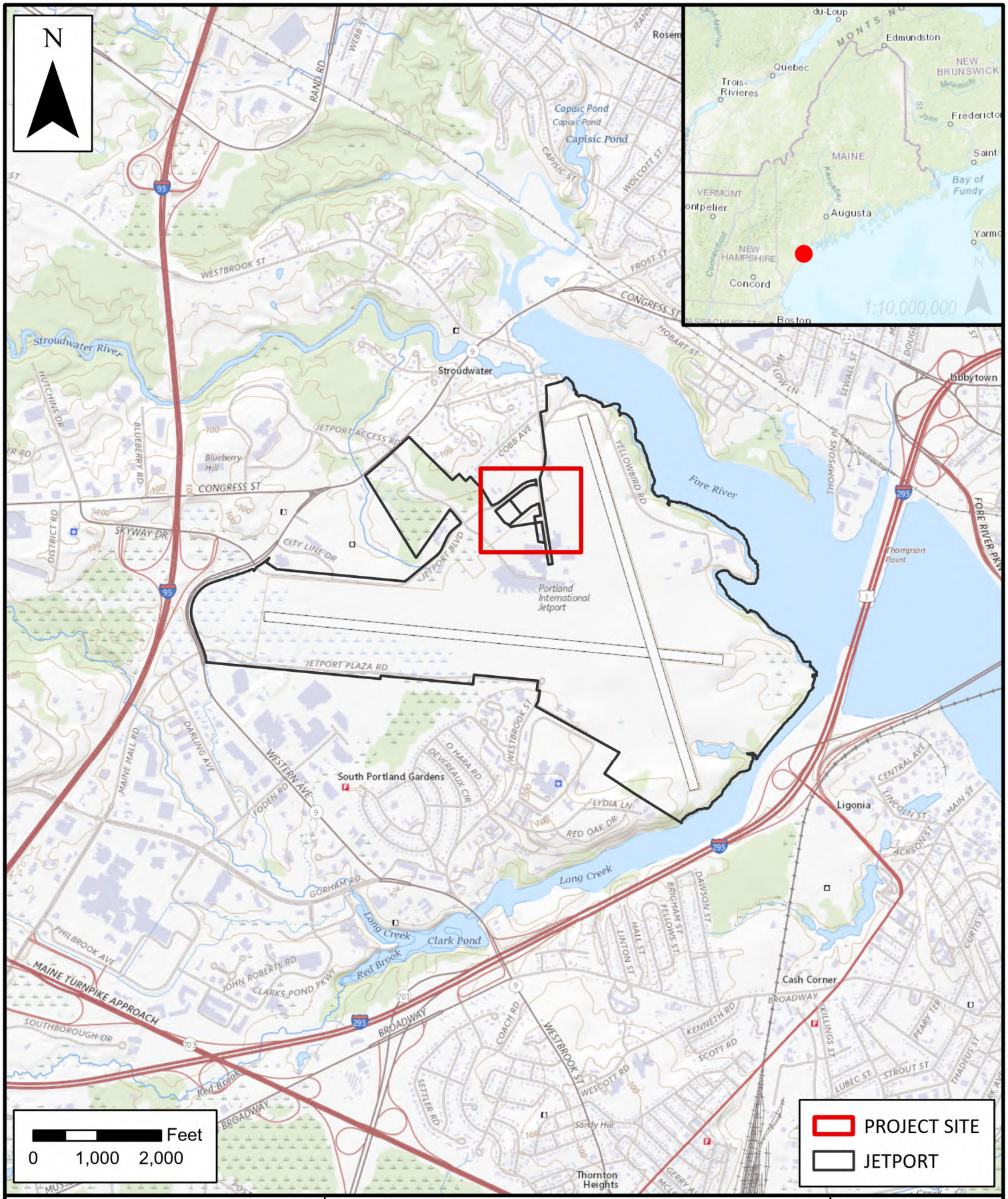
C. Construction Plan

Site improvements will be dependent on when permits are received. The Jetport is tentatively planning on a Fall 2024 and completion around the spring of 2025.

D. Drawings

All appropriate site drawings are attached. A partial list of Individual plans is listed below. Please see the plan set cover sheet for a complete plan list.

Sheet Number	Sheet Title
G-001	Cover Sheet
G-002	Notes & Legend
C-003	Demolition Plan
C-002	Demolition Plan
C-100	Overall Site Plan
C-101	Site Plan
C-102	Site Plan
C-103	Site Plan
C-200	Overall Grading Plan
C-201	Grading Plan
C-202	Grading Plan
C-203	Grading Plan
C-300	Overall Utility Plan
C-301	Utility Plan
C-302	Utility Plan
C-303	Utility Plan
L-101	Landscaping Plan
L-102	Landscaping Plan
L-103	Landscaping Plan
C-500	Erosion Control Notes
C-501	Erosion Control Details
C-502	Site Details
C-503	Site Details
C-504	Site Details
1 of 2	Pre-Development Watershed Plan
2 of 2	Post-Development Watershed Plan



SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. - Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

LOCATION MAP

JETPORT PARKING

SCALE: 1:24,000

DATE: 2/29/2024

LOCATION:
1001 WESTBROOK ST
PORTLAND, ME

INFORMATION:
MAINE GEOLIBRARY
USGS QUADRANGLE

Battery Storage Project Overview

Portland International Jetport ("PWM") plans to install a 1.9-megawatt ("MW") lithium-ion battery storage system ("BSS") on its property in Portland, Maine. The BSS will be financed, owned, and operated by PWM. The BSS project will help advance Maine's clean energy policies and ambitious grid decarbonization efforts. In June 2021, Governor Mills signed Public Law 2021 Chapter 298 (LD 528 - An Act To Advance Energy Storage in Maine). This bipartisan legislation directs multiple important steps to advance energy storage development throughout Maine and sets goals for 300 MW of installed energy storage capacity in the state by the end of 2025 and 400 MW of installed energy storage capacity in the state by the end of 2030. PWM's BSS project will support Maine's efforts to meet these goals.

PWM will charge the BSS from Central Maine Power Company's power grid during periods of high renewable generation in Maine's electricity supply mix and will discharge the BSS to reduce the terminal's grid demand during high-demand periods on CMP's local system. This operations strategy will help soak up widespread intermittent solar generation being developed throughout Maine, will help reduce stress on CMP's grid infrastructure during high-demand periods, and will help displace higher-emitting electric generation sources in the state's supply mix during high-demand periods.

In addition to helping reduce greenhouse gas emissions in Maine's electricity supply mix and reduce stress on CMP's distribution and transmission system during periods of high demand, the BSS will be configured to enable PWM to utilize the system as a backup power resource in the event of a grid outage. The BSS has a nameplate energy capacity of five megawatt-hours, meaning the system will be able to provide several hours of uninterrupted power to the terminal in the event of a grid outage. For normal operating conditions, the BSS is designed to be non-exporting. The electricity discharged by the BSS will only be used to reduce the terminal's onsite electric load and the system will have protective relaying schemes to ensure that no power discharged from the BSS can be sent to CMP's local grid.

Figures 1 and 2 below show the proposed location of the BSS on PWM's property at the intersection of International Parkway and Jetport Boulevard. The BSS will be located adjacent to the new surface lot being developed by PWM. Figure 3 presents the preliminary layout of the BSS components within the system's fence line. The BSS will have security fencing and lighting.

Ameresco, Inc. will be constructing and maintaining the BSS and will utilize battery modules manufactured by Tesla. The BSS will be maintained in accordance with industry leading practices for ongoing preventative checks and performance monitoring. The BSS' technical specifications and warranty guarantees are provided in the attached document titled 'Portland Jetport Tesla Megapack 2 XL Datasheet'. An overview of the BSS' safety features and design is provided in the attached document titled 'Portland Jetport Tesla Megapack 2 XL Safety Overview'. This safety documentation, along with the protective relaying scheme detailed in the attached electrical one-line diagram, demonstrates the project will satisfy all utility interconnection, permitting, and safety requirements.

The BSS is in the advanced stage of CMP's interconnection study process. CMP has determined that the BSS can interconnect and operate in parallel with its local distribution system without any grid upgrades. PWM is awaiting the final review results from ISO New England that will determine whether the project requires a transmission-level interconnection study. Following this decision, PWM will be engaging local permitting authorities within the City of Portland to begin educating key local stakeholders, including Portland Fire Department, on the BSS' design, safety features, fire protection, and protocols in the event of an emergency. This engagement will be collaborative with the aim of supporting a local permitting process that meets the needs of all key stakeholders.

Figure 1. Location of Proposed Battery Storage System



Figure 2. Preliminary Layout of Battery Storage System & Associated Utilities

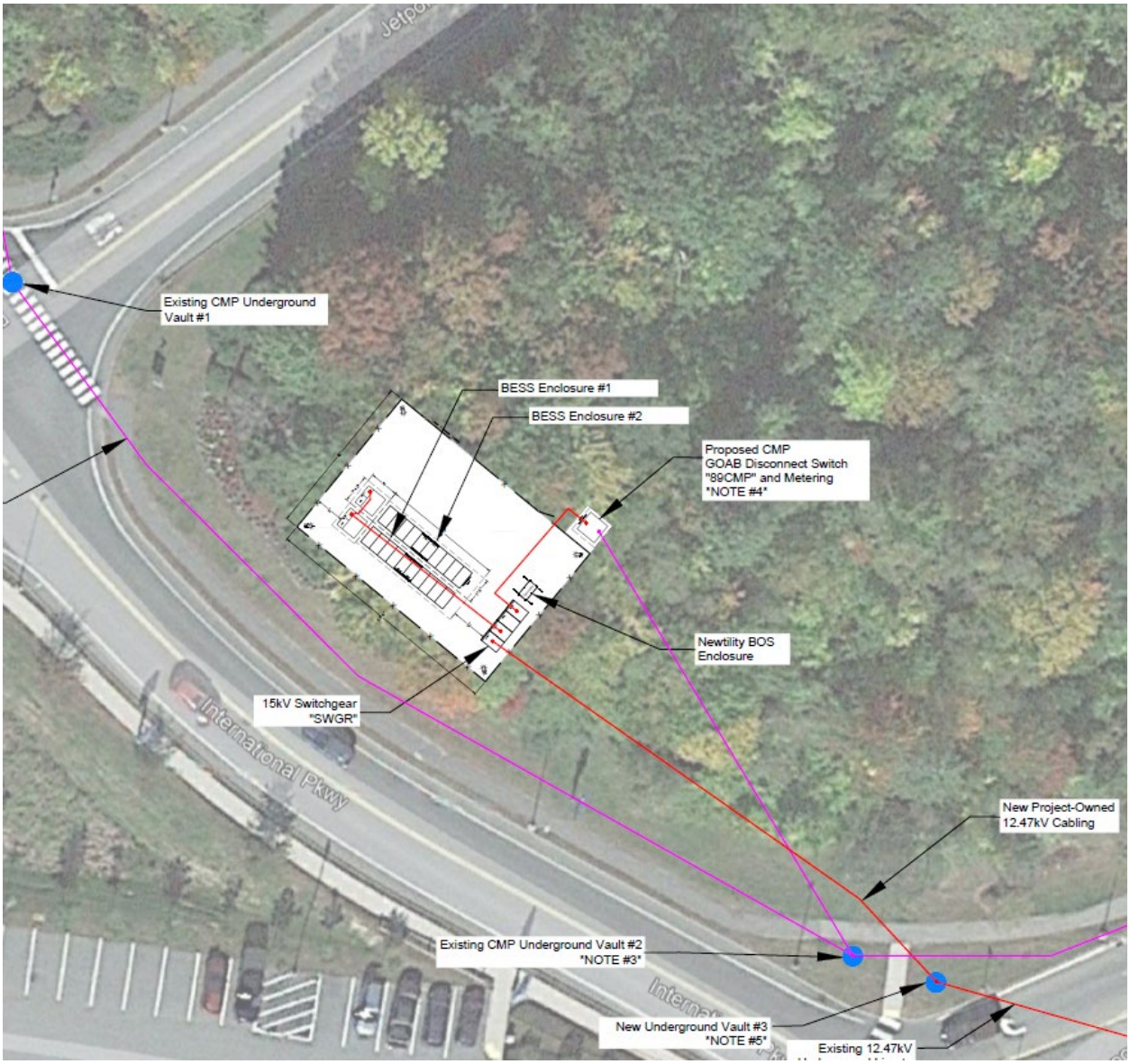
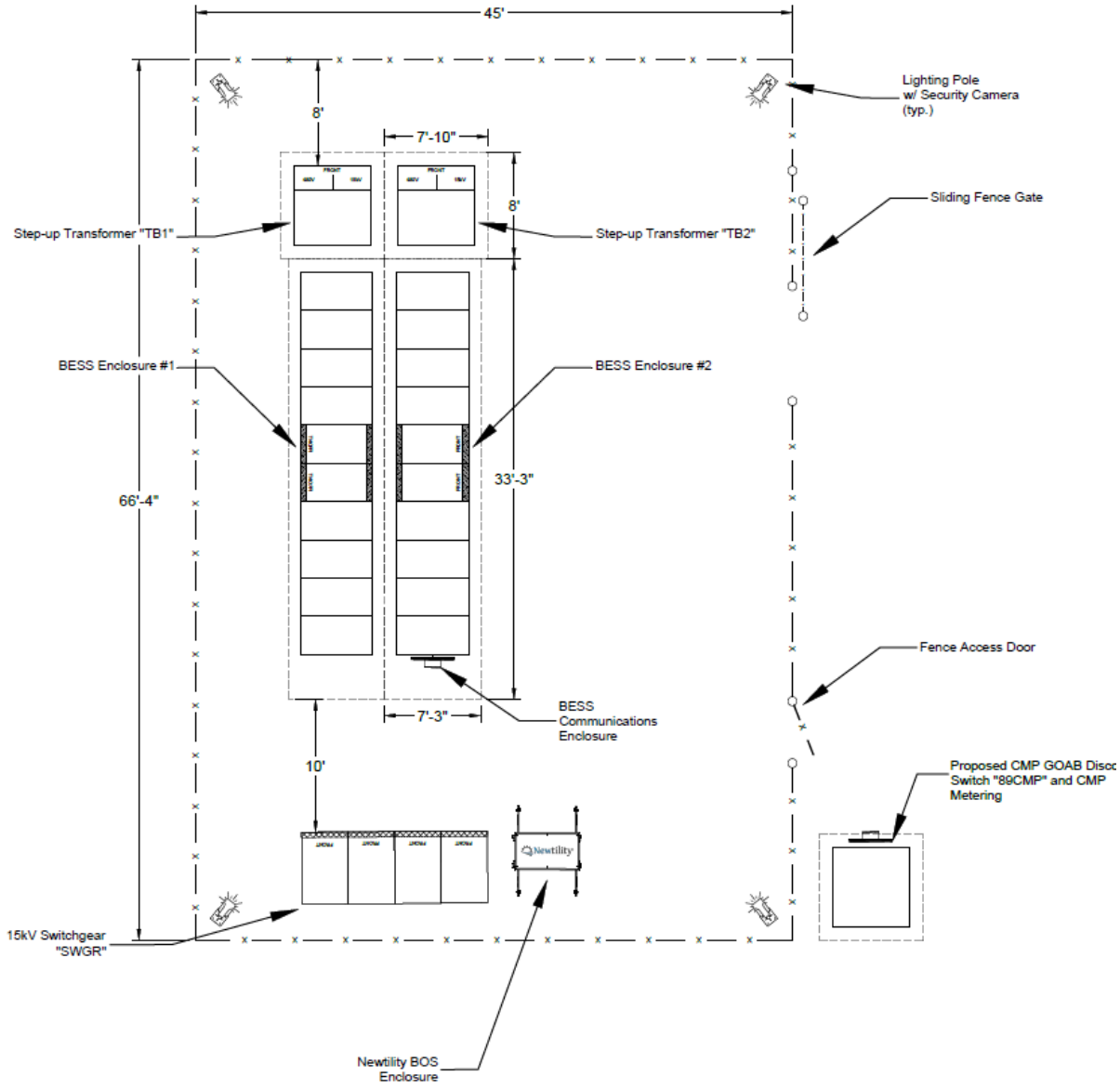


Figure 3. Preliminary Layout of Battery Storage System Components



Section 2

Title, Right or Interest

Title, Right or Interest

The proposed project site is located at Portland International Jetport. The project area is comprised of several parcels owned by the City of Portland. Please see this Section for a copy of Exhibit A, a property map which documents those properties held by the Portland Jetport, including grantee and deed references, and that was part of the Airport Improvement Program Federal Grant application. Also included in this Section are copies of Deeds Bk38899 Pg50 & Pg127, which are not reflected in Exhibit A.

EASEMENTS ON AIRPORT PROPERTY

MAP KEY	GRANTOR	GRANTEE	BOOK/PAGE PLAN NO.	INSTRUMENT	DATE	AREA	REMARKS
E100	STATE OF MAINE	PORTLAND PIPE LINE CORPORATION	3052/765	INDENTURE	08/14/68		
E101	CITY OF PORTLAND	PORTLAND GAS AND LIGHT COMPANY	2462/254	QUIT CLAIM	03/24/59		
E103	CITY OF PORTLAND	PORTLAND WATER DISTRICT	8333/36	EASEMENT	07/09/88		
E104	CITY OF PORTLAND	PORTLAND WATER DISTRICT	2318/11	EASEMENT	10/05/56		
E105	CITY OF PORTLAND	CHAPLIN CORPORATION	2392/289	QUIT CLAIM	01/17/58		DRAINAGE
E106	CITY OF PORTLAND	PORTLAND PIPE LINE COMPANY	1655/221	EASEMENT	10/09/41		
E107	BURTON DENSMORE & GERTRUDE L. DENSMORE	PORTLAND PIPE LINE COMPANY	1646/6	EASEMENT	07/14/41		SEE KEY MAP NO. 36
E108	WALTER C. & ELEANOR JOHNSON NIELSEN, NELLIE R. JOHNSON	PORTLAND PIPE LINE COMPANY	1646/198	EASEMENT	10/03/41		SEE KEY MAP NO. 3
E109	ISSAC FAIRWEATHER	PORTLAND PIPE LINE COMPANY	1646/4	EASEMENT	07/14/41		SEE KEY MAP NO. 18
E110	CITY OF PORTLAND	PORTLAND PIPE LINE CORPORATION	2889/575	EASEMENT	04/20/65		SEE KEY MAP NO. 61, 47, 40, 38 & 45
E111	WILFRED A. HAY, TRUSTEE OF CLINTON C. PHINNEY	SOCONY-VACUUM OIL COMPANY, INC.	1916/392	EASEMENT	07/03/48		SEE KEY MAP NO. 39
E112	FRANK P. CUMMINGS, TRUSTEE OF LEON F. CUMMINGS	SOCONY-VACUUM OIL COMPANY, INC.	1891/137	EASEMENT	12/19/47		SEE MAP KEY NO. 47 (20 FOOT WIDTH)
E113	FRNCIS B. EVANS	SOCONY-VACUUM OIL COMPANY, INC.	1943/446	EASEMENT	01/31/49		SEE KEY MAP NO. 41
E114	CITY OF PORTLAND	PORTLAND WATER DISTRICT	3028/473	INDENTURE	01/31/68		SEE KEY MAP NO. 46
E115	EDWARD S. FINKS AND DOROTHY L. FINKS	PORTLAND WATER DISTRICT	2383/121	WAR. DEED	11/12/57		SEE KEY MAP NO. 25 & 26
E116	CITY OF PORTLAND	PORTLAND WATER DISTRICT	4493/349	EASEMENT	09/14/79		SEE KEY MAP NO. 26 & 27
E117	CITY OF PORTLAND	PORTLAND PIPE LINE CORPORATION	13331/23	EASEMENT	09/10/97		SEE KEY MAP NO. 78
E118	CITY OF PORTLAND	MOBIL PIPE LINE COMPANY	15081/259	INDENTURE	10/01/99		SEE KEY MAP NO. 78
E119	CITY OF PORTLAND	PORTLAND WATER DISTRICT	12451/119	EASEMENT	04/16/96		
E120	CITY OF PORTLAND	CENTRAL MAINE POWER	28512/44	EASEMENT	09/08/10		
E121	CITY OF PORTLAND	CENTRAL MAINE POWER	28512/43	EASEMENT	09/08/10		

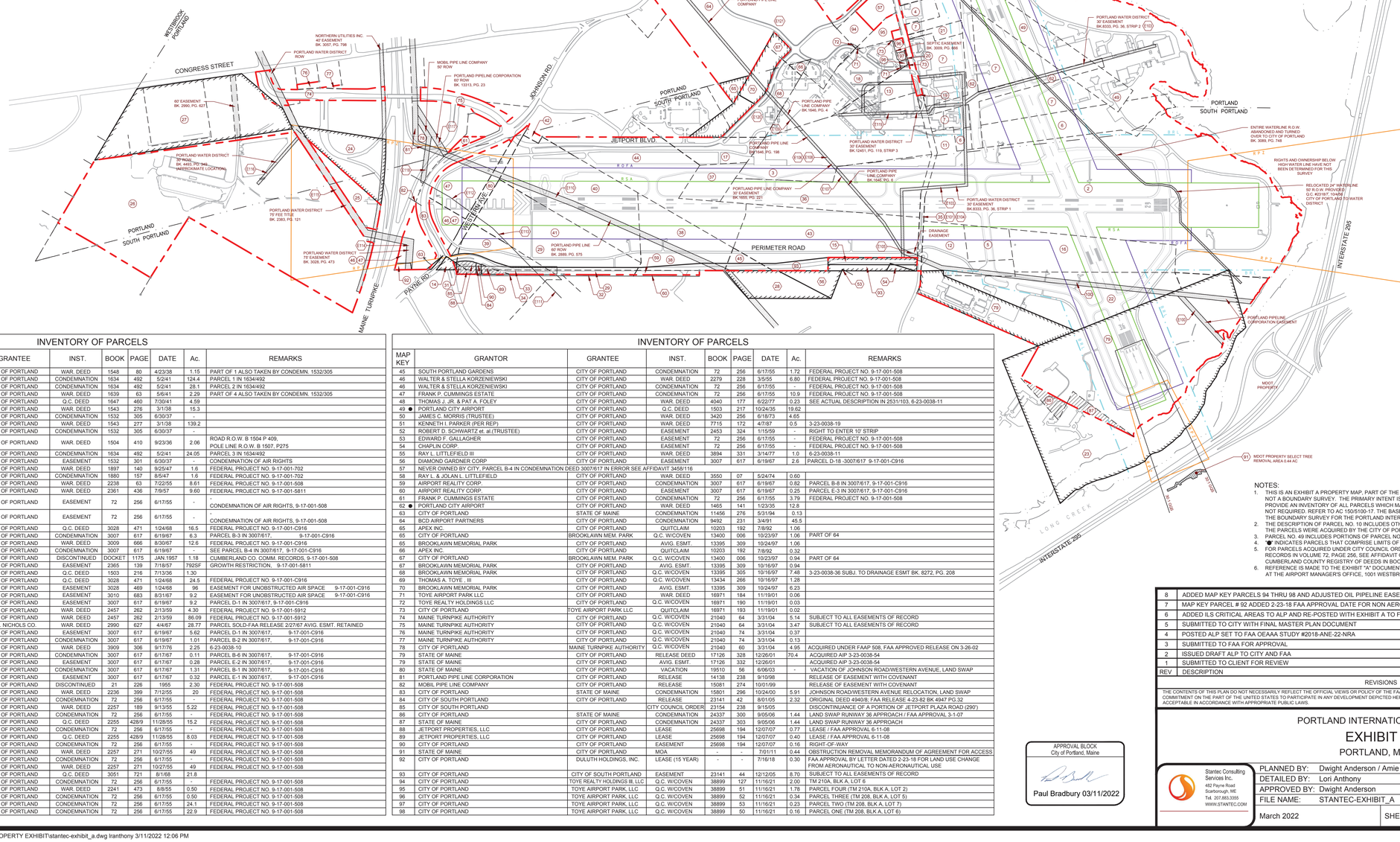
NORTH

Magnetic Variance 18° 34' West (February 2006) Annual Rate of Change 00° 6' East (February 2006)

S 14°-51'-00" W

LEGEND

EXISTING	FUTURE	ITEM
		RUNWAY PROTECTION ZONE
		EASEMENT (AVIGATIONAL)
		AIRPORT PROPERTY LINE
		CITY LINE
		BUILDING RESTRICTION LINE (BRL)
		RUNWAY OBSTACLE FREE AREA (ROFA)
		RUNWAY SAFETY AREA (RSA)
		LOT LINES
		RIGHT OF WAY EASEMENTS-UTILITIES
		MEMORANDUM OF AGREEMENT (MOA) FOR ACCESS
(xx)		PROPERTY PARCEL
xx		EASEMENT PARCEL / MOA AREA



INVENTORY OF PARCELS

MAP KEY	GRANTOR	GRANTEE	INST.	BOOK	PAGE	DATE	Ac.	REMARKS
1 ●	HAROLD SEIDERS	CITY OF PORTLAND	WAR. DEED	1548	80	4/23/38	1.15	PART OF 1 ALSO TAKEN BY CONDEMN. 1532/305
2 ●	HERBERT JACKSON	CITY OF PORTLAND	CONDEMNATION	1634	492	5/2/41	124.4	PARCEL 1 IN 1634/492
3 ●	FAIRWEATHER, NEILSON & LARRABEE	CITY OF PORTLAND	CONDEMNATION	1634	492	5/2/41	28.1	PARCEL 2 IN 1634/492
4 ●	GEORGE W. MILLS	CITY OF PORTLAND	WAR. DEED	1639	63	5/6/41	2.29	PART OF 4 ALSO TAKEN BY CONDEMN. 1532/305
5 ●	STATE OF MAINE	CITY OF PORTLAND	Q.C. DEED	1647	460	7/30/41	4.59	
6 ●	CLIFFORD STRANGE	CITY OF PORTLAND	WAR. DEED	1543	276	3/1/38	15.3	
6 ●	CLIFFORD STRANGE	CITY OF PORTLAND	CONDEMNATION	1532	305	6/30/37	-	
7 ●	PORTLAND CITY AIRPORT	CITY OF PORTLAND	WAR. DEED	1543	277	3/1/38	139.2	
7 ●	PORTLAND CITY AIRPORT	CITY OF PORTLAND	CONDEMNATION	1532	305	6/30/37	-	
8 ●	FLOELLA A. MAXWELL	CITY OF PORTLAND	WAR. DEED	1504	410	9/23/36	2.06	ROAD R.O.W. B 1504 P 409, POLE LINE R.O.W. B 1507, P275
9 ●	MILLIKEN HEIRS & CUMMINGS ESTATE	CITY OF PORTLAND	CONDEMNATION	1634	492	5/2/41	24.05	PARCEL 3 IN 1634/492
10 ●	ROBERT D. JACKSON	CITY OF PORTLAND	EASEMENT	1532	301	6/30/37	-	CONDEMNATION OF AIR RIGHTS
11	CLIFFORD STRANGE	CITY OF PORTLAND	WAR. DEED	1897	140	9/25/47	1.6	FEDERAL PROJECT NO. 9-17-001-702
11	CLIFFORD STRANGE	CITY OF PORTLAND	CONDEMNATION	1880	157	8/5/47	1.6	FEDERAL PROJECT NO. 9-17-001-702
12	STATE OF MAINE	CITY OF PORTLAND	WAR. DEED	2238	63	7/22/55	8.61	FEDERAL PROJECT NO. 9-17-001-508
13	ELEANOR J. NIELSON	CITY OF PORTLAND	WAR. DEED	2361	436	7/9/57	9.60	FEDERAL PROJECT NO. 9-17-001-5811
14	EDNA MAXFIELD	CITY OF PORTLAND	EASEMENT	72	256	6/17/55	-	CONDEMNATION OF AIR RIGHTS, 9-17-001-508
15	MERLE P. CHAPLIN	CITY OF PORTLAND	EASEMENT	72	256	6/17/55	-	CONDEMNATION OF AIR RIGHTS, 9-17-001-508
16	STATE OF MAINE	CITY OF PORTLAND	Q.C. DEED	3028	471	1/24/68	16.5	FEDERAL PROJECT NO. 9-17-001-C916
17	BROOKLAWN MEM. PARK	CITY OF PORTLAND	CONDEMNATION	3007	617	6/19/67	6.3	PARCEL B-3 IN 3007/617, 9-17-001-C916
18	BERTRAM J. FAIRWEATHER	CITY OF PORTLAND	WAR. DEED	3009	666	8/30/67	12.6	FEDERAL PROJECT NO. 9-17-001-C916
18	BERTRAM J. FAIRWEATHER	CITY OF PORTLAND	CONDEMNATION	3007	617	6/19/67	-	SEE PARCEL B-4 IN 3007/617, 9-17-001-C916
19	CUMBERLAND COUNTY COMMISSIONERS	CITY OF PORTLAND	DISCONTINUED	DOCKET	1175	JAN.1957	1.18	CUMBERLAND CO. COMM. RECORDS, 9-17-001-508
20	LLEWELLYN PRESSLEY	CITY OF PORTLAND	EASEMENT	2365	139	7/18/57	792SF	GROWTH RESTRICTION, 9-17-001-5811
21 ●	PORTLAND CITY AIRPORT	CITY OF PORTLAND	Q.C. DEED	1503	216	7/13/36	1.30	
22	STATE OF MAINE	CITY OF PORTLAND	Q.C. DEED	3028	471	1/24/68	24.5	FEDERAL PROJECT NO. 9-17-001-C916
23	STATE OF MAINE	CITY OF PORTLAND	EASEMENT	3028	469	1/24/68	96	EASEMENT FOR UNOBSTRUCTED AIR SPACE 9-17-001-C916
24	HARRY HARMON & GEORGE HUTCHINS	CITY OF PORTLAND	EASEMENT	3010	683	8/31/67	9.2	EASEMENT FOR UNOBSTRUCTED AIR SPACE 9-17-001-C916
24	HARRY HARMON & GEORGE HUTCHINS	CITY OF PORTLAND	EASEMENT	3007	617	6/19/67	2	PARCEL D-1 IN 3007/617, 9-17-001-C916
25	EDWARD S. & DOROTHY L. FINKS	CITY OF PORTLAND	WAR. DEED	2457	262	2/13/59	4.30	FEDERAL PROJECT NO. 9-17-001-5912
26	EDWARD S. & DOROTHY L. FINKS	CITY OF PORTLAND	WAR. DEED	2457	262	2/13/59	86.09	FEDERAL PROJECT NO. 9-17-001-5912
27	CITY OF PORTLAND	W.H. NICHOLS CO.	WAR. DEED	2996	627	4/4/67	28.77	PARCEL SOLD-FAA RELEASE 2/27/67 AVIG. ESMT. RETAINED
28	BERGEN ASSOCIATES INC.	CITY OF PORTLAND	EASEMENT	3007	617	6/19/67	5.62	PARCEL D-1 IN 3007/617, 9-17-001-C916
29	ADC BUILDING FUND INC. et. als.	CITY OF PORTLAND	CONDEMNATION	3007	617	6/19/67	1.01	PARCEL B-2 IN 3007/617, 9-17-001-C916
30	OTIS J. & DOROTHY J. AUGUST	CITY OF PORTLAND	WAR. DEED	3909	306	9/17/76	2.25	6-23-0038-10
31	ADC BUILDING FUND INC.	CITY OF PORTLAND	CONDEMNATION	3007	617	6/19/67	0.11	PARCEL B-6 IN 3007/617, 9-17-001-C916
32	ADC BUILDING FUND INC.	CITY OF PORTLAND	EASEMENT	3007	617	6/17/67	0.28	PARCEL E-2 IN 3007/617, 9-17-001-C916
33	ADC BUILDING FUND INC.	CITY OF PORTLAND	CONDEMNATION	3007	617	6/17/67	1.31	PARCEL B-1 IN 3007/617, 9-17-001-C916
34	ADC BUILDING FUND INC.	CITY OF PORTLAND	EASEMENT	3007	617	6/17/67	0.32	PARCEL E-1 IN 3007/617, 9-17-001-C916
35	CUMBERLAND COUNTY COMMISSIONERS	CITY OF PORTLAND	DISCONTINUED	21	226	1955	2.30	FEDERAL PROJECT NO. 9-17-001-508
36	BURTON DENSMORE	CITY OF PORTLAND	WAR. DEED	2236	399	7/12/55	20	FEDERAL PROJECT NO. 9-17-001-508
36	BURTON DENSMORE	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
37	BROOKLAWN MEM. PARK	CITY OF PORTLAND	WAR. DEED	2257	189	9/13/55	5.22	FEDERAL PROJECT NO. 9-17-001-508
37	BROOKLAWN MEM. PARK	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
38	CLINTON C. PHINNEY & ROBERT D. SCHWARTZ	CITY OF PORTLAND	Q.C. DEED	2255	428/9	11/28/55	15.2	FEDERAL PROJECT NO. 9-17-001-508
38	CLINTON C. PHINNEY & ROBERT D. SCHWARTZ	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
39	CLINTON C. PHINNEY & ROBERT D. SCHWARTZ	CITY OF PORTLAND	Q.C. DEED	2255	428/9	11/28/55	8.03	FEDERAL PROJECT NO. 9-17-001-508
39	CLINTON C. PHINNEY & ROBERT D. SCHWARTZ	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
40	JOHN M. DENSMORE	CITY OF PORTLAND	WAR. DEED	2257	271	10/27/55	49	FEDERAL PROJECT NO. 9-17-001-508
40	JOHN M. DENSMORE	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
41	JOHN M. DENSMORE	CITY OF PORTLAND	WAR. DEED	2257	271	10/27/55	49	FEDERAL PROJECT NO. 9-17-001-508
41	MOBIL PIPE LINE CO.	CITY OF PORTLAND	Q.C. DEED	3051	721	8/1/68	21.8	
41	FRANCIS B. EVANS	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
42	JOHN E. DENSMORE	CITY OF PORTLAND	WAR. DEED	2241	473	8/8/55	0.50	FEDERAL PROJECT NO. 9-17-001-508
42	JOHN E. DENSMORE	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	0.50	FEDERAL PROJECT NO. 9-17-001-508
43	MERLE P. CHAPLIN	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	24.1	FEDERAL PROJECT NO. 9-17-001-508
44	CHRISTIAN KRAGELUND	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	22.9	FEDERAL PROJECT NO. 9-17-001-508

INVENTORY OF PARCELS

MAP KEY	GRANTOR	GRANTEE	INST.	BOOK	PAGE	DATE	Ac.	REMARKS
45	SOUTH PORTLAND GARDENS	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	1.72	FEDERAL PROJECT NO. 9-17-001-508
46	WALTER & STELLA KORZENIEWSKI	CITY OF PORTLAND	WAR. DEED	2279	228	3/5/55	6.80	FEDERAL PROJECT NO. 9-17-001-508
46	WALTER & STELLA KORZENIEWSKI	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
47	FRANK P. CUMMINGS ESTATE	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	10	FEDERAL PROJECT NO. 9-17-001-508
48	THOMAS J. JR. & PAT A. FOLEY	CITY OF PORTLAND	WAR. DEED	4040	177	6/22/77	0.23	SEE ACTUAL DESCRIPTION IN 2531/103, 6-23-0038-11
49 ●	PORTLAND CITY AIRPORT	CITY OF PORTLAND	Q.C. DEED	1503	217	10/24/35	19.62	
50	JAMES C. MORRIS (TRUSTEE)	CITY OF PORTLAND	WAR. DEED	3420	256	6/18/73	4.65	
51	KENNETH I. PARKER (PER REP)	CITY OF PORTLAND	WAR. DEED	7715	172	4/7/87	0.5	3-23-0038-19
52	ROBERT D. SCHWARTZ et. al.(TRUSTEE)	CITY OF PORTLAND	EASEMENT	2453	324	1/15/59	-	RIGHT TO ENTER 10' STRIP
53	EDWARD F. GALLAGHER	CITY OF PORTLAND	EASEMENT	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
54	CHAPLIN CORP	CITY OF PORTLAND	EASEMENT	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
55	RAY L. LITTLEFIELD III	CITY OF PORTLAND	WAR. DEED	3894	331	3/14/77	1.0	6-23-0038-11
56	DIAMOND GARDNER CORP	CITY OF PORTLAND	EASEMENT	3007	617	6/19/67	2.6	PARCEL D-18 -3007/617 9-17-001-C916
57	NEVER OWNED BY CITY, PARCEL B-4 IN CONDEMNATION DEED 3007/617 IN ERROR SEE AFFIDAVIT 3458/116							
58	RAY L. & JOLA L. LITTLEFIELD	CITY OF PORTLAND	WAR. DEED	3550	07	5/24/74	0.60	
59	AIRPORT REALITY CORP.	CITY OF PORTLAND	CONDEMNATION	3007	617	6/19/67	0.82	PARCEL B-8 IN 3007/617, 9-17-001-C916
60	AIRPORT REALITY CORP.	CITY OF PORTLAND	EASEMENT	3007	617	6/19/67	0.25	PARCEL E-3 IN 3007/617, 9-17-001-C916
61	FRANK P. CUMMINGS ESTATE	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	3.79	FEDERAL PROJECT NO. 9-17-001-508
62 ●	PORTLAND CITY AIRPORT	CITY OF PORTLAND	WAR. DEED	1465	141	1/23/35	12.8	
63	CITY OF PORTLAND	STATE OF MAINE	CONDEMNATION	11456	276	5/31/94	0.13	
64	BCD AIRPORT PARTNERS	CITY OF PORTLAND	CONDEMNATION	9492	231	3/4/91	45.5	
65	APEX INC.	CITY OF PORTLAND	QUITCLAIM	10203	192	7/8/92	1.06	
65	CITY OF PORTLAND	BROOKLAWN MEM. PARK	Q.C. W/COVEN	13400	006	10/23/97	1.06	PART OF 64
65	BROOKLAWN MEMORIAL PARK	CITY OF PORTLAND	AVIG. ESMT	13395	309	10/24/97	1.06	
66	APEX INC.	CITY OF PORTLAND	QUITCLAIM	10203	192	7/8/92	0.32	
67	CITY OF PORTLAND	BROOKLAWN MEM. PARK	Q.C. W/COVEN	13400	006	10/23/97	0.94	PART OF 64
67	BROOKLAWN MEMORIAL PARK	CITY OF PORTLAND	AVIG. ESMT.	13395	309	10/16/97	0.94	
68	BROOKLAWN MEMORIAL PARK	CITY OF PORTLAND	Q.C. W/COVEN	13395	305	10/16/97	7.48	3-23-0038-36 SUBJ. TO DRAINAGE ESMT BK. 8272, PG. 208
69	THOMAS A. YORK, III	CITY OF PORTLAND	Q.C. W/COVEN	13434	266	10/16/97	1.28	
70	BROOKLAWN MEMORIAL PARK	CITY OF PORTLAND	AVIG. ESMT.	13395	309	10/24/97	6.23	
71	TOYE AIRPORT PARK LLC	CITY OF PORTLAND	WAR. DEED	16971	184	11/19/01	0.06	
72	TOYE REALTY HOLDINGS LLC	CITY OF PORTLAND	Q.C. W/COVEN	16971	190	11/19/01	0.03	
73	CITY OF PORTLAND	TOYE AIRPORT PARK LLC	QUITCLAIM	16971	193	11/19/01	0.02	
74	MAINE TURNPIKE AUTHORITY	CITY OF PORTLAND	Q.C. W/COVEN	21040	64	3/31/04	5.14	SUBJECT TO ALL EASEMENTS OF RECORD
75	MAINE TURNPIKE AUTHORITY	CITY OF PORTLAND	Q.C. W/COVEN	21040	64	3/31/04	3.47	SUBJECT TO ALL EASEMENTS OF RECORD
76	MAINE TURNPIKE AUTHORITY	CITY OF PORTLAND	Q.C. W/COVEN	21040	74	3/31/04	0.37	
77	MAINE TURNPIKE AUTHORITY	CITY OF PORTLAND	Q.C. W/COVEN	21040	74	3/31/04	0.13	
78	CITY OF PORTLAND	MAINE TURNPIKE AUTHORITY	Q.C. W/COVEN	21040	60	3/31/04	4.95	ACQUIRED UNDER FAAP 508, FAA APPROVED RELEASE ON 3-26-02
79	STATE OF MAINE	CITY OF PORTLAND	RELEASE DEED	17126	328	12/28/01	70.4	ACQUIRED AIP 3-23-0038-54
79	STATE OF MAINE	CITY OF PORTLAND	AVIG. ESMT.	17126	332	12/26/01		ACQUIRED AIP 3-23-0038-54
80	STATE OF MAINE	CITY OF PORTLAND	VACATION	19510	56	6/06/03	-	VACATION OF JOHNSON ROAD/WESTERN AVENUE, LAND SWAP
81	PORTLAND PIPE LINE CORPORATION	CITY OF PORTLAND	RELEASE	14138	238	9/10/98		RELEASE OF EASEMENT WITH COVENANT
82	MOBIL PIPE LINE COMPANY	CITY OF PORTLAND	RELEASE	15081	274	10/01/99		RELEASE OF EASEMENT WITH COVENANT
83	CITY OF PORTLAND	STATE OF MAINE	CONDEMNATION	15801	296	10/24/00	5.91	JOHNSON ROAD/WESTERN AVENUE RELOCATION, LAND SWAP
84	CITY OF SOUTH PORTLAND	CITY OF PORTLAND	RELEASE	23141	42	8/01/05	2.32	ORIGINAL DEED 4940/8, FAA RELEASE 4-23-82 BK 4947 PG.32
85	CITY OF SOUTH PORTLAND		CITY COUNCIL ORDER	23154	238	9/15/05		DISCONTINUANCE OF A PORTION OF JETPORT PLAZA ROAD (290')
86	CITY OF PORTLAND	STATE OF MAINE	CONDEMNATION	24337	300	9/05/06	1.44	LAND SWAP RUNWAY 36 APPROACH / FAA APPROVAL 3-1-07
87	STATE OF MAINE	CITY OF PORTLAND	CONDEMNATION	24337	303	9/05/06	1.44	LAND SWAP RUNWAY 36 APPROACH
88	JETPORT PROPERTIES, LLC	CITY OF PORTLAND	LEASE.	25698	194	12/07/07	0.77	LEASE / FAA APPROVAL 6-11-08
89	JETPORT PROPERTIES, LLC	CITY OF PORTLAND	LEASE	25698	194	12/07/07	0.40	LEASE / FAA APPROVAL 6-11-08
90	CITY OF PORTLAND	CITY OF PORTLAND	EASEMENT	25698	194	12/07/07	0.16	RIGHT-OF-WAY
91	STATE OF MAINE	CITY OF PORTLAND	MOA	-	-	7/01/11	0.44	OBSTRUCTION REMOVAL MEMORANDUM OF AGREEMENT FOR ACCESS
92	CITY OF PORTLAND	DULUTH HOLDINGS, INC.	LEASE (15 YEAR)	-	-	7/16/18	0.30	FAA APPROVAL BY LETTER DATED 2-23-18 FOR LAND USE CHANGE FROM AERONAUTICAL TO NON-AERONAUTICAL USE
93	CITY OF PORTLAND	CITY OF SOUTH PORTLAND	EASEMENT	23141	44	12/12/05	8.70	SUBJECT TO ALL EASEMENTS OF RECORD
94	CITY OF PORTLAND	TOYE REALTY HOLDINGS III, LLC	Q.C. W/COVEN	38899	127	11/16/21	2.00	TM 210A, BLK A, LOT 6
95	CITY OF PORTLAND	TOYE AIRPORT PARK, LLC	Q.C. W/COVEN	38899	51	11/16/21	1.78	PARCEL FOUR (TM 210A, BLK A, LOT 2)
96	CITY OF PORTLAND	TOYE AIRPORT PARK, LLC	Q.C. W/COVEN	38899	52	11/16/21	0.34	PARCEL THREE (TM 208, BLK A, LOT 5)
97	CITY OF PORTLAND	TOYE AIRPORT PARK, LLC	Q.C. W/COVEN	38899	53	11/16/21	0.23	PARCEL TWO (TM 208, BLK A, LOT 7)
98	CITY OF PORTLAND	TOYE AIRPORT PARK, LLC	Q.C. W/COVEN	38899	50	11/16/21	0.16	PARCEL ONE (TM 208, BLK A, LOT 6)

NOTES:
1. THIS IS AN EXHIBIT A PROPERTY MAP, PART OF THE AIRPORT IMPROVEMENT PROGRAM FEDERAL GRANT APPLICATION. IT IS NOT A BOUNDARY SURVEY. THE PRIMARY INTENT IS TO IDENTIFY ALL LAND WHICH IS DESIGNATED AIRPORT PROPERTY AND TO PROVIDE AN INVENTORY OF ALL PARCELS WHICH MAKE UP THE AIRPORT. PHYSICAL SURVEY OF BOUNDARIES IS GENERALLY NOT REQUIRED. REFER TO AC 150/5100-17. THE BASE PROPERTY LINE INFORMATION FOR THIS EXHIBIT 'A' WAS SOURCED FROM THE BOUNDARY SURVEY FOR THE PORTLAND INTERNATIONAL JETPORT LAST UPDATED JANUARY 26, 2022.
2. THE DESCRIPTION OF PARCEL NO. 10 INCLUDES OTHER AVIGATIONAL EASEMENTS WHICH WERE LATER EXTINGUISHED WHEN THE PARCELS WERE ACQUIRED BY THE CITY OF PORTLAND.
3. PARCEL NO. 49 INCLUDES PORTIONS OF PARCEL NO. 62 WHICH HAD BEEN PREVIOUSLY CONVEYED.
4. "●" INDICATES PARCELS THAT COMPRISE LIMITS OF AP-4 AFFECTED LAND (C.A.A. DOCKET NO. S-904-17-19).
5. FOR PARCELS ACQUIRED UNDER CITY COUNCIL ORDER, DATED JUNE 20, 1955, RECORDED IN THE PORTLAND CITY CLERKS RECORDS IN VOLUME 72, PAGE 256, SEE AFFIDAVIT OF ELIZABETH L. BOYNTON, DATED AUGUST 4, 1997, RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 13265, PAGE 102.
6. REFERENCE IS MADE TO THE EXHIBIT "A" DOCUMENT FOR THE PORTLAND INTERNATIONAL JETPORT ON FILE IN THE TERMINAL AT THE AIRPORT MANAGER'S OFFICE, 1001 WESTBROOK STREET, PORTLAND.

REV	DESCRIPTION	DATE	BY	APP'D
8	ADDED MAP KEY PARCELS 94 THRU 98 AND ADJUSTED OIL PIPELINE EASEMENT	03.11.22	LA	DDA
7	MAP KEY PARCEL # 92 ADDED 2-23-18 FAA APPROVAL DATE FOR NON AERONAUTICAL USE	04.17.19	LA	DDA
6	ADDED ILS CRITICAL AREAS TO ALP AND RE-POSTED WITH EXHIBIT A TO FAA OEAAA	09.27.18	LA	DDA
5	SUBMITTED TO CITY WITH FINAL MASTER PLAN DOCUMENT	07.09.18	LA	DDA
4	POSTED ALP SET TO FAA OEAAA STUDY #2018-ANE-22-NRA	01.12.18	LA	DDA
3	SUBMITTED TO FAA FOR APPROVAL	11.29.17	LA	DDA
2	ISSUED DRAFT ALP TO CITY AND FAA	11.17.16	LA	DDA
1	SUBMITTED TO CLIENT FOR REVIEW	07.26.16	LA	DDA

REVISIONS

THE CONTENTS OF THIS PLAN DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS DOCUMENT BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

APPROVAL BLOCK
City of Portland, Maine

Paul Bradbury 03/11/2022

PORTLAND INTERNATIONAL JETPORT
EXHIBIT 'A'
PORTLAND, MAINE

Stantec Consulting Services Inc.
482 Payne Road
Scarborough, ME
Tel. 207.883.3355
WWW.STANTEC.COM

PLANNED BY: Dwight Anderson / Amie Gray / Steve Benson
DETAILED BY: Lori Anthony
APPROVED BY: Dwight Anderson
FILE NAME: STANTEC-EXHIBIT_A

March 2022 SHEET EXHIBIT 'A'

Coffman Associates Airport Consultants

MAINE REAL ESTATE TAX-Paid

DLN: 1002140172253

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL BY THESE PRESENTS THAT **TOYE AIRPORT PARK, LLC**, a Maine limited liability company with a place of business in the City of South Portland, County of Cumberland, State of Maine, for consideration paid, grants to the **CITY OF PORTLAND**, a Maine municipal corporation with a principal office at 389 Congress Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any improvements thereon, located 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 AIRPORT PARK, LLC has caused this instrument to be signed and sealed this 16th day of November, 2021.

WITNESS:

TOYE AIRPORT PARK, LLC

By _____
Thomas A. Toye, III
Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

November 16, 2021

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.

_____
Attorney at Law/~~Notary Public~~
Drew A. Anderson
Printed Name

EXHIBIT A
TO
TOYE AIRPORT PARK, LLC DEED

City of Portland Assessor's reference as Map 208, Block A, Lots 5, 6 & 7 and Map 210A, Block A, Lot 2, which properties are located in the City of Portland, County of Cumberland and State of Maine and are more particularly bounded and described as follows:

PARCEL ONE (Tax Map 208, Block A, Lot 6):

A certain lot or parcel of land with the buildings thereon, situated in Portland, on the westerly side of Westbrook Street, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a stake on the west side of said Westbrook Street North four and one-half degrees East (N 4 ½° E) eight hundred six (806) feet from Abner Gould's corner; thence South seventy-four and one-half degrees West (S 74 ½° W) along the line of land now or formerly of Nellie R. Johnson one hundred six and fifty-seven hundredths (106.57) feet to a point; thence from said point North four and one-half degrees East (N 4 ½° E) and parallel with said Westbrook Street eighty-six (86) feet to a point; thence from said last mentioned point in an easterly direction and at right angles to the last described bound one hundred (100) feet to a point on the westerly side of Westbrook Street; thence from said point on the Westerly side of Westbrook Street South four and one-half degrees West (S 4 ½° W) along the side of said Westbrook Street fifty (50) feet to the point of beginning.

TOGETHER with that property conveyed by the City of Portland to Toye Airport Park, LLC, dated November 16, 2001 and recorded in said Registry of Deeds in Book 16971, Page 193 described as Parcel 2 and further bounded and described as follows:

A certain lot or parcel of land on the westerly side of Westbrook Street, in the City of Portland, County of Cumberland, State of Maine, being shown as "Area to be Conveyed to Thomas Toye, III" on a plan of land titled "Survey Plot Plan of Land to be Conveyed" for Dufresne-Henry, Inc. dated 11-15-01 by Sebago Technics, Inc., said parcel being more particularly bounded and described as follows:

Beginning at a 5/8-inch capped iron rebar at the southeasterly corner of land now or formerly of Thomas A. Toye, III by deed recorded at the Cumberland County Registry of

Deeds in Book 10097, Page 17;

Thence S 08°-54'-54" E, by and along said Westbrook Street, a distance of 11.71 feet to a point;

Thence S 55°-13'-45" W, passing through land of the Grantor, a distance of 21.88 feet to a point;

Thence N 83°-28'-06" W, passing through land of the Grantor, a distance of 22.38 feet to a point on the southerly line of said land of Toye, said point being the easterly corner of "Area A to be Conveyed";

Thence N 60°-44'-36" E, by and along said Toye, a distance of 44.00 feet to the point of beginning.

Meaning and intending to describe a certain lot or parcel of land containing 403 square feet, more or less, and being shown as "Land to be Conveyed to Thomas Toye III" on a plan of land titled "Survey Plot Plan of Land to be Conveyed" for Dufresne-Henry, Inc., dated through 11-15-01 by Sebago Technics, Inc.

EXCEPTED from the above property is that property conveyed by Toye Airport Park, LLC to the City of Portland by Warranty Deed, dated November 16, 2001 and recorded in the Cumberland County Registry of Deeds in Book 16971, Page 184 described as Parcel 1.

NOTE: The first course in the first described parcel of land has been incorrectly described as running North seventy-four and one-half degrees West (N 74 ½° W) dating back to at least 1909.

PARCEL TWO (Tax Map 208, Block A, Lot 7):

A certain lot or parcel of land, situated on the westerly side of Westbrook Street, in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows: Beginning on the westerly sideline of Westbrook Street at the northeasterly corner of land conveyed by Sarah D. Rich to Raymond L. Cousins, by deed dated August 28, 1922, and recorded in the Cumberland County Registry of Deeds in Book 1115, Page 5; thence northerly by the westerly sideline of Westbrook Street one hundred (100) feet to the southeasterly corner of land conveyed by Sarah D. Rich to Catherine M. Lindell, by deed dated September 28, 1929, and recorded in said Registry of Deeds in Book 1333, Page 260; thence westerly at right angles with Westbrook Street and by said Lindell land one hundred (100) feet to land conveyed by Sarah D. Rich to Isaac H. Fairweather; thence

southerly parallel with Westbrook Street and by said Fairweather land one hundred (100) feet to the northwesterly corner of said Cousins land; thence easterly by said Cousins land and at right angles with Westbrook Street one hundred (100) feet to the point of beginning, containing 10,000 square feet, or less.

PARCEL THREE (Tax Map 208, Block A, Lot 5):

A certain lot or parcel of land, with the buildings thereon, situated on the westerly side of Westbrook Street, in Portland, in the County of Cumberland and State of Maine, and bounded and described as follows:

Beginning at a point on said westerly side of Westbrook Street, distant northerly one hundred (100) feet from the point of intersection of said westerly side of Westbrook Street with the northerly sideline of a certain lot or parcel of land conveyed to Raymond L. Cousins by deed dated August 28, 1922, and recorded in said Registry of Deeds in Book 1115, Page 5; thence running northerly along said westerly side of Westbrook Street a distance of one hundred fifty (150) feet to a point; thence running westerly and along a line at right angles to said westerly side of Westbrook Street a distance of one hundred (100) feet to a point; thence running southerly and along a line parallel to said westerly sideline of said street a distance of one hundred fifty (150) feet to a point; thence running easterly and on a line again at right angles to said westerly side of said street a distance of one hundred (100) feet to a point of beginning.

TOGETHER with that property conveyed by the City of Portland to Toye Airport Park, LLC, dated November 16, 2001 and recorded in said Registry of Deeds in Book 16971, Page 193 described as Parcel 1 and further bounded and described as follows:

A certain lot or parcel of land situated on the westerly side of, but not adjacent to, Westbrook Street, in the City of Portland, County of Cumberland, State of Maine, and being depicted as "Area to be Conveyed to Thomas Toye III" on a plan of land titled "Survey Plot Plan of Land to be Conveyed" for Dufresne-Henry, Inc., dated through November 15, 2001 by Sebago Technics, Inc. (the "Plan"), said parcel being more particularly bounded and described as follows:

Beginning at the northwesterly corner of land now or formerly of Toye Airport Park, LLC, by deed recorded in the Cumberland County Registry of Deeds in Book 15957, Page 160, at land of the Grantor;

Thence S 08°-54'-54" E, by and along said land of Toye Airport Park, LLC, a distance of 17.43 feet to a point;

Thence N 78°-54'-06" W, passing through land of the Grantor, a distance of 50.84 feet to a point in the southerly line of other land of Thomas A. Toye III recorded in said Registry of Deeds in Book 6290, Page 27;

Thence N 81°-02'-37" E, by and along said other lands of Toye, a distance of 47.77 feet to the point of beginning.

Meaning and intending to describe a certain triangular parcel of land containing 416 square feet, more or less, and depicted as "Area to be Conveyed to Thomas Toye III" on a plan of land titled "Survey Plot Plan of Land to be Conveyed" for Dufresne-Henry, Inc., dated through 11-15-01, by Sebago Technics, Inc.

PARCEL FOUR (Tax Map 210A, Block A, Lot 2):

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

Beginning at a point on the westerly side of Westbrook Street, said point being distant northerly along said westerly side of said Westbrook Street 774.36 feet from the northerly terminus of the discontinuance of said Street by the County Commissioners as defined in Docket 1175 and dated January, 1957, on file in the office of said County Commissioners, Portland, Maine, said point being the northerly corner of land of the Norman Realty Holding Corporation; thence North eighty-two degrees forty-four minutes West (N 82° 44' W) by land of said Norman Realty Holding Corporation and at right angles to the said westerly sideline of said Westbrook Street a distance of 100.00 feet to a point; thence South seven degrees sixteen minutes West (S 7° 16' W) on a line parallel to and distant 100.00 feet westerly of the said westerly sideline of said Westbrook Street and at right angles to the last described course a distance of 100.00 feet to a point; thence North eighty-two degrees forty-four minutes West (N 82° 44' W) by land conveyed by Bertram J. Fairweather to the City of Portland by Warranty Deed dated August 30, 1967 and recorded in the Cumberland County Registry of Deeds in Book 3009, Page 666 and at right angles to the last-described course a distance of Four Hundred Seventy (470) Feet, more or less, to land as conveyed to John A. and Lorena A. Knight by deed dated May 26, 1955 and recorded in said Registry of Deeds in Book 2231, Page 116; thence North sixty-six degrees thirty-five and one-half minutes East (N 66° 35½' E) by land now or formerly of said Knight a distance of Five Hundred Twelve and One-Half (512½) Feet to a point; thence North eighty-one degrees fifty-two and one-half minutes East (N 81° 52½' E) by land of said Knight a distance of one hundred thirty-four (134) feet, more or less, to the westerly sideline of said Westbrook Street; thence South seven degrees sixteen minutes West (S 7° 16' W) by the westerly sideline of said Westbrook Street a distance of One Hundred Ninety-Seven (197) Feet, more or less, to said land of said Norman Realty

Holding Corporation and the point of beginning, containing 1.78 acres, more or less.

Together with a right-of-way fifteen (15) feet in width lying to the west of a line distant 100.00 feet westerly and parallel to the said westerly sideline of said Westbrook Street and to extend Two Hundred Twenty-Five (225) Feet to the south from the most southerly boundary line of the parcel above described and conveyed to the Grantee, within which a septic tank effluent drain may be maintained, repaired and replaced so long as said drain may be needed to serve the premises herein described and conveyed to the Grantee.

Also the Grantor herein conveys and assigns to the Grantee any rights it may have as a result of the provision in the deed from Bertram J. Fairweather to the City of Portland, dated August 30, 1967 and recorded in said Registry of Deeds in Book 3009, Page 666, whereby the City of Portland agreed that should there be constructed within a period of not more than ten (10) years from the date of said deed, a public airport access road, crossing the land therein conveyed to the City to a point on Congress Street; said City will convey to the assigns of the Grantor a right-of-way twenty (20) feet in width extending from the land herein above conveyed to this Grantee in a location lying to the South of the division line between the land now or formerly of John A. and Lorena A. Knight and extending in a westerly direction by said division line to the easterly sideline of said future airport access road, it being understood and agreed that such a right-of-way when granted shall be for the purpose of travel only and for no other purpose and that no building, structure or other encumbrance of any nature shall be placed, erected or maintained therein.

The above-described premises together with the rights of way are all and the same as reserved and covenanted by said Fairweather and City of Portland in the aforesaid 1967 deed between said parties.

EXCEPTED from the above property is that property conveyed by Toye Airport Park, LLC to the City of Portland by Warranty Deed, dated November 16, 2001 and recorded in the Cumberland County Registry of Deeds in Book 16971, Page 184 described as Parcel Two.

Meaning and intending to convey and hereby conveying the remaining premises as described in the Quitclaim Deed Without Covenant from Thomas A. Toye to Toye Airport Park, LLC, dated January 8, 2001 and recorded in said Registry of Deeds in Book 15957, Page 160 and the same premises as described in the Quitclaim Deed from the City of Portland to Toye Airport Park, LLC, dated November 16, 2001 and recorded in said Registry of Deeds in Book 16971, Page 193.

MAINE REAL ESTATE TAX-Paid

DLN: 1002140172279

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL BY THESE PRESENTS THAT **TOYE REALTY HOLDINGS III, LLC**, a Maine limited liability company with a place of business in the City of South Portland, County of Cumberland, State of Maine, for consideration paid, grants to the **CITY OF PORTLAND**, a Maine municipal corporation with a principal office at 389 Congress Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any improvements thereon, located 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 III, LLC has caused this instrument to be signed and sealed this 16th day of November, 2021.

WITNESS:

TOYE REALTY HOLDINGS III, LLC

By _____
Thomas A. Toye, III
Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

November 16, 2021

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.

_____
Attorney at Law/~~Notary Public~~

Drew A. Anderson
Printed Name

EXHIBIT A
TO
TOYE REALTY HOLDINGS III, LLC DEED

The property known as 0 Jetport Boulevard, together with any improvements thereon, situated in the City of Portland, Cumberland County and State of Maine, and currently identified by the City of Portland Assessor's reference as Map 210A, Block A, Lot 6, more particularly bounded and described as follows:

A certain lot or parcel of land situated on the southeasterly side of a strip of land now or formerly owned by the City of Portland, said strip running southwesterly from the westerly sideline of Westbrook Street, so called, in the City of Portland, County of Cumberland, State of Maine as shown on Standard Boundary Survey of Thomas A. Toye Property, Westbrook Street, Portland, Maine for Toye Realty Holdings LLC, dated November 27, 2000 and recorded in the Cumberland County Registry of Deeds in Plan Book 201, Page 22, being more particularly bounded and described as follows:

Beginning at a 5/8 inch capped iron rebar set on the northwesterly sideline of land now or formerly owned by the City of Portland by a deed dated August 30, 1967 and recorded in said Registry of Deeds in Book 3009, Page 666, said rebar being located N 50°-10'-25" E, a distance of 25.51 feet from a found 1¼ inch iron pipe found 12 inches high;

Thence N 38°-04'-35" W, by and along land now or formerly owned by the City of Portland by a deed dated February 4, 1991 and recorded in said Registry of Deeds in Book 9492, Page 231, a distance of 307.77 feet to a 5/8 inch capped iron rebar set on the southeasterly sideline of land now or formerly owned by the City of Portland by a deed recorded in said Registry of Deeds in Book 13434, Page 266;

Thence N 51°-55'-25" E, by and along said land of the City of Portland, a distance of 287.17 feet to a 5/8 inch capped iron rebar set at the northwesterly corner of land now or formerly owned by Portland Jetport Title Corp. by a deed dated June 10, 1991 and recorded in said Registry of Deeds in Book 9684, Page 257;

Thence S 38°-04'-35" E, by and along said land of Portland Jetport Title Corp., a distance of 299.0 feet to a 5/8 inch capped iron rebar set on the northwesterly sideline of land now or formerly owned by Thomas A. Toye III by a deed dated November 1, 1982 and recorded in said Registry of Deeds in Book 6290, Page 27;

Thence S 50°-10'-25" W, by and along said land of Thomas Toye and land of the City of Portland, a total distance of 287.30 feet to the point of beginning.

This property is subject to any easements of record.

EXCEPTED from the above property is that property conveyed by Toye Realty Holdings III, LLC to the City of Portland, dated November 16, 2001 and recorded in said Registry of Deeds in Book 16971, Page 190.

Meaning and intending to convey and hereby conveying the remaining property described in the Release 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.

TOYT110/1608103

Section 3

Financial Capacity

Financial Capacity

A. Estimated Costs

The anticipated construction cost of the proposed project is approximately $8,000,000.

B. Financing

The proposed project is being funded through the Jetport unrestricted fund balance. Please see this Section for a letter regarding the unrestricted cash fund balance.

Portland International Jetport
Maine's Home Airport.

PAUL H. BRADBURY, P.E.
AIRPORT DIRECTOR
ZACHARY R. SUNDQUIST, A.A.E.
ASSISTANT AIRPORT DIRECTOR

February 27, 2024

Mr. Owens McCullough, PE
Senior Vice President
Sebago Technics, Inc.
75 John Roberts Road, Suite 4A
South Portland, ME 04106

Subject: Portland International Jetport Surface Parking Expansion Project Funding

Dear Mr. McCullough:

The Portland International Jetport's unrestricted cash fund balance as of June 30, 2023 (the close of its prior fiscal year) was $39.1 million. Based on the current engineering estimate of $8 million for the surface parking lot expansion the Jetport intends to fully fund this project out of its unrestricted cash reserves.

Please feel free to contact me if you have any questions or require any additional information.

Best regards,

Paul H. Bradbury, P.E.
Airport Director
Portland International Jetport

Section 4

Technical Ability

Technical Ability

The Jetport has contracted with Sebago Technics Inc. for design and permitting services.

Sebago Technics, Inc. (STI) is a multi-disciplinary engineering firm that offers a wide range of services specializing in land development, planning, permitting, and engineering design services. We maintain a staff of multi-disciplinary professionals to provide services in the areas of general civil engineering, road and utility infrastructure design, construction management, permitting, landscape architecture, soil science, wetlands science, land surveying, and environmental services. Over the years, we have found our depth of service to be a key element in meeting the customer's needs with timely and responsive services.

Please see this Section for additional information on the Project Team.

OWENS A. MCCULLOUGH, PE, LEED-AP

Senior Vice President of Strategy & Client Development



Mr. McCullough joined Sebago Technics in August of 1987 and is the Senior Vice President of Strategy and Client Development. He is responsible for the overall coordination and management of engineering, quality control, budgeting, planning and providing technical assistance to project managers and technical staff. His experience includes a broad range of civil engineering projects for both public and private clients including the related disciplines of surveying and landscape architecture. Mr. McCullough oversees the project's progress and monitors budgets, schedules, and client satisfaction.

In addition to his management responsibilities, Mr. McCullough is a Senior Project Manager. He works with municipal clients on public works projects, which include engineering review services, inspections, land planning, site and civil design, solid waste transfer and disposal, street reconstruction, utility system designs, airport engineering, SLODA/ NRPA Permitting, site plan reviews, design-build projects, stormwater management/erosion control, construction specifications and regulatory agency applications.

Mr. McCullough also provides technical design and project management on private sector projects to include small and large-scale retail, municipal, commercial and industrial projects. These projects involve grading/drainage and utility design, public presentations and regulatory permitting. The extent and diversity of projects that Mr. McCullough has been involved with has provided him with a well-balanced technical and working knowledge within the municipal and private sectors.

EXPERIENCE

- **Managed Three General Services Contracts** (1993–1996, 2000–2004 and 2014–current) along with project specific general consulting - City of Portland, ME.
- **Managed a General Services Contract** (1996 through 2007 and 2014 - current) - Portland International Jetport.
- **Lead Design Team & Environmental Investigations** for Baxter Boulevard North Storage Conduit Storage Project (2012-2013), a 2 Million Gallon CSO Storage Project.
- **Roadway Engineering and General Consulting** - Gorham, Casco, Portland and Raymond, ME.
- **Landfill Closings** for the Town of Raymond, Fryeburg, Gorham, Naples, Winterport and City of Portland, ME.
- **Site Feasibility Assessment, Land Planning and Regulatory Permitting** for a new marine ramp on Cliff Island in Casco Bay.
- **Lewiston Auburn Water Pollution Control Authority:** Served as owner's techincal advisor and consultant for the strategic planning and preparation of Design-Build RFP for a new 2.1 Million Gallon CSO Storage Factility.
- Led the planning, design, bidding, and construction for a new **Municipal Services Facility in the City of South Portland.**
- **City of Biddeford LAP Sidewalk Project** - Owens provided design and construction administration, and inspection services of this 0.5 ± mile sidewalk in Biddeford, ME.
- Led the planning, design, bidding, and construction for a new **Municipal Services Facility in the City of Westbrook.**
- **Led Project Team** for Investigations and regulatory coordination to secure a VRAP at the former Plan-it recycling facility in Gorham, ME.
- **Facilities Planning** - Led Team and provided consultation for evaluations of the South Portland Police Station, Hamlin School, Cash Corner Fire Station, & O'Neil Street site redevelopment.
- **Maine Turnpike Authority York Toll Plaza** (2017-2018). Led the environmental investigation and secured the Maine NRPA and USACOE Individual Permits.
- Served as an expert witness for **Portland Air Freight** during litigation and subsequently prepared corrective design plan with construction administration for a Freight Terminal Facility.
- **Back Cove South Storage CSO Facility** - Project Manager for alternative planning and preparation of a Business Case Evaluation.

CERTIFICATIONS

Maine DOT Local Project Administration Recertification, 2023

LEED Accredited Professional

EDUCATION

University of Colorado, Denver, CO
B.S., Civil Engineering, 1987

REGISTRATIONS

Professional Engineer: Maine #7122

LEED Accredited Professional

MEMBERSHIPS

ACEC Maine – Board of Directors
President (2016-2017)
National Director 2018-2019

Rotary International

American Society of Civil Engineers

Former – Town of Gorham, Maine, Appeals Board, Member and Chairman

Former - Town of Limington, Maine, Planning Board, Member and Chairman

MEREDA Public Policy Committee

RECOGNITION

2013 ACEC Engineering Excellence Award, Baxter Boulevard South Storage Conduit

SEBAGO TECHNICS

AMY BELL SEGAL, RLA

Senior Project Manager/Senior Landscape Architect



In the course of her 30 year career, Amy has worked on a great variety of projects in the public and private sectors across Maine and New England. Her work has included site planning, permitting and construction management for residential, commercial, institutional, and industrial properties as well as recreation, trail, and community planning. She has earned a wonderful reputation through great work, relationships and communication.

EXPERIENCE

- **Portland Tree Canopy Project, Portland, ME**: Working with Parks and Forestry Staff to plan and implement tree planting strategies to increase the canopy within Bayside and Downtown neighborhoods.
- Working with Left Turn Enterprises to develop **Lakeside Norway,** a 6-acre four season event and recreation center and new brewery for Norway Brewing Company on Lake Pennesseewassee within the Downtown Gateway Area.
- **Arthur P. Girard Columbarium Garden,Westbrook, ME:** Conceptual design through construction documentation for a 400 niche columbarium garden in Woodlawn Cemetery. The Garden includes public and veterans sections, extensive landscaping, and a pergola for outdoor funeral services.
- **Red Cross Park Renovation, Greenville, ME:** Master Plan for renovation of 6-acre park on Moosehead Lake that provides swimming and boating access. Plan includes shoreland stabilization, improved parking, accessibility, playspace, trails, and a pump track. Park applying for funding through the Land & Water Conservation Fund Grant program.
- **Evergreen Cemetery Expasion, Rangeley, ME:** Master Plan for a multi generation expansion for Town-owned cemetery. Highlights of initial phases include a 500 in ground plots, 250 cremains plots, columbarium niche walls and a gathering space that overlooks Rangeley Lake and the western mountains.

Prior to her employment with Sebago Technics, Amy's experience includes:

- **Scarborough Municipal Campus Master Plan:** Developed in collaboration with Town Staff, the Master Plan provides short, medium and long-term planning strategies for balancing future development and recreational open space needs with environmental limitations.
- **Waterfront Zoning Study, Portland, ME:** Worked with Portland Planning Dept. to develop 3D Modeling analysis, height massing study, and evaluate viewshed impacts of proposed zoning changes within the WPDZ.
- **Portland Observatory Zoning Study, Greater Portland Landmarks:** Developed 3D Modeling analysis and height massing study of potential development surrounding historic structure.
- **Tannery Site Concept Master Plan, Camden, ME:** Concept Plan to guide the redevelopment of a brownfield site into a community park with space for a farmer's market, festivals, concerts, and an adventure playground along the Riverwalk Trail and Megunticook River.
- **Bonney Park, Androscoggin Riverwalk, Riverpark, Moulton Park Rail Trail, and Little Andy Park, Auburn, ME:** A series of linked open spaces along the Androscoggin River. Design, permitting, and construction management.

EDUCATION

BSLA, Cornell University
Denmark International Study Program, 1992

REGISTRATIONS

Maine Licensed Landscape Architect #2265
CLARB Certified
Maine DOT LPA Certified 2019 - 2023

SPECIAL TRAINING

MeDEP Low Impact Development Stormwater BMP training
Courses in ADA standards, Complete Streets, Sustainable Sites (ASLA LEED equiv)

PROFESSIONAL EMPLOYMENT

2020 - Present: Sebago Technics, Inc.
South Portland, ME

1992 - 2020: TJD&A
Landscape Architects & Planners
Yarmouth, ME

1988 - 1992: Bell & Spina Architects
Camillus,NY

SEBAGO TECHNICS

TANNER F. GOODINE, EI

Civil Engineer



Mr. Goodine joined Sebago Technics, Inc., (STI) in March of 2021. Tanner graduated from the University of Maine with a degree in Civil Engineering. He has experience in construction with the Lane Corporation and in project design and inspection with Walsh Associates. He has served as a Resident Project Representative, permitted and designed projects and performed surveys using GPS. While at Sebago Technics, Tanner has served as a full-time construction inspector, performed erosion control inspections in both Maine and New Hampshire, and helped with design while not in the field.

EXPERIENCE

Bowdoin College Athletic Fields – Brunswick, ME – The project, situated in the Mare Brook Watershed in Brunswick—an Urban Impaired Watershed—involved three artificial turf fields and two natural grass fields. As the lead engineer on the project, Tanner oversaw site grading beyond the field boundaries, as well as stormwater design, and federal, state, and local permitting. This resulted in the three turf fields serving as self-treating BMPs, along with a 33,000 sq ft. subsurface stormwater detention and treatment system. The stormwater design met the Urban Impaired Stream Standard set by Maine DEP, and it even generated an excess of credits, signifying that the project not only met but exceeded expectations, further enhancing the quality of life in the watershed.

Portland Transportation Center Parking Lot Reconstruction & Stormwater Improvements – Full-time resident inspections and construction administration for the construction of a 3-acre parking lot and 17,000 square foot subsurface sand filter stormwater system along Thompson's Point in Portland, ME.

Boothbay Harbor Route 27 Sidewalk – Full-time resident inspections on a Locally Administered Project (LAP) of the construction of approximately 0.25 miles of paved sidewalk extension on Route 27 in Boothbay Harbor, ME.

Somerset Street & Kennebec Street Redesign, Portland, ME – Provided full-time resident inspections and construction administration for both the Somerset Street & Kennebec Street redevelopment projects for the City of Portland, ME.

3rd Party Inspections & Town Engineer Reviews for Wells, Cape Elizabeth, and Rye, NH – Performed weekly construction inspections as a third-party reviewer for Maine DEP to inspect stormwater and erosion control measures as well as performed engineering peer reviews for the Towns of Wells and Cape Elizabeth, ME, and Rye, NH.

Clifford Park, Boothbay, ME – Designed and provided construction administration for the redevelopment of a municipal park and three sports fields in Boothbay, ME. The project provided the area with an updated little league field, two multi-purpose recreational fields, stormwater and municipal utility improvements.

Shawnee Peak Parking Development – Provided engineering design and construction administration for the construction of a 2-acre parking lot and two underdrained soil filters in a critical watershed in Bridgton, ME.

EDUCATION

University of Maine - Orono, ME
B.S., Civil Engineering
2020

CERTIFICATIONS

Erosion and Sediment Control Certification Program

Local Project Administration (LPA)

OSHA-10

SEBAGO TECHNICS

Section 5

Noise

Noise

A. Developments Producing a Minor Noise Impact

The proposed project involves a parking expansion for an existing airport and therefore does not fall within sub-paragraphs 1-3. It is anticipated that the daily use of the lots will generate noise consistent with existing conditions. The parking lots are to be located within the existing airport campus and any noise generated will be consistent with allowable amounts for the area. Any proposed noise levels at the property line will be consistent with the allowed amounts noted in the City of Portland ordinance.

Temporary noise may arise during construction as a result of construction equipment working on the site. This noise potential is short-term and also not expected to be significant. Construction will occur from 7 a.m. to 7 p.m. or during daylight hours and will be in compliance with the Portland ordinance.

a. Type, source, and location of noise.
Typical construction noise is anticipated during the site preparation and construction phases of the project. Anticipated construction phase noises include general equipment operation. The location of the noise will be confined to the jobsite, and a vegetative buffer will remain on the northern portion of the site. The fully developed parking area is to be located within the airport campus and any noise generated will be consistent with existing parking areas.

b. Uses, zoning, and plans
The property is zoned Airport Business and is located within the Jetport campus. The proposed parking expansion is part of the airport master plan and aligns with the current City of Portland's and Use.

c. Protected locations
There are delineated wetlands on the western portion of the site and construction will impact approximately 8,618 square feet of wetlands. An NRPA permit application has been submitted as part of this project.

d. Minor nature of impact
The development will generate short term noise associated with typical construction related activity. The proposed parking expansion will not result in an increase in traffic or traffic noise to the site. The parking lot expansion is needed to better serve the existing client base of the Jetport and is located within the existing airport campus.

e. Demonstration

Noise will be generated primarily from vehicular movement consistent with what is currently produced by the existing surface lots and related roadway networks that currently exist and service the Jetport.

Section 6

Visual Quality & Scenic Character

Visual Quality

The proposed project involves the construction of a parking lot addition at an existing airport. The proposed project is consistent with the planned growth of the airport campus and will not result in a negative impact on the visual quality of the area. The proposed project involves a robust landscape plan and the parking lots have been designed to sit at a lower elevation from the airport abutting properties. Please see the plan set for the proposed landscaping and overall site design information.

Section 7

Wildlife and Fisheries

Wildlife and Fisheries

A review by the Maine Department of Inland Fisheries and Wildlife (MDIFW) for this project was received on November 17, 2023. The department does not anticipate that the proposed project will result in an impact on protected or endangered species. Please see this Section for the response letter.

JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
353 WATER STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041

JUDITH CAMUSO
COMMISSIONER

November 17, 2023

Rebecca Gabryszewski
Sebago Technics
75 John Roberts Road, Suite 4A
South Portland, ME 04106

RE: Information Request – Portland Jetport Environmental Assessment Project (ERID 3138)

Dear Rebecca:

Per your request received on August 18, 2023, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and inland fisheries habitat concerns within the vicinity of the *Portland Jetport Environmental Assessment* project.

Our Department has not mapped any Essential Habitats that would be directly affected by your project. Essential Habitats are areas formally designated as essential to the conservation of a State Endangered or Threatened species and are protected pursuant to the Maine Endangered Species Act (MESA, 12 M.R.S, §12804.2). Currently, Essential Habitats are only designated for three State Endangered coastal breeding bird species.

Endangered, Threatened, and Special Concern Species

Bat Species – Of the eight species of bats that occur in Maine, four species are afforded protection under Maine's Endangered Species Act (MESA, 12 M.R.S §12801 et. seq.): little brown bat (State Endangered), northern long-eared bat (State Endangered), eastern small-footed bat (State Threatened), and tri-colored bat (State Threatened). The four remaining bat species are designated as Species of Special Concern (Rare): big brown bat, red bat, hoary bat, and silver-haired bat. While a comprehensive statewide inventory for bats has not been completed, based on historical evidence, it is likely that several of these species occur within the project area during spring/fall migration, the summer breeding season, and/or for overwintering. However, our Agency does not anticipate significant impacts to any of the bat species as a result of this project.

Significant Wildlife Habitat

Significant Vernal Pools – Significant Vernal Pools (SVPs) are Significant Wildlife Habitats under Maine's Natural Resources Protection Act. MDIFW's resource maps do not currently document SVPs on the project parcel. However, a comprehensive statewide inventory for SVPs has not been completed. SVPs are not included on MDIFW maps until project areas have been surveyed using approved methods and the survey results confirmed. Thus, their absence from resource maps is not necessarily indicative of an absence on the ground. MDIFW recommends that surveys for vernal pools be conducted within the project boundary by qualified wetland scientists prior to final project design to determine whether there are SVPs present in the area. These surveys should extend up to 250 feet beyond the anticipated project footprint because of potential performance standard requirements for off-site SVPs, assuming such pools

are located on land owned or controlled by the applicant. Once surveys are completed, survey forms should be submitted to our Agency for review well before the submission of any necessary permits. Our Department will need to review and verify any vernal pool data prior to final determination of significance.

Aquatic Resources

Fish Habitat - We generally recommend maintaining 100-foot undisturbed vegetated buffers from the upland edge of all intermittent and perennial streams and any contiguous wetlands. Maintaining and enhancing buffers along these resources is critical to the protection of water temperatures, water quality, natural inputs of coarse woody debris, and various forms of aquatic life necessary to support fish and other aquatic species. Riparian buffers also provide critical habitat and important travel corridors for a variety of wildlife species. Stream crossings should be avoided, but if a stream crossing is necessary, or an existing crossing needs to be modified, it should be designed to provide for full aquatic passage. Small streams, including intermittent streams, can provide crucial rearing habitat, cold water for thermal refugia, and abundant food for juvenile salmonids on a seasonal basis. Undersized crossings may inhibit these functions and become a frequent maintenance problem that causes reoccurring damage to the resource. Generally, MDIFW recommends that all new, modified, and replacement stream crossings be sized to span at least 1.2 times the bankfull width of the stream. In addition, we generally recommend that stream crossings be open bottomed (i.e., natural bottom), although embedded structures which are backfilled with representative streambed material have been shown to be effective in providing habitat connectivity for fish and other aquatic organisms. Construction Best Management Practices should be closely followed to avoid erosion, sedimentation, alteration of stream flow, and other impacts as eroding soils can travel significant distances as well as transport other pollutants resulting in direct impacts to fish, other aquatic life, and their habitats. In addition, we recommend that any necessary instream work occur between July 15 and October 1.

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance, we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

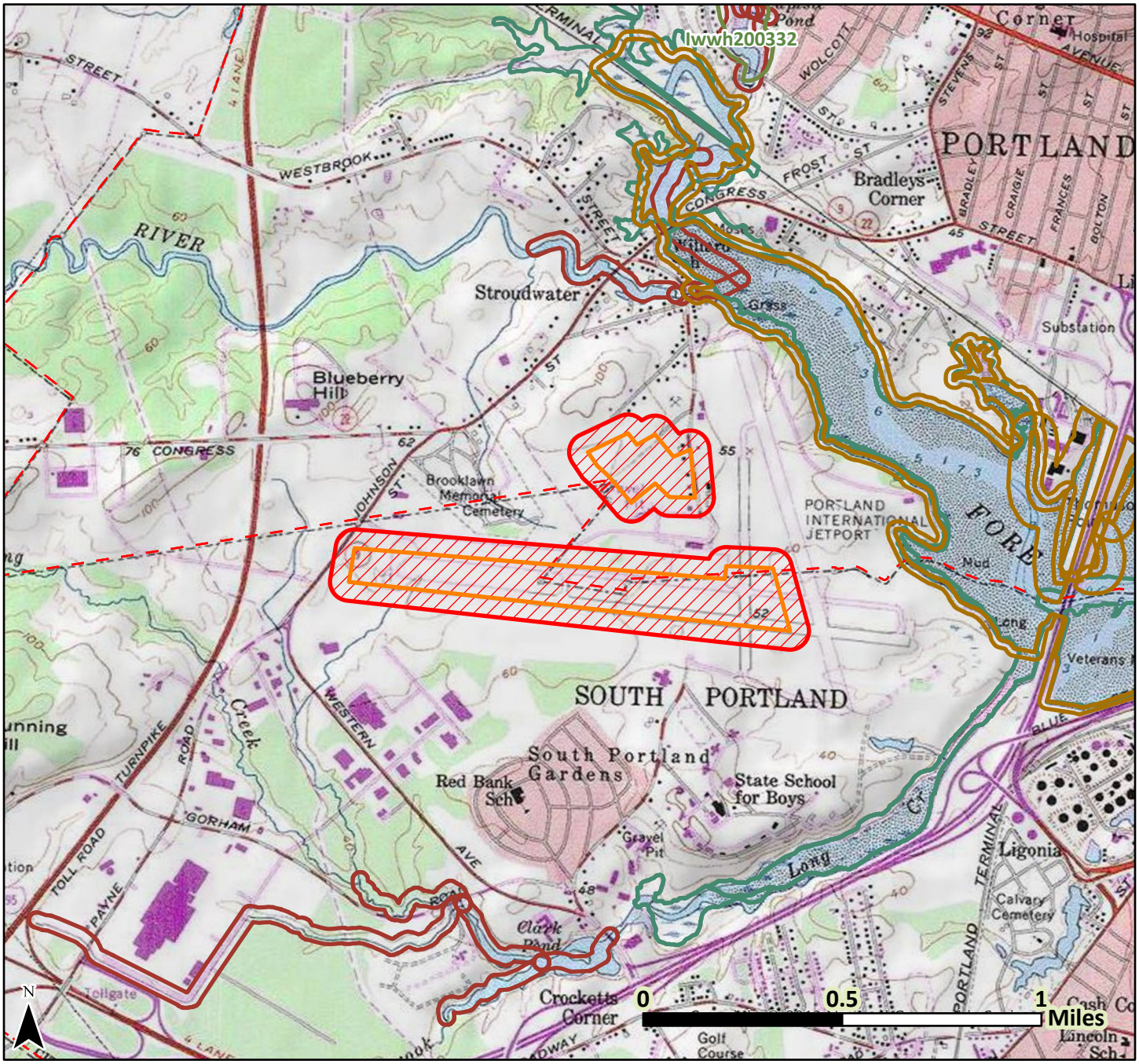
Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

Emily Robinson

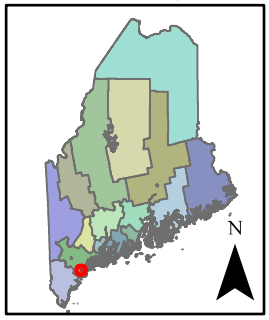
Emily Robinson
Resource Biologist

Maine Department of Inland Fisheries and Wildlife
Environmental Review of Fish and Wildlife Observations and Priority Habitats
Portland Jetport Environmental Assessment



County Boundary
Township Boundary
Project Footprint
Search Area
Inland Waterfowl/Wading Bird
Shorebird Area
Special Concern Fish
Tidal Waterfowl/Wading Bird

Date: 8/29/2023
Projection:
UTM Zone 19N, NAD83



Legend only lists resources visible in the map; see response letter for all resources that were evaluated.

Section 8

Historic Sites

Historic Sites

The Maine Historic Preservation Commission (MHPC) was contacted to review the proposed project for potential impacts to historic or culturally significant resources. A response letter was received on September 1, 2023, which confirmed no historic properties or cultural significant resources will be impacted by this project. Please see this Section for a copy of the response letter from the MHPC.

SEBAGO TECHNICS

RECEIVED
AUG 18 2023
By 1227-23

August 18, 2023
19059

Mr. Kirk F. Mohney, Director, and State Historic Preservation Officer
Maine Historic Preservation Commission
65 State House Station
Augusta, Maine 04333

mhpcprojectreview@maine.gov

Re: Portland International Airport
Parking Lot Expansion and Runway Improvements
1001 Westbrook Street, Portland

Dear Mr. Mohney:

On behalf of our client, Sebago Technics respectfully requests a site review for the proposed improvements at the Portland International Airport in Portland/South Portland. The proposed improvements include the expansion of an existing parking lot (see figure for Project Area A) and the reconfiguration of an existing taxiway (see figure for Project Area B). As part of the site review for permitting and design, we request a review by the Maine Historic Preservation Commission for any properties or structures of historical significance in the proposed site's vicinity.

Improvements to the Project A area include the expansion of an existing surface lot to provide greatly needed additional parking spaces. Improvements in Project Area B will include reconstruction of Taxiways A and F with new taxiway and shoulder pavement and select electrical component replacement/addition including in-pavement taxiway centerline lights, runway guard lights, signs and wiring for the associated taxiways. The taxiway segments to be reconstructed are 75 feet wide and wider at radii leading onto the Runway, with up to 15-foot-wide shoulders which will be widened to up to 30 feet to meet current FAA standards. A new taxiway stub near the mid-point of the existing taxiway stubs E and D is also proposed. All improvements will occure on the existing Jetport campus. Improvements to the taxiway will improve movement within and functionality of the Jetport. There are no proposed additional runways or extensions.

A review of the National Register of Historic Places identified the Stroudwater Neighborhood as being in the vicinity of the Jetport. Included with this neighborhood is the Tate House which was constructed in 1755. The Brooklawn Memorial Cemetary (not listed) which was opened in 1935 is located in the vicinity of the Jetport. Neither of these sites are within the viewshed of the project or are abutters to the proposed improvement areas. Review of the City of Portland/South Portland property records found no abutting or viewshed properties with structures 50+ years of age.

Please see the attached aerial which illustrates the two project areas. If you have any questions, please do not hesitate to contact me at rgabryszewski@sebagotechnics.com or (207) 200-2065. I look forward to hearing from you.

Sincerely,

SEBAGO TECHNICS, INC.



Rebecca Gabryszewski
Senior Team Leader, Entitlements Group

enc.

Based on the information submitted, I have concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

Kirk F. Mohney — 8/29/23

Kirk F. Mohney, — **Date**
State Historic Preservation Officer
Maine Historic Preservation Commission

MHPC # 1227-23

Section 9

Unusual Natural Areas

Unusual Natural Areas

The Maine Natural Areas Program (MNAP) was contacted to review the project area for the presence of rare or unique botanicals. A response letter was received on August 18, 2023 stating that there were no known rare or unique botanicals within the project area. Please see this Exhibit for a copy of the MNAP response letter.

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

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

August 18, 2023

Rebecca Gabryszewski
Sebago Technics
75 John Roberts Road, Suite 4A
South Portland, ME 04106

Via email: rgabryszewski@sebagotechnics.net

Re: Rare and exemplary botanical features in proximity to: #19059, Portland International Airport, Parking Lot Expansion and Runway Improvements, Portland and South Portland, Maine

Dear Rebecca Gabryszewski:

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received August 17, 2023 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Portland and South Portland, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

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

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

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

The Maine Natural Areas Program (MNAP) is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. MNAP welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by MNAP are to be published in any form, the Program should be informed at the outset and credited as the source.

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

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

The Maine Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $150.00 for two hours of our services.

Thank you for using MNAP in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Lisa St. Hilaire

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

Section 10

Buffers

Buffers

The project is located within an existing developed airport campus with the proposed parking located consistent with the Jetport Master plan. The proposed parking includes substantial perimeter landscaping and is located by existing parking and roadway networks. The land north of Jetport Boulevard is owned by the City of Portland and will be retained as landscaped buffering.

Section 11

Soils

Soils

A. Soil Survey Map and Report

The soil types identified in the soil survey were utilized in the pre- and post-development drainage plans and the corresponding hydrologic soil group was included in the stormwater runoff models.

B. Soil Survey Intensity Level by Development Type

Please see this Section and the plan set for soils information.

C. Geotechnical Investigation

Please see the Geotechnical Report by S.W. Cole dated November 16, 2023, included as part of this Section.

D. Hydric Soils Mapping

Please see this Section for a wetland report by Sebago Technics July 10, 2023. A vernal pool survey was also completed, no egg masses were observed. Please see this Section for the determination letter from Maine DEP dated February 9, 2024

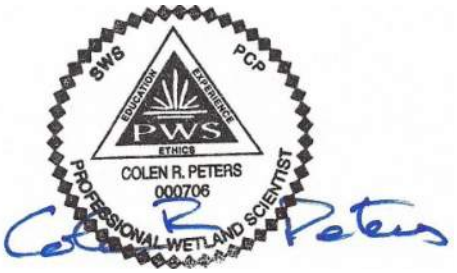
Wetland Delineation

To: **Owens McCullough, P.E. Project Manager**

From: **Cole Peters, PWS**

Date: **July 10, 2023**

Project: **19059- Portland Jetport Parking Expansion**



A field delineation of jurisdictional wetlands has been completed at the Portland International Jetport on both sides of Jetport Boulevard, northeast of International Parkway (Figure 1). The Federal Emergency Management Agency (FEMA) has prepared Flood Insurance Rate Maps (FIRM) for this part of Portland (Community Panel Number 230051 0012C, effective date 12/8/1998). No part of the area reviewed occurs within a FEMA designated 100-year floodplain (Zone A, AE). The City of Portland Zoning Map (June 24, 2022) identifies the area including the Site as the Airport Business (AB) District and no part of the area reviewed is subject to the City's Shoreland Zoning Ordinance.

Wetland Delineation:

Wetland boundaries were delineated at the Site by Cole Peters, PWS, and Anna Biddle, LSS, on May 31, 2023 with sequentially numbered pink flagging. The flagging was then located with a sub-meter accuracy global position system (GPS) unit to depict these boundaries on Figure 1.

Evidence indicative of wetland from three parameters – vegetation, soils and hydrology – was used to identify and delineate the wetlands in accordance with the 1987 *US Army Corps of Engineers Wetland Delineation Manual* and the subsequent *Regional Supplement to the US Army Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (January 2012). With the exception of unusual or atypical situations, evidence of wetland must be exhibited by all three parameters for an area or position to be designated as wetland. Characteristics of the delineated wetland are described below.

The freshwater wetland community on the Site is dominated by trees and shrubs that include: red maple (*Acer rubrum*), speckled alder (*Alnus incana*), arrowwood (*Viburnum recognitum*), glossy buckthorn (*Frangula alna*), and winterberry holly (*Ilex verticillata*). In open areas and the herbaceous understory are: meadowsweet (*Spirea latifolia*), bluejoint (*Calamagrostis canadensis*), tussock sedge (*Carex stricta*), and royal, cinnamon and sensitive ferns (*Osmunda regalis, Osmumdastrum cinnamomeum*, *Onoclea sensibilis*). All of these plants are identified as "Obligate" (OBL), "Facultative Wetland" (FACW) or "Facultative" (FAC) indicators of wetland by the 2016, *State of Maine National Wetland Plant List* prepared by the US Army Corps of Engineers and are therefore hydrophytes.

Dominant vegetation throughout upland areas of the Site consists of: white pine (*Pinus strobus,*), northern red oak (*Quercus rubra*), trembling aspen (*Populus tremuloides*), Tatarian honeysuckle (*Lonicera tatarica*), Japanese barberry (*Berberis thunbergii*), multiflora rose (*Rosa multiflora*), and bracken fern (*Pteridium aquilinum*). All of these plants are classified as "Facultative Upland" (FACU) or are not indicative of wetland, and when in predominance are indicative of upland.

The medium intensity soil survey prepared by the USDA Natural Resource Conservation Service (NRCS) indicates the poorly drained Swanton (Sz) Series occurs beneath wetlands delineated at the Site. The fine sandy loam of the Sz Series is designated as hydric and indicative of wetlands. A hand auger was also used to evaluate soils in areas delineated as wetlands. At sampling locations in areas dominated by hydrophytes, characteristics were representative of hydric soil indicator criteria F3: Depleted Matrix.

Hydrology is considered to be the "*driving force*" of wetlands (Mitch and Gosselink, 1986) and inherently is responsible for the adaptation of certain vegetation (hydrophytes) and the development of specific soil characteristics (hydric) indicative of wetlands. At the time of the survey, evidence of wetland hydrology observed at the Site included: localized standing water, saturated soils, sediment deposits, water-stained leaves, and drainage patterns indicative of wetlands.

The National Wetland Inventory (NWI) makes use of *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et. al, 1979) to differentiate types of wetlands. With this system, freshwater wetlands are classified based on dominant plant type as: Palustrine Forested (**PFO**), Palustrine Scrub-Shrub (**PSS**), Palustrine Emergent (**PEM**), Palustrine Open Water (**POW**), or Palustrine Unconsolidated Bottom (**PUB**). Wetlands classified by this system as PFO or PSS are more commonly known of as swamps whereas PEM typically represent marshes or meadows. POW and PUB generally lack vegetation and correspond to pond.

On the southeast side of Jetport Boulevard, deciduous trees generally dominate the two small isolated areas of deciduous forested wetlands (Photos 1, 2) (Figure 1) that are designated as PFO1 by the NWI Classification System. PFO1 wetland also occurs on the opposite side of Jetport Boulevard along International Parkway (Photo 3). The narrow, linear, parallel configuration of wetland indicate it was previously ditched, potentially for agriculture. Another area of wetland to the northeast borders the landscaped edge of Jetport Boulevard and extends onto adjoining property to the north (Photo 4). The wetland is dominated by a mixture of deciduous trees and shrubs designated by NWI as PFO1/PSS1. Based on depth, water near Jetport Boulevard in this wetland is likely to be permanent, potentially due to the absence of a drainage outlet.

Vernal Pools:

Vernal pools (**VP**s) are defined by the Maine Department of Environmental Protection (MDEP) as: "*a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and no viable populations of predatory fish*" (Chapter 335 §9). "Significant vernal pools" (**SVP**s) are recognized by the presence of fairy shrimp (*Eubrandhipus* spp.), or more than 40 wood frog (*Rana sylvatica*) egg masses or at least 10 blue spotted salamander (*Ambystoma laterale*) or 20 spotted salamander (*A. maculatum*) egg masses. VPs documented to be used by state-listed rare, endangered, or threatened species such as Blanding's turtles (*Emydoidea blanddingii*), spotted turtles (*Clemmys guttata*), ringed boghaunter dragonflies (*Williamsoni linterni*), Eastern ribbon snakes (*Thamnophis sauritus*), wood turtles (*Clemmys insculpta*), four-toed salamanders (*Hemidactylium scutalum*), swamp darner dragonflies (*Epiaeschna heros*), and comet darner dragonflies (*Anax longipes*), are also considered to be SVPs (Ch 335 §9B 1-4).

Under the provisions of Section 404 of the federal Clean Water Act, the US Army Corps of Engineers (USACE) regulates activities in "*waters of the United States"* including VPs, which are defined by the USACE New England District in the State of Maine General Permit (GP, reissued on October 14, 2020). The NED definition, while very similar to MDEP's, does not reference "natural" and does not recognize

or differentiate SVPs based on number of indicator species egg masses. Instead, the GP definition states: "*VPs are depressional wetland basins that typically go dry in most years and may contain inlets or outlets, typically of intermittent flow. Vernal pools range in both size and depth depending on landscape position and parent material(s). In most years, VPs support one or more of the following obligate species: wood frog (Rana sylvatica), spotted salamander (Ambystoma maculatum), blue spotted salamander (A. laterale) fairy shrimp (Eubrandhipus* spp.). *However, they should preclude sustainable populations of predatory fish."*

West of Penobscot Bay and southward from Augusta to Fryeburg, the Maine Department of Inland Fisheries and Wildlife (MDIFW) recommends evidence of VP indicator species egg masses be observed on separate dates during periods established for wood frogs (April 10th to April 25th) and spotted salamanders (April 20th to May 10th). Potential vernal pools (**PVP**s) can be identified outside (before/after) the recommended survey period, but are not necessarily indicative of regulatory jurisdiction. During the recommended survey periods VP and SVP characteristics are to be documented on MDIFW data forms and located with submeter accuracy GPS in order to identify the portion of Critical Terrestrial Habitat (**CTH**) within 250 feet around an SVP referred to as *Significant Vernal Pool Habitat* (**SVPH** Ch 335 §9A (7)).

Vernal pool surveys were conducted at the Site on April 11, and 23, 2023. Depressions do not occur in the three areas of PFO1 wetland for ponding of surface water to a depth and duration that is suitable for the occurrence of any form of vernal pool or indicator species egg masses. Ponded water in the PFO1/PSS1 wetland is suggestive of a vernal pool however, no amphibian indicator egg masses were observed here during either survey date. During the second survey, a solitary mallard (*Anas platyrhynchos*) drake was feeding in the pool.

Regulatory Assessment:

Activities in and adjacent to wetlands are regulated by the MDEP under the provisions of the Natural Resources Protection Act (NRPA) and associated Permit by Rule (Chapter 305), Wetland and Waterbodies Protection (Chapter 310) and Significant Wildlife Habitat (Chapter 335) Rules. Certain characteristics are relevant to whether a wetland is regulated as a "wetland of special significance" (WOSS).

Wetlands at the Site:

- do not contain a "critically imperiled (S1)" (Ch 310 §3F) or an "imperiled (S2)" (Ch 310 §3L) community as defined by the Natural Areas Program;
- do not contain significant wildlife habitat (38 MRSA §480-B (10) mapped by MDIFW;
- are not located within 250 feet of a "coastal wetland" (38 MRSA §480-B (2));
- are not located within 250 feet of a "great pond" (38 MRSA §465-A);
- do not contain more than 20,000 square feet of open water or aquatic or emergent marsh vegetation;
- do not occur in a 100-year floodplain mapped by the Federal Emergency Management Agency (FEMA) (38 MRSA §480-B(2-D));
- are not a "peatland" (Ch 310 §3P); and

- do not occur within 25 feet of a "river, stream or brook" (38 MRSA §480-B (9)).

Wetlands at the Site are therefore not "wetlands of special significance" (WOSS- Ch 310 §4A (1-8)).

Typically, activities requiring alteration of less than 4,300 square feet of non-WOSS wetland would be a "minor alteration" and would not require a NRPA permit (38 M.R.S.A. §480 Q (17)). In excess of this but less than 15,000 square feet would require a Tier 1 permit and a Tier 2 permit would be necessary for impacts between 15,000 square feet and an acre (43,560 square feet). The cumulative extent of previous approved wetland impacts is relevant to determining the applicable Tier of NRPA permitting. Excluding specific activities authorized by Permit by Rule (PBR - Chapter 305) provisions of the NRPA, activities exceeding one acre would require a Tier 3 permit.

Wetlands at the Site are also regulated by the US Army Corps of Engineers as "*waters of the United States*" under the provisions of Section 404 of the Clean Water Act. To authorize minimal-impact activities in wetlands, including placement of fill, the Corps makes use of a General Permit (GP) for the State of Maine. Such impacts to wetlands are broken down into two permit categories under the GP based on the following area thresholds: Category 1 – less than 15,000 square feet and Category 2 – 15,000 square feet to three acres. Activities eligible for Category 1 activities can be authorized with a Self-Verification Notification (SVN) Form submitted to the Corps. Category 2 activities are reviewed in conjunction with the US Fish and Wildlife Service, and the US Environmental Protection Agency and as appropriate the National Marine Fisheries Services, and require an application and written approval from the Corps of Engineers.



Photograph 1: Southwestward view of the 2,810± sq ft isolated forested wetland (PFO1) with International Parkway in the background.



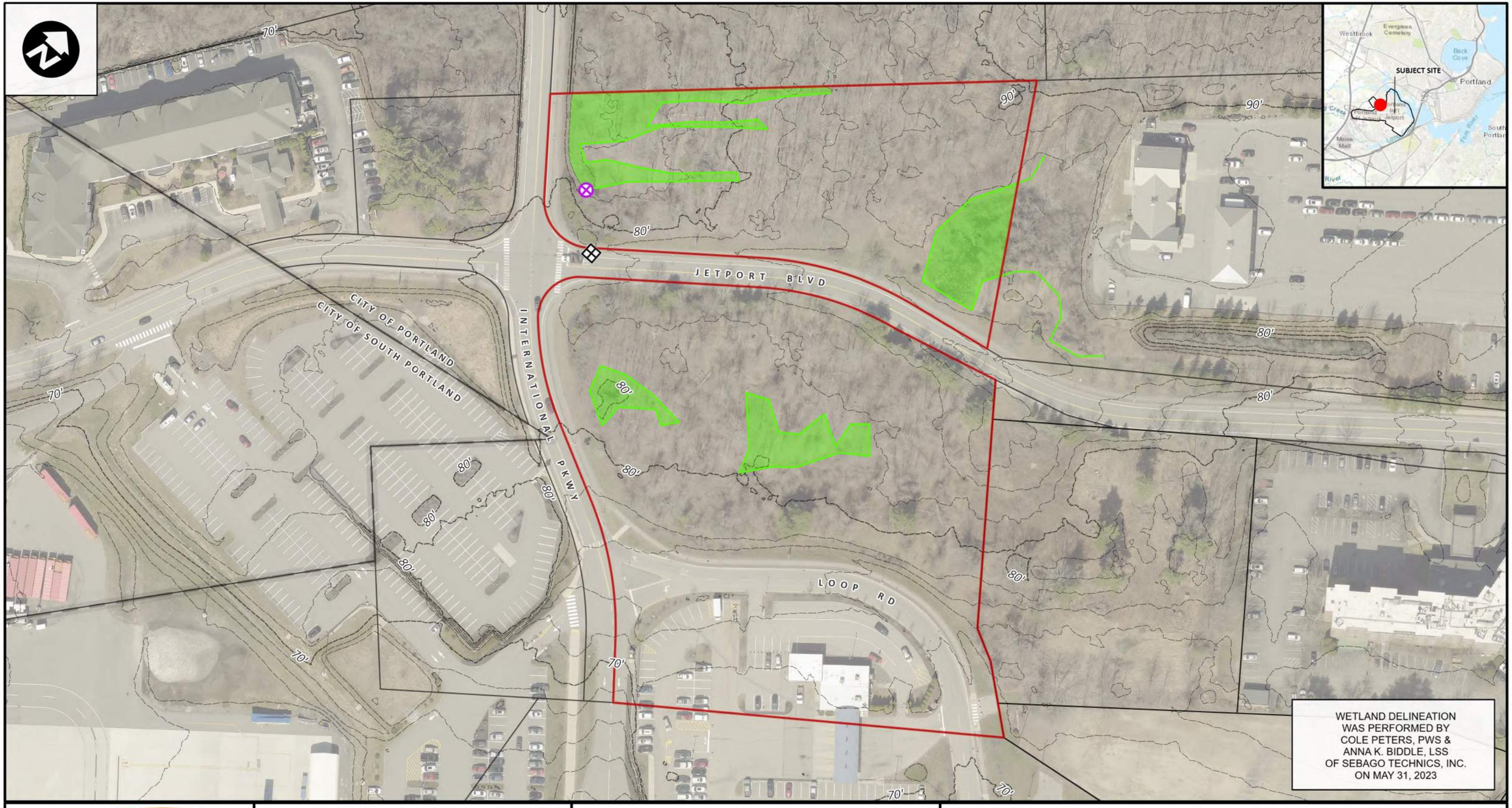
Photograph 2: Eastward view of the 5,820± isolated forested wetland (PFO1) with the Loop Road at center-right.



Photograph 3 Westward down gradient view of the forested wetland (PFO1) on the north side of Jetport Boulevard that appears to have been historically ditched.



Photograph 4: Northward view of ponded water in the deciduous forested and scrub shrub (PFO1/PSS1) wetland on the north side of Jetport Boulevard. No amphibian egg masses indicative of vernal pools were observed in the wetland during surveys conducted on April 11 and 21, 2023.



SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd. - Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

0 100 200 300
Feet
1" = 100' when printed at 11 x 17

FIGURE 1: NATURAL RESOURCES MAP

TAX MAP 210A, LOTS B-1 & A-7

INFORMATION: MAINE GEOLIBRARY
2020 USGS LIDAR TOPOGRAPHY
2021 SPRING ORTHOIMAGERY

THIS IS NOT A BOUNDARY SURVEY.
WETLAND FEATURES WERE DELINEATED
USING GPS TECHNOLOGY CAPABLE OF SUB-METER ACCURACY.

LOCATION: JETPORT BOULEVARD
PORTLAND, ME

DATE: 7/10/2023
PROJECT NUMBER: 19059

19059.aprx

- AREA OF INTEREST (AOI)
- TOWN BOUNDARY
- CATCH BASIN
- CULVERT OUTLET - 24" RCP
- DELINEATED WETLAND BOUNDARY
- WETLANDS WITHIN AOI
- 2' CONTOUR
- 10' CONTOUR

Map Projection : NAD 1983 StatePlane Maine West FIPS 1802 Feet

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JANET T. MILLS
GOVERNOR

MELANIE LOYZIM
COMMISSIONER

February 9, 2024

Paul Bradbury
Portland International Jetport
1001 Westbrook Street
Portland, ME 04102

Re: Vernal Pool Significance Determination, Pool ID # 5273–Portland

Dear Paul Bradbury:

Vernal pools are temporary to semi-permanent wetlands occurring in shallow depressions that typically fill during the spring and dry during the summer or in drought years. They provide important breeding and foraging habitat for a wide variety of specialized wildlife species including several rare, threatened, and endangered species.

After conducting a field survey at your request, it has been determined that the vernal pool identified above on your property is NOT SIGNIFICANT because either: 1. the feature does not meet the definition of a vernal pool under the Significant Wildlife Habitat rules, 06-096 CMR 335(9) or 2. the vernal pool does not meet the biological standards for exceptional wildlife use of the Significant Wildlife Habitat rules, 06-096 CMR 335(9)(B). Therefore, activities within 250 feet of the pool are not regulated under the Natural Resources Protection Act (NRPA) unless there are other protected natural resources nearby such as streams or freshwater wetlands. I have attached a copy of the database printout that verifies the State's findings with respect to your survey.

I want to also advise you that the pool area on your property can be considered a freshwater wetland and therefore direct pool alterations may require permitting under the NRPA.

If you have any questions or need further clarification, please contact Mark Stebbins at 207-592-4810 or email at: Mark.N.Stebbins@maine.gov

Sincerely,

Robert Wood
Director, Bureau of Land Resources

cc. town file

IFW Recommendations for Significant Vernal Pool Determinations

The following is a list of pools and IFW's recommendations for whether or not they qualify as Significant Vernal Pools, one of Maine's Significant Wildlife Habitats.

Data current as of: Friday, February 09, 2024

IFW's Pool ID: 5273 Twp: Portland
Observer's ID: VP-1

UTM Coordinates of Pool Center: 394121 E, 4833920 N
ProjectType: 19059-PWM parking

Landowner:	Paul Bradbury - Portland International Jetport	Contact:	Cole Peters - Sebago Technics, Inc
	1001 Westbrook Street		75 John Roberts Road,Suite 4A
	Portland, ME 04102		South Portland, ME 04106
	(207) 756-8029 phb@portlandmaine.gov		(207) 200-2100 Cpeters@sebagotechnics.com

Survey Date: 4/11/2023 Additional Survey Dates: 04/21/2023

IFW's Recommendation: RED: NOT SIGNIFICANT, does not meet the vernal pool definition

IFW Comments:

REPORT

19-0714 S

November 16, 2023

Explorations and Geotechnical Engineering Services

Proposed Parking Lot Expansion
Jetport Blvd and Loop Road
Portland, Maine

Prepared For:
Sebago Technics, Inc.
Attention: Owens McCullough, P.E., LEED AP
75 John Roberts Road
South Portland, Maine 04106

Prepared By:
S. W. Cole Engineering, Inc.
286 Portland Road
Gray, Maine
T: 207-657-2866

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19-0714 S

November 16, 2023

Sebago Technics, Inc.
Attention: Owens McCullough, P.E., LEED AP
75 Jon Roberts Road
South Portland ME 04106

Subject: Explorations and Geotechnical Engineering Services
Proposed Parking Lots
Jetport Blvd
Portland, Maine

Dear Owens:

In accordance with our revised Proposal, dated October 23, 2023, we have performed subsurface explorations for the subject project. This report summarizes our findings and geotechnical recommendations, and its contents are subject to the limitations set forth in Appendix A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our services was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to earthwork and pavement associated with the proposed construction. Our scope of services included test pit explorations, soils laboratory testing, a geotechnical analysis of the subsurface findings and preparation of this report.

1.2 Site and Proposed Construction

We understand the site consists of four parcels:

1) A large, wooded lot located on the northerly side of the Portland Jetport Terminal building and parking garage, between Loop Road and Jetport Blvd. This parcel

is approximately 300 by 800 feet in plan dimensions. Existing grades vary in elevation from approximately 72 to 87 feet.

2) A small, wooded lot located on the north side of Jetport Blvd approximately 200 by 300 feet in plan dimensions. Existing grades appear to vary from about elevation 80 to 89.
3) A gravel parking lot (Park & Jet Lot) located south of the Embassy Suites hotel and west of Westbrook Street. This parcel is approximately 175 by 400 feet in plan dimensions. Existing grades appear to vary from about elevation 68 to 77.
4) A paved parking lot (Cell Phone Lot) located adjacent to the northerly side of Loop Road. This parcel is approximately 170 by 270 feet in plan dimensions. Existing grades appear to vary from about 68 to 71 feet.

We understand development plans call for construction of new paved parking lots on each of these parcels. We understand subsurface stormwater systems are planned in some areas. Based on the plans provided, existing site grades vary from about elevation 68 to 89 feet (southeast to northwest) and finish site pavement grades will vary from about elevation 68 to 89 feet. It appears much of the proposed parking lot area(s) will require up to about 3 feet of tapered cuts and fills to establish proposed pavement grades. A portion of the site, however, located between Jetport Blvd and Loop Road will require tapered cuts varying from greater than 3 to as much as 9+/- feet to establish proposed pavement grades.

Proposed and existing site features are shown on the “Exploration Location Plan” attached in Appendix B.

2.0 EXPLORATION AND TESTING

2.1 Explorations

Twenty-four test pits (TP-1 through TP-4, TP-6 through TP-9, TP-11 through TP-13, TP-15 through TP-17, TP-19, TP-21 through TP-23, TP-25, TP-27, and TP-29 through TP-32) were made at the site on October 25 and 26, 2023 by Shaw Earthworks, Inc. As requested by STI, certain test pit locations were omitted due to exploration time constraints. The exploration locations were selected and established in the field by STI using GPS methods. The approximate exploration locations are shown on the “Exploration Location Plan” attached in Appendix B. Logs of the explorations and a key

to the notes and symbols used on the logs are attached in Appendix C. The approximate, interpolated elevations shown on the logs were estimated based on topographic information shown on the “Exploration Location Plan”.

2.2 Testing

The explorations were made using a small excavator. Soil samples obtained from the explorations were returned to our laboratory for further classification and testing. Moisture content test results are noted on the logs. The results of four soil gradation tests are attached in Appendix D.

3.0 SUBSURFACE CONDITIONS

3.1 Soil and Bedrock

The test pits were attempted to depths of either 6 feet or 10 feet (10 feet in possible subsurface stormwater management areas) as directed by STI. Below a surficial layer of forest duff and topsoil with organics or uncontrolled fill, the explorations encountered a subsurface profile generally consisting of native deposits of sand with varying amounts of silt and gravel, some cobbles, and a few small boulders as well as sandy clayey silt and stiff to medium silty clay. An uncontrolled fill consisting of mixed clayey silty sand with some organics and clayey silty sand was encountered at test pits TP-1 and TP-2 (cell phone lot) to depths of about 7 and 2.5 feet respectively. Test pits TP-3, TP-4, TP-6, and TP-7 (gravel Park & Jet lot) encountered about 18 to 30 inches of gravelly sand, some silt (uncontrolled fill) overlying about 6-inches of relic topsoil and/or soils with rootlets overlying native soils. Test pits made in wooded areas encountered tree roots to depths varying from about 1.5 to 2.5 feet below the ground surface. Practical refusal surfaces (probable boulders) were encountered at depths of about 10 and 9 feet at test pits TP-2 and TP-12, respectively.

Not all the strata were encountered at each exploration; refer to the attached logs for more detailed subsurface information.

3.2 Groundwater

The soils encountered at the test pits were moist to wet from the ground surface. Where encountered, saturated soil and groundwater seepage was observed at depths varying from about 3.5 to 9.5 feet below the existing ground surface. Groundwater likely becomes

perched on the relatively impervious clayey silt and silty clay encountered at some of the test pits. Long term groundwater information is not available. It should be anticipated that groundwater levels will fluctuate, particularly in response to periods of snowmelt and precipitation, as well as changes in site use.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations include:

- All topsoil, soils with roots and organics, buried relic topsoil, uncontrolled fill and disturbed soils must be completely removed from beneath proposed paved areas.

- The soil encountered was generally wet, becoming saturated with depth with groundwater seepage noted in some test pits. Care will need to be taken not to disturb the native soils during construction. Earthwork and grading activities should occur during drier, non-freezing weather of Spring, Summer, and Fall. Rubber tired construction equipment should not operate directly on the native soil subgrades, particularly when wet. Excavation of bearing surfaces should be completed with a smooth-edged bucket to lessen subgrade disturbance.

- Swales and subsurface drainage systems may be needed in some areas, particularly in deeper planned cut areas.

4.2 Site and Subgrade Preparation

We recommend that site preparation begin with the construction of an erosion control system to protect adjacent drainage ways and areas outside the construction limits. All topsoil, soils with roots and organics, buried relic topsoil, uncontrolled fill and disturbed soils must be completely removed from beneath proposed paved areas. The extent of removal should extend 1 foot laterally outward from outside edge of pavement for every 1-foot of excavation depth (1H:1V bearing splay). The over-excavated area should be backfilled with compacted Granular Borrow. As much vegetation as possible should remain outside the construction areas to lessen the potential for erosion and site disturbance.

Beneath pipes and utility structures with soft trench bottoms, we recommend over excavating with a smooth-edged bucket and installing at least 1 foot of Underdrain Sand below customary bedding materials wrapped in non-woven geotextile fabric. The depth of customary bedding materials for soft trench bottoms should be at least 12 inches below pipes and 24 inches below structures.

4.3 Excavation and Dewatering

Excavation work will generally encounter topsoil, soils with roots and organics, buried relic topsoil, uncontrolled fills, native granular soils, silty clay, and clayey silt soils. Wet to saturated soils and groundwater should be expected with depth. Care must be exercised during construction to limit disturbance of the subgrade soils. Earthwork and grading activities should occur during drier, non-freezing weather of Spring, Summer and Fall. Rubber tired construction equipment should not operate directly on the subgrades, particularly when wet. Low ground pressure tracked equipment may be needed and temporary haul roads overlying geotextile fabric may be necessary. Final cuts to subgrade should be performed with a smooth-edged bucket to help reduce strength loss from soil disturbance.

Sumping and pumping and/or temporary ditching dewatering techniques should be adequate to control groundwater in excavations. Controlling the water levels to at least one foot below planned excavation depths will help stabilize subgrades during construction. Excavations must be properly shored or sloped in accordance with OSHA Regulations to prevent sloughing and caving of the sidewalls during construction. Care must be taken to preclude undermining adjacent structures, utilities, and roadways. The design and planning of excavations, excavation support systems, and dewatering is the responsibility of the contractor.

4.4 Site Drainage

Surface grades should be sloped away from paved areas for positive surface water drainage. Perimeter drainage swales should be deep enough to help control water from intruding into adjacent pavement subbase/base aggregates. We recommend a deeper swale or groundwater cut-off trench drain be considered beneath the proposed swale located in the proposed deeper cut planned in the area near test pit TP-25 to help control water intrusion beneath adjacent pavemen. The trench drain should follow the MaineDOT specifications for French Drains. The underdrain pipe should consist of 6-inch diameter,

perforated foundation drainpipe bedded in Crushed Stone and wrapped in non-woven geotextile filter fabric. The underdrain pipe must have a positive gravity outlet protected from freezing, clogging and backflow.

4.5 Fill, Backfill and Compaction

We recommend the following fill and backfill materials: recycled products must also be tested in accordance with applicable environmental regulations and approved by a qualified environmental consultant.

Common Borrow: Fill to raise grades in landscape areas should be non-organic compactable earth meeting the requirements of 2020 MaineDOT Standard Specification 703.18 Common Borrow.

Granular Borrow: Fill to raise grades in paved areas, as well as to repair soft areas, should be sand or silty sand meeting the requirements of 2020 MaineDOT Standard Specification 703.19 Granular Borrow.

Underdrain Sand: Sand used beneath bedding materials in soft trench bottoms should be clean, free-draining sand meeting the requirements of 2020 MaineDOT Standard Specification 703.22 Underdrain Backfill Material Type B.

Crushed Stone: Crushed Stone, used for underdrain aggregate should be washed ¾-inch crushed stone meeting the requirements of 2020 MaineDOT Standard Specification 703.13 Crushed Stone ¾-Inch.

Reuse of Site Soils: The organic soils, soils with roots and silty clay are unsuitable for reuse as fill in paved areas but may be suitable for reuse as Common Borrow in landscape areas, provided they are at a compactable moisture content at the time of reuse. The native granular soils and granular portions of existing fills can likely be re-used as Granular Borrow provided the soil is at a compactable moisture content at the time of re-use.

Placement and Compaction: Fill should be placed in horizontal lifts and compacted such that the desired density is achieved throughout the lift thickness with 3 to 5 passes of the compaction equipment. Loose lift thicknesses for grading, fill and backfill

activities should not exceed 12 inches. We recommend that fill and backfill in paved areas be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557. Crushed Stone should be compacted with 3 to 5 passes of a vibratory plate compactor having a static weight of at least 500 pounds.

4.6 Weather Considerations

Construction activity should be limited during wet and freezing weather and the site soil may require drying or thawing before construction activities may continue. The contractor should anticipate the need for water to temper fills to facilitate compaction during dry weather. If construction takes place during cold weather, subgrades must be protected during freezing conditions.

4.7 Paved Areas

We anticipate paved areas will be subjected primarily to passenger vehicle and light delivery truck traffic. Considering the findings at the explorations and proposed usage, we offer the following pavement section for consideration.

FLEXIBLE (HMA) PAVEMENT SECTION – 2020 MaineDOT Standard Specs	
Pavement Layer	**Material Thickness**
MaineDOT 9.5 mm Hot Mix Asphalt	1 ½ inches
MaineDOT 12.5 mm Hot Mix Asphalt	2 ½ inches
MaineDOT 703.06 Aggregate Base Type A	3 inches
MaineDOT 703.06 Aggregate Subbase Type D	18 inches

The base and subbase materials should be compacted to at least 95 percent of their maximum dry density as determined by ASTM D-1557. Hot mix asphalt pavement should be compacted to 92 to 97 percent of its theoretical maximum density as determined by ASTM D-2041. A tack coat should be used between successive lifts of bituminous pavement.

Frost penetration can be on the order of 4.5 feet in this area. It should be understood that in the absence of full depth excavation of frost susceptible soils below paved areas and subsequent replacement with non-frost susceptible compacted fill, frost penetration into the subgrade will occur and some heaving and distress of pavement must be anticipated.

4.8 Design Review and Construction Testing

S.W.COLE should be retained to review the construction documents prior to bidding to determine that our earthwork and pavement recommendations have been properly interpreted and implemented.

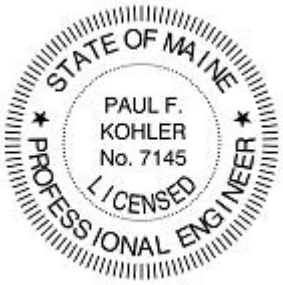
A construction materials testing and quality assurance program should be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to observe earthwork activities, the preparation of pavement subgrades, as well as to provide laboratory and field testing of soil and asphalt construction materials.

5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the construction phase of the project.

Sincerely,

S. W. Cole Engineering, Inc.



Paul F. Kohler, P.E.
Principal Geotechnical Engineer

PFK:tjb

APPENDIX A

Limitations

This report has been prepared for the exclusive use of Sebago Technics, Inc. for specific application to the proposed parking lots at the Portland Jetport Facility in Portland, Maine. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct our services in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE's scope of services has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE.

APPENDIX B

Figures



LEGEND:

APPROXIMATE TEST PIT LOCATION

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A SCALE PLAN OF THE SITE PROVIDED SEBAGO TECHNICS, INC., RECEIVED 11/08/2023.
2. THE TEST PIT LOCATIONS WERE SELECTED AND ESTABLISHED IN THE FIELD BY SEBAGO TECHNICS, INC AND PROVIDED ON THE ABOVE REFERENCED PLAN.
3. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
4. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

0 40 80 Feet

S.W.COLE ENGINEERING, INC.

SEBAGO TECHNICS, INC.

EXPLORATION LOCATION PLAN

PROPOSED PARKING LOTS
PORTLAND JETPORT
JETPORT BLVD AND LOOP ROAD, PORTLAND, MAINE

Job No.:	19-0714	Scale:	1" = 40'
Date :	11/14/2023	Sheet:	1

APPENDIX C

Exploration Logs and Key

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Paul Kohler
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP- 1

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 67.5' Estimated **COMPLETION DEPTH (FT):** 10.0
WATER LEVEL DEPTHS (FT): Soils wet, Some seepage at 3.5'. **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Grassed Topsoil					
		1.7 Brown clayey SILT and SAND, some organics (Mixed FILL)	▽ 3.5				
5							
		7.0 Stiff brown-gray silty CLAY					
10		Bottom of Exploration at 10.0 feet					

TEST PIT TP- 2

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 71' Estimated **COMPLETION DEPTH (FT):** 10.0
WATER LEVEL DEPTHS (FT): Soils moist to wet. Free water at 9.5 ft **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Grassed Topsoil					
		1.0 Brown silty SAND, some gravel, trace clay (Mixed Fill)					
		2.5 Very stiff gray-brown silty CLAY					
5							
		8.0 Medium dark gray silty CLAY, boulder at bottom of test pit	▽ 9				
10		Bottom of Exploration at 10.0 feet					

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP- 3

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 69.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): Soils appear saturated below 5 feet **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Brown gravelly SAND some silt; occasional cobbles (Fill)					
		2.5 Buried Topsoil					
		2.6 Brown-orange gravelly SAND, some silt					
		4.0 Gray-brown gravelly silty SAND					
5							

Bottom of Exploration at 6.0 feet

TEST PIT TP- 4

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 71.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Brown gravelly SAND some silt; occasional cobbles (Fill)					
		1.5 Brown-light brown silty gravelly SAND					
		3.8 Brown-gray fine to medium SAND some gravel, some silt					
5							

Bottom of Exploration at 6.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP- 6

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 74' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Brown gravelly SAND some silt (Fill)					
		1.5 Dark brown silty fine SAND; with rootlets (Probable Fill)					
		3.0 Gray-brown SILT and CLAY					
				1S		4-5	
5							
		Bottom of Exploration at 6.0 feet					

TEST PIT TP- 7

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 73' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Brown GRAVEL and SAND, some silt (Fill)		1S		0-1	ID 23292S w =6.6 %
		1.5 Buried Topsoil with roots					
		2.0 Gray-brown SILT and CLAY					
5							
		Bottom of Exploration at 6.0 feet					

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP- 8

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 72' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Grassed Topsoil					
		1.5 Gray SILT and fine SAND with roots (probable Buried Topsoil)					
		2.0 Gray-brown fine sandy clayey SILT					
5							

Bottom of Exploration at 6.0 feet

TEST PIT TP- 9

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 73.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		2.0 Gray-brown clayey fine sandy SILT					
5							

Bottom of Exploration at 6.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Paul Kohler
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-11

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 76.5' Estimated **COMPLETION DEPTH (FT):** 10.0
WATER LEVEL DEPTHS (FT): Soils wet to saturated below 8'+/- **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.0 Brown silty SAND with gravel, some cobbles					
		3.5 Gray-brown SILT and SAND, trace gravel					
5							
		6.5 Brown SILT and SAND, trace clay					
		8.0 Gray clayey SILT and SAND, some gravel, some cobbles					
10							

Bottom of Exploration at 10.0 feet

TEST PIT TP-12

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 79.5' Estimated **COMPLETION DEPTH (FT):** 9.0
WATER LEVEL DEPTHS (FT): Soils moist to wet. Saturated below 8'+/- **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Topsoil and organics					
		0.7 Brown silty SAND with gravel, some cobbles					
5		5.0 Gray-brown silty SAND, some gravel, some cobbles Small boulder at bottom of test pit					

Bottom of Exploration at 9.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-13

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 79.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		0.8 Gray-brown gravelly SILT and fine SAND					
		2.5 Gray SILT and CLAY					
5							

Bottom of Exploration at 6.0 feet

TEST PIT TP-15

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 79' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Grassed Topsoil					
		1.5 Brown, gravelly silty SAND		1S		3-4	ID 23293S w =11.2 %
5							

Bottom of Exploration at 6.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-16

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 77.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.0 Brown, silty SAND, some gravel					
		3.5 Gray-brown gravelly silty SAND					
5							

Bottom of Exploration at 6.0 feet

TEST PIT TP-17

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 78.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): Soils appear saturated below 5.8 feet **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		2.0 Gray-brown silty fine to medium SAND, some gravel					
5							
		5.8 Gray SILT and fine SAND					

Bottom of Exploration at 6.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-19

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 83' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		0.7 Light gray silty fine SAND, some gravel		1S		3-4	ID 23294S w =8.5 %
5							
		Bottom of Exploration at 6.0 feet					

TEST PIT TP-21

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 81' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.5 Brown gravelly silty SAND					
		3.0 Gray gravelly SILT and fine SAND					
5							
		Bottom of Exploration at 6.0 feet					

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Paul Kohler
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-22

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 80.5' Estimated **COMPLETION DEPTH (FT):** 9.5
WATER LEVEL DEPTHS (FT): Soils wet to saturated. Slight seepage at 8.5'. **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.0 Light brown layered,silty SAND and clayey SILT, some gravel, some cobbles					
5		4.5 Gray-brown clayey SILT and SAND, trace gravel, some cobbles					
		8.5 Gray-brown silty SAND with gravel, cobbles	▽ 8.5				

Bottom of Exploration at 9.5 feet

TEST PIT TP-23

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 79' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.5 Light brown-gray Silty SAND some gravel; occasional cobbles					
5		4.0 Gray, SILT and fine SAND					

Bottom of Exploration at 6.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-25

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 86.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.5 Light gray gravelly silty fine SAND					
5							

Bottom of Exploration at 6.0 feet

TEST PIT TP-27

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 83' Estimated **COMPLETION DEPTH (FT):** 8.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.5 Gray gravelly SILT and fine SAND					
5							

Bottom of Exploration at 8.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Paul Kohler
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-29

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 83.5' Estimated **COMPLETION DEPTH (FT):** 9.5
WATER LEVEL DEPTHS (FT): Soils wet **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.0 Light brown gravelly silty SAND, some cobbles					
		2.5 Gray-brown silty SAND, trace clay					
5							
		7.0 Gray-brown silty SAND, trace clay, some gravel, some cobbles					

Bottom of Exploration at 9.5 feet

TEST PIT TP-30

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 81' Estimated **COMPLETION DEPTH (FT):** 10.0
WATER LEVEL DEPTHS (FT): Soils moist to wet **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.0 Brown silty SAND, some gravel, some cobbles, small boulder					
		4.0 Gray-brown SAND. some silt, some gravel					
5							
		6.0 Gray-brown silty SAND, trace clay					
10							

Bottom of Exploration at 10.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-31

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 86' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Grassed Topsoil					
		1.8 Gray Silty fine to medium SAND some gravel					
		3.0 Gray SILT and fine SAND, trace gravel		1S		4-5	ID 23295S w =17.7 %
5		5.0 Gray SILT and CLAY					

Bottom of Exploration at 6.0 feet

TEST PIT TP-32

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 85.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): Soils appear saturated below 4 feet **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.5 Brown silty gravelly SAND					
		2.5 Gray-brown silty fine to medium SAND, some gravel					
5							

Bottom of Exploration at 6.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

KEY TO NOTES & SYMBOLS

Test Boring and Test Pit Explorations

Stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - laboratory test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. – pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight

Description of Proportions:

Trace:	0 to 5%
Some:	5 to 12%
"Y"	12 to 35%
And	35+%
With	Undifferentiated

Description of Stratified Soils

Parting:	0 to 1/16" thickness
Seam:	1/16" to 1/2" thickness
Layer:	½" to 12" thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

APPENDIX D

Laboratory Test Results

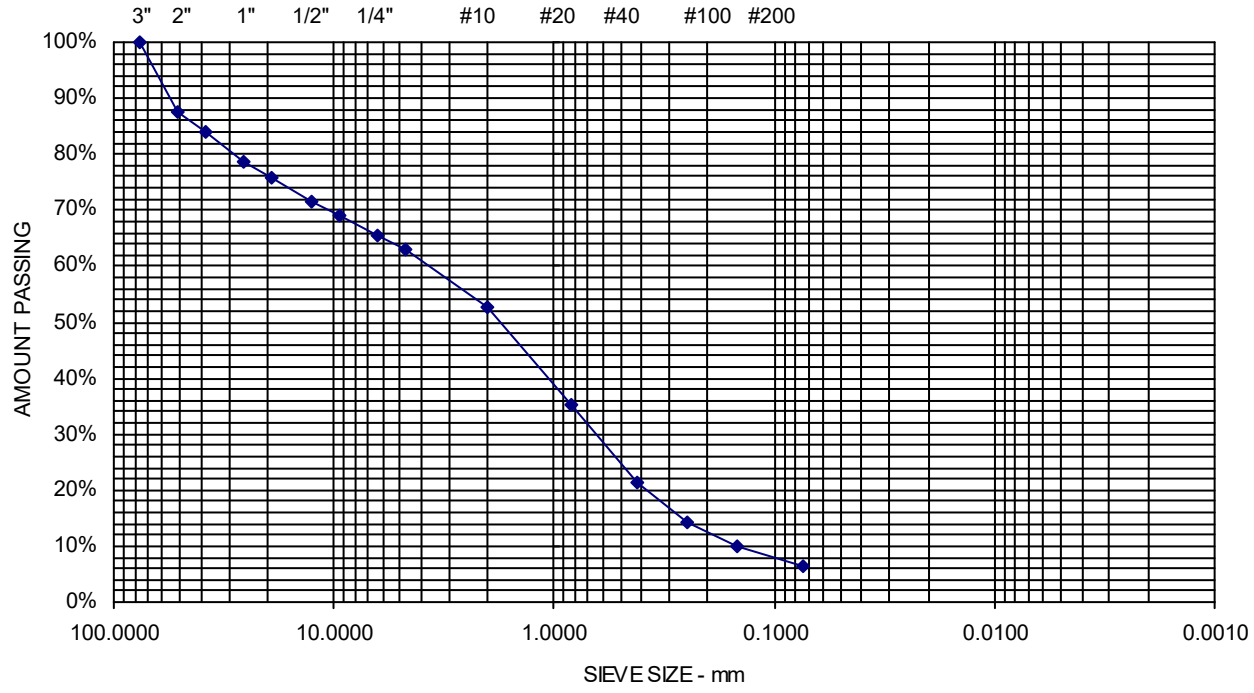
S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED JETPORT PARKING LOTS - EXPLORATIONS AND GEOTECHNICAL ENGINEERING SERVICES	Project Number	19-0714
Client	SEBAGO TECHNICS, INC.	Lab ID	23292S
		Date Received	10/31/2023
		Date Completed	11/8/2023
Material Source	**TP-7, 1S, 0.0'-1.0'**	Tested By	BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
75 mm	**3"**	**100**	
50 mm	**2"**	**87**	
38.1 mm	**1-1/2"**	**84**	
25.0 mm	**1"**	**78**	
19.0 mm	**3/4"**	**76**	
12.5 mm	**1/2"**	**72**	
9.5 mm	**3/8"**	**69**	
6.3 mm	**1/4"**	**65**	
4.75 mm	**No. 4**	**63**	37.1% Gravel
2.00 mm	**No. 10**	**53**	
850 um	**No. 20**	**35**	
425 um	**No. 40**	**21**	56.6% Sand
250 um	**No. 60**	**14**	
150 um	**No. 100**	**10**	
75 um	**No. 200**	**6.3**	6.3% Fines



Comments: Moisture Content = 6.6%

Sheet

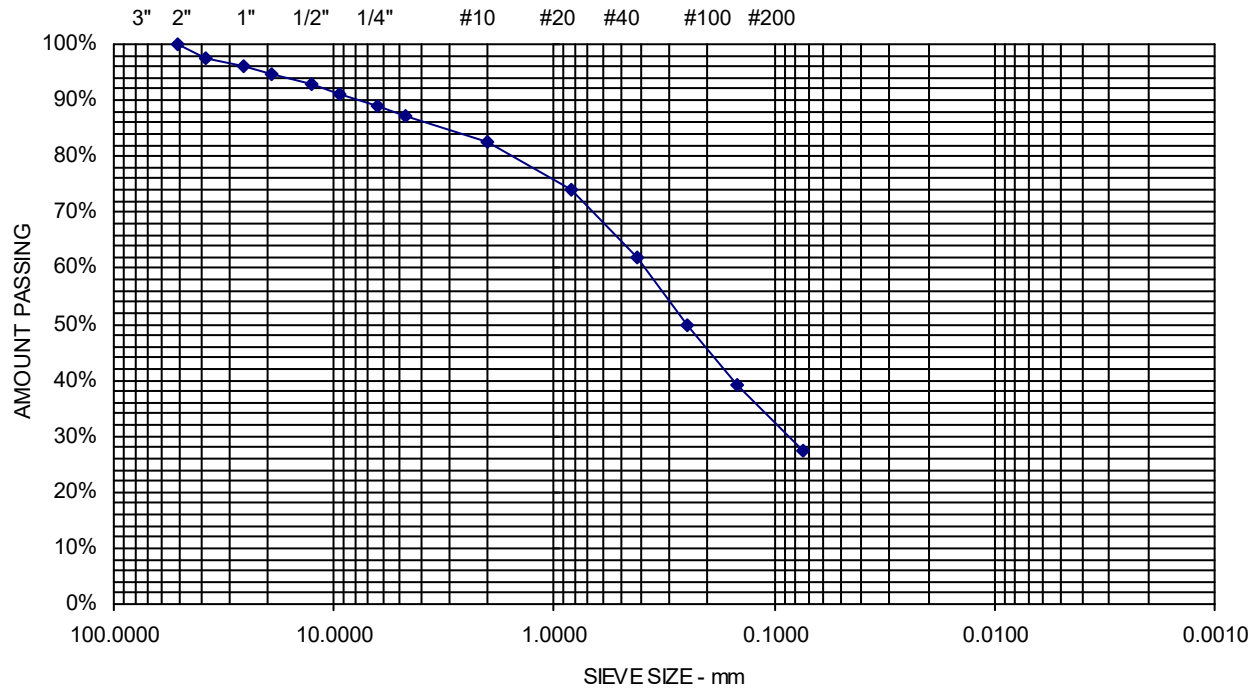
S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED JETPORT PARKING LOTS - EXPLORATIONS AND GEOTECHNICAL ENGINEERING SERVICES	Project Number	19-0714
Client	SEBAGO TECHNICS, INC.	Lab ID	23293S
		Date Received	10/31/2023
		Date Completed	11/8/2023
Material Source	**TP-15, 1S, 3.0'-4.0'**	Tested By	BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**98**	
25.0 mm	**1"**	**96**	
19.0 mm	**3/4"**	**95**	
12.5 mm	**1/2"**	**93**	
9.5 mm	**3/8"**	**91**	
6.3 mm	**1/4"**	**89**	
4.75 mm	**No. 4**	**87**	12.6% Gravel
2.00 mm	**No. 10**	**83**	
850 um	**No. 20**	**74**	
425 um	**No. 40**	**62**	59.9% Sand
250 um	**No. 60**	**50**	
150 um	**No. 100**	**39**	
75 um	**No. 200**	**27.5**	27.5% Fines



Comments: Moisture Content = 11.2%

Sheet

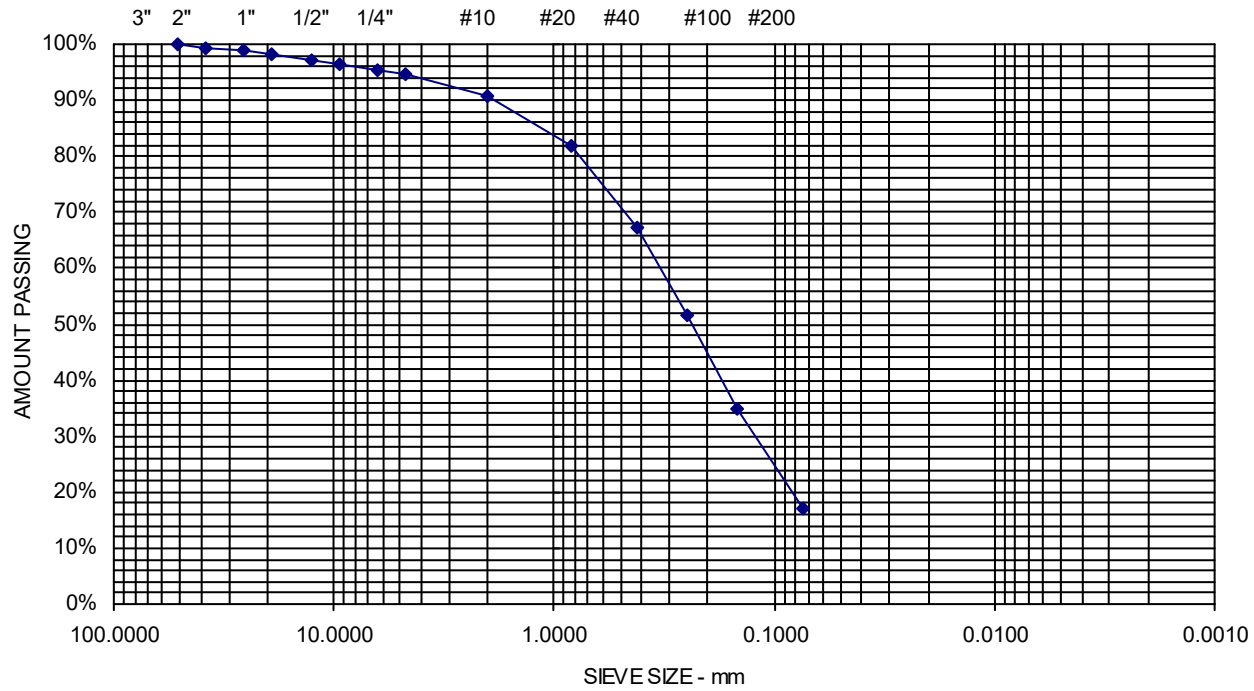
S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED JETPORT PARKING LOTS - EXPLORATIONS AND GEOTECHNICAL ENGINEERING SERVICES	Project Number	19-0714
Client	SEBAGO TECHNICS, INC.	Lab ID	23294S
		Date Received	10/31/2023
		Date Completed	11/8/2023
Material Source	**TP-19, 1S, 3.0'-4.0'**	Tested By	BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**99**	
25.0 mm	**1"**	**99**	
19.0 mm	**3/4"**	**98**	
12.5 mm	**1/2"**	**97**	
9.5 mm	**3/8"**	**96**	
6.3 mm	**1/4"**	**95**	
4.75 mm	**No. 4**	**95**	5.4% Gravel
2.00 mm	**No. 10**	**91**	
850 um	**No. 20**	**82**	
425 um	**No. 40**	**67**	77.5% Sand
250 um	**No. 60**	**52**	
150 um	**No. 100**	**35**	
75 um	**No. 200**	**17.1**	17.1% Fines



Comments: Moisture Content = 8.5%

Sheet

S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

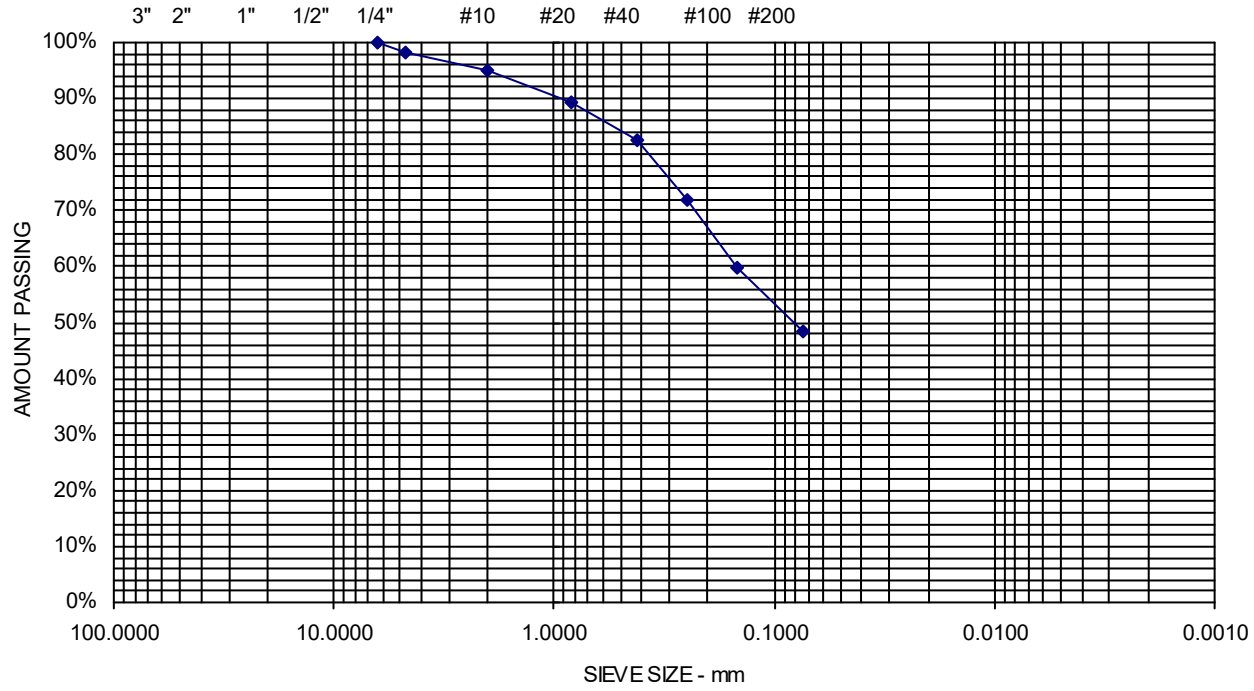
Project Name: PORTLAND ME - PROPOSED JETPORT PARKING LOTS - EXPLORATIONS AND GEOTECHNICAL ENGINEERING SERVICES

Client: SEBAGO TECHNICS, INC.

Material Source: **TP-31, 1S, 4.0'-5.0'**

Project Number: 19-0714
Lab ID: 23295S
Date Received: 10/31/2023
Date Completed: 11/8/2023
Tested By: BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
6.3 mm	**1/4"**	**100**	
4.75 mm	**No. 4**	**98**	1.9% Gravel
2.00 mm	**No. 10**	**95**	
850 um	**No. 20**	**89**	
425 um	**No. 40**	**83**	49.6% Sand
250 um	**No. 60**	**72**	
150 um	**No. 100**	**60**	
75 um	**No. 200**	**48.5**	48.5% Fines



Comments: Moisture Content = 17.7%

Sheet

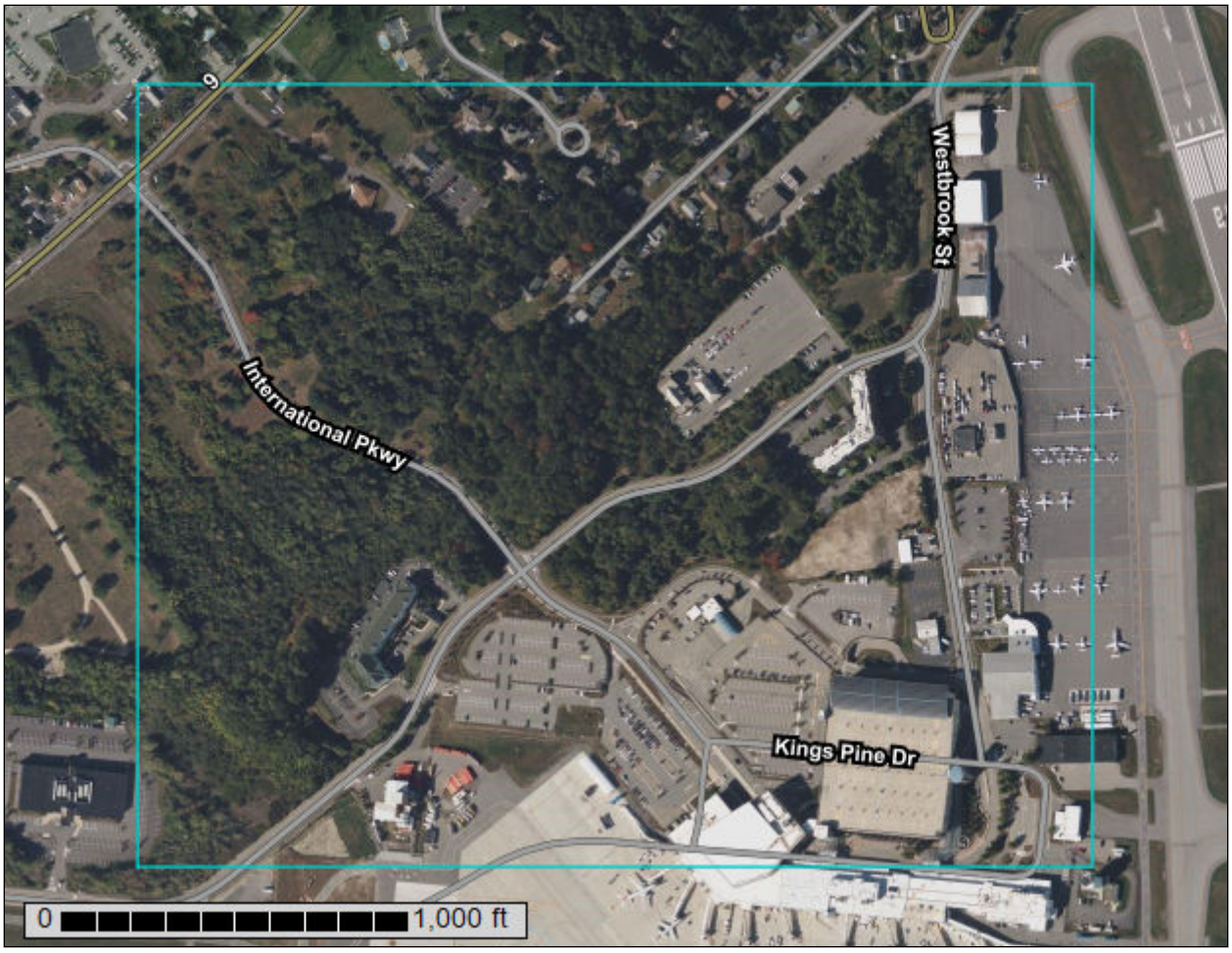
United States Department of Agriculture

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



August 14, 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.

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

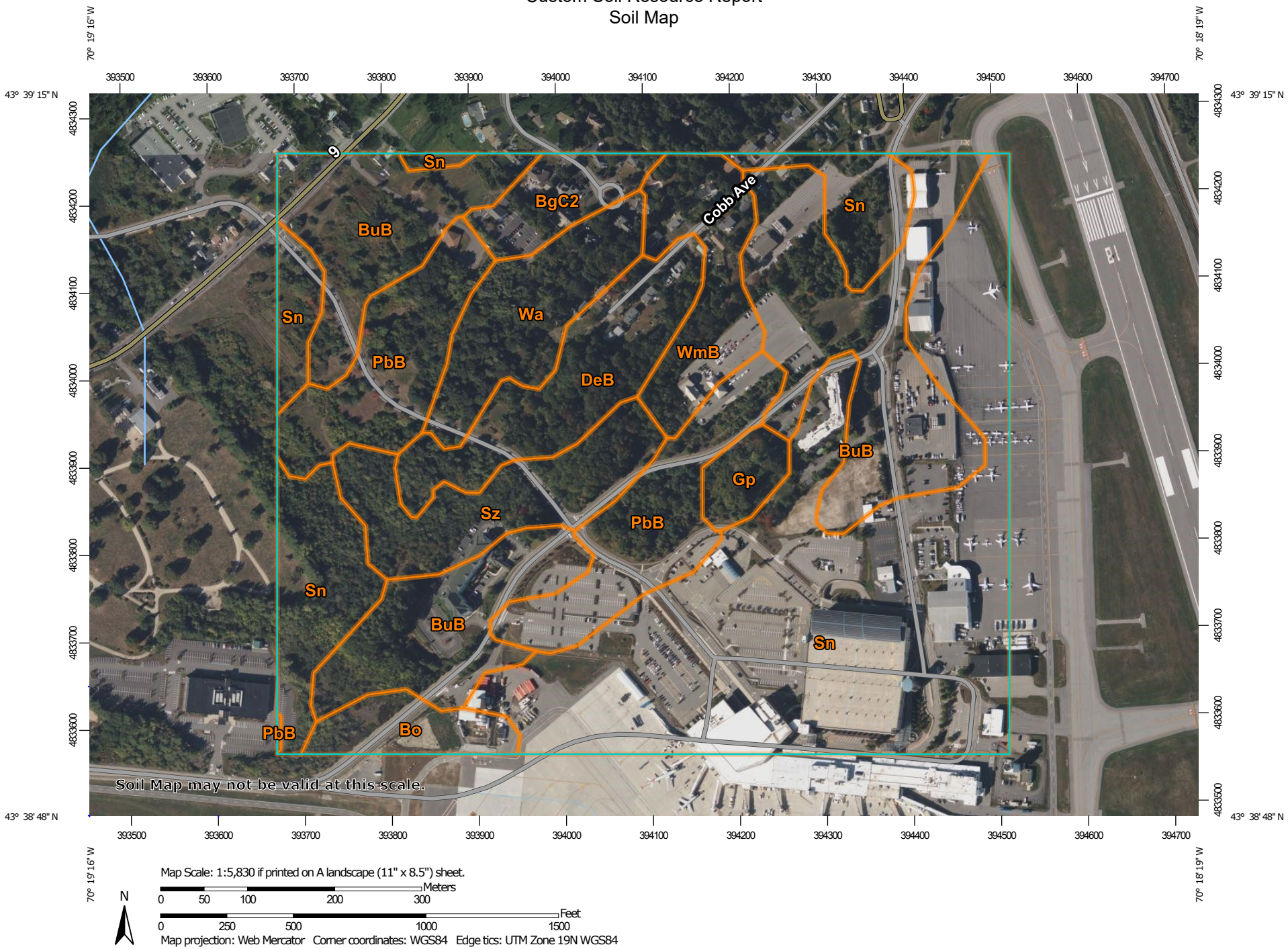
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Soil Map

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.


70° 19' 16" W
70° 18' 19" W
43° 39' 15" N
43° 38' 48" N
393500
393600
393700
393800
393900
394000
394100
394200
394300
394400
394500
394600
394700
4834300
4834200
4834100
4834000
4833900
4833800
4833700
4833600
4833500
9
Cobb Ave
Sn
BgC2
BuB
Wa
WmB
PbB
DeB
Gp
Sz
Bo
Soil Map may not be valid at this scale.
Map Scale: 1:5,830 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 50 100 200 300
Feet
0 250 500 1000 1500
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—Oct 7, 2021

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
BgC2	Nicholville very fine sandy loam, 8 to 15 percent slopes	3.6	2.5%
Bo	Biddeford mucky peat, 0 to 3 percent slopes	3.3	2.3%
BuB	Lamoine silt loam, 3 to 8 percent slopes	32.7	22.8%
DeB	Deerfield loamy fine sand, 3 to 8 percent slopes	8.9	6.2%
Gp	Gravel pits	2.0	1.4%
PbB	Paxton fine sandy loam, 3 to 8 percent slopes	16.1	11.2%
Sn	Scantic silt loam, 0 to 3 percent slopes	54.6	38.0%
Sz	Swanton fine sandy loam	8.3	5.7%
Wa	Walpole fine sandy loam	7.4	5.1%
WmB	Windsor loamy sand, 0 to 8 percent slopes	6.8	4.7%
Totals for Area of Interest		**143.6**	**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

BgC2—Nicholville very fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2yjg6
Elevation: 20 to 2,300 feet
Mean annual precipitation: 34 to 50 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Nicholville and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nicholville

Setting

Landform: Lakebeds (relict), eskers
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciomarine deposits

Typical profile

Ap - 0 to 7 inches: very fine sandy loam
Bs - 7 to 19 inches: very fine sandy loam
BC - 19 to 30 inches: very fine sandy loam
C - 30 to 65 inches: loamy very fine sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 18 to 30 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: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F144BY501ME - Loamy Slope (Northern Hardwoods)
Hydric soil rating: No

Bo—Biddeford mucky peat, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2t0jn
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

Biddeford and similar soils: 82 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Biddeford

Setting

Landform: Marine terraces, river valleys
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave, linear
Parent material: Organic material over glaciomarine deposits

Typical profile

Oe - 0 to 12 inches: mucky peat
Eg - 12 to 16 inches: silt loam
Bg - 16 to 45 inches: silty clay
Cg - 45 to 65 inches: clay

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very 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 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: D
Ecological site: F144BY002ME - Marine Terrace Depression, F144BY304ME - Wet Clay Flat
Hydric soil rating: Yes

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: Marine terraces, river valleys
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

DeB—Deerfield loamy fine sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2xfg9
Elevation: 0 to 1,190 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Deerfield and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deerfield

Setting

Landform: Kame terraces, outwash plains, outwash terraces, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy outwash derived from granite, gneiss, and/or quartzite

Typical profile

Ap - 0 to 9 inches: loamy fine sand
Bw - 9 to 25 inches: loamy fine sand
BC - 25 to 33 inches: fine sand
Cg - 33 to 60 inches: sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: About 15 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum: 11.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Gp—Gravel pits

Map Unit Composition

Gravel pits: 92 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gravel Pits

Typical profile

H1 - 0 to 6 inches: extremely gravelly sand
H2 - 6 to 60 inches: extremely gravelly sand

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Ecological site: F144BY601ME - Dry Sand
Hydric soil rating: No

PbB—Paxton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: bljf
Elevation: 0 to 930 feet
Mean annual precipitation: 48 to 50 inches
Mean annual air temperature: 45 to 46 degrees F
Frost-free period: 145 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Paxton and similar soils: 87 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Drumlinoid ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from mica schist

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 20 inches: fine sandy loam
H3 - 20 to 65 inches: fine sandy loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 18 to 40 inches to densic material
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 30 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F144BY501ME - Loamy Slope (Northern Hardwoods)
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: Marine terraces, river valleys
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

Sz—Swanton fine sandy loam

Map Unit Setting

National map unit symbol: blk4
Elevation: 10 to 900 feet
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 39 to 46 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Swanton and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swanton

Setting

Landform: Outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: fine sandy loam
H2 - 9 to 32 inches: fine sandy loam
H3 - 32 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 high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Wa—Walpole fine sandy loam

Map Unit Setting

National map unit symbol: blk7
Elevation: 0 to 540 feet
Mean annual precipitation: 48 to 49 inches
Mean annual air temperature: 45 to 46 degrees F
Frost-free period: 145 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Walpole and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Walpole

Setting

Landform: Outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 20 inches: fine sandy loam
H3 - 20 to 65 inches: gravelly loamy sand

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): High (2.00 to 6.00 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F144BY303ME - Acidic Swamp
Hydric soil rating: Yes

WmB—Windsor loamy sand, 0 to 8 percent slopes

Map Unit Setting

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

Map Unit Composition

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

Description of Windsor

Setting

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

Typical profile

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

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144BY601ME - Dry Sand
Hydric soil rating: No

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Section 12

Stormwater Management

Section 12

Stormwater Management

Please see the Stormwater Management report, submitted under separate cover.

Section 13

Urban Impaired Stream Submissions

Section 13

Urban Impaired Stream Standard

The project is not located within the watershed of an urban impaired stream.

Section 14

Basic Standards Submissions

Section 14

Basic Standards

The Basic Standard Requirements for Erosion and Sediment Control and Maintenance are included in the plan set.

Section 15

Groundwater

Groundwater

A. Narrative and Report

1. Location

   Please see this Section for mapping Information regarding the Bedrock, Surficial Geology and Sand & Gravel Aquifers.

2. Quantity

   The Jetport campus is serviced through public water. The proposed project involves the construction of surface parking lots and will not result in an increased use of water.

3. Sources

   The Jetport campus is serviced by public sewer. The proposed project involves the construction of surface parking lots and will not result in an increased generation of sewage.

4. Measures to Prevent Degradation

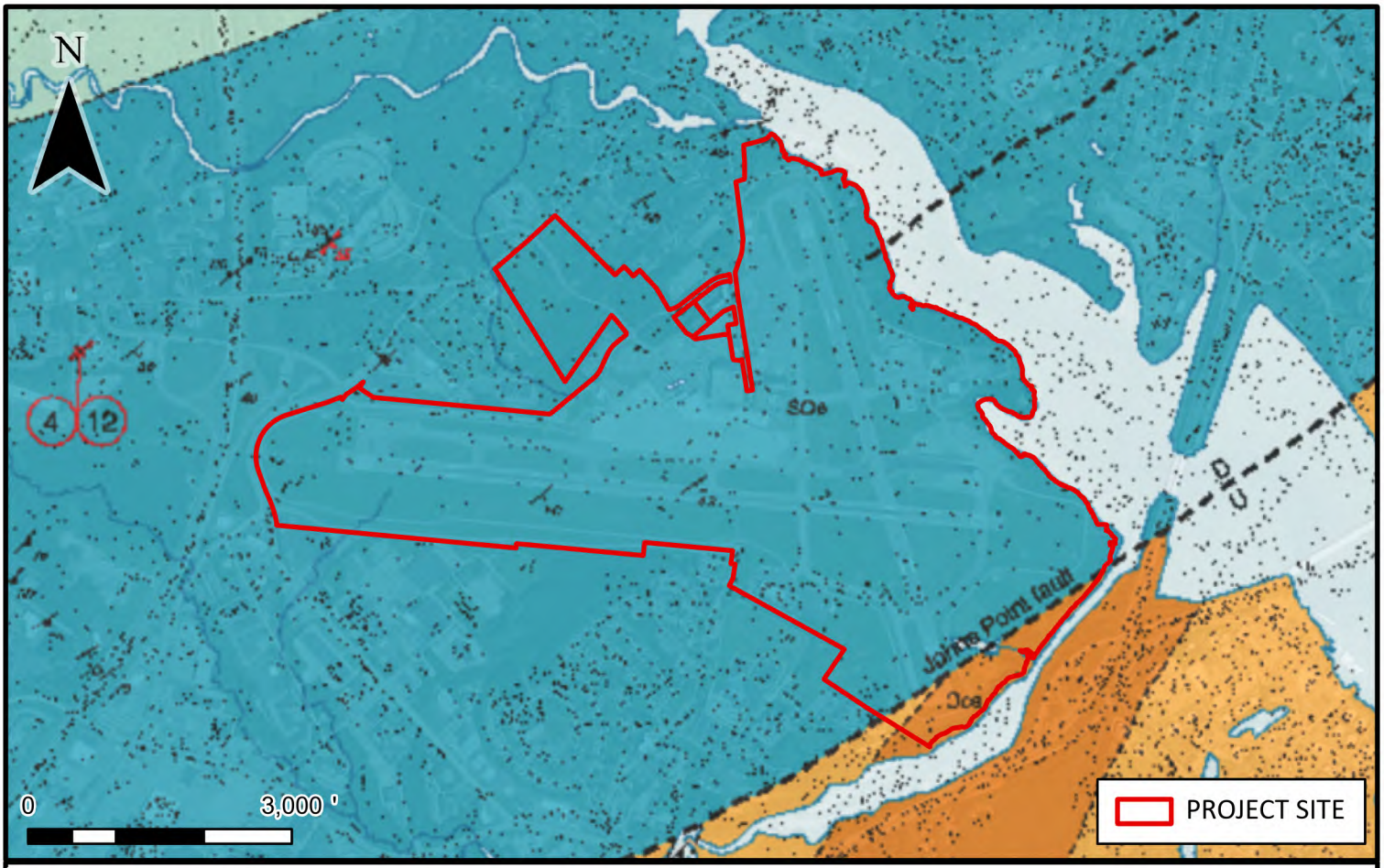
   Impervious drainage areas associated with the project are directed to stormwater management facilities designed to meet or exceed current DEP treatment standards.

B. Groundwater Protection Plan

There are no development plans to store or use petroleum products, pesticides, herbicides, road salt, solvents, acids or other materials with the potential to contaminate groundwater. The proposed project does include the construction of a pad for the installation of Tesla Megapack battery system. The proposed battery system will not result in potential impacts to the area groundwater. Please see this Section for the Megapack datasheet and a Safety Overview writeup. Please see Section 1 for more detailed information regarding battery storage and usage.

C. Monitoring Plan

Not applicable.



STRATIFIED ROCKS

Silurian - Ordovician

CENTRAL MAINE SEQUENCE

SOhc — **Hutchins Corner Formation**. Fine-grained medium gray migmatized quartz-plagioclase-biotite gneiss with minor thin interlayers of medium light greenish gray calc-silicate granofels or gneiss.

MERRIMACK GROUP

SOb — **Berwick Formation**. Fine-grained medium gray migmatized and non-migmatized quartz-plagioclase biotite gneiss and granofels with minor light medium gray calc-silicate gneiss or granofels.

SOe — **Eliot Formation**: Fine-grained buff-weathering, medium-gray quartz-plagioclase-biotite phyllite with abundant carbonate at lowest grades, calc-silicate minerals (clinozoisite, sphene, diopside, and rarely grossular) at higher grades of metamorphism; with interlayered dark gray phyllite. Formation is strongly sheared throughout.

Middle Ordovician

CASCO BAY GROUP

Osc — **Scarboro Formation.** Rusty- and non-rusty weathering biotite-muscovite-garnet-quartz phyllite with rare quartz-plagioclase-biotite phyllite interbeds.

Oscg — **Unnamed volcanogenic member.** Medium greenish gray chlorite-garnet-quartz phyllite, generally non-rusty weathering.

Osp — **Spring Point Formation.** Medium greenish gray actinolite-biotite-chlorite-plagioclase-quartz schist and amphibolite. Some light gray plagioclase-quartz-biotite granofels is known from borings, but is not presently exposed.

Oce — **Cape Elizabeth Formation.** Fine-grained medium gray quartz-plagioclase-muscovite-chlorite-biotite-garnet phyllite and dark gray muscovite-chlorite-biotite-garnet phyllite.

EXPLANATION OF SYMBOLS

- Outcrop of metamorphic rock or non-foliated plutonic rock.
- Outcrop of foliated plutonic rock.
- 20 — Strike and dip of compositional layering. (inclined, vertical, horizontal)
- 20 — Strike and dip of gneissic foliation. (inclined, vertical)
- 20 — Foliation in granites. (inclined, vertical)
- 20 — Direction and angle of inclination of lineations. (plunging, horizontal)
- Stratigraphic or intrusive contact.
- Fault. Arrows indicate sense of motion. U = upthrown block; D = downthrown block.
- Nomenclature boundary between rocks assigned to the Merrimack Group and rocks assigned to the Central Maine sequence.
- ④ — Photo locality.
- 20 — Dark gray to black intrusive rocks. Diabase and basalt dikes.

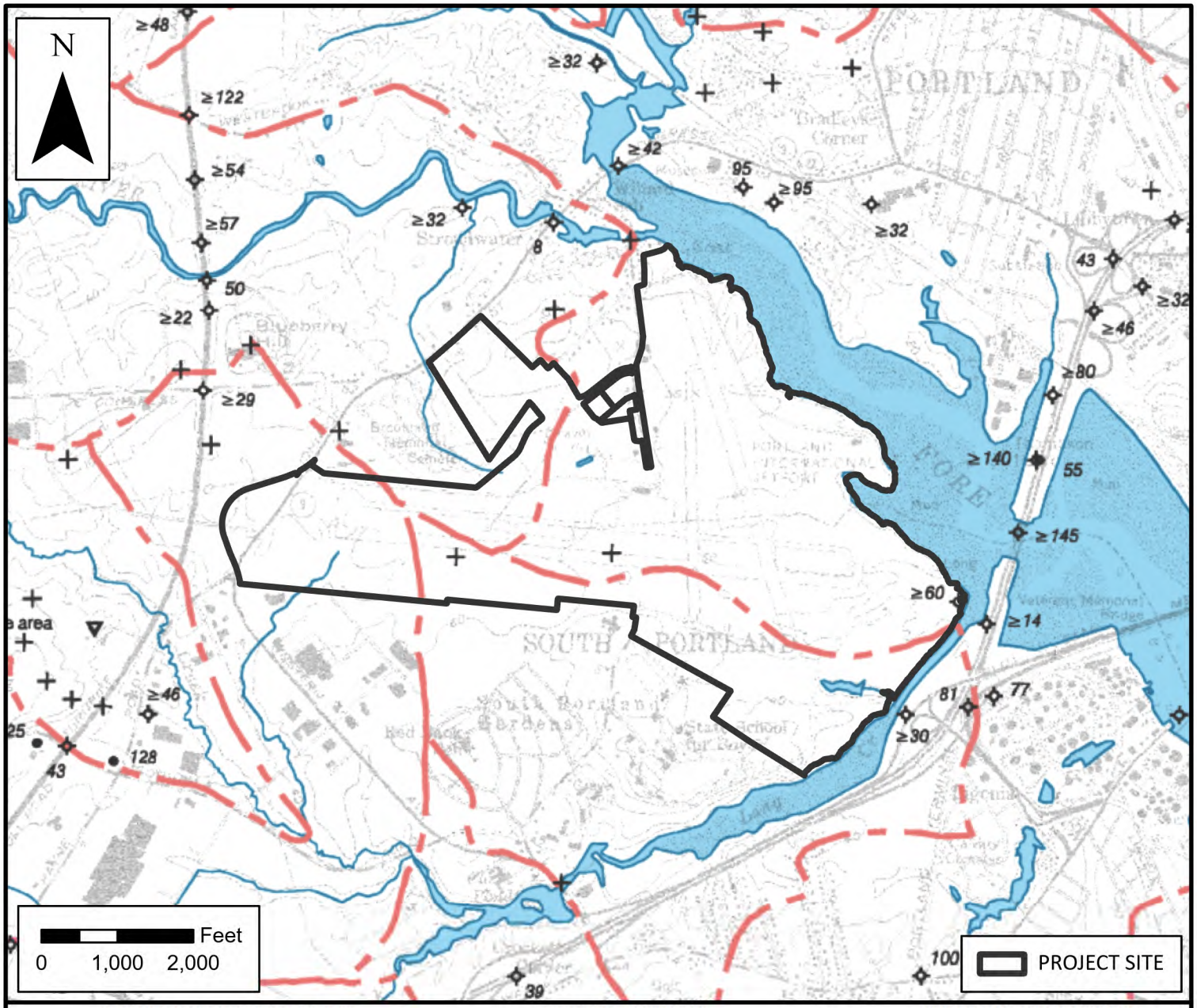
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75 John Roberts Rd. - Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

BEDROCK GEOLOGY MAP
PORTLAND JETPORT

SCALE: 1:24,000
DATE: 11/10/2023

LOCATION:
1001 WESTBROOK ST
PORTLAND, ME

INFORMATION:
MGS - BEDROCK GEOLOGY - 24K
PORTLAND WEST QUAD - HUSSEY II, 2003



SIGNIFICANT SAND AND GRAVEL AQUIFERS
(yields greater than 10 gallons per minute)

Approximate boundary of surficial deposits with significant saturated thickness where potential ground-water yield is moderate to excellent.

Surficial deposits with good to excellent potential ground-water yield; yields generally greater than 50 gallons per minute to a properly constructed well. Deposits consist primarily of glacial sand and gravel, but can include areas of sandy till and alluvium; yield zones are based on subsurface data where available, and may vary from mapped extent in areas where data are unavailable.

Surficial deposits with moderate to good potential ground-water yield; yields generally greater than 10 gallons per minute to a properly constructed well. Deposits consist primarily of glacial sand and gravel, but can include areas of sandy till and alluvium; yields may exceed 50 gallons per minute in deposits hydraulically connected with surface-water bodies, or in extensive deposits where subsurface data are available.

SURFICIAL DEPOSITS WITH LESS FAVORABLE AQUIFER CHARACTERISTICS
(yields less than 10 gallons per minute)

Areas with moderate to low or no potential ground-water yield (includes areas underlain by till, marine deposits, eolian deposits, alluvium, swamps, thin glacial sand and gravel deposits, or bedrock); yields in surficial deposits generally less than 10 gallons per minute to a properly constructed well.

SEISMIC-LINE INFORMATION

Profiles for 12-channel seismic lines are shown in Figure 6 of Open-File Report 87-24a (Adamik and others, 1987). Length of 12-channel seismic lines as shown on the map is to scale. All single-channel lines ranged from 80 to 250 feet long and are not shown to scale.

53 Depth to bedrock, in feet below land surface.

≥53 Depth to bedrock exceeds depth shown (based on calculations).

12 Depth to water level, in feet below land surface.

MAP-7 131, 23 — Twelve-channel seismic line, with depth to bedrock and depth to water shown at the midpoint of the line, in feet below land surface.

69, 12 / MAP-E / 72, 12 — Single-channel seismic line, with depth to bedrock and depth to water shown at each end of the line, in feet below land surface. Unless otherwise indicated, data shown above the line-identifier box refers to the northern end of the seismic line.

The 3-letter identifier for a line is an abbreviation for the topographic quadrangle. If the 3-letter identifier for the line is followed by a number (ex: MAP - 7, MAP - 4), the line is a 12-channel line. If the identifier is followed by a letter (ex: MAP - E, MAP- P), the line is a single-channel line. Single-channel seismic interpretations by J. T. Adamik. Twelve-channel seismic interpretations by J. T. Adamik and C. D. Neil.

GEOLOGIC AND WELL INFORMATION

56 Depth to bedrock, in feet below land surface

≥ 13 Penetration depth of boring; ≥ symbol refers to minimum depth to bedrock based on boring depth or refusal

6 Depth to water level in feet below land surface (observed in well, spring, test boring, pit, or seismic line)

Gravel pit (overburden thickness noted in feet, e.g. 5-12')

Quarry

4 GPM Yield (flow) of well or spring in gallons per minute (GPM)

Spring, with general direction of flow

Drilled overburden well

Dug well

Observation well (project well if labeled; nonproject well if unlabeled)

Test boring (project boring if labeled; nonproject boring if unlabeled)

Driven point

Test pit

Drilled bedrock well

Potential point source of ground-water contamination

Bedrock outcrop

Surface-water drainage-basin boundary; surface-water divides generally correspond to ground-water divides. Horizontal direction of ground-water flow generally is away from divides and toward surface-water bodies.

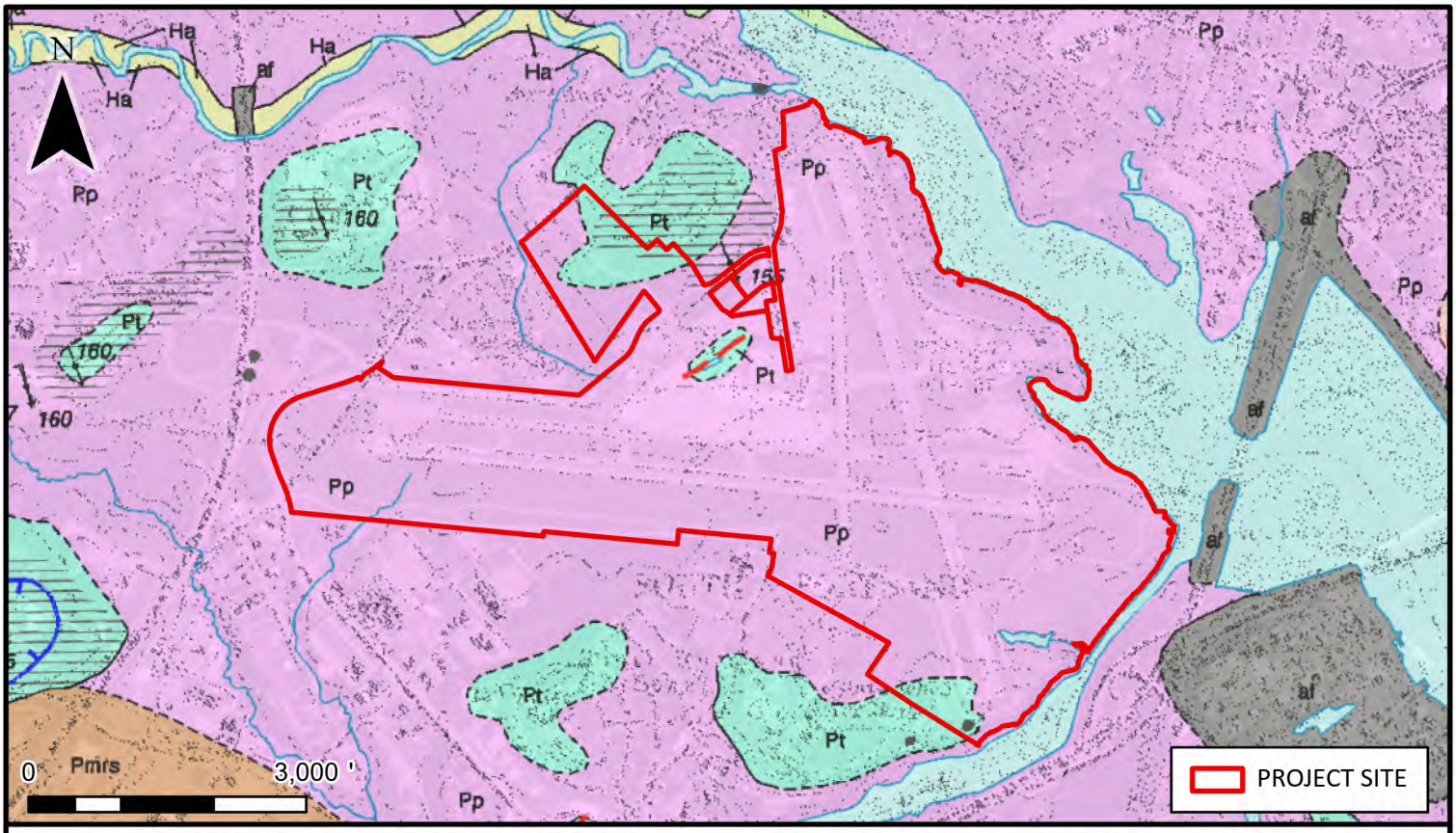
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South Portland, ME 04106
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SIGNIFICANT SAND & GRAVEL AQUIFER MAP
PORTLAND JETPORT

SCALE: 1:24,000
DATE: 11/10/2023

LOCATION:
1001 WESTBROOK ST
PORTLAND, ME

INFORMATION:
MAINE GEOLOGICAL SURVEY:
SAND & GRAVEL AQUIFERS 24K SCALE



Note: The first letter of each map unit indicates the general age of the unit:
H = Holocene (postglacial deposit; formed during the last 10,000 years).
Q = Quaternary (deposit of uncertain age, but usually late-glacial and/or postglacial).
P = Pleistocene (deposit formed during glacial to late-glacial time, prior to 10,000 yr B. P. [years before present]).

Ha — **Stream alluvium** - Sand, silt, gravel, and organic material. Deposited on flood plains of modern streams.

Hwsm — **Salt marsh deposits** - Salt-marsh peat, muck, and fine-grained sediments deposited along tidal inlets.

Hw — **Wetland deposits** - Peat, muck, and/or fine-grained sediments deposited in poorly drained (wetland) areas. Variable tree cover may be present.

Pmrs — **Marine regressive sand deposits** - Sand, silt, and minor gravel deposited in shallow marine waters during late-glacial regression of the sea. May include a variety of nearshore and fluvial sediments. Commonly occurs as flat sandy areas and is likely to be underlain by marine clay-silt of the Presumpscot Formation.

Pmn — **Marine nearshore deposits** - Sand, gravel, and minor silt. Formed by wave and current action in shoreline and shallow nearshore environments, usually during regressive phase of late-glacial marine submergence in Maine's coastal lowland.

Pm — **Marine deposits, undifferentiated** - Poorly exposed sand and gravel of uncertain origin, thought to have been deposited in the sea during late-glacial time. May include deltaic, submarine fan, shoreline, and/or nearshore deposits.

Pmf — **Marine fan deposit** - Sand and gravel deposited on the sea floor at the glacier margin during the late-glacial marine submergence.

Pp — **Presumpscot Formation** - Silt, clay, and minor sand deposited on the sea floor during the late-glacial marine submergence.

Pem — **End moraine** - Ridge of till and/or sand and gravel deposited at the glacier margin during recession of the last ice sheet.

Pemc — **End moraine complex** - Cluster of closely spaced end moraines deposited at the receding margin of the last glacial ice sheet. Composed of till and/or sand and gravel. Locally includes ice-marginal submarine fan deposits.

Pt — **Till** - Loose to very compact, poorly sorted, mostly nonstratified mixture of sand, silt, and gravel-size rock debris deposited directly from glacial ice. Locally contains lenses of water-laid sediment.

Bedrock - Gray areas are individual outcrops. Ruled pattern indicates areas where outcrops are common and/or surficial sediments are generally less than 10 ft thick.

af — **Artificial fill** - Variable mixtures of surficial sediments, rock fragments, and artificial materials, transported and dumped to build up roads, waterfronts, etc.

Contact - Boundary between map units. Dashed where very approximate.

End moraine - Line shows axis of end-moraine ridge. Dashed where inferred or approximately located, especially in areas where moraines are overlain by younger sediments.

Glacially streamlined hill - Symbol shows trend of long axis of hill, which parallels former ice-flow direction.

135 — **Glacial striation locality** - Arrows show ice-flow directions (with azimuths in degrees) inferred from striations (scratches on bedrock caused by glacial abrasion). Dot marks point of observation. Flagged trend is older.

Meltwater channel - Channel eroded by glacial meltwater. Arrow shows inferred direction of former stream flow.

12,850±65 (shell)
11,750±55 (wood)
P — **Fossil locality** - Fossil locality in marine sediments at Mercy Hospital site, with examples of contrasting radiocarbon ages of closely associated spruce wood and marine shells. Ages are in years before present as reported by the National Ocean Sciences Accelerator Mass Spectrometry Facility, Woods Hole, Massachusetts. The discrepancy between marine and terrestrial ages resulted from the shells incorporating older carbon from seawater (marine reservoir effect).

④ — **Photo locality** - Location of photographed site shown and described in map legend.

Approximate ocean shoreline when spruce logs were deposited on the sea floor in Portland. Hachures point toward higher ground. This sea level (+120 ft) is estimated from the radiocarbon ages of marine shells associated with the logs (Thompson and others, 2008), and the relative sea-level curve derived from shell ages in the Portland-Lewiston region (Retelle and Weddle, 2001). The highest sea level in Portland (about 270 ft) occurred immediately after deglaciation. The land rose when the weight of the ice sheet was removed, causing the shoreline to recede.

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SURFICIAL GEOLOGY MAP
PORTLAND JETPORT

SCALE: 1:24,000
DATE: 11/10/2023

LOCATION:
1001 WESTBROOK ST
PORTLAND, ME

INFORMATION:
MGS - SURFICIAL GEOLOGY 24K
PORTLAND WEST QUAD - THOMPSON, 2008

Section 16

Water Supply

Water Supply

A. Water Supply Method

Not applicable. The Jetport is serviced by municipal water; however, the proposed parking expansion will not result in additional capacity needs and will not require the need of potable water.

B. Subsurface Wastewater Disposal

Not applicable. The proposed project involves the development of additional parking on the existing Jetport campus and does not require subsurface wastewater disposal.

Please see Section 17.

C. Total Usage

Not applicable.

Section 17

Wastewater Disposal

Wastewater Disposal

A. On-Site Subsurface Wastewater Disposal Systems

Not applicable.

B. Nitrate-Nitrogen Impact Assessment

Not applicable.

C. Municipal Facility or Utility Company Letter

Not applicable. The proposed project involves the construction of a surface parking lot and therefore does not require wastewater disposal.

D. Wastewater Discharge Information

The proposed development will not discharge any liquid waste into any stream, river, pond, lake or other body of water.

E. Storage or Treatment Lagoons

The proposed development will not include any lagoons, impoundments, ponds or similar structures for storage involving liquid waste other than stormwater.

Section 18

Solid Waste

Solid Waste

A. Estimated Quantities of Solid Waste

The proposed project involves the development of additional surface parking at the Jetport in Portland. The parking expansion is not expected to generate additional solid waste at the site. The proposed lot will fill an existing need for parking, it will not result in an increased use of the Jetport, nor an increase in solid waste generation.

Municipal Solid Waste:

The proposed parking lot is not expected to generate any municipal solid waste. There will be trash receptacles placed along the sidewalk. Additional receptacles are proposed to better serve the modified pedestrian circulation. These receptacles will be maintained by SP Parking who manages the Jetport parking facilities.

B. Off-Site Disposal of Construction/Demolition Debris

The proposed project site is not developed, therefore involves minimal demolition. There will be a small amount of demolition in the areas where the parking lot entrance and exit connect to the existing road system at the Jetport. The majority of site preparation work will involve the removal of vegetation.

Debris associated with the construction of the new 240,000 s.f. surface parking lot is expected to be typical construction waste consisting mostly of the removal of existing asphalt and gravel from existing parking areas that are to be expanded. It will be the responsibility of the contractor to remove construction waste from the site during construction. All construction waste will be transported and disposed of off-site to a local facility (to be selected by the contractor) by a Non-Hazardous Waste Transporter. Local options include the Bath Landfill at Detritus Dr. Bath, ME 04530

C. On-Site Disposal of Wood Waste/Land Clearing Debris

A qualified tree cutter will perform the required tree clearing and any marketable logs will be taken off-site. The associated stumps and grubbing will be ground on-site by a portable stump grinder and used as mulch in the stabilization of back slopes and for erosion control. The majority of the trees to be removed are diseased/dying. It is estimated that approximately 4 acres or 1,600 cubic yards of tree waste will be generated as part of this project (assuming 4 acres of clearing @ 400cy/acre). The grinding must be completed within a 30-day time period if a DEP permit has not been obtained. Material that has been ground and is not being used on-site must be hauled off-site within a time-period of 30 days from the end of the grinding process by a Non-Hazardous Waste Transporter. We anticipate that all material can be chipped and/or ground and used on site.

D. **Special or Hazardous Waste**

Not applicable. Past use of the site does not indicate that contaminated soils or other potential hazards to human health or the environment will be found during grading and excavation of the site, nor were any hazards visually apparent during the environmental site assessment field visits. Any hazardous material used during construction should be disposed of per applicable Federal and State laws regarding the detection, identification, handling, storage, transportation and disposal of special wastes and hazardous wastes.

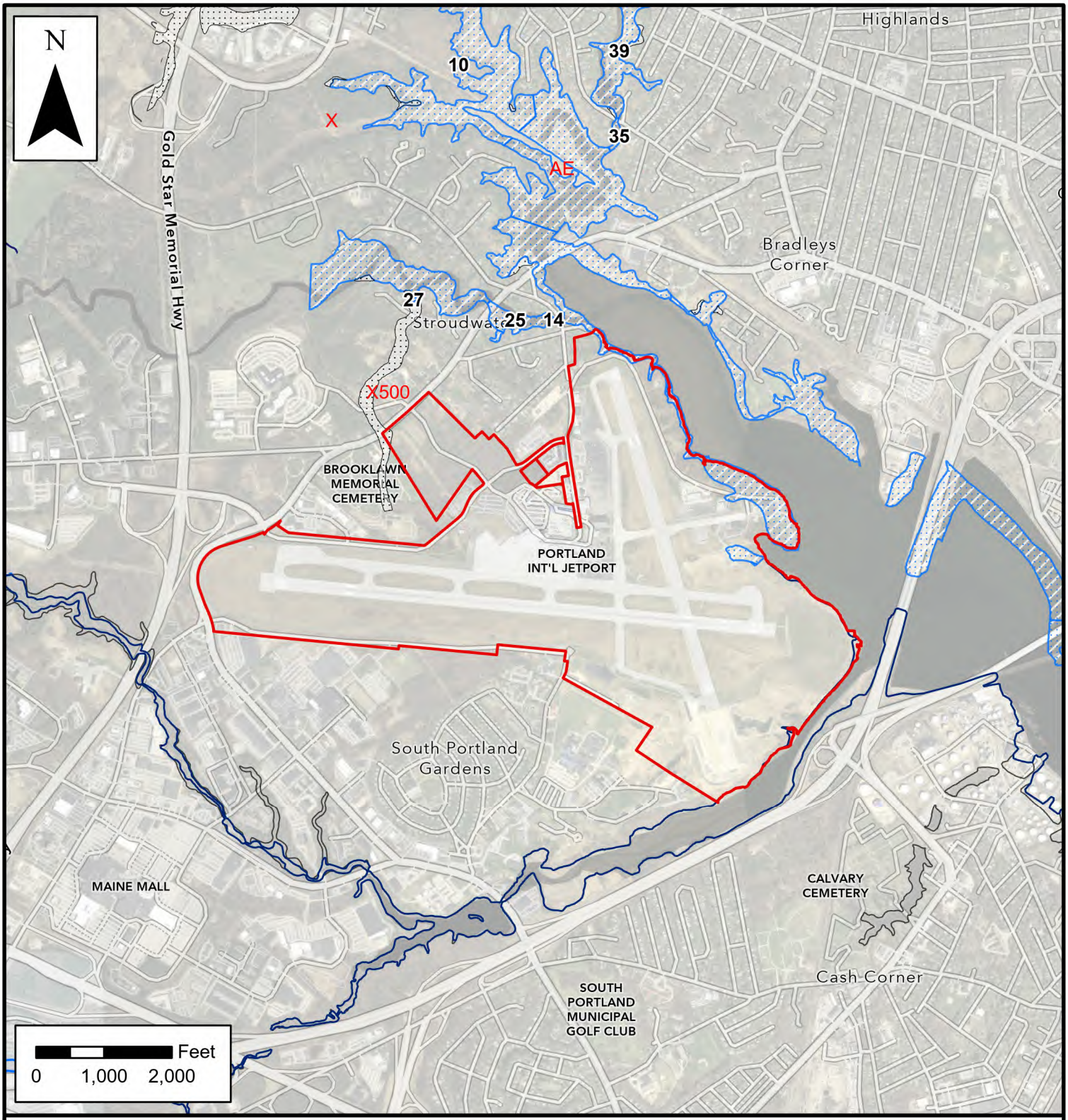
Section 19

Flooding

Section 19

Flooding

The proposed project is not located in a flood hazard zone. Please see this Section for a copy of the FEMA FIRM map: Community Panel Number 230053 0004 C, effective 1981,



PROJECT SITE

FLOOD ZONES 1986 EFFECTIVE (PORTLAND)

ZONE AE

500 YEAR

FEMA 100-YR FLOODPLAINS (SOUTH PORTLAND)

ZONE A

ZONE AE

500 YEAR

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FEMA NATIONAL FLOOD HAZARDS

PORTLAND JETPORT

SCALE: 1:24,000

DATE: 11/13/2023

LOCATION:
1001 WESTBROOK ST
PORTLAND, ME

INFORMATION: FLOOD ZONES 1986 EFFECTIVE - PORTLAND, ME MAP SERVER
SOUTH PORTLAND FIRM PANEL
230053 0004 C - EFFECTIVE 1981

Section 20

Blasting

Blasting

Given the nature of the site it is not anticipated that blasting will be required. Should ledge be encountered during construction, a blasting plan will be submitted for approval that has been developed to be in compliance with the accepted limit for safe levels of blasting vibrations as developed by the U.S. Bureau of Mines as presented in Appendix B of the U.S. Bureau of Mines, RI 8507.

Blasting Requirements

Should blasting be necessary, we recommend that the following controls be implemented for the project:

The Contractor should comply with all applicable laws, rules, ordinances, and regulations of the federal government, the State of Maine, and the City of Portland governing transportation, storage, handling and use of explosives.

Prior to the start of rock excavation or blasting work, notices should be sent to residents and businesses in the area describing the blasting and rock excavation work, indicating the approximate schedule of work, and describing blasting procedures, mitigation measures, and blast warning signals.

Prior to the start of blasting work, pre-blast condition surveys should be conducted of all existing structures and conditions on the site, adjacent to the site, or in the vicinity of the site. These surveys should extend to such structures, wells, or an item that may be affected by the Contractor's blasting operations. As a minimum, condition surveys should be performed on all structures within a half-mile of anticipated blasting areas.

Prior to the start of blasting work, the Contractor should submit to the engineer for review a blasting plan containing details of proposed blasting and construction operations including:

A. Sequence and schedule of blasting rounds including the general sequence of drilling, blasting, excavating, etc.

B. Specifics of typical blast rounds and open cut blast rounds in deepest rock cut areas and areas closest to existing structures.

C. In each area specified, include the following blast round details:

- Diameter, spacing, burden, depth and orientation of each blast hole for each round design.
- Nomenclature and amount (in terms of weight and number of cartridges) of explosives and distribution of charge to be used within each hole, on each delay,

and the total for the blast.

- Nomenclature and type of detonators and delay pattern for the round.
- Type and location of stemming to be used in holes.
- Calculations of anticipated vibration levels at nearest adjacent structure or well.

D. Specifics of Test Blasts to check effectiveness and vibration characteristics of typical trench and open cut blasting rounds.

E. Methods of matting or covering the blast area to prevent fly rock and excessive air blast overpressure.

F. Name and qualifications of licensed blaster who will be on site at all times directly supervising the loading and detonation of each blast.

G. Name and qualifications of the person responsible for conducting pre-blast condition surveys.

H. Name and qualifications of the person responsible for monitoring and reporting blast vibrations.

I. Details of an audible advance signal system to be employed at the job site as a means of informing workers, Engineer, Architect, Owner, and the general public that a blast is about to occur. Details of access control during blasting.

The Contractor should conduct all blasting activity in such a manner that the peak particle velocity of ground vibration measured at the locations of the nearest structures or wells to the blast does not exceed the "safe limits" recommended by the U.S. Bureau of Mines as presented in Figure B-1 of Appendix B of U.S. Bureau of Mines, RI 8507.

The Contractor should conduct all blasting activities in such a way that sound levels from blasting shall not exceed the limits given in the Maine Department of Environmental Protection Rules, Chapter 375.10 (c)(4)(c).

# of Blasts Per Day	Sound Level Limit
1	129 dBL
2	126 dBL
3	124 dBL
4	123 dBL

Blast monitoring should be conducted by an independent firm trained in the use of a seismograph, and records should be analyzed and results reported by persons familiar with analyzing and reporting the frequency content of a seismograph record. A minimum of two (2) engineering seismographs shall be used for each blast, one each adjacent to the nearest off-site structures or wells which lie within a 300-foot radius of blasting activities.

Blast Monitoring Equipment: All instrumentation proposed for use on the project shall have been calibrated within the previous six (6) months to a standard traceable to the National Bureau of Standards. Characteristics of required instrumentation are listed below:

- Measure the three (3) mutually perpendicular components of particle velocity in the directions vertical, radial and perpendicular to the vibration source.

- Measure and display the maximum peak particle velocity component and air blast overpressure. These readings must be displayed and be able to be read in the field, immediately after each blast.

- Furnish a permanent time history record of particle velocity waveforms and air blast overpressure waveforms, so that frequency and time of maximum peak particle velocity or air blast overpressure can be determined.

Blast Monitoring Reports: Within 24 hours following each blast, the Contractor should submit to the Engineer a Blast Monitoring Report. Each Blast Monitoring Report should include all of the following applicable items:

- Blast round design data, as indicated in Section C of the Blasting Requirements.

- Blast Monitoring Location Plan, indicating the location of the blast, the monitoring locations, and the distances from the blast to monitoring locations.

- Vibration and air blast overpressure data from each seismograph, including a copy of the strip chart (or other permanent record of velocity/time waveform) with calibration and monitoring record marked with the date, time and location of the blast.

- In the event that the Contractor's design round results in ground vibrations and/or air blast overpressures exceed the blasting limit criteria presented herein, the Contractor should immediately revise the round design appropriately and submit the revised round design to the Engineer for review. Allow sufficient time for review.

- The Contractor should report to the Engineer in writing all blasting complaints received by the Contractor within 24 hours of receipt. Each blast complaint report should include the name and address of the complaint, time received, date and time of blast complained about, and a description of the circumstances which led to the complaint. Upon receipt of a written complaint from a resident alleging damage from the blasting, the Contractor's representative or a representative of the Blaster's Insurance Company should investigate the claim and a written report should be issued to the homeowner, with a copy to the Engineer, of the results of the investigation and the response of the Contractor. This written report should be received by the resident and the Engineer within 15 workdays of receipt of the written complaint.

Review by the owner and the owner's consultant of the blast designs and techniques shall not relieve the Contractor of his responsibility for the accuracy, adequacy, and safety of the blasting, exercising proper supervision and field judgment and producing the results within the blasting limits required by the requirements.

Blasting shall be limited to between the hours of 9:00 a.m. and 4:00 p.m., Monday through Friday.

Blasting mats shall be utilized for all blast rounds detonated to prevent the throw of fly rock from the blasting area, unless the Contractor's independent professional engineer/seismologist determines that the overburden is sufficient enough to prevent fly rock.

Ammonium Nitrate Fuel Oil (ANFO) shall not be permitted for blasting.

At the start of blasting, the Contractor shall perform a series of test blasts to establish a site-specific relationship between the charge weight per millisecond delay and peak ground vibration levels at various distances from the blast. The results of the test blasts will form the basis for selection of maximum permissible charge weights during production blasting.

Section 21

Air Emissions

Air Emissions

The proposed development is not anticipated to generate adverse air emissions which could impact the developed area or abutting properties. Temporary emissions may occur during the construction of the project due to earth moving activities and construction equipment. These emissions are expected to be limited in nature and of short duration. Provisions for dust control, if needed during construction, have been included in the Erosion and Sediment Control Plan.

Section 22

Odors

Odors

The proposed project involves the construction of a surface parking lot at an existing airport. The proposed project is not expected to result in odor generation beyond minor odor amounts originating from the typical circulation of motor vehicles around the site. Temporary limited odors may arise during construction as a result of construction equipment working on the site. This odor potential is short-term and not expected to be significant.

Section 23

Water Vapor

Water Vapor

The proposed project involves the construction of a surface parking lot. There is no proposed portion of the project that is expected to generate water vapor emissions that will impact the developed area or abutting properties.

Section 24

Sunlight

Sunlight

The proposed development involves the construction of a surface parking lot which is a horizontal surface and does not extend vertically; therefore, the project does not block of interfere with sunlight.

Section 25

Notices

Notices

A. Evidence That a Notice Has Been Sent

Please see this Section for a copy of the Form B Public Notice and the certified mail receipts.

A public meeting was held on December 12, 2023. Please see this Section for a copy of Form C, the meeting attendance sheet, and meeting minutes.

B. List of Abutters

Please see this Section.

Notice of Intent to File

Please take notice that the Portland International Jetport of 1001 Westbrook Street, Portland, ME is intending to file an Amended Site Location of Development Act permit application with the Maine Department of Environmental Protection pursuant to the provisions of 38 M.R.S.A. §§ 481 thru 490 and a Natural Resource Protection Act permit application pursuant to the provisions of 38 M.R.S.A. §§ 480-A thru 480-BB on or about **February 20, 2024**.

The Portland International Jetport is proposing an expansion of its existing parking areas with an approximately 240,000 s.f. long term parking area to be located at the airport campus. The proposed project will result in approximately 8,618 s.f. of wetland impact.

A request for a public hearing or a request that the Board of Environmental Protection assume jurisdiction over this application must be received by the Department in writing, no later than 20 days after the application is found by the Department to be complete and is accepted for processing. A public hearing may or may not be held at the discretion of the Commissioner or Board of Environmental Protection. Public comment on the application will be accepted throughout the processing of the application.

The application will be filed for public inspection at the Department of Environmental Protection's office in Portland during normal working hours. A copy of the application may also be seen at the City of Portland municipal offices.

Written public comments may be sent to the Southern Maine Regional Office in Portland at MDEP, Southern Maine Regional Office, 312 Canco Road, Portland, Maine 04101 where the application is filed for public inspection.

FORM C

PUBLIC NOTICE FILING AND CERTIFICATION

The DEP Rules, Chapter 2, require an applicant to provide public notice for all Site Location projects with the exception of minor revisions and condition compliance applications. In the notice, the applicant must describe the proposed activity and where it is located. **"Abutter"** for the purposes of the notice provision means any person who owns property that is BOTH (1) adjoining and (2) within one mile of the delineated project boundary, including owners of property directly across a public or private right of way.

1. **Newspaper:** You must publish the Notice of Intent to File in a newspaper circulated in the area where the activity is located. The notice must appear in the newspaper within 30 days prior to the filing of the application with the Department. You may use the attached Notice of Intent to File form, or one containing identical information, for newspaper publication and certified mailing.

2. **Abutting Property Owners:** You must send a copy of the Notice of Intent to File by certified mail to the owners of the property abutting the activity. Their names and addresses can be obtained from the town tax maps or local officials. They must receive notice within 30 days prior to the filing of the application with the Department.

3. **Municipal Office:** You must send a copy of the Notice of Intent to File and a **duplicate of the entire application** to the Municipal Office.

   ATTACH a list of the names and addresses of the owners of abutting property.

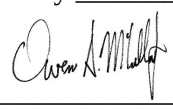
CERTIFICATION

By signing below, the applicant or authorized agent certifies that:

1. A Notice of Intent to File was published in a newspaper circulated in the area where the project site is located within 30 days prior to filing the application;
2. A certified mailing of the Notice of Intent to File was sent to all abutters within 30 days of the filing of the application;
3. A certified mailing of the Notice of Intent to File, and a duplicate copy of the application was sent to the town office of the municipality in which the project is located; and
4. Provided notice of, if required, and held a public informational meeting in accordance with Chapter 2, Rules Concerning the Processing of Applications, Section 14, prior to filing the application. Notice of the meeting was sent by certified mail to abutters and to the town office of the municipality in which the project is located at least ten days prior to the meeting. Notice of the meeting was also published once in a newspaper circulated in the area where the project site is located at least seven days prior to the meeting.

The Public Informational Meeting was held on December 12, 2023.
Date

Approximately 39+ members of the public attended the Public Informational Meeting.



Signature of Applicant or Authorized Agent

02-15-2024
Date

Portland Press Herald
Maine Sunday Telegram
pressherald.com

Classified Advertising Proof

Mark Adams
Sebago Technics Inc
75 John Roberts Rd
Suite 4A
South Portland
ME
04106
+1 (207) 856-0277
apinvoices@sebagotechnics.com

Thank you for placing your advertisement with us.

Your order information and a preview of your advertisement are attached below for your review. If there are changes or questions, please contact the classified department at (207) 791-6100

Thank you

(207) 791-6100 jjensen@mainetoday.com Monday – Friday 8:00 am – 5pm

Order Number		Order Price	
Sales Rep.	**Joan Jensen**	PO No.	**19059 Notice of Intent to File / Julie Springer**
Account		Payment Type	**Invoice**

Publication	**Portland Press Herald**	Number of dates	**1**
First Run Date	**02/07/2024**	Last Run Date	**02/07/2024**

Publication	**Online Upsell PPH**	Number of dates	**1**
First Run Date	**02/07/2024**	Last Run Date	**02/07/2024**

Public Notice

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U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

OFFICIAL USE

Certified Mail Fee
$

Extra Services & Fees *(check box, add fee as appropriate)*
- ☐ Return Receipt (hardcopy) $
- ☐ Return Receipt (electronic) $
- ☐ Certified Mail Restricted Delivery $
- ☐ Adult Signature Required $
- ☐ Adult Signature Restricted Delivery $

Postage
$

Postmark Here

SCARBOROUGH ME FEB 06 2024 04074

7022 2410 0003 1896 7796

WYMAN DREW W &
COLLEEN L POWER JTS
1 COBB AVE
PORTLAND, ME 04102

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

OFFICIAL USE

Certified Mail Fee
$

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- ☐ Return Receipt (hardcopy) $
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7022 2410 0003 1896 7802

AHMADOV TARLAN R &
ZEMFIRA M AHMADOVA JTS
10 FOX HALL RD
FALMOUTH, ME 04105

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HANGAR GROUP LLC
100 AVIATION BLVD
SOUTH PORTLAND, ME 04106

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GREGORY LEE &
MICHAEL GREGORY JTS
101 COBB AVE
PORTLAND, ME 04102

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7022 2410 0003 1896 7833

NAPIER DEBORAH L
111 COBB AVE
PORTLAND, ME 04102

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7022 2410 0003 1896 7840

CAMPBELL KEVIN L &
CINDY A JTS
1130 WESTBROOK ST
PORTLAND, ME 04102

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7022 2410 0003 1896 7857

EDGCOMBE JOSHUA J &
KAREN EDGCOMBE JTS
1144 WESTBROOK ST
PORTLAND, ME 04102

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7022 2410 0003 1896 7864

SMITH NANCY S &
PAUL D JTS
1157 WESTBROOK ST
PORTLAND, ME 04102

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7022 2410 0003 1896 7871

HIDER MARK S VN VET
1161 WESTBROOK ST
PORTLAND, ME 04102

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HARDING RICHARD B
1168 WESTBROOK ST
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7022 2410 0003 1896 7895

KINNEY ELISABETH MARY
1169 WESTBROOK ST
PORTLAND, ME 04102

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HAWKES ANDREA C &
DONALD K HAWKES JTS
1181 WESTBROOK ST
PORTLAND, ME 04102

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SILK DAVID P
1187 WESTBROOK ST
PORTLAND, ME 04102

7022 2410 0003 1893 2688

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AINSWORTH THOMAS G &
K MONAHAN AINSWORTH JTS
12 GARRISON ST EXT
PORTLAND, ME 04102

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DRICE MORAVIA
129 WILLIAM ST
PORTLAND, ME 04103

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440 WESTERN AVENUE ASSOCIATES LLP
131 JOHNSON RD
STE 4
PORTLAND, ME 04102

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STATE OF MAINE
16 STATE HOUSE STATION
AUGUSTA, ME 04333

7022 2410 0003 1893 2725

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FANCY SAUCE LLC
17 SOUTH ST # 3
PORTLAND, ME 04102

7022 2410 0003 1893 2732

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DIVERSIFIED PARTNERS LLC
17 SOUTH ST
3RD FLOOR
PORTLAND, ME 04101

7022 2410 0003 1893 2749

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MITHRAS LLC
18 ARLINGTON RD
SOUTH PORTLAND, ME 04106

7022 2410 0003 1893 2756

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CHRISTCHURCH OF PORTLAND
1900 CONGRESS ST
PORTLAND, ME 04102

7022 2410 0003 1893 2763

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FAITH TEMPLE
1914 CONGRESS ST
PORTLAND, ME 04102

7022 2410 0003 1893 2770

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DUBOIS PAUL A &
KIMBERLY A DUBOIS JTS
1915 CONGRESS ST
PORTLAND, ME 04102

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PORTLAND LODGE #188 BPOE OF USA
1945 CONGRESS ST
PORTLAND, ME 04102

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GATEWAY BUSINESS PARK CONDO
1945 CONGRESS ST
PORTLAND, ME 04101

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MAIETTA JEFFREY
1967 CONGRESS ST
PORTLAND, ME 04102

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BROOKLAWN MEMORIAL PK
2002 CONGRESS ST
PORTLAND, ME 04102

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2015 CONGRESS ST LLC
2015 CONGRESS ST
PORTLAND, ME 04102

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UNUM CORP
2211 CONGRESS ST
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7022 2410 0003 1893 2855

GIRI PORTLAND REAL ESTATE INC
225 SQUANTUM ST
STE 200
QUINCY, MA 02171

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7022 2410 0003 1893 2862

GIRI PORTLAND WESTBROOK INC
225 W SQUANTUM ST
STE 200
QUINCY, MA 02171

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7022 2410 0003 1893 2879

145 JETPORT BOULEVARD LLC
2300 CROWN COLONY DRIVE,
SUITE 203
QUINCY, MA 02169

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MAINE TURNPIKE AUTHORITY
2360 CONGRESS ST
PORTLAND, ME 04102

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To
FRESHLY BROOD LLC
26 COLLINS MILLS ROAD
WEST GARDINER, ME 04345
Street, Apt. No., or PO Box No.
City, State, ZIP+4®

7022 2410 0003 1893 2893

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To
PARKER KENNETH I & KAREN C
2-A GARRISON ST
PORTLAND, ME 04102
Street, Apt. No., or PO Box No.
City, State, ZIP+4®

7022 2410 0003 1893 2909

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To
758 WESTBROOK LLC
33 NUTE RD
MADBURY, NH 03823
Street, Apt. No., or PO Box No.
City, State, ZIP+4®

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To
DIODES US MANUFACTURING
INCORPORATED
333 WESTERN AV
SOUTH PORTLAND, ME 04106
Street, Apt. No., or PO Box No.
City, State, ZIP+4®

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To
TOYE REALTY HOLDINGS II LLC
3520 PIEDMONT RD NE
STE 410
ATLANTA, GA 30305
Street, Apt. No., or PO Box No.
City, State, ZIP+4®

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To
CITY OF PORTLAND
389 CONGRESS ST
PORTLAND, ME 04101
Street, Apt. No., or PO Box No.
City, State, ZIP+4®

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To
RAYMOND JUDITH P &
TIMOTHY W RAYMOND
4 FIELDSTONE CT
PORTLAND, ME 04103
Street, Apt. No., or PO Box No.
City, State, ZIP+4®

7022 2410 0003 1893 2954

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Postage
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To
TEMPLE BETH EL
400 DEERING AVE
PORTLAND, ME 04103
Street, Apt. No., or PO Box No.
City, State, ZIP+4®

7022 2410 0003 1893 2961

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Postage
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To
JETPORT STATE BUILDING LLC
42 MARKET STREET
PORTLAND, ME 04101
Street, Apt. No., or PO Box No.
City, State, ZIP+4®

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Postage
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To
MAINE TURNPIKE AUTHORITY
430 RIVERSIDE ST
PORTLAND, ME 04103
Street, Apt. No., or PO Box No.
City, State, ZIP+4®

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To
2 MEADOWOOD LL
446 WESTERN AV
SOUTH PORTLAND, ME 04106
Street, Apt. No., or PO Box No.
City, State, ZIP+4®

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7022 2410 0003 1893 3005

CROMWELL SUSAN A &
TIMOTHY A WALSH JTS
49 ST GEORGE ST
PORTLAND, ME 04103

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7022 2410 0003 1893 3012

MAINE, STATE OF
50 LYDIA LANE
SOUTH PORTLAND, ME 04106

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7022 2410 0003 1893 3029

145 JETPORT BOULEVARD LLC
54 BARTOL ISLAND RD
FREEPORT, ME 04032

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TRANSPORT LEASING CORP
58 LOWELL JUNCTION RD
ANDOVER, MA 01810

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7022 2410 0003 1893 3043

PINGREE 2000 REAL ESTATE HOLDINGS LLC
600 CORPORATE PARK DR
SAINT LOUIS, MO 63105

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7022 2410 0003 1893 3050

MAINE, STATE OF
677 WESTBROOK ST
SOUTH PORTLAND, ME 04106

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7022 2410 0003 1893 3067

AAM PORTLAND HOTEL LLC
78 BLANCHARD RD STE 100
BURLINGTON, MA 01803

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7022 2410 0003 1893 3074

ROBBINS JAMES E & DEBRA WITS
8 GARRISON ST
PORTLAND, ME 04102

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7022 2410 0003 1893 3081

WALKART ELIZABETH
9 COBB AVE
PORTLAND, ME 04102

SCARBOROUGH ME
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7022 2410 0003 1893 3098

MAINE, STATE OF
C/O MAINE PROPERTIES,
197 US RT 1
SCARBOROUGH, ME 04074

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7022 2410 0003 1893 3104

VEREIT REAL ESTATE L.P.
DBA: DULUTH TRADING COMPANY,
201 EAST FRONT ST
MT. HOREB, WI 53572

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MAIETTA NEIL R &
JEFFREY N MAIETTA JTS
PO BOX 1025
GRAY, ME 04039

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TEXAS INSTRUMENTS INCORPORATED
PO BOX 660199, MS A3000
DALLAS, TX 75265

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MAINE, STATE OF
RICHARD BERMAN,
1 INDIA ST
PORTLAND, ME 04101

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19059
Page 6 of 6
February 5, 2024

PORTLAND

OWNER	ADDRESS	CITY	STATE	ZIP
EDGCOMBE JOSHUA J & KAREN EDGCOMBE JTS	1144 WESTBROOK ST	PORTLAND	ME	04102
CAMPBELL KEVIN L & CINDY A JTS	1130 WESTBROOK ST	PORTLAND	ME	04102
PINGREE 2000 REAL ESTATE HOLDINGS LLC	600 CORPORATE PARK DR	SAINT LOUIS	MO	63105
GIRI PORTLAND WESTBROOK INC	225 W SQUANTUM ST STE 200	QUINCY	MA	02171
SMITH NANCY S & PAUL D JTS	1157 WESTBROOK ST	PORTLAND	ME	04102
BROOKLAWN MEMORIAL PK	2002 CONGRESS ST	PORTLAND	ME	04102
145 JETPORT BOULEVARD LLC	54 BARTOL ISLAND RD	FREEPORT	ME	04032
GIRI PORTLAND REAL ESTATE INC	225 SQUANTUM ST STE 200	QUINCY	MA	02171
GREGORY LEE & MICHAEL GREGORY JTS	101 COBB AVE	PORTLAND	ME	04102
RAYMOND JUDITH P & TIMOTHY W RAYMOND	4 FIELDSTONE CT	PORTLAND	ME	04103
AHMADOV TARLAN R & ZEMFIRA M AHMADOVA JT	10 FOX HALL RD	FALMOUTH	ME	04105
MITHRAS LLC	18 ARLINGTON RD	SOUTH PORTLAND	ME	04106
AAM PORTLAND HOTEL LLC	78 BLANCHARD RD STE 100	BURLINGTON	MA	01803
TOYE REALTY HOLDINGS II LLC	3520 PIEDMONT RD NE STE 410	ATLANTA	GA	30305
BROOKLAWN MEMORIAL PK	2002 CONGRESS ST	PORTLAND	ME	04102
FAITH TEMPLE	1914 CONGRESS ST	PORTLAND	ME	04102
CHRISTCHURCH OF PORTLAND	1900 CONGRESS ST	PORTLAND	ME	04102
WALKART ELIZABETH	9 COBB AVE	PORTLAND	ME	04102
WYMAN DREW W & COLLEEN L POWER JTS	1 COBB AVE	PORTLAND	ME	04102
HARDING RICHARD B	1168 WESTBROOK ST	PORTLAND	ME	04102
HIDER MARK S VN VET	1161 WESTBROOK ST	PORTLAND	ME	04102
KINNEY ELISABETH MARY	1169 WESTBROOK ST	PORTLAND	ME	04102
HAWKES ANDREA C & DONALD K HAWKES JTS	1181 WESTBROOK ST	PORTLAND	ME	04102
AINSWORTH THOMAS G & K MONAHAN AINSWORT	12 GARRISON ST EXT	PORTLAND	ME	04102
SILK DAVID P	1187 WESTBROOK ST	PORTLAND	ME	04102
ROBBINS JAMES E & DEBRA W JTS	8 GARRISON ST	PORTLAND	ME	04102
PARKER KENNETH I & KAREN C	2-A GARRISON ST	PORTLAND	ME	04102
TEMPLE BETH EL	400 DEERING AVE	PORTLAND	ME	04103
TRANSPORT LEASING CORP	58 LOWELL JUNCTION RD	ANDOVER	MA	01810
MAIETTA JEFFREY	1967 CONGRESS ST	PORTLAND	ME	04102
DIVERSIFIED PARTNERS LLC	17 SOUTH ST 3RD FLOOR	PORTLAND	ME	04101
PORTLAND LODGE #188 BPOE OF USA	1945 CONGRESS ST	PORTLAND	ME	04102
FANCY SAUCE LLC	17 SOUTH ST # 3	PORTLAND	ME	04102
CROMWELL SUSAN A & TIMOTHY A WALSH JTS	49 ST GEORGE ST	PORTLAND	ME	04103
MAIETTA NEIL R & JEFFREY N MAIETTA JTS	PO BOX 1025	GRAY	ME	04039
2015 CONGRESS ST LLC	2015 CONGRESS ST	PORTLAND	ME	04102
DUBOIS PAUL A & KIMBERLY A DUBOIS JTS	1915 CONGRESS ST	PORTLAND	ME	04102
DRICE MORAVIA	129 WILLIAM ST	PORTLAND	ME	04103
MAINE TURNPIKE AUTHORITY	430 RIVERSIDE ST	PORTLAND	ME	04103
CITY OF PORTLAND	389 CONGRESS ST	PORTLAND	ME	04101
440 WESTERN AVENUE ASSOCIATES LLP	131 JOHNSON RD STE 4	PORTLAND	ME	04102
STATE OF MAINE	16 STATE HOUSE STATION	AUGUSTA	ME	04333
NAPIER DEBORAH L	111 COBB AVE	PORTLAND	ME	04102
GATEWAY BUSINESS PARK CONDO	1945 CONGRESS ST	PORTLAND	ME	04101
UNUM CORP	2211 CONGRESS ST	PORTLAND	ME	04102

SOUTH PORTLAND

OWNER	ADDRESS	CITY	STATE	ZIP
MAINE, STATE OF	50 LYDIA LANE	SOUTH PORTLAND	ME	04106
MAINE, STATE OF	RICHARD BERMAN, 1 INDIA ST	PORTLAND	ME	04101
MAINE, STATE OF	677 WESTBROOK ST	SOUTH PORTLAND	ME	04106
HANGAR GROUP LLC	100 AVIATION BLVD	SOUTH PORTLAND	ME	04106
758 WESTBROOK LLC	33 NUTE RD	MADBURY	NH	03823
MAINE, STATE OF	C/O MAINE PROPERTIES, 197 US RT 1	SCARBOROUGH	ME	04074
BROOKLAWN MEMORIAL PARK	2002 CONGRESS STREET	PORTLAND	ME	04102-1904
JETPORT STATE BUILDING LLC	42 MARKET STREET	PORTLAND	ME	04101
145 JETPORT BOULEVARD LLC	2300 CROWN COLONY DRIVE, SUITE 203	QUINCY	MA	02169
TRANSPORT LEASING CORP	58 LOWELL JCT RD	ANDOVER	MA	01810
VEREIT REAL ESTATE L.P.	DBA: DULUTH TRADING COMPANY, 201 EAST FRONT ST	MT. HOREB	WI	53572
MAINE TURNPIKE AUTHORITY	2360 CONGRESS ST	PORTLAND	ME	04102
PORTLAND, CITY OF	389 CONGRESS ST	SOUTH PORTLAND	ME	04106
FRESHLY BROOD LLC	26 COLLINS MILLS ROAD	WEST GARDINER	ME	04345
DIODES US MANUFACTURING INCORPORATED	333 WESTERN AV	SOUTH PORTLAND	ME	04106
2 MEADOWOOD LLC	446 WESTERN AV	SOUTH PORTLAND	ME	04106
TEXAS INSTRUMENTS INCORPORATED	PO BOX 660199, MS A3000	DALLAS	TX	75265

PUBLIC INFORMATIONAL MEETING SIGN-IN

Proposed Parking Lot Expansion
Portland International Jetport

Date/Time of Meeting: December 12, 2023, 6 P.M.

Location: Lower Level Open Space Area
1001 Westbrook Street, Portland

Members of the Public in Attendance	
Printed Name	**E-mail**
1. Gretchen Halpert	ghalpert@stny.rr.com
2. Lynn Jennings	pipithird@gmail.com
3. Ron Faris	RFARIS@STNY.RR.COM
4. Dick Farnsworth	OMC@maine.rr.com
5. Andrea Hawkes	achawkes@yahoo.com
6. MARY DAVIS	td@maine.rr.com
7. Kathleen Stokes	kastokes@yahoo.com
8. Kay Wattler	kwaxler3@maine.rr.com
9. WENDY + MICHAEL TAYLOR	WDTAYLOR126@comcast.net
10. Joe & Carolyn Heasley	jheasley1@maine.rr.com
11. Diane Diconzo / Pat Cannell	dianediconzo@gmail.com
12. JANE MARIE WILBERG	MENTJE4463@GMAIL.COM
Developer and Consultant Team in Attendance:	
1. Owen McCullough	Sebago Technics, Inc.
2. Amy Ball Sigl	" " "
3. Trevor Gardine	" " "
4. Paul Bradbury	Airport Director
5. Tom Ainsworth	12 Garrison St.
6.	
7.	

attendees

Members of the Public in Attendance	
Printed Name	**E-mail**
13. Jennifer Stenberg	jensten.88@gmail.com
14. Frederick Falker	ffalker@verizon.net
15. Regina Phillips	rphillips@portlandmaine.gov
16. Gilbert N Mitchell	gibwoody@aol.com
17. Jim Stenberg	jim@jsengineer.com
18. Tricia Foley	tricia.p.f2005@yahoo.com
19. Luis Millones	luis.millones@gmail.com
20. Thomas Hamtrick	twhs31@gmail.com
21. Megan Hamtrick	meganmhamtrick@gmail.com
22. Ava Keniston	kenistonava1@gmail.com
23. Eleanor Keniston	Kenistonava1@gmail.com
24. MARK OKRENT	MOKRENT@BATES.EDU
25. CHARLOTTE WITT	CHARLOTTE.WITT@UNH.EDU
26. Adam Bard	adamjbard@yahoo.com
27. Nancy Dano	nancyedano.com
28. Lee Gregory	leegregorydvm@gmail.com
29. Michael Gregory	michaelhayesgregory@gmail.com
30. MARTHA JOHNSTON	mhjmhc89@gmail.com
31. Zemfira Ahmadova	zemo_usa@yahoo.com
32. Tarlan Ahmadov	tarlan.ahmadov@Gmail.com
33. Kim + Paul Dubois	pdubois1915@yahoo.com
34. Kerry Kirshner	thesagecounsel@gmail.com
35. Stephanie Walsh	stephlwalsh@gmail.com
36. Kim Kenney	KENNEYKIM@HOTMAIL.COM

Members of the Public in Attendance	
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SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

STORMWATER MANAGEMENT REPORT

For

PORTLAND INTERNATIONAL JETPORT
PORTLAND, MAINE

Prepared for:

Portland International Jetport
1001 Westbrook Street
Portland, ME 04101

Prepared by:

Sebago Technics, Inc.
75 John Roberts Rd, Suite 4A
South Portland, ME 04106

February, 2024

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STORMWATER MANAGEMENT REPORT
PORTLAND INTERNATIONAL JETPORT
PORTLAND, ME

1. Introduction

This Stormwater Management Plan Report has been prepared to present analyses performed to address the potential impacts associated with the project due to proposed modification in stormwater runoff characteristics and land cover changes. The stormwater management controls that are outlined in this report have been designed to suit the proposed development and to comply with applicable regulatory requirements.

The project will require a major site plan approval from the City of Portland along with an amendment to the Site Location of Development Act (SLODA) permit (L-13760) and a Natural Resources Protection Act (NRPA) permit through the Maine Department of Environmental Protection (DEP) due to wetland impacts and a related permit through the US Army Core of Engineers (USACE).

The City of Portland zoning maps indicate the property is zoned “Airport Business” with the allowed uses including “parking lots and garages” (Sec. 14-197.1. Permitted uses) and a maximum impervious surface ratio of 70% (City Order No. 295-88, 5-23-88).

2. Existing Conditions

The project site is located at the Portland International Jetport (PWM) and is owned by the City of Portland. The entire acreage for the property is approximately 666 acres with 473 acres of airfield area and 193 acres of area beyond the airfield.

The project site for the proposed development is located near the intersection of Jetport Boulevard and International Parkway. There is an existing paved cellphone lot as well as an existing gravel lot located off Loop Road in the southern section of the project site. The gravel lot drains to the south on the surface of the lot as there is no storm drain network or water quality treatment within this lot. The stormwater runoff from the surface enters a grass swale between the lots and eventually drains to a catch basin near the southeastern corner of the cellphone lot. The northern section of the site consists of undeveloped, wooded land. The project site is approximately 13 acres.

The slopes range from 0% to 8% throughout the entire project site with the lowest approximate elevation of 52 FT and the highest approximate elevation of 90 FT.

The site is tributary to the Fore River, which is considered a major river segment. The site is not located within an urban impaired stream or lake-most at risk watershed according to Chapter 502 of the Maine DEP regulations.

The proposed development area of the site is not located in an identified flood zone per the FEMA Flood Insurance Rate Map.

3. Soils

Soil characteristics were obtained from the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey completed by Sebago Technics. The Hydrologic Groups (HSG) of the soils is classified by Technical Release TR-55 of the Soil Conservation Service as follows:

Soil Map Symbol	Soil Name	Slope (%)	HSG
BuB	Lamoine silt loam	3-8	C/D
Gp	Gravel pits	N/A	N/A
PbB	Paxton fine sandy loam	3-8	C
Sn	Scantic silt loam	0-3	D
Sz	Swanton fine sandy loam	0-3	C/D
WmB	Windsor loamy sand	0-8	A

Hydrologic Soil Group boundaries are delineated on the Watershed Map. A copy of the Class D Intensity Soil Survey is included as Appendix 4.

4. Proposed Site Improvements

The proposed development will consist of two (2) paved parking lots: the lower lot and the upper lot. The upper and lower lots together are proposed to consist of 684 long- term parking spaces. There are landscaped islands proposed in each of the lots.

In total, the proposed site improvements result in 7.24 acres of disturbed area and 7.24 acres of proposed developed area, which consists of 5.64 acres of new impervious area and 1.60 acres of new landscaped or vegetated area.

Lower Lot

The lower lot is proposed to be located where the existing paved cellphone and valet gravel lots currently exist. There is a proposed entrance on Loop Road and exit on Westbrook Street. There is also an internal connecting road from the lower lot to the upper lot. The lower lot is proposed to consist of eight (8) ADA- compliant parking spaces and 248 standard parking spaces. The lower lot is proposed to be treated by one (1) Contech Stormfilter BMP with upstream CMP Pipe Detention. The total area tributary to the treatment system is equal to 105,340 SF (2.42 Ac), which includes approximately 90,030 SF (2.07 Ac) of impervious area.

Upper Lot

The upper lot is proposed to be located northwest of the lower lot, bounded by Jetport Boulevard to the northeast and Loop Road to the southwest. The entrance to the upper lot is the same as the lower lot on Loop Road with an exit onto Loop Road. The upper lot is proposed to consist of twelve (12) ADA-compliant parking spaces and 416 standard parking spaces. The upper lot is proposed to be treated by one (1) Contech Stormfilter BMP with upstream CMP Pipe Detention. The total area of the lot is approximately 180,210 SF (4.14 Ac), which includes approximately 146,080 SF (3.35 Ac) of impervious area.

The overall stormwater management system for the project will consist of catch basins and two (2) subsurface drainage systems. The two (2) subsurface drainage systems will be water quality treatment systems with upstream detention designated to the long-term parking lots. Since the Jetport discharges to the Fore River, the applicant will be pursuing a waiver of the Flooding Standard pursuant to MDEP Rules, Chapter 500(4)(F)(3)(b).

5. Existing Conditions Model

The existing conditions watershed plan consists of nine (9) subcatchments labeled 1S through 9S in the HydroCAD model. Four (4) locations were identified as Points of Analyses (POA) for comparing peak runoff rates. Please refer to the Existing Conditions HydroCAD model and Existing Conditions Watershed Plan. The overall drainage area included in the model is equal to 11.88 acres.

POA-1 is located near the intersection of Loop Road and Westbrook Street and represents the discharge pipe of existing catch basin B-32A. For the specific study point, there are five (5) existing catch basins that capture the stormwater runoff of the contributing watersheds. Watersheds 1S, 2S, 3S, 4S, 6S, and 8S contribute to POA-1 with an overall runoff area of approximately 9.06 acres.

POA-2 is located along Westbrook Street at an existing drainage manhole (WS-DMH-2). Watershed 5S contributes to this study point with a runoff area of approximately 0.82 acres.

POA-3 is located on an abutting property at an existing catch basin. Watershed 9S contributes to this study point with a runoff area of approximately 0.36 acres.

POA-4 is located along Loop Road at an existing drainage manhole (unlabeled). Watershed 7S contributes to this study point with a runoff area of approximately 1.64 acres.

6. Proposed Conditions Model

The proposed conditions consists of the same overall watershed area as the existing conditions, however, the pre-development subcatchments have been broken into smaller

watersheds as a result of the proposed development. The total area in the proposed conditions model remains unchanged from the existing conditions model at 11.88 acres.

POA1: Subcatchments 1S, 2.1S, 3.1S thru 3.7S, 4.1S thru 4.8S, 6.1S, and 8.1S thru 8.12S are tributary to POA-1 with an overall tributary area of 10.21 acres. The increase in tributary area is a result of the proposed development and alteration of drainage patterns to convey and treat stormwater to the two (2) subsurface drainage systems.

Subcatchments 8.2S thru 8.12S are tributary to Stormfilter Treatment Unit #1 (SF-1), represented by nodes 8.83P, 8.84P, and 8.85P. 8.83P represents the water quality detention of the Stormfilter, while 8.84P represents the peak flow detention of the upstream storage configuration. 8.85P represents the 18" discharge pipe that combines the water quality discharge and peak detention flow, which eventually drains to POA-1.

Subcatchments 3.1S thru 3.7S and 4.2S thru 4.8S are tributary to Stormfilter Treatment Unit #2 (SF-2), represented by nodes 3.32P, 3.33P, and 3.34P. 3.32P represents the water quality detention of the Stormfilter, while 3.33P represents the peak flow detention of the upstream storage configuration. 3.34P represents the 24" discharge pipe that combines the water quality discharge and peak detention flow, which eventually drains to POA-1.

Subcatchment 1S remains unchanged from the existing condition. Subcatchment 2.1S represents existing conditions subcatchment 2S that has been altered as a result of the proposed project through the change in land cover type and altered grading and drainage patterns. Subcatchment 6.1S represents the existing conditions subcatchment 6S that has been altered as a result of the proposed project through grading and land cover changes. Subcatchment 8.1S represents the remainder of existing conditions subcatchment 8S that remains largely unchanged from the existing condition and does not drain to SF-1. Subcatchments 1S, 2.1S, 6.1S and 8.1S are tributary to existing conditions catch basin B-34, represented by node 2P, which eventually drains to POA-1.

POA-2: Subcatchment 5.1S is tributary to POA-2 with an overall tributary area of 0.47 acres. 5.1S represents the remainder of existing conditions subcatchment 5S that continues to drain to POA-2. 5.1S is the result of the alterations to subcatchment 9S in the proposed development, which consists of grading and conveyance of stormwater to be attenuated and treated by SF-2.

POA-3: Subcatchment 9.1S is tributary to POA-3 with an overall tributary area of 0.16 acres. 9.1S represents the remainder of existing conditions subcatchment 9S that continues to drain to POA-3. 9.1S is the result of the alterations to subcatchment 9S in the proposed development, which consists of grading and conveyance of stormwater to be attenuated and treated by SF-1.

POA-4: Subcatchment 7.1S is tributary to POA-4 with an overall tributary area of 1.02 acres. 7.1S represents the remainder of existing conditions subcatchment 7S that continues to

drain to the existing conditions drain manhole that is represented by node 7P in the existing and proposed conditions models.

7. Stormwater Management

Basic Standard - Chapter 500, Section 4(B)

Since the project will disturb more than one (1) acre of land area, MDEP Basic Standards apply, requiring that grading or other construction activities on the site do not impede or otherwise alter drainage ways to have an unreasonable adverse impact. We have avoided adverse impacts by providing an Erosion & Sedimentation Control Plan, and an Inspection, Maintenance and Housekeeping Plan (Appendix 3) to be implemented during construction and post-construction stabilization of the site. These construction requirements have been developed following Best Management Practice guidelines.

General Standard - Chapter 500, Section 4(C)

Since the project will create more than one (1) acre of impervious surface, MDEP General Standards apply, which require a project's stormwater management system to include treatment measures that will mitigate for the increased frequency and duration of channel erosive flows due to runoff from smaller storms, provide for effective treatment of pollutants in stormwater, and mitigate potential temperature impacts. The General Standards require treatment of no less than 95% of the site's created impervious area and no less than 80% of the site's created developed area (landscaped area and impervious area combined). To mitigate the changes in hydrologic patterns due to the development of this project, two (2) Contech Stormfilter Treatment BMP's have been implemented into the stormwater management infrastructure. Filtration BMPs are very effective at removing a wide range of pollutants through the use of organic soil filter media.

The Best Management Practices (two (2) subsurface drainage systems) have been designed and sized in accordance with DEP BMP standards contained within Chapter 500 and the BMP Manual. Sizing calculations can be found in Appendix 1. Through the use of the aforementioned BMP's 96.0% of new impervious area and 90.5% of new developed area will be receiving treatment. This meets the requirements for the Maine DEP General Standards.

It is worth noting that in the proposed condition, the redevelopment of the area occupied by the existing gravel and cellphone lots will provide greater water quality than in the existing condition. As described above, in the existing condition, the existing gravel parking lot has no storm drain network to drain the runoff and is not treated prior to entering the Jetport storm drain network. It contributes untreated, turbulent stormwater runoff to the existing system. In the proposed condition, with the implementation of the proposed BMP's, the system will remove pollutants, cool the water, and provide attenuation to the stormwater runoff of the area. This will mitigate impacts to the Fore River Watershed from an area that is already developed.

Flooding Standard - Chapter 500, Section 4(F)

Since the planned project will create more than three (3) acres of impervious surface, MDEP Flooding Standards must be met. The Flooding Standard requires a project's stormwater management system detain, retain, or result in the infiltration of stormwater from 24-hour storms of the 2, 10, and 25-year frequencies such that the peak flows of stormwater from the project site do not exceed the peak flows of stormwater prior to undertaking the project. The project is located within the direct watershed of the Fore River, which is a major river segment. Therefore, the project qualifies for a waiver from the Flooding Standard as defined in MDEP's Chapter 500, Section 4(F)-3(a). As stated above, the majority of the proposed developed area discharges to the existing stormdrain network. Therefore, the project was designed to treat and attenuate stormwater discharge so the pipe capacity of the existing stormdrain network was not increased or exceeded.

A runoff evaluation was performed using the methodology outlined in the USDA Soil Conservation Service's "Urban Hydrology for Small Watersheds - Technical Release #55 (TR-55)". HydroCAD computer software was utilized to perform the calculations.

HydroCAD Stormwater Analysis

Runoff curve numbers were determined for each of the watersheds by measuring the area of each hydrologic soil group within each type of land cover. The type of land cover was determined based on survey data, field reconnaissance and aerial photography. Times of concentration were determined from site topographic maps in accordance with SCS procedures.

The 24-hour rainfall values utilized in the hydrologic model were obtained from Appendix H of MDEP's Chapter 500: Stormwater Management (effective date August 2015). Rainfall values for Cumberland SE County are listed in the table below.

Storm Frequency Precipitation (in./24 hr) Cumberland SE County	
2-year	3.1
10-year	4.6
25-year	5.8

The following table presents the results of the peak runoff calculations at the analysis points for the existing and proposed conditions.

Peak Runoff Rate Summary Table			
Analysis Point	**Storm Event**	**Existing Conditions (cfs)**	**Proposed Conditions (cfs)**
POA-1	2-year	12.9	9.0
	10-year	20.7	15.0
	25-year	27.0	19.8
POA-2	2-year	2.3	1.2
	10-year	3.5	1.9
	25-year	4.5	2.5
POA-3	2-year	0.6	0.3
	10-year	1.2	0.5
	25-year	1.6	0.7
POA-4	2-year	2.3	2.3
	10-year	3.8	3.6
	25-year	5.0	4.6

The HydroCAD Data output sheets from this analysis are appended to this report (Appendix 2) along with the Stormwater Management Plans (Appendix 5). The model predicts that the peak runoff rates in the proposed condition at Points of Analyses 1, 2, 3, & 4 are at or below existing condition runoff rates for the 2, 10, and 25-year storm events with implementation of the proposed stormwater management practices.

8. Summary

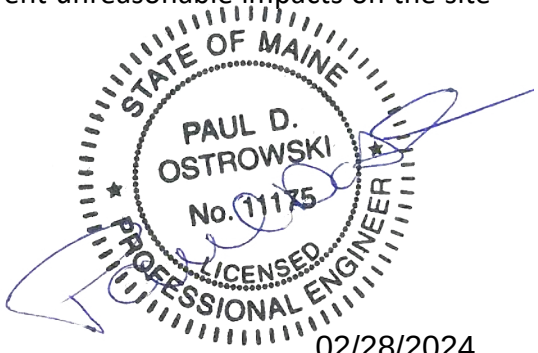
The proposed development has been designed to manage stormwater runoff through Best Management Practices approved by MDEP. Stormwater BMP's provide treatment to 96.0% (95% required) of impervious areas, and 90.5% (80% required) of the total developed area. Runoff discharging from the site in the proposed condition will be at or below existing conditions for the 2, 10, and 25-year storm events at points of analyses 1, 2, 3, & 4. Additionally, erosion and sedimentation controls along with associated maintenance and housekeeping procedures have been outlined to prevent unreasonable impacts on the site and to the surrounding environment.

Prepared by:

SEBAGO TECHNICS, INC.



Tanner F. Goodine, EI
Civil Engineer
TFG/PDO



02/28/2024

Paul D. Ostrowski, PE
Senior Project Engineer

Appendix 1

Stormwater Quality Calculations

Table 1: MDEP GENERAL STANDARD CALCULATIONS

Job #19059: Portland International Jetport (PWM) Parking Expansion

AREA ID	WATERSHED SIZE (S.F.)	EXISTING ONSITE IMPERVIOUS AREA TO REMAIN (S.F.)	NEW ONSITE IMPERVIOUS AREA (S.F.)	NEW ONSITE IMPERVIOUS AREA NOT TREATED BY POROUS ASPHALT* (S.F.)	EXISTING ONSITE LANDSCAPED AREA TO REMAIN (S.F.)	NEW ONSITE LANDSCAPED AREA (S.F.)	NET NEW DEVELOPED AREA (S.F.)	NET EXISTING DEVELOPED AREAS (S.F.)	TREATMENT PROVIDED?	IMPERVIOUS AREA TREATED (S.F.)	LANDSCAPED AREA TREATED (S.F.)	DEVELOPED AREA TREATED (S.F.)	TREATMENT BMP
1S	34,840	33,500			1,340		0	34,840	NO	0	0	0	
2.1S	29,840	16,315	4,530		1,065	7,930	12,460	17,380	NO	0	0	0	
3.1S	1,450		900			550	1,450	0	YES	900	550	1,450	SF-2
3.2S	4,400		2,300			2,100	4,400	0	YES	2,300	2,100	4,400	SF-2
3.3S	7,500		6,550			950	7,500	0	YES	6,550	950	7,500	SF-2
3.4S	5,170		4,660			510	5,170	0	YES	4,660	510	5,170	SF-2
3.5S	7,350		6,520			830	7,350	0	YES	6,520	830	7,350	SF-2
3.6S	7,080		7,080				7,080	0	YES	7,080	0	7,080	SF-2
3.7S	6,280		5,470			810	6,280	0	YES	5,470	810	6,280	SF-2
4.1S	30,540	15,510			8,544	4,758	4,758	24,054	NO	0	0	0	
4.2S	11,860		9,785			2,075	11,860	0	YES	9,785	2,075	11,860	SF-2
4.3S	10,630		9,425			1,205	10,630	0	YES	9,425	1,205	10,630	SF-2
4.4S	11,040		9,180			1,860	11,040	0	YES	9,180	1,860	11,040	SF-2
4.5S	5,620		3,490			2,130	5,620	0	YES	3,490	2,130	5,620	SF-2
4.6S	9,090		7,990			1,100	9,090	0	YES	7,990	1,100	9,090	SF-2
4.7S	6,020		6,020			0	6,020	0	YES	6,020	0	6,020	SF-2
4.8S	11,850		10,665			1,185	11,850	0	YES	10,665	1,185	11,850	SF-2
5.1S	20,660	10,000	495		10,165		495	20,165	NO	0	0	0	
6.1S	50,370	41,330	900		8,140	0	900	49,470	NO	0	0	0	
7.1S	44,485	28,795	2,450		4,120	7,640	10,090	32,915	NO	0	0	0	
8.1S	13,930	5,530	1,380		7,020		1,380	12,550	NO	0	0	0	
8.2S	19,350		16,340			3,010	19,350	0	YES	16,340	3,010	19,350	SF-1
8.3S	33,150		31,640			1,510	33,150	0	YES	31,640	1,510	33,150	SF-1
8.4S	22,420		17,510			4,910	22,420	0	YES	17,510	4,910	22,420	SF-1
8.5S	15,090		12,280			2,810	15,090	0	YES	12,280	2,810	15,090	SF-1
8.6S	9,090		0			9,090	9,090	0	YES	0	9,090	9,090	SF-1
8.7S	11,120		7,885			3,235	11,120	0	YES	7,885	3,235	11,120	SF-1
8.8S	5,080		1,800			3,280	5,080	0	YES	1,800	3,280	5,080	SF-1
8.9S	9,920		8,240			1,680	9,920	0	YES	8,240	1,680	9,920	SF-1
8.10S	17,310		16,705			605	17,310	0	YES	16,705	605	17,310	SF-1
8.11S	8,440		7,765			675	8,440	0	YES	7,765	675	8,440	SF-1
8.12S	26,900		23,570			3,330	26,900	0	YES	23,570	3,330	26,900	SF-1
8.13S	2,340		2,340				2,340	0	YES	2,340	0	2,340	SF-1
9.1S	6,800					2,000			NO	0	0	0	
TOTAL (S.F.)	**517,015**	**150,980**	**245,865**		**40,394**	**71,768**	**315,633**	**191,374**		**236,110**	**49,440**	**285,550**	

TOTAL NEW IMPERVIOUS AREA (S.F.)	**245,865**	**TOTAL DEVELOPED AREA (S.F.)**	**315,633**
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (S.F.)	**236,110**	**TOTAL AREA RECEIVING TREATMENT (S.F.)**	**285,550**
% OF IMPERVIOUS AREA RECEIVING TREATMENT	**96.0%**	**% OF AREA RECEIVING TREATMENT**	**90.5%**

Contech Engineered Solutions LLC
71 US Rte 1, Suite F
Scarborough, ME 04074
Phone: (207) 885-6191
www.ContechES.com

December 13, 2023

Tanner Goodine, EI
Sebago Technics, Inc.
75 John Roberts Road, Suite 4A
South Portland, ME 04106

RE: Portland Jetport Parking (Contech Reference No. 777919)
Review of StormFilter Design

To whom it may concern,

The purpose of this letter is to document Contech Engineered Solutions review of the plans and the proposed application of the StormFilter Media Filtration System water quality unit for your project.

Contech Engineered Solutions (Contech) has reviewed the StormFilter (SF) design for this project. We believe the SF configuration to be an appropriate water quality solution for this site.

The SF system with Phosphosorb (Psorb) media cartridges is approved for use by MEDEP meeting the General Standard of the Stormwater rules (Chapter 500) if designed, installed, and maintained in accordance with the provisions noted in the February 24, 2023 approval letter from the MEDEP.

The StormFilter system is designed in accordance with the maximum drain down rate of 1.67 gallons per minute per square foot of filter surface area (18.79 gpm per 27" cartridge). Additionally, the StormFilter is designed with an upstream water quality volume (WQv) detention system to retain, route and treat the entire WQ event flow from the contributing drainage area to the treatment unit. The resultant volume from the WQ event storm is detained in the upstream detention to an elevation below any bypass flow paths resulting in a routed storm event volume through the SF cartridges with a required emptying time of 24 to 48 hours.

Due to the extended detention time upstream of the SF in the WQv detention system, Contech assumes sedimentation of the larger solids at an estimated 50 percent reduction of the total suspended solids prior to the treatment by the StormFilter vault.

StormFilter 1: The engineer of record provided a drainage area of 4.14 acres, of which 3.35 acres is impervious. In order to adequately treat the runoff from this area, Contech recommends an offline StormFilter Vault 8'x11' (model SF0811) with quantity 18 x 27" Phosphosorb cartridges based on sediment mass loading design methodology.

StormFilter 2: The engineer of record provided a drainage area of 2.42 acres, of which 2.07 acres is impervious. In order to adequately treat the runoff from this area, Contech recommends an offline StormFilter 96" diameter Manhole (model SFMH96) with quantity 11 x 27" Phosphosorb cartridges based on sediment mass loading design methodology.

The SF system requires a hydraulic headwater condition to fully immerse the media and activate the cartridge float valve. For 27" SF cartridges, this headwater condition is 3.05 ft above SF outlet invert. This is achieved by the either physical inlet to outlet pipe elevation drop or an upstream WQ detention filling during the WQ storm flow to the required SF float valve activation elevation.

The WQv is routed through the SF vault and the detention system WQ outlet control shall be designed by the Engineer of Record to drain down in 24 to 48 hours after the beginning of the storm resulting in a cumulative treated WQv.

Contech Engineered Solutions LLC
71 US Rte 1, Suite F
Scarborough, ME 04074
Phone: (207) 885-6191
www.ContechES.com

It is recommended to have the site detention system storage designed to store the WQv and flood control volume separately with the two parts of the detention system separated by a weir to ensure that the WQv is captured for treatment prior to overflowing into the flood control detention.

Our systems require periodic maintenance to continue operating properly. Given typical runoff pollutant loading rates, Contech recommends maintenance inspections on an annual basis.

This system is expected to operate in accordance with Contech's design intent. Please feel free to contact me if you have any questions or concerns.

Sincerely,



David Adams, PE
Contech Engineered Solutions, LLC.
(207) 885-6191
dadams@conteches.com

StormFilter Design Calculation

CONTECH Stormwater Solutions Inc. Engineer:	**DRA**	
Date	**12/1/2023**	

Site Information

Project Name	**Portland Jetport Parking**	
Project State	**ME**	
Project Location	**Portland**	
Site Designation	**Lot 1**	
Drainage Area, Ad	**4.14**	ac
Impervious Area, Ai	**3.35**	ac
Pervious Area, Ap	**0.78**	
% Impervious	**81**	%
Runoff Coefficient, Rc	**0.78**	

Upstream Detention System

Detention pretreatment credit	**50%**	

Mass loading calculations

Mean Annual Rainfall, P	**49**	in
Agency required % removal	**80%**	
Percent Runoff Capture	**90%**	
Mean Annual Runoff, V_t	**516,267**	ft^3
Event Mean Concentration of Pollutant, EMC	**75**	mg/l
Annual Mass Load, M_{total}	**2,416**	lbs

Water Quality Volume

90% Rainfall Depth	**1.00**	in
Volume to be treated	**0.269**	ac-ft
Volume to be treated by filters	**11,707**	ft^3

Filter System

Filtration brand	**StormFilter**	
Specific Flow Rate	**1.00**	gpm/ft^2
Cartridge height	**27**	in

Number of cartridges - mass loading

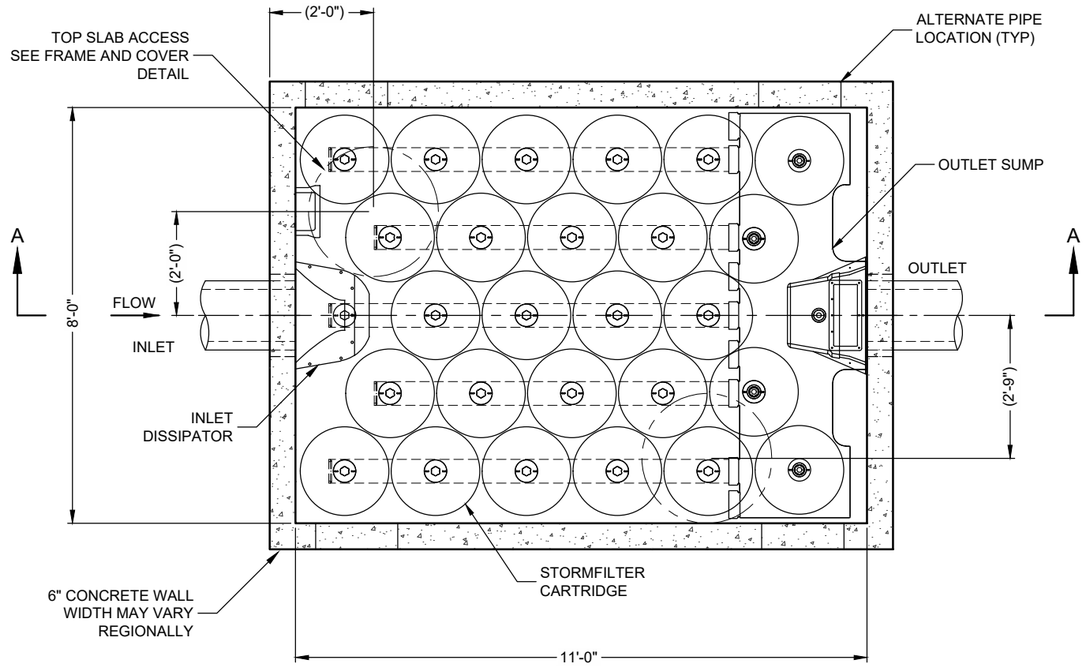
Mass removed by pretreatment system, M_{pre}	**1,208**	lbs
Mass load to filters after pretreatment, M_{pass1}	**1,208**	lbs
Mass to be captured by filters, M_{filter}	**966**	lbs
Allowable Cartridge Flow rate, Q_{cart}	**11.25**	gpm
Mass load per cartridge, M_{cart} (lbs)	**54**	lbs
Number of Cartridges required, N_{mass}	**18**	ea
Treatment Capacity	**0.451**	cfs

Determine Critical Sizing Value

Method to Use:	**MASS-LOADING**

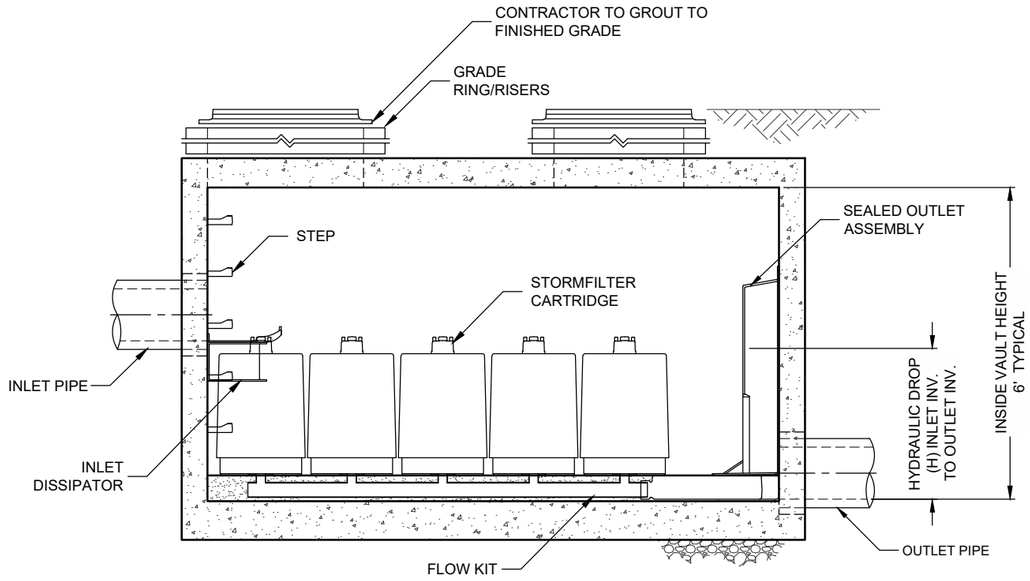
SUMMARY

Treatment Flow Rate (cfs)	0.451
Cartridge Flow Rate (gpm)	11.25
Number of Cartridges	18



PLAN VIEW

VAULT STYLE: OUTLET SUMP (NIB)



SECTION A-A

The Stormwater Management StormFilter®

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,322,629; 5,524,376; 5,707,527; 5,865,197; 6,027,639; 6,849,048; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

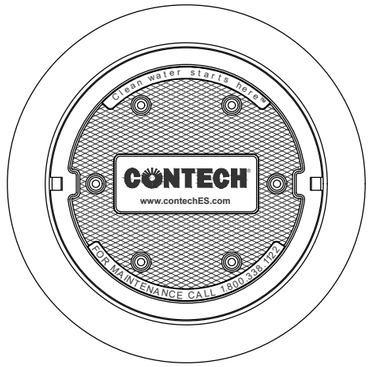
STORMFILTER DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD VAULT STYLE IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (26). VAULT STYLE OPTIONS INCLUDE INLET BAY (17), INLET BAY/OUTLET BAY (12), OUTLET BAY (21), FULL HEIGHT BAFFLE WALL (17). STORMFILTER 8X11 PEAK HYDRAULIC CAPACITY IS 1.8 CFS. IF THE SITE CONDITIONS EXCEED 1.8 CFS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			1.8'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	10	8.35	5

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY



FRAME AND COVER

(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
CARTRIDGE HEIGHT (27", 18", LOW DROP(LD))	*
NUMBER OF CARTRIDGES REQUIRED	*
CARTRIDGE FLOW RATE	*
MEDIA TYPE (PERLITE, ZPG, PSORB)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE #1	*	*	*
INLET PIPE #2	*	*	*
OUTLET PIPE	*	*	*

UPSTREAM RIM ELEVATION	*
DOWNSTREAM RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR SITE SPECIFIC DRAWINGS WITH DETAILED VAULT DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
7. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).
8. STORMFILTER STRUCTURE SHALL BE PRECAST CONFORMING TO ASTM C-857 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER VAULT (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL VAULT SECTIONS AND ASSEMBLE VAULT.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

CONTECH ENGINEERED SOLUTIONS LLC
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9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

SF0811
STORMFILTER
STANDARD DETAIL

I:\STORMWATER\COMMOPS\10 STORMFILTER\40 STANDARD DRAWINGS\VAULT\DWG\SF0811-DTL SEALED OUTLET RISER.DWG 8/10/2021 2:40 PM

StormFilter Design Calculation

CONTECH Stormwater Solutions Inc. Engineer:	**DRA**	
Date	**12/1/2023**	

Site Information

Project Name	**Portland Jetport Parking**	
Project State	**ME**	
Project Location	**Portland**	
Site Designation	**Lot 2**	
Drainage Area, Ad	**2.42**	ac
Impervious Area, Ai	**2.07**	ac
Pervious Area, Ap	**0.35**	
% Impervious	**85**	%
Runoff Coefficient, Rc	**0.82**	

Upstream Detention System

Detention pretreatment credit	**50%**	

Mass loading calculations

Mean Annual Rainfall, P	**49**	in
Agency required % removal	**80%**	
Percent Runoff Capture	**90%**	
Mean Annual Runoff, V_t	**317,144**	ft^3
Event Mean Concentration of Pollutant, EMC	**75**	mg/l
Annual Mass Load, M_{total}	**1,484**	lbs

Water Quality Volume

90% Rainfall Depth	**1.00**	in
Volume to be treated	**0.165**	ac-ft
Volume to be treated by filters	**7,191**	ft^3

Filter System

Filtration brand	**StormFilter**	
Specific Flow Rate	**1.00**	gpm/ft^2
Cartridge height	**27**	in

Number of cartridges - mass loading

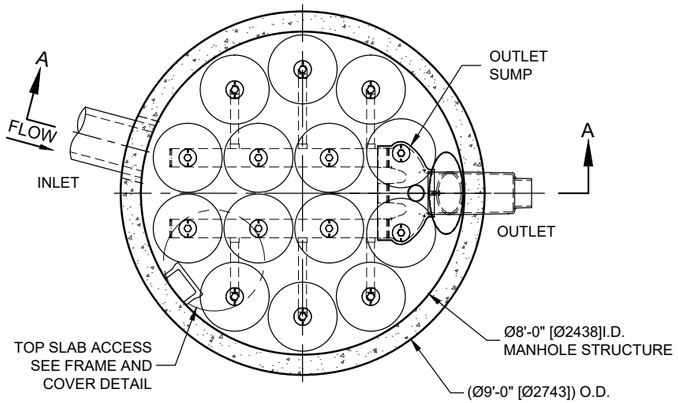
Mass removed by pretreatment system, M_{pre}	**742**	lbs
Mass load to filters after pretreatment, M_{pass1}	**742**	lbs
Mass to be captured by filters, M_{filter}	**594**	lbs
Allowable Cartridge Flow rate, Q_{cart}	**11.25**	gpm
Mass load per cartridge, M_{cart} (lbs)	**54**	lbs
Number of Cartridges required, N_{mass}	**11**	ea
Treatment Capacity	**0.276**	cfs

Determine Critical Sizing Value

Method to Use:	**MASS-LOADING**

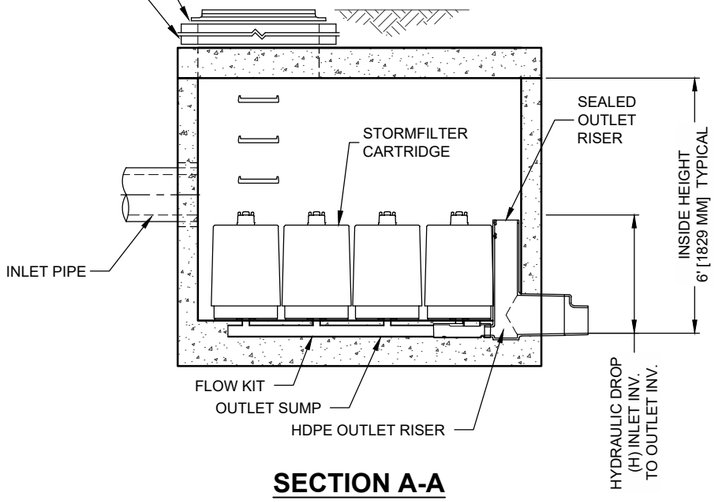
SUMMARY

Treatment Flow Rate (cfs)	0.276
Cartridge Flow Rate (gpm)	11.25
Number of Cartridges	11



PLAN VIEW

STANDARD OUTLET RISER
FLOWKIT: 43A



SECTION A-A

The Stormwater Management StormFilter®

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,322,629; 5,524,576; 5,707,527; 5,985,157; 6,027,639; 6,649,048; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

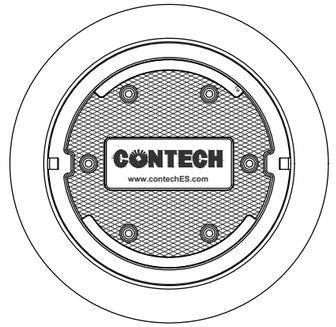
STORMFILTER DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD MANHOLE STYLE IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (14). VOLUME SYSTEM IS ALSO AVAILABLE WITH MAXIMUM 14 CARTRIDGES. Ø8'-0" [2438 mm] MANHOLE STORMFILTER PEAK HYDRAULIC CAPACITY IS 1.8 CFS [51 L/s] . IF THE SITE CONDITIONS EXCEED 1.8 CFS [51 L/s] AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27" [686 mm]			18" [458 mm]			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05' [930 mm]			2.3' [700 mm]			1.8' [550 mm]		
SPECIFIC FLOW RATE (gpm/sf) [L/s/m^2]	2 [1.30]	1.67* [1.08]	1 [0.65]	2 [1.30]	1.67* [1.08]	1 [0.65]	2 [1.30]	1.67* [1.08]	1 [0.65]
CARTRIDGE FLOW RATE (gpm) [L/s]	22.5 [1.42]	18.79 [1.19]	11.25 [0.71]	15 [0.95]	12.53 [0.79]	7.5 [0.44]	10 [0.63]	8.35 [0.54]	5 [0.32]

* 1.67 gpm/sf [1.08 L/s/m^2] SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY



FRAME AND COVER

(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs) [L/s]	*
PEAK FLOW RATE (cfs) [L/s]	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
CARTRIDGE HEIGHT (SEE TABLE ABOVE)	*
NUMBER OF CARTRIDGES REQUIRED	*
CARTRIDGE FLOW RATE	*
MEDIA TYPE (PERLITE, ZPG, PSORB)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE #1	*	*	*
INLET PIPE #2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR SITE SPECIFIC DRAWINGS WITH DETAILED VAULT DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' [1524 mm] AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES [178 mm]. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
7. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) [L/s] DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft)[m^2].
8. STORMFILTER STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET PIPE(S).
E. CONTRACTOR TO PROVIDE AND INSTALL CONNECTOR TO THE OUTLET RISER STUB. STORMFILTER EQUIPPED WITH A DUAL DIAMETER HDPE OUTLET STUB AND SAND COLLAR. IF OUTLET PIPE IS LARGER THAN 8 INCHES [200 mm], CONTRACTOR TO REMOVE THE 8 INCH [200 mm] OUTLET STUB AT MOLDED-IN CUT LINE. COUPLING BY FERNCO OR EQUAL AND PROVIDED BY CONTRACTOR.
F. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

SFMH96
STORMFILTER
STANDARD DETAIL

Summary for Pond 8.83P: WQ DET & SF-1

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 0.83" for WQ SF-1 event
Inflow = 3.7 cfs @ 12.09 hrs, Volume= 12,434 cf
Outflow = 0.7 cfs @ 12.52 hrs, Volume= 12,434 cf, Atten= 80%, Lag= 26.3 min
Primary = 0.5 cfs @ 12.52 hrs, Volume= 12,311 cf
Secondary = 0.3 cfs @ 12.52 hrs, Volume= 123 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.62' @ 12.52 hrs Surf.Area= 1,115 sf Storage= 4,521 cf

Plug-Flow detention time= 93.2 min calculated for 12,434 cf (100% of inflow)
Center-of-Mass det. time= 93.2 min (880.1 - 786.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	62.50'	0 cf	**10.00'W x 111.50'L x 8.00'H Field A** 8,920 cf Overall - 5,504 cf Embedded = 3,416 cf x 0.0% Voids
#2A	62.50'	5,504 cf	**CMP Round 96** x 5 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +1.50' x 50.27 sf x 1 rows 8.00' Header x 50.27 sf x 1 = 402.1 cf Inside
		5,504 cf	Total Available Storage

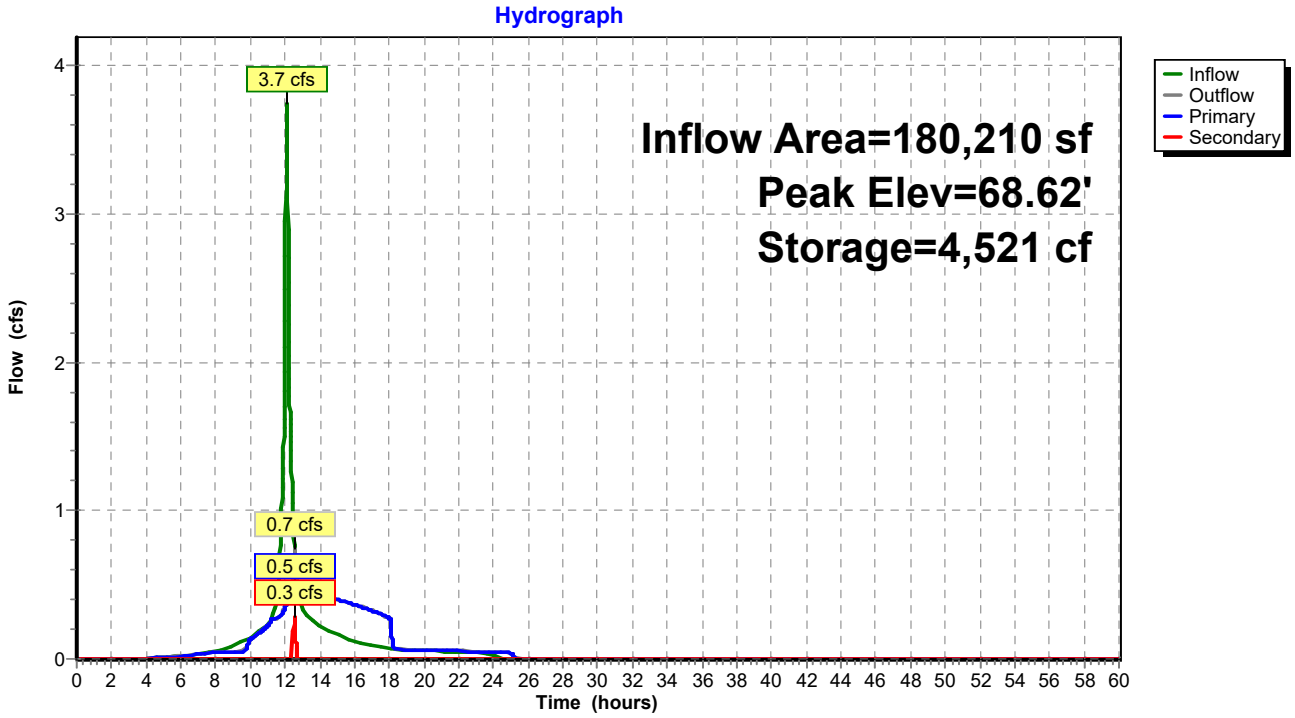
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	62.50'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 62.50' / 62.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	60.60'	**Tube/Siphon/Float Valve X 18.00** 0.586" Diameter, C= 0.600, 0.263" Trickle Diameter Starts@63.35'
#3	Primary	60.60'	**12.0" Round 12" Stormfilter Outlet** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.60' / 60.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Secondary	68.58'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 6.08 6.16 6.24 6.32 6.40 6.48 6.56 6.64 6.72 6.80 6.88 6.96 7.04 7.12 7.20 7.28 7.36 7.44 7.52 7.60 7.68 7.76 7.84 7.92 8.00 Width (feet) 6.83 6.73 6.63 6.52 6.40 6.28 6.15 6.01 5.87 5.71 5.55 5.38 5.20 5.01 4.80 4.58 4.34 4.08 3.80 3.49 3.14 2.73 2.24 1.59 0.00

Primary OutFlow Max=0.5 cfs @ 12.52 hrs HW=68.62' (Free Discharge)
└**3=12" Stormfilter Outlet** (Passes 0.5 cfs of 8.2 cfs potential flow)
└**2=Tube/Siphon/Float Valve** (Orifice Controls 0.5 cfs @ 13.64 fps)
└**1=Culvert** (Passes 0.5 cfs of 9.0 cfs potential flow)

Secondary OutFlow Max=0.2 cfs @ 12.52 hrs HW=68.62' (Free Discharge)
└**4=Custom Weir/Orifice** (Weir Controls 0.2 cfs @ 0.69 fps)

Pond 8.83P: WQ DET & SF-1



Summary for Pond 3.32P: WQ DET & SF-2

Inflow Area = 105,340 sf, 85.47% Impervious, Inflow Depth = 0.82" for WQ SF-2 event
Inflow = 2.2 cfs @ 12.09 hrs, Volume= 7,215 cf
Outflow = 0.3 cfs @ 12.59 hrs, Volume= 7,215 cf, Atten= 85%, Lag= 30.1 min
Primary = 0.3 cfs @ 12.59 hrs, Volume= 7,195 cf
Secondary = 0.0 cfs @ 12.59 hrs, Volume= 20 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.41' @ 12.59 hrs Surf.Area= 1,634 sf Storage= 2,580 cf

Plug-Flow detention time= 87.6 min calculated for 7,214 cf (100% of inflow)
Center-of-Mass det. time= 87.6 min (874.4 - 786.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	60.00'	0 cf	**8.00'W x 204.25'L x 9.00'H Field A** 14,706 cf Overall - 10,166 cf Embedded = 4,540 cf x 0.0% Voids
#2A	60.00'	10,166 cf	**CMP Round 96** x 9 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +14.25' x 50.27 sf x 1 rows 8.00' Header x 50.27 sf x 1 = 402.1 cf Inside
		10,166 cf	Total Available Storage

Storage Group A created with Chamber Wizard

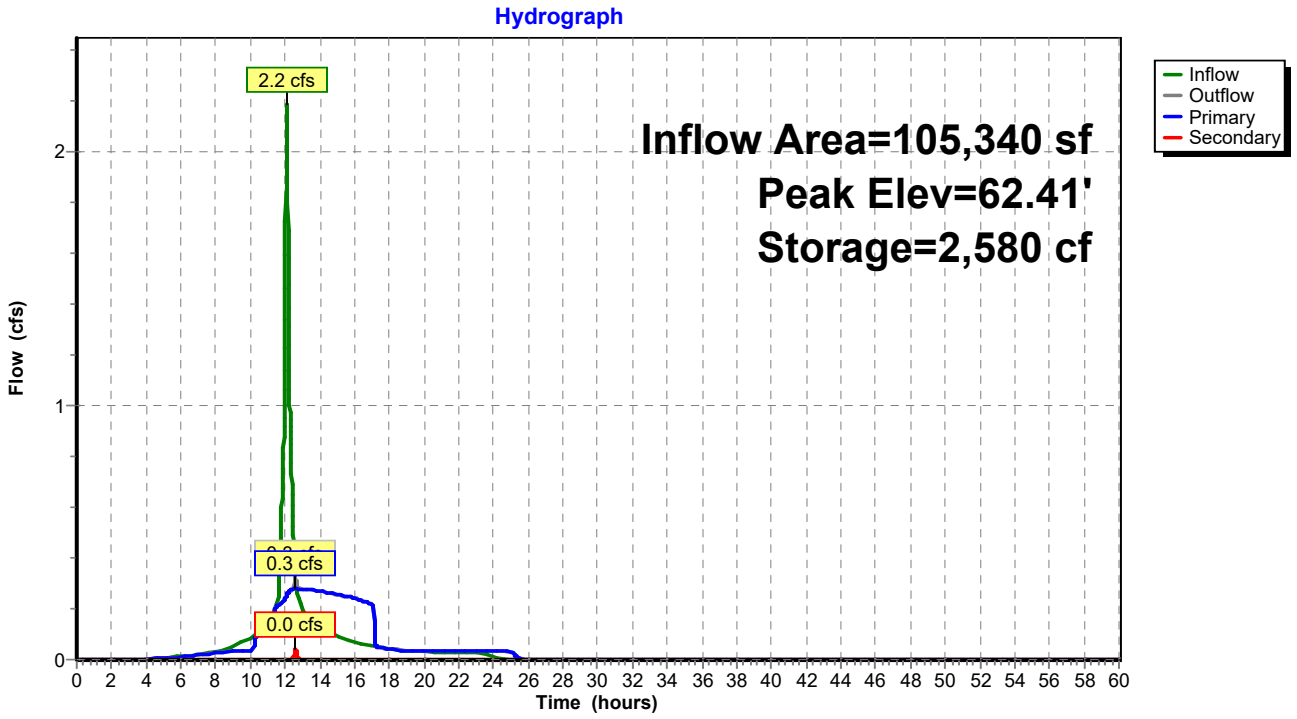
Device	Routing	Invert	Outlet Devices
#1	Device 2	60.00'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 60.00' / 59.95' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	57.70'	**Tube/Siphon/Float Valve X 11.00** 0.668" Diameter, C= 0.600, 0.263" Trickle Diameter Starts@60.45'
#3	Primary	57.70'	**12.0" Round 12" Stormfilter Outlet** L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.70' / 57.60' S= 0.0077 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Secondary	62.40'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 2.40 2.48 2.56 2.64 2.72 2.80 2.88 2.96 3.04 3.12 3.20 3.28 3.36 3.44 3.52 3.60 3.68 3.76 3.84 3.92 4.00 4.08 4.16 4.24 4.32 4.40 4.48 4.56 4.64 4.72 4.80 4.88 4.96 5.04 5.12 5.20 5.28 5.36 5.44 5.52 5.60 5.68 5.76 5.84 5.92 6.00 6.08 6.16 6.24 6.32 6.40 6.48 6.56 6.64 6.72 6.80 6.88 6.96 7.04 7.12 7.20 7.28 7.36 7.44 7.52 7.60 7.68 7.76 7.84 7.92 8.00 Width (feet) 7.33 7.40 7.46 7.52 7.58 7.63 7.68 7.72 7.77 7.80 7.84 7.87 7.90 7.92 7.94 7.96 7.97 7.99 7.99 8.00 8.00 8.00 7.99 7.99 7.97 7.96 7.94 7.92 7.90 7.87 7.84 7.80 7.77 7.72 7.68 7.63 7.58 7.52 7.46 7.40 7.33 7.26 7.18 7.10 7.02 6.93 6.83 6.73 6.63 6.52 6.40 6.28 6.15 6.01 5.87 5.71 5.55 5.38 5.20 5.01 4.80 4.58 4.34 4.08 3.80 3.49 3.14 2.73 2.24 1.59

0.00

Primary OutFlow Max=0.3 cfs @ 12.59 hrs HW=62.41' (Free Discharge)
└**3=12" Stormfilter Outlet** (Passes 0.3 cfs of 6.1 cfs potential flow)
└**2=Tube/Siphon/Float Valve** (Orifice Controls 0.3 cfs @ 10.45 fps)
└**1=Culvert** (Passes 0.3 cfs of 5.2 cfs potential flow)

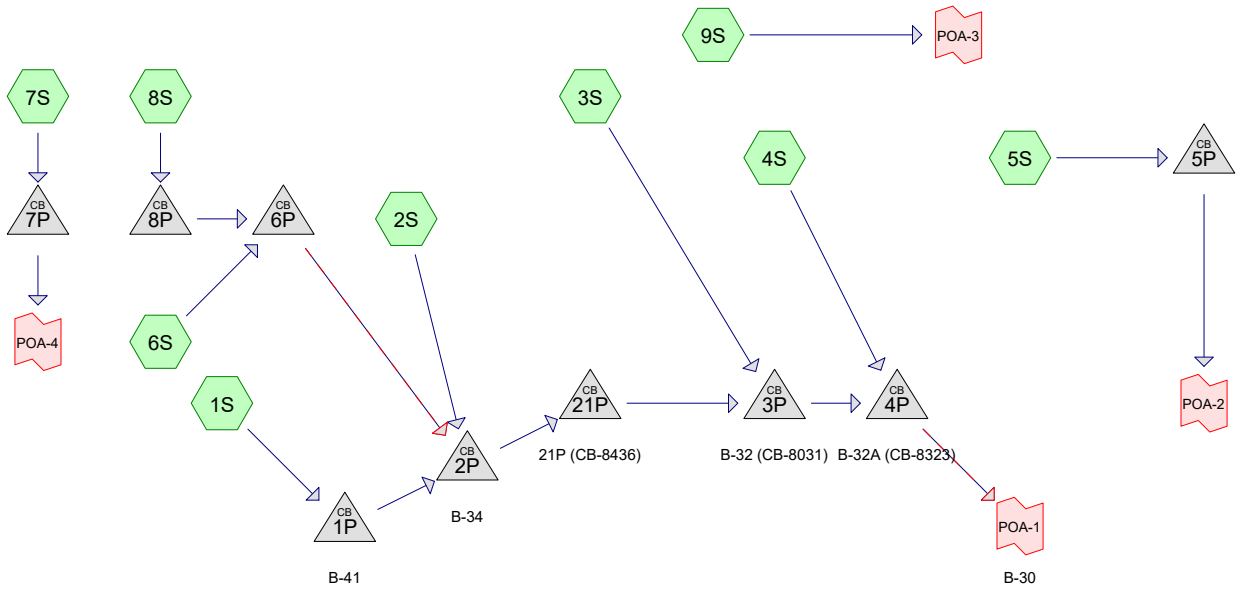
Secondary OutFlow Max=0.0 cfs @ 12.59 hrs HW=62.41' (Free Discharge)
└**4=Custom Weir/Orifice** (Weir Controls 0.0 cfs @ 0.33 fps)

Pond 3.32P: WQ DET & SF-2



Appendix 2A

Existing Conditions HydroCAD Summary



Subcat Reach Pond Link

Routing Diagram for 19059 - PRE
Prepared by Sebago Technics, Inc., Printed 2/23/2024
HydroCAD® 10.00-24 s/n 01856 © 2018 HydroCAD Software Solutions LLC

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=34,840 sf 96.15% Impervious Runoff Depth=2.82"
Tc=6.0 min CN=WQ Runoff=2.4 cfs 8,185 cf

Subcatchment2S: Runoff Area=23,550 sf 62.59% Impervious Runoff Depth=2.43"
Tc=6.0 min CN=WQ Runoff=1.4 cfs 4,761 cf

Subcatchment3S: Runoff Area=107,470 sf 32.46% Impervious Runoff Depth=2.04"
Flow Length=835' Tc=33.4 min CN=WQ Runoff=3.0 cfs 18,233 cf

Subcatchment4S: Runoff Area=80,650 sf 29.23% Impervious Runoff Depth=2.58"
Flow Length=480' Tc=7.8 min CN=WQ Runoff=4.9 cfs 17,338 cf

Subcatchment5S: Runoff Area=35,560 sf 28.26% Impervious Runoff Depth=2.62"
Tc=6.0 min CN=WQ Runoff=2.3 cfs 7,757 cf

Subcatchment6S: Runoff Area=63,780 sf 67.70% Impervious Runoff Depth=2.37"
Flow Length=280' Tc=14.5 min CN=WQ Runoff=2.9 cfs 12,622 cf

Subcatchment7S: Runoff Area=71,445 sf 40.30% Impervious Runoff Depth=2.05"
Flow Length=460' Tc=25.7 min CN=WQ Runoff=2.3 cfs 12,219 cf

Subcatchment8S: Runoff Area=84,725 sf 9.68% Impervious Runoff Depth=1.36"
Flow Length=505' Tc=27.8 min CN=WQ Runoff=1.7 cfs 9,571 cf

Subcatchment9S: Runoff Area=15,800 sf 0.00% Impervious Runoff Depth=1.53"
Tc=6.0 min CN=83 Runoff=0.6 cfs 2,011 cf

Pond 1P: B-41 Peak Elev=58.76' Inflow=2.4 cfs 8,185 cf
18.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=2.4 cfs 8,185 cf

Pond 2P: B-34 Peak Elev=59.25' Inflow=6.7 cfs 35,138 cf
18.0" Round Culvert n=0.013 L=140.0' S=0.0116 '/' Outflow=6.7 cfs 35,138 cf

Pond 3P: B-32 (CB-8031) Peak Elev=57.21' Inflow=8.1 cfs 53,372 cf
24.0" Round Culvert n=0.013 L=22.0' S=-0.0036 '/' Outflow=8.1 cfs 53,372 cf

Pond 4P: B-32A (CB-8323) Peak Elev=57.69' Inflow=12.9 cfs 70,710 cf
Primary=12.9 cfs 70,710 cf Secondary=0.0 cfs 0 cf Outflow=12.9 cfs 70,710 cf

Pond 5P: Peak Elev=60.88' Inflow=2.3 cfs 7,757 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=2.3 cfs 7,757 cf

Pond 6P: Peak Elev=64.44' Inflow=4.1 cfs 22,193 cf
Primary=4.1 cfs 22,193 cf Secondary=0.0 cfs 0 cf Outflow=4.1 cfs 22,193 cf

Pond 7P: Peak Elev=66.07' Inflow=2.3 cfs 12,219 cf
12.0" Round Culvert n=0.013 L=100.0' S=0.0100 '/' Outflow=2.3 cfs 12,219 cf

Pond 8P: Peak Elev=64.34' Inflow=1.7 cfs 9,571 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0189 '/' Outflow=1.7 cfs 9,571 cf

Pond 21P: 21P (CB-8436) Peak Elev=57.37' Inflow=6.7 cfs 35,138 cf
24.0" Round Culvert n=0.013 L=90.0' S=0.0029 '/' Outflow=6.7 cfs 35,138 cf

Link POA-1: B-30 Inflow=12.9 cfs 70,710 cf
Primary=12.9 cfs 70,710 cf

Link POA-2: Inflow=2.3 cfs 7,757 cf
Primary=2.3 cfs 7,757 cf

Link POA-3: Inflow=0.6 cfs 2,011 cf
Primary=0.6 cfs 2,011 cf

Link POA-4: Inflow=2.3 cfs 12,219 cf
Primary=2.3 cfs 12,219 cf

Total Runoff Area = 517,820 sf Runoff Volume = 92,697 cf Average Runoff Depth = 2.15"
61.97% Pervious = 320,900 sf 38.03% Impervious = 196,920 sf

Summary for Subcatchment 1S:

Runoff = 2.4 cfs @ 12.08 hrs, Volume= 8,185 cf, Depth= 2.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
33,500	98	Paved parking, HSG D
1,340	84	50-75% Grass cover, Fair, HSG D
34,840		Weighted Average
1,340		3.85% Pervious Area
33,500		96.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 2S:

Runoff = 1.4 cfs @ 12.09 hrs, Volume= 4,761 cf, Depth= 2.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
14,740	98	Paved parking, HSG D
730	96	Gravel surface, HSG D
8,080	84	50-75% Grass cover, Fair, HSG D
23,550		Weighted Average
8,810		37.41% Pervious Area
14,740		62.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3S:

Runoff = 3.0 cfs @ 12.44 hrs, Volume= 18,233 cf, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
34,880	98	Paved parking, HSG D
7,880	96	Gravel surface, HSG D
2,770	84	50-75% Grass cover, Fair, HSG D
58,940	83	Woods, Poor, HSG D
3,000	77	Woods, Poor, HSG C
107,470		Weighted Average
72,590		67.54% Pervious Area
34,880		32.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0150	0.07		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
6.8	250	0.0150	0.61		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.6	100	0.0300	2.79		**Shallow Concentrated Flow, C-D** Unpaved Kv= 16.1 fps
0.1	10	0.0100	1.50		**Shallow Concentrated Flow, D-E** Grassed Waterway Kv= 15.0 fps
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, E-F** Paved Kv= 20.3 fps
0.1	10	0.0200	2.12		**Shallow Concentrated Flow, F-G** Grassed Waterway Kv= 15.0 fps
0.7	170	0.0400	4.06		**Shallow Concentrated Flow, G-H** Paved Kv= 20.3 fps
0.5	170	0.0100	5.90	4.63	**Pipe Channel, H-I** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
33.4	835	Total			

Summary for Subcatchment 4S:

Runoff = 4.9 cfs @ 12.11 hrs, Volume= 17,338 cf, Depth= 2.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
23,570	98	Paved parking, HSG D
46,780	96	Gravel surface, HSG D
10,300	84	50-75% Grass cover, Fair, HSG D
80,650		Weighted Average
57,080		70.77% Pervious Area
23,570		29.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	20	0.0400	0.07		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	180	0.0350	3.01		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
2.2	280	0.0200	2.12		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
7.8	480	Total			

Summary for Subcatchment 5S:

Runoff = 2.3 cfs @ 12.08 hrs, Volume= 7,757 cf, Depth= 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (sf)	CN	Description
*	10,050	98	Paved parking, HSG D
	22,320	96	Gravel surface, HSG D
	3,190	84	50-75% Grass cover, Fair, HSG D
	35,560		Weighted Average
	25,510		71.74% Pervious Area
	10,050		28.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 6S:

Runoff = 2.9 cfs @ 12.19 hrs, Volume= 12,622 cf, Depth= 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
37,150	98	Paved parking, HSG D
6,030	98	Roofs, HSG D
640	96	Gravel surface, HSG D
1,670	79	50-75% Grass cover, Fair, HSG C
6,470	84	50-75% Grass cover, Fair, HSG D
11,820	77	Woods, Poor, HSG C
63,780		Weighted Average
20,600		32.30% Pervious Area
43,180		67.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0700	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	65	0.0500	1.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.3	115	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
14.5	280	Total			

Summary for Subcatchment 7S:

Runoff = 2.3 cfs @ 12.36 hrs, Volume= 12,219 cf, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
28,795	98	Paved parking, HSG D
4,120	79	50-75% Grass cover, Fair, HSG C
38,530	83	Woods, Poor, HSG D
71,445		Weighted Average
42,650		59.70% Pervious Area
28,795		40.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.5	110	0.0225	0.08		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.4	90	0.0150	0.61		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.1	10	0.0150	1.84		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
0.7	250	0.0100	5.90	4.63	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
25.7	460	Total			

Summary for Subcatchment 8S:

Runoff = 1.7 cfs @ 12.39 hrs, Volume= 9,571 cf, Depth= 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
8,205	98	Paved parking, HSG D
10,390	83	Woods, Poor, HSG D
66,130	77	Woods, Poor, HSG C
84,725		Weighted Average
76,520		90.32% Pervious Area
8,205		9.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	110	0.0300	0.09		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
6.9	180	0.0075	0.43		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.4	35	0.1000	1.58		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
0.5	180	0.0100	5.90	4.63	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
27.8	505	Total			

Summary for Subcatchment 9S:

Runoff = 0.6 cfs @ 12.09 hrs, Volume= 2,011 cf, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
15,800	83	Woods, Poor, HSG D
15,800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Pond 1P: B-41

Inflow Area = 34,840 sf, 96.15% Impervious, Inflow Depth = 2.82" for 2-YR event
Inflow = 2.4 cfs @ 12.08 hrs, Volume= 8,185 cf
Outflow = 2.4 cfs @ 12.08 hrs, Volume= 8,185 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.4 cfs @ 12.08 hrs, Volume= 8,185 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.76' @ 12.08 hrs
Flood Elev= 63.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.90'	**18.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 57.90' / 57.75' S= 0.0100 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.4 cfs @ 12.08 hrs HW=58.76' (Free Discharge)
1=Culvert (Barrel Controls 2.4 cfs @ 3.26 fps)

Summary for Pond 2P: B-34

Inflow Area = 206,895 sf, 48.15% Impervious, Inflow Depth = 2.04" for 2-YR event
Inflow = 6.7 cfs @ 12.11 hrs, Volume= 35,138 cf
Outflow = 6.7 cfs @ 12.11 hrs, Volume= 35,138 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.7 cfs @ 12.11 hrs, Volume= 35,138 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.25' @ 12.11 hrs
Flood Elev= 63.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**18.0" Round Culvert**
			L= 140.0' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 57.50' / 55.88' S= 0.0116 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.7 cfs @ 12.11 hrs HW=59.25' (Free Discharge)
1=Culvert (Inlet Controls 6.7 cfs @ 3.80 fps)

Summary for Pond 3P: B-32 (CB-8031)

Inflow Area = 314,365 sf, 42.79% Impervious, Inflow Depth = 2.04" for 2-YR event
Inflow = 8.1 cfs @ 12.13 hrs, Volume= 53,372 cf
Outflow = 8.1 cfs @ 12.13 hrs, Volume= 53,372 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.1 cfs @ 12.13 hrs, Volume= 53,372 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.21' @ 12.13 hrs
Flood Elev= 66.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert**
			L= 22.0' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 55.44' / 55.52' S= -0.0036 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.1 cfs @ 12.13 hrs HW=57.21' (Free Discharge)
1=Culvert (Barrel Controls 8.1 cfs @ 3.66 fps)

Summary for Pond 4P: B-32A (CB-8323)

Inflow Area = 395,015 sf, 40.02% Impervious, Inflow Depth = 2.15" for 2-YR event
Inflow = 12.9 cfs @ 12.12 hrs, Volume= 70,710 cf
Outflow = 12.9 cfs @ 12.12 hrs, Volume= 70,710 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.9 cfs @ 12.12 hrs, Volume= 70,710 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.69' @ 12.12 hrs
Flood Elev= 59.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.52' / 54.90' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	59.39'	**15.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=12.9 cfs @ 12.12 hrs HW=57.69' (Free Discharge)
└**1=Culvert** (Inlet Controls 12.9 cfs @ 4.11 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=55.52' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond 5P:

Inflow Area = 35,560 sf, 28.26% Impervious, Inflow Depth = 2.62" for 2-YR event
Inflow = 2.3 cfs @ 12.08 hrs, Volume= 7,757 cf
Outflow = 2.3 cfs @ 12.08 hrs, Volume= 7,757 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.3 cfs @ 12.08 hrs, Volume= 7,757 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 60.88' @ 12.08 hrs
Flood Elev= 66.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 59.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.3 cfs @ 12.08 hrs HW=60.88' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.3 cfs @ 2.52 fps)

Summary for Pond 6P:

Inflow Area = 148,505 sf, 34.60% Impervious, Inflow Depth = 1.79" for 2-YR event
Inflow = 4.1 cfs @ 12.23 hrs, Volume= 22,193 cf
Outflow = 4.1 cfs @ 12.23 hrs, Volume= 22,193 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.1 cfs @ 12.23 hrs, Volume= 22,193 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.44' @ 12.23 hrs
Flood Elev= 71.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.08'	**12.0" Round Culvert** L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.08' / 57.67' S= 0.0147 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	70.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=4.1 cfs @ 12.23 hrs HW=64.44' (Free Discharge)
↑**1=Culvert** (Inlet Controls 4.1 cfs @ 5.19 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=62.08' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond 7P:

Inflow Area = 71,445 sf, 40.30% Impervious, Inflow Depth = 2.05" for 2-YR event
Inflow = 2.3 cfs @ 12.36 hrs, Volume= 12,219 cf
Outflow = 2.3 cfs @ 12.36 hrs, Volume= 12,219 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.3 cfs @ 12.36 hrs, Volume= 12,219 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.07' @ 12.36 hrs
Flood Elev= 69.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.00'	**12.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.00' / 64.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.3 cfs @ 12.36 hrs HW=66.07' (Free Discharge)
↑**1=Culvert** (Inlet Controls 2.3 cfs @ 2.87 fps)

Summary for Pond 8P:

Inflow Area = 84,725 sf, 9.68% Impervious, Inflow Depth = 1.36" for 2-YR event
Inflow = 1.7 cfs @ 12.39 hrs, Volume= 9,571 cf
Outflow = 1.7 cfs @ 12.39 hrs, Volume= 9,571 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.7 cfs @ 12.39 hrs, Volume= 9,571 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.34' @ 12.39 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.50' / 62.18' S= 0.0189 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.7 cfs @ 12.39 hrs HW=64.34' (Free Discharge)
1=Culvert (Inlet Controls 1.7 cfs @ 2.46 fps)

Summary for Pond 21P: 21P (CB-8436)

Inflow Area = 206,895 sf, 48.15% Impervious, Inflow Depth = 2.04" for 2-YR event
Inflow = 6.7 cfs @ 12.11 hrs, Volume= 35,138 cf
Outflow = 6.7 cfs @ 12.11 hrs, Volume= 35,138 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.7 cfs @ 12.11 hrs, Volume= 35,138 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.37' @ 12.11 hrs
Flood Elev= 67.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.88'	**24.0" Round Culvert** L= 90.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.88' / 55.62' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.7 cfs @ 12.11 hrs HW=57.37' (Free Discharge)
1=Culvert (Barrel Controls 6.7 cfs @ 3.73 fps)

Summary for Link POA-1: B-30

Inflow Area = 395,015 sf, 40.02% Impervious, Inflow Depth = 2.15" for 2-YR event
Inflow = 12.9 cfs @ 12.12 hrs, Volume= 70,710 cf
Primary = 12.9 cfs @ 12.12 hrs, Volume= 70,710 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-2:

Inflow Area = 35,560 sf, 28.26% Impervious, Inflow Depth = 2.62" for 2-YR event
Inflow = 2.3 cfs @ 12.08 hrs, Volume= 7,757 cf
Primary = 2.3 cfs @ 12.08 hrs, Volume= 7,757 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-3:

Inflow Area = 15,800 sf, 0.00% Impervious, Inflow Depth = 1.53" for 2-YR event
Inflow = 0.6 cfs @ 12.09 hrs, Volume= 2,011 cf
Primary = 0.6 cfs @ 12.09 hrs, Volume= 2,011 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-4:

Inflow Area = 71,445 sf, 40.30% Impervious, Inflow Depth = 2.05" for 2-YR event
Inflow = 2.3 cfs @ 12.36 hrs, Volume= 12,219 cf
Primary = 2.3 cfs @ 12.36 hrs, Volume= 12,219 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=34,840 sf 96.15% Impervious Runoff Depth=4.31"
Tc=6.0 min CN=WQ Runoff=3.6 cfs 12,507 cf

Subcatchment2S: Runoff Area=23,550 sf 62.59% Impervious Runoff Depth=3.86"
Tc=6.0 min CN=WQ Runoff=2.2 cfs 7,569 cf

Subcatchment3S: Runoff Area=107,470 sf 32.46% Impervious Runoff Depth=3.40"
Flow Length=835' Tc=33.4 min CN=WQ Runoff=5.0 cfs 30,468 cf

Subcatchment4S: Runoff Area=80,650 sf 29.23% Impervious Runoff Depth=4.05"
Flow Length=480' Tc=7.8 min CN=WQ Runoff=7.5 cfs 27,187 cf

Subcatchment5S: Runoff Area=35,560 sf 28.26% Impervious Runoff Depth=4.09"
Tc=6.0 min CN=WQ Runoff=3.5 cfs 12,119 cf

Subcatchment6S: Runoff Area=63,780 sf 67.70% Impervious Runoff Depth=3.78"
Flow Length=280' Tc=14.5 min CN=WQ Runoff=4.5 cfs 20,090 cf

Subcatchment7S: Runoff Area=71,445 sf 40.30% Impervious Runoff Depth=3.42"
Flow Length=460' Tc=25.7 min CN=WQ Runoff=3.8 cfs 20,353 cf

Subcatchment8S: Runoff Area=84,725 sf 9.68% Impervious Runoff Depth=2.56"
Flow Length=505' Tc=27.8 min CN=WQ Runoff=3.3 cfs 18,052 cf

Subcatchment9S: Runoff Area=15,800 sf 0.00% Impervious Runoff Depth=2.81"
Tc=6.0 min CN=83 Runoff=1.2 cfs 3,706 cf

Pond 1P: B-41 Peak Elev=59.00' Inflow=3.6 cfs 12,507 cf
18.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=3.6 cfs 12,507 cf

Pond 2P: B-34 Peak Elev=60.86' Inflow=10.9 cfs 58,219 cf
18.0" Round Culvert n=0.013 L=140.0' S=0.0116 '/' Outflow=10.9 cfs 58,219 cf

Pond 3P: B-32 (CB-8031) Peak Elev=57.96' Inflow=13.4 cfs 88,687 cf
24.0" Round Culvert n=0.013 L=22.0' S=-0.0036 '/' Outflow=13.4 cfs 88,687 cf

Pond 4P: B-32A (CB-8323) Peak Elev=59.43' Inflow=20.7 cfs 115,873 cf
Primary=20.4 cfs 115,836 cf Secondary=0.3 cfs 37 cf Outflow=20.7 cfs 115,873 cf

Pond 5P: Peak Elev=61.19' Inflow=3.5 cfs 12,119 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=3.5 cfs 12,119 cf

Pond 6P: Peak Elev=70.56' Inflow=7.0 cfs 38,143 cf
Primary=6.5 cfs 37,911 cf Secondary=0.5 cfs 231 cf Outflow=7.0 cfs 38,143 cf

Pond 7P: Peak Elev=67.08' Inflow=3.8 cfs 20,353 cf
12.0" Round Culvert n=0.013 L=100.0' S=0.0100 '/' Outflow=3.8 cfs 20,353 cf

Pond 8P: Peak Elev=65.25' Inflow=3.3 cfs 18,052 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0189 '/' Outflow=3.3 cfs 18,052 cf

Pond 21P: 21P (CB-8436) Peak Elev=57.91' Inflow=10.9 cfs 58,219 cf
24.0" Round Culvert n=0.013 L=90.0' S=0.0029 '/' Outflow=10.9 cfs 58,219 cf

Link POA-1: B-30 Inflow=20.7 cfs 115,873 cf
Primary=20.7 cfs 115,873 cf

Link POA-2: Inflow=3.5 cfs 12,119 cf
Primary=3.5 cfs 12,119 cf

Link POA-3: Inflow=1.2 cfs 3,706 cf
Primary=1.2 cfs 3,706 cf

Link POA-4: Inflow=3.8 cfs 20,353 cf
Primary=3.8 cfs 20,353 cf

Total Runoff Area = 517,820 sf Runoff Volume = 152,052 cf Average Runoff Depth = 3.52"
61.97% Pervious = 320,900 sf 38.03% Impervious = 196,920 sf

Summary for Subcatchment 1S:

Runoff = 3.6 cfs @ 12.08 hrs, Volume= 12,507 cf, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
33,500	98	Paved parking, HSG D
1,340	84	50-75% Grass cover, Fair, HSG D
34,840		Weighted Average
1,340		3.85% Pervious Area
33,500		96.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 2S:

Runoff = 2.2 cfs @ 12.08 hrs, Volume= 7,569 cf, Depth= 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
14,740	98	Paved parking, HSG D
730	96	Gravel surface, HSG D
8,080	84	50-75% Grass cover, Fair, HSG D
23,550		Weighted Average
8,810		37.41% Pervious Area
14,740		62.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3S:

Runoff = 5.0 cfs @ 12.44 hrs, Volume= 30,468 cf, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
34,880	98	Paved parking, HSG D
7,880	96	Gravel surface, HSG D
2,770	84	50-75% Grass cover, Fair, HSG D
58,940	83	Woods, Poor, HSG D
3,000	77	Woods, Poor, HSG C
107,470		Weighted Average
72,590		67.54% Pervious Area
34,880		32.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0150	0.07		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
6.8	250	0.0150	0.61		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.6	100	0.0300	2.79		**Shallow Concentrated Flow, C-D** Unpaved Kv= 16.1 fps
0.1	10	0.0100	1.50		**Shallow Concentrated Flow, D-E** Grassed Waterway Kv= 15.0 fps
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, E-F** Paved Kv= 20.3 fps
0.1	10	0.0200	2.12		**Shallow Concentrated Flow, F-G** Grassed Waterway Kv= 15.0 fps
0.7	170	0.0400	4.06		**Shallow Concentrated Flow, G-H** Paved Kv= 20.3 fps
0.5	170	0.0100	5.90	4.63	**Pipe Channel, H-I** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
33.4	835	Total			

Summary for Subcatchment 4S:

Runoff = 7.5 cfs @ 12.11 hrs, Volume= 27,187 cf, Depth= 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
23,570	98	Paved parking, HSG D
46,780	96	Gravel surface, HSG D
10,300	84	50-75% Grass cover, Fair, HSG D
80,650		Weighted Average
57,080		70.77% Pervious Area
23,570		29.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	20	0.0400	0.07		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	180	0.0350	3.01		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
2.2	280	0.0200	2.12		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
7.8	480	Total			

Summary for Subcatchment 5S:

Runoff = 3.5 cfs @ 12.08 hrs, Volume= 12,119 cf, Depth= 4.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

	Area (sf)	CN	Description
*	10,050	98	Paved parking, HSG D
	22,320	96	Gravel surface, HSG D
	3,190	84	50-75% Grass cover, Fair, HSG D
	35,560		Weighted Average
	25,510		71.74% Pervious Area
	10,050		28.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 6S:

Runoff = 4.5 cfs @ 12.19 hrs, Volume= 20,090 cf, Depth= 3.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
37,150	98	Paved parking, HSG D
6,030	98	Roofs, HSG D
640	96	Gravel surface, HSG D
1,670	79	50-75% Grass cover, Fair, HSG C
6,470	84	50-75% Grass cover, Fair, HSG D
11,820	77	Woods, Poor, HSG C
63,780		Weighted Average
20,600		32.30% Pervious Area
43,180		67.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0700	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	65	0.0500	1.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.3	115	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
14.5	280	Total			

Summary for Subcatchment 7S:

Runoff = 3.8 cfs @ 12.34 hrs, Volume= 20,353 cf, Depth= 3.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
28,795	98	Paved parking, HSG D
4,120	79	50-75% Grass cover, Fair, HSG C
38,530	83	Woods, Poor, HSG D
71,445		Weighted Average
42,650		59.70% Pervious Area
28,795		40.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.5	110	0.0225	0.08		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.4	90	0.0150	0.61		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.1	10	0.0150	1.84		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
0.7	250	0.0100	5.90	4.63	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
25.7	460	Total			

Summary for Subcatchment 8S:

Runoff = 3.3 cfs @ 12.39 hrs, Volume= 18,052 cf, Depth= 2.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
8,205	98	Paved parking, HSG D
10,390	83	Woods, Poor, HSG D
66,130	77	Woods, Poor, HSG C
84,725		Weighted Average
76,520		90.32% Pervious Area
8,205		9.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	110	0.0300	0.09		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
6.9	180	0.0075	0.43		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.4	35	0.1000	1.58		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
0.5	180	0.0100	5.90	4.63	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
27.8	505	Total			

Summary for Subcatchment 9S:

Runoff = 1.2 cfs @ 12.09 hrs, Volume= 3,706 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
15,800	83	Woods, Poor, HSG D
15,800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Pond 1P: B-41

Inflow Area = 34,840 sf, 96.15% Impervious, Inflow Depth = 4.31" for 10-YR event
Inflow = 3.6 cfs @ 12.08 hrs, Volume= 12,507 cf
Outflow = 3.6 cfs @ 12.08 hrs, Volume= 12,507 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.6 cfs @ 12.08 hrs, Volume= 12,507 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.00' @ 12.08 hrs
Flood Elev= 63.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.90'	**18.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 57.90' / 57.75' S= 0.0100 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.6 cfs @ 12.08 hrs HW=59.00' (Free Discharge)
1=Culvert (Barrel Controls 3.6 cfs @ 3.57 fps)

Summary for Pond 2P: B-34

Inflow Area = 206,895 sf, 48.15% Impervious, Inflow Depth = 3.38" for 10-YR event
Inflow = 10.9 cfs @ 12.12 hrs, Volume= 58,219 cf
Outflow = 10.9 cfs @ 12.12 hrs, Volume= 58,219 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.9 cfs @ 12.12 hrs, Volume= 58,219 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 60.86' @ 12.12 hrs
Flood Elev= 63.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**18.0" Round Culvert**
			L= 140.0' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 57.50' / 55.88' S= 0.0116 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=10.8 cfs @ 12.12 hrs HW=60.86' (Free Discharge)
1=Culvert (Inlet Controls 10.8 cfs @ 6.14 fps)

Summary for Pond 3P: B-32 (CB-8031)

Inflow Area = 314,365 sf, 42.79% Impervious, Inflow Depth = 3.39" for 10-YR event
Inflow = 13.4 cfs @ 12.26 hrs, Volume= 88,687 cf
Outflow = 13.4 cfs @ 12.26 hrs, Volume= 88,687 cf, Atten= 0%, Lag= 0.0 min
Primary = 13.4 cfs @ 12.26 hrs, Volume= 88,687 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.96' @ 12.26 hrs
Flood Elev= 66.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert**
			L= 22.0' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 55.44' / 55.52' S= -0.0036 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=13.4 cfs @ 12.26 hrs HW=57.96' (Free Discharge)
1=Culvert (Barrel Controls 13.4 cfs @ 4.37 fps)

Summary for Pond 4P: B-32A (CB-8323)

Inflow Area = 395,015 sf, 40.02% Impervious, Inflow Depth = 3.52" for 10-YR event
Inflow = 20.7 cfs @ 12.12 hrs, Volume= 115,873 cf
Outflow = 20.7 cfs @ 12.12 hrs, Volume= 115,873 cf, Atten= 0%, Lag= 0.0 min
Primary = 20.4 cfs @ 12.12 hrs, Volume= 115,836 cf
Secondary = 0.3 cfs @ 12.12 hrs, Volume= 37 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.43' @ 12.12 hrs
Flood Elev= 59.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.52' / 54.90' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	59.39'	**15.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=20.4 cfs @ 12.12 hrs HW=59.42' (Free Discharge)
1=Culvert (Inlet Controls 20.4 cfs @ 6.48 fps)

Secondary OutFlow Max=0.3 cfs @ 12.12 hrs HW=59.42' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 0.3 cfs @ 0.52 fps)

Summary for Pond 5P:

Inflow Area = 35,560 sf, 28.26% Impervious, Inflow Depth = 4.09" for 10-YR event
Inflow = 3.5 cfs @ 12.08 hrs, Volume= 12,119 cf
Outflow = 3.5 cfs @ 12.08 hrs, Volume= 12,119 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.5 cfs @ 12.08 hrs, Volume= 12,119 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 61.19' @ 12.08 hrs
Flood Elev= 66.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 59.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.5 cfs @ 12.08 hrs HW=61.19' (Free Discharge)
1=Culvert (Inlet Controls 3.5 cfs @ 2.93 fps)

Summary for Pond 6P:

Inflow Area = 148,505 sf, 34.60% Impervious, Inflow Depth = 3.08" for 10-YR event
Inflow = 7.0 cfs @ 12.23 hrs, Volume= 38,143 cf
Outflow = 7.0 cfs @ 12.23 hrs, Volume= 38,143 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.5 cfs @ 12.23 hrs, Volume= 37,911 cf
Secondary = 0.5 cfs @ 12.23 hrs, Volume= 231 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.56' @ 12.23 hrs
Flood Elev= 71.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.08'	**12.0" Round Culvert** L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.08' / 57.67' S= 0.0147 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	70.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=6.5 cfs @ 12.23 hrs HW=70.56' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 6.5 cfs @ 8.23 fps)

Secondary OutFlow Max=0.5 cfs @ 12.23 hrs HW=70.56' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.5 cfs @ 0.70 fps)

Summary for Pond 7P:

Inflow Area = 71,445 sf, 40.30% Impervious, Inflow Depth = 3.42" for 10-YR event
Inflow = 3.8 cfs @ 12.34 hrs, Volume= 20,353 cf
Outflow = 3.8 cfs @ 12.34 hrs, Volume= 20,353 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.8 cfs @ 12.34 hrs, Volume= 20,353 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.08' @ 12.34 hrs
Flood Elev= 69.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.00'	**12.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.00' / 64.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.8 cfs @ 12.34 hrs HW=67.08' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 3.8 cfs @ 4.78 fps)

Summary for Pond 8P:

Inflow Area = 84,725 sf, 9.68% Impervious, Inflow Depth = 2.56" for 10-YR event
Inflow = 3.3 cfs @ 12.39 hrs, Volume= 18,052 cf
Outflow = 3.3 cfs @ 12.39 hrs, Volume= 18,052 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.3 cfs @ 12.39 hrs, Volume= 18,052 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 65.25' @ 12.39 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.50' / 62.18' S= 0.0189 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.3 cfs @ 12.39 hrs HW=65.25' (Free Discharge)
1=Culvert (Inlet Controls 3.3 cfs @ 4.26 fps)

Summary for Pond 21P: 21P (CB-8436)

Inflow Area = 206,895 sf, 48.15% Impervious, Inflow Depth = 3.38" for 10-YR event
Inflow = 10.9 cfs @ 12.12 hrs, Volume= 58,219 cf
Outflow = 10.9 cfs @ 12.12 hrs, Volume= 58,219 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.9 cfs @ 12.12 hrs, Volume= 58,219 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.91' @ 12.12 hrs
Flood Elev= 67.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.88'	**24.0" Round Culvert** L= 90.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.88' / 55.62' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.9 cfs @ 12.12 hrs HW=57.91' (Free Discharge)
1=Culvert (Barrel Controls 10.9 cfs @ 4.23 fps)

Summary for Link POA-1: B-30

Inflow Area = 395,015 sf, 40.02% Impervious, Inflow Depth = 3.52" for 10-YR event
Inflow = 20.7 cfs @ 12.12 hrs, Volume= 115,873 cf
Primary = 20.7 cfs @ 12.12 hrs, Volume= 115,873 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-2:

Inflow Area = 35,560 sf, 28.26% Impervious, Inflow Depth = 4.09" for 10-YR event
Inflow = 3.5 cfs @ 12.08 hrs, Volume= 12,119 cf
Primary = 3.5 cfs @ 12.08 hrs, Volume= 12,119 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-3:

Inflow Area = 15,800 sf, 0.00% Impervious, Inflow Depth = 2.81" for 10-YR event
Inflow = 1.2 cfs @ 12.09 hrs, Volume= 3,706 cf
Primary = 1.2 cfs @ 12.09 hrs, Volume= 3,706 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-4:

Inflow Area = 71,445 sf, 40.30% Impervious, Inflow Depth = 3.42" for 10-YR event
Inflow = 3.8 cfs @ 12.34 hrs, Volume= 20,353 cf
Primary = 3.8 cfs @ 12.34 hrs, Volume= 20,353 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=34,840 sf 96.15% Impervious Runoff Depth=5.50"
Tc=6.0 min CN=WQ Runoff=4.5 cfs 15,975 cf

Subcatchment2S: Runoff Area=23,550 sf 62.59% Impervious Runoff Depth=5.02"
Tc=6.0 min CN=WQ Runoff=2.9 cfs 9,856 cf

Subcatchment3S: Runoff Area=107,470 sf 32.46% Impervious Runoff Depth=4.53"
Flow Length=835' Tc=33.4 min CN=WQ Runoff=6.7 cfs 40,604 cf

Subcatchment4S: Runoff Area=80,650 sf 29.23% Impervious Runoff Depth=5.23"
Flow Length=480' Tc=7.8 min CN=WQ Runoff=9.6 cfs 35,138 cf

Subcatchment5S: Runoff Area=35,560 sf 28.26% Impervious Runoff Depth=5.28"
Tc=6.0 min CN=WQ Runoff=4.5 cfs 15,635 cf

Subcatchment6S: Runoff Area=63,780 sf 67.70% Impervious Runoff Depth=4.93"
Flow Length=280' Tc=14.5 min CN=WQ Runoff=5.9 cfs 26,203 cf

Subcatchment7S: Runoff Area=71,445 sf 40.30% Impervious Runoff Depth=4.55"
Flow Length=460' Tc=25.7 min CN=WQ Runoff=5.0 cfs 27,091 cf

Subcatchment8S: Runoff Area=84,725 sf 9.68% Impervious Runoff Depth=3.60"
Flow Length=505' Tc=27.8 min CN=WQ Runoff=4.7 cfs 25,399 cf

Subcatchment9S: Runoff Area=15,800 sf 0.00% Impervious Runoff Depth=3.91"
Tc=6.0 min CN=83 Runoff=1.6 cfs 5,143 cf

Pond 1P: B-41 Peak Elev=59.18' Inflow=4.5 cfs 15,975 cf
18.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=4.5 cfs 15,975 cf

Pond 2P: B-34 Peak Elev=62.76' Inflow=14.3 cfs 77,433 cf
18.0" Round Culvert n=0.013 L=140.0' S=0.0116 '/' Outflow=14.3 cfs 77,433 cf

Pond 3P: B-32 (CB-8031) Peak Elev=58.77' Inflow=17.9 cfs 118,037 cf
24.0" Round Culvert n=0.013 L=22.0' S=-0.0036 '/' Outflow=17.9 cfs 118,037 cf

Pond 4P: B-32A (CB-8323) Peak Elev=59.66' Inflow=27.0 cfs 153,175 cf
Primary=21.1 cfs 149,393 cf Secondary=5.8 cfs 3,782 cf Outflow=27.0 cfs 153,175 cf

Pond 5P: Peak Elev=61.57' Inflow=4.5 cfs 15,635 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=4.5 cfs 15,635 cf

Pond 6P: Peak Elev=70.69' Inflow=9.5 cfs 51,602 cf
Primary=6.5 cfs 48,670 cf Secondary=3.0 cfs 2,932 cf Outflow=9.5 cfs 51,602 cf

Pond 7P: Peak Elev=68.28' Inflow=5.0 cfs 27,091 cf
12.0" Round Culvert n=0.013 L=100.0' S=0.0100 '/' Outflow=5.0 cfs 27,091 cf

Pond 8P: Peak Elev=66.50' Inflow=4.7 cfs 25,399 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0189 '/' Outflow=4.7 cfs 25,399 cf

Pond 21P: 21P (CB-8436) Peak Elev=58.59' Inflow=14.3 cfs 77,433 cf
24.0" Round Culvert n=0.013 L=90.0' S=0.0029 '/' Outflow=14.3 cfs 77,433 cf

Link POA-1: B-30 Inflow=27.0 cfs 153,175 cf
Primary=27.0 cfs 153,175 cf

Link POA-2: Inflow=4.5 cfs 15,635 cf
Primary=4.5 cfs 15,635 cf

Link POA-3: Inflow=1.6 cfs 5,143 cf
Primary=1.6 cfs 5,143 cf

Link POA-4: Inflow=5.0 cfs 27,091 cf
Primary=5.0 cfs 27,091 cf

Total Runoff Area = 517,820 sf Runoff Volume = 201,043 cf Average Runoff Depth = 4.66"
61.97% Pervious = 320,900 sf 38.03% Impervious = 196,920 sf

Summary for Subcatchment 1S:

Runoff = 4.5 cfs @ 12.08 hrs, Volume= 15,975 cf, Depth= 5.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
33,500	98	Paved parking, HSG D
1,340	84	50-75% Grass cover, Fair, HSG D
34,840		Weighted Average
1,340		3.85% Pervious Area
33,500		96.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 2S:

Runoff = 2.9 cfs @ 12.08 hrs, Volume= 9,856 cf, Depth= 5.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
14,740	98	Paved parking, HSG D
730	96	Gravel surface, HSG D
8,080	84	50-75% Grass cover, Fair, HSG D
23,550		Weighted Average
8,810		37.41% Pervious Area
14,740		62.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3S:

Runoff = 6.7 cfs @ 12.44 hrs, Volume= 40,604 cf, Depth= 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
34,880	98	Paved parking, HSG D
7,880	96	Gravel surface, HSG D
2,770	84	50-75% Grass cover, Fair, HSG D
58,940	83	Woods, Poor, HSG D
3,000	77	Woods, Poor, HSG C
107,470		Weighted Average
72,590		67.54% Pervious Area
34,880		32.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0150	0.07		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
6.8	250	0.0150	0.61		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.6	100	0.0300	2.79		**Shallow Concentrated Flow, C-D** Unpaved Kv= 16.1 fps
0.1	10	0.0100	1.50		**Shallow Concentrated Flow, D-E** Grassed Waterway Kv= 15.0 fps
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, E-F** Paved Kv= 20.3 fps
0.1	10	0.0200	2.12		**Shallow Concentrated Flow, F-G** Grassed Waterway Kv= 15.0 fps
0.7	170	0.0400	4.06		**Shallow Concentrated Flow, G-H** Paved Kv= 20.3 fps
0.5	170	0.0100	5.90	4.63	**Pipe Channel, H-I** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
33.4	835	Total			

Summary for Subcatchment 4S:

Runoff = 9.6 cfs @ 12.11 hrs, Volume= 35,138 cf, Depth= 5.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
23,570	98	Paved parking, HSG D
46,780	96	Gravel surface, HSG D
10,300	84	50-75% Grass cover, Fair, HSG D
80,650		Weighted Average
57,080		70.77% Pervious Area
23,570		29.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	20	0.0400	0.07		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	180	0.0350	3.01		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
2.2	280	0.0200	2.12		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
7.8	480	Total			

Summary for Subcatchment 5S:

Runoff = 4.5 cfs @ 12.08 hrs, Volume= 15,635 cf, Depth= 5.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	10,050	98	Paved parking, HSG D
	22,320	96	Gravel surface, HSG D
	3,190	84	50-75% Grass cover, Fair, HSG D
	35,560		Weighted Average
	25,510		71.74% Pervious Area
	10,050		28.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 6S:

Runoff = 5.9 cfs @ 12.19 hrs, Volume= 26,203 cf, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
37,150	98	Paved parking, HSG D
6,030	98	Roofs, HSG D
640	96	Gravel surface, HSG D
1,670	79	50-75% Grass cover, Fair, HSG C
6,470	84	50-75% Grass cover, Fair, HSG D
11,820	77	Woods, Poor, HSG C
63,780		Weighted Average
20,600		32.30% Pervious Area
43,180		67.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0700	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	65	0.0500	1.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.3	115	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
14.5	280	Total			

Summary for Subcatchment 7S:

Runoff = 5.0 cfs @ 12.34 hrs, Volume= 27,091 cf, Depth= 4.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
28,795	98	Paved parking, HSG D
4,120	79	50-75% Grass cover, Fair, HSG C
38,530	83	Woods, Poor, HSG D
71,445		Weighted Average
42,650		59.70% Pervious Area
28,795		40.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.5	110	0.0225	0.08		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.4	90	0.0150	0.61		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.1	10	0.0150	1.84		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
0.7	250	0.0100	5.90	4.63	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
25.7	460	Total			

Summary for Subcatchment 8S:

Runoff = 4.7 cfs @ 12.39 hrs, Volume= 25,399 cf, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
8,205	98	Paved parking, HSG D
10,390	83	Woods, Poor, HSG D
66,130	77	Woods, Poor, HSG C
84,725		Weighted Average
76,520		90.32% Pervious Area
8,205		9.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	110	0.0300	0.09		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
6.9	180	0.0075	0.43		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.4	35	0.1000	1.58		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
0.5	180	0.0100	5.90	4.63	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
27.8	505	Total			

Summary for Subcatchment 9S:

Runoff = 1.6 cfs @ 12.09 hrs, Volume= 5,143 cf, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
15,800	83	Woods, Poor, HSG D
15,800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Pond 1P: B-41

Inflow Area = 34,840 sf, 96.15% Impervious, Inflow Depth = 5.50" for 25-YR event
Inflow = 4.5 cfs @ 12.08 hrs, Volume= 15,975 cf
Outflow = 4.5 cfs @ 12.08 hrs, Volume= 15,975 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.5 cfs @ 12.08 hrs, Volume= 15,975 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.18' @ 12.08 hrs
Flood Elev= 63.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.90'	**18.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 57.90' / 57.75' S= 0.0100 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.5 cfs @ 12.08 hrs HW=59.18' (Free Discharge)
1=Culvert (Barrel Controls 4.5 cfs @ 3.77 fps)

Summary for Pond 2P: B-34

Inflow Area = 206,895 sf, 48.15% Impervious, Inflow Depth = 4.49" for 25-YR event
Inflow = 14.3 cfs @ 12.12 hrs, Volume= 77,433 cf
Outflow = 14.3 cfs @ 12.12 hrs, Volume= 77,433 cf, Atten= 0%, Lag= 0.0 min
Primary = 14.3 cfs @ 12.12 hrs, Volume= 77,433 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.76' @ 12.12 hrs
Flood Elev= 63.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**18.0" Round Culvert**
			L= 140.0' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 57.50' / 55.88' S= 0.0116 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=14.3 cfs @ 12.12 hrs HW=62.76' (Free Discharge)
1=Culvert (Inlet Controls 14.3 cfs @ 8.07 fps)

Summary for Pond 3P: B-32 (CB-8031)

Inflow Area = 314,365 sf, 42.79% Impervious, Inflow Depth = 4.51" for 25-YR event
Inflow = 17.9 cfs @ 12.26 hrs, Volume= 118,037 cf
Outflow = 17.9 cfs @ 12.26 hrs, Volume= 118,037 cf, Atten= 0%, Lag= 0.0 min
Primary = 17.9 cfs @ 12.26 hrs, Volume= 118,037 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.77' @ 12.26 hrs
Flood Elev= 66.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert**
			L= 22.0' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 55.44' / 55.52' S= -0.0036 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=17.9 cfs @ 12.26 hrs HW=58.77' (Free Discharge)
1=Culvert (Inlet Controls 17.9 cfs @ 5.70 fps)

Summary for Pond 4P: B-32A (CB-8323)

Inflow Area = 395,015 sf, 40.02% Impervious, Inflow Depth = 4.65" for 25-YR event
Inflow = 27.0 cfs @ 12.12 hrs, Volume= 153,175 cf
Outflow = 27.0 cfs @ 12.12 hrs, Volume= 153,175 cf, Atten= 0%, Lag= 0.0 min
Primary = 21.1 cfs @ 12.12 hrs, Volume= 149,393 cf
Secondary = 5.8 cfs @ 12.12 hrs, Volume= 3,782 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.66' @ 12.12 hrs
Flood Elev= 59.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.52' / 54.90' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	59.39'	**15.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=21.1 cfs @ 12.12 hrs HW=59.65' (Free Discharge)
└**1=Culvert** (Inlet Controls 21.1 cfs @ 6.73 fps)

Secondary OutFlow Max=5.8 cfs @ 12.12 hrs HW=59.65' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 5.8 cfs @ 1.46 fps)

Summary for Pond 5P:

Inflow Area = 35,560 sf, 28.26% Impervious, Inflow Depth = 5.28" for 25-YR event
Inflow = 4.5 cfs @ 12.08 hrs, Volume= 15,635 cf
Outflow = 4.5 cfs @ 12.08 hrs, Volume= 15,635 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.5 cfs @ 12.08 hrs, Volume= 15,635 cf

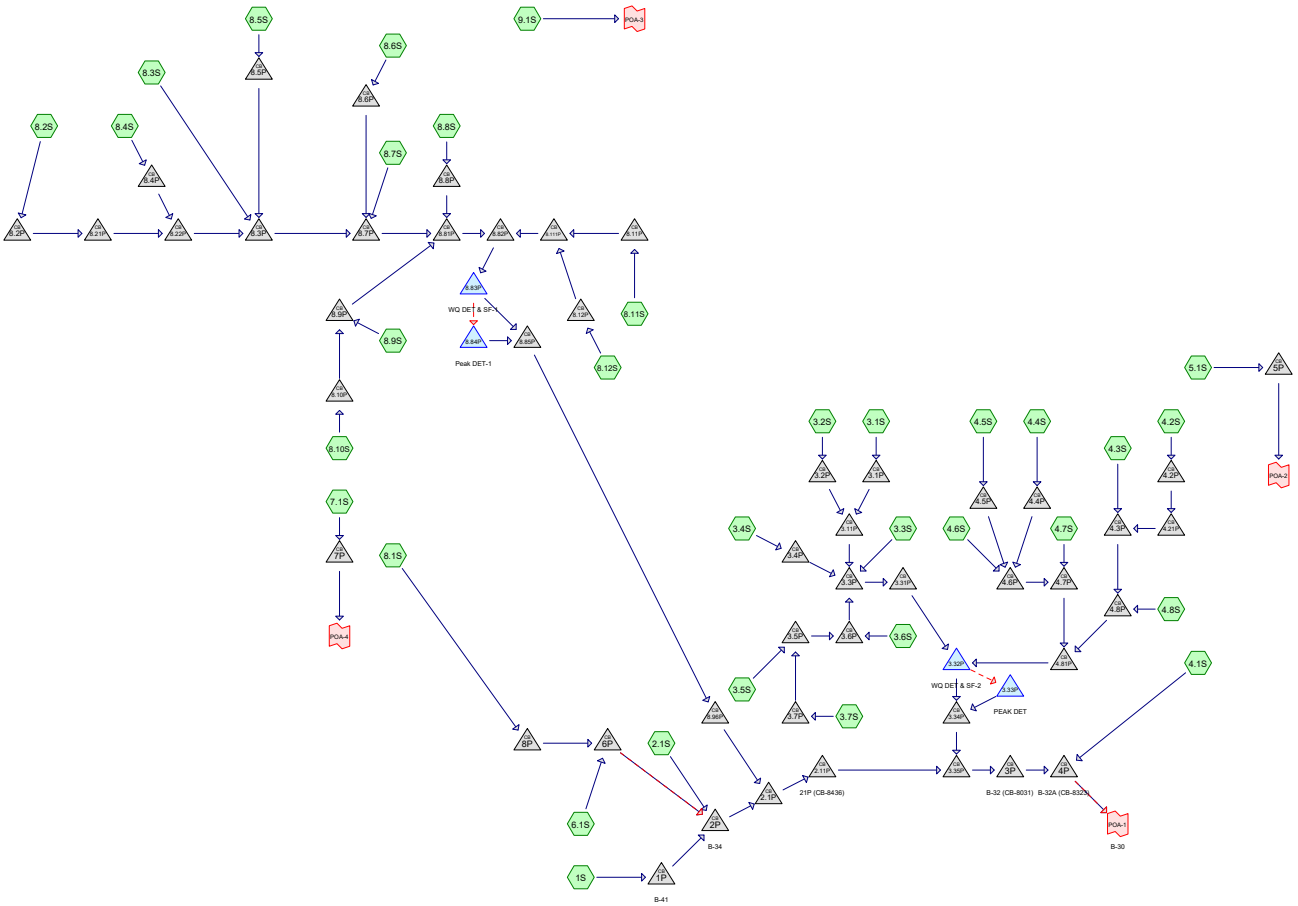
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 61.57' @ 12.08 hrs
Flood Elev= 66.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 59.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.5 cfs @ 12.08 hrs HW=61.56' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.5 cfs @ 3.68 fps)

Appendix 2B

Proposed Conditions
HydroCAD Summary



Subcat Reach Pond Link

Routing Diagram for 19059 - POST
Prepared by Sebago Technics, Printed 2/28/2024
HydroCAD® 10.20-4b s/n 00643 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR	Type III 24-hr		Default	24.00	1	3.10	2
2	10-YR	Type III 24-hr		Default	24.00	1	4.60	2
3	25-YR	Type III 24-hr		Default	24.00	1	5.80	2

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=34,840 sf 96.15% Impervious Runoff Depth=2.82"
Tc=6.0 min CN=WQ Runoff=2.4 cfs 8,185 cf

Subcatchment2.1S: Runoff Area=29,840 sf 69.86% Impervious Runoff Depth=2.49"
Tc=6.0 min CN=WQ Runoff=1.8 cfs 6,180 cf

Subcatchment3.1S: Runoff Area=1,450 sf 62.07% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=WQ Runoff=0.1 cfs 276 cf

Subcatchment3.2S: Runoff Area=4,400 sf 52.27% Impervious Runoff Depth=2.13"
Tc=6.0 min CN=WQ Runoff=0.2 cfs 782 cf

Subcatchment3.3S: Runoff Area=7,500 sf 87.33% Impervious Runoff Depth=2.67"
Tc=6.0 min CN=WQ Runoff=0.5 cfs 1,670 cf

Subcatchment3.4S: Runoff Area=5,170 sf 90.14% Impervious Runoff Depth=2.72"
Tc=6.0 min CN=WQ Runoff=0.3 cfs 1,170 cf

Subcatchment3.5S: Runoff Area=7,350 sf 88.71% Impervious Runoff Depth=2.69"
Tc=6.0 min CN=WQ Runoff=0.5 cfs 1,650 cf

Subcatchment3.6S: Runoff Area=7,080 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.5 cfs 1,692 cf

Subcatchment3.7S: Runoff Area=6,280 sf 87.10% Impervious Runoff Depth=2.67"
Tc=6.0 min CN=WQ Runoff=0.4 cfs 1,397 cf

Subcatchment4.1S: Runoff Area=30,540 sf 50.79% Impervious Runoff Depth=2.24"
Flow Length=135' Tc=12.1 min CN=WQ Runoff=1.4 cfs 5,709 cf

Subcatchment4.2S: Runoff Area=11,860 sf 82.50% Impervious Runoff Depth=2.65"
Tc=6.0 min CN=WQ Runoff=0.8 cfs 2,615 cf

Subcatchment4.3S: Runoff Area=10,630 sf 88.66% Impervious Runoff Depth=2.69"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,386 cf

Subcatchment4.4S: Runoff Area=11,040 sf 83.15% Impervious Runoff Depth=2.61"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,399 cf

Subcatchment4.5S: Runoff Area=5,620 sf 62.10% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=WQ Runoff=0.3 cfs 1,069 cf

Subcatchment4.6S: Runoff Area=9,090 sf 87.90% Impervious Runoff Depth=2.68"
Tc=6.0 min CN=WQ Runoff=0.6 cfs 2,031 cf

Subcatchment4.7S: Runoff Area=6,020 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.4 cfs 1,439 cf

Subcatchment4.8S: Runoff Area=11,850 sf 90.00% Impervious Runoff Depth=2.71"
Tc=6.0 min CN=WQ Runoff=0.8 cfs 2,680 cf

Subcatchment5.1S: Runoff Area=20,660 sf 50.80% Impervious Runoff Depth=2.24"
Tc=6.0 min CN=WQ Runoff=1.2 cfs 3,863 cf

Subcatchment6.1S: Runoff Area=50,370 sf 83.84% Impervious Runoff Depth=2.65"
Flow Length=280' Tc=14.5 min CN=WQ Runoff=2.5 cfs 11,130 cf

Subcatchment7.1S: Runoff Area=45,290 sf 74.03% Impervious Runoff Depth=2.45"
Flow Length=425' Tc=11.4 min CN=WQ Runoff=2.3 cfs 9,250 cf

Subcatchment8.10S: Runoff Area=8,440 sf 92.00% Impervious Runoff Depth=2.74"
Tc=6.0 min CN=WQ Runoff=0.6 cfs 1,930 cf

Subcatchment8.11S: Runoff Area=26,900 sf 87.62% Impervious Runoff Depth=2.68"
Tc=6.0 min CN=WQ Runoff=1.7 cfs 6,001 cf

Subcatchment8.12S: Runoff Area=2,340 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.2 cfs 559 cf

Subcatchment8.1S: Runoff Area=13,930 sf 49.61% Impervious Runoff Depth=2.02"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,349 cf

Subcatchment8.2S: Runoff Area=19,350 sf 84.44% Impervious Runoff Depth=2.63"
Tc=6.0 min CN=WQ Runoff=1.2 cfs 4,238 cf

Subcatchment8.3S: Runoff Area=48,240 sf 91.04% Impervious Runoff Depth=2.73"
Tc=6.0 min CN=WQ Runoff=3.2 cfs 10,974 cf

Subcatchment8.4S: Runoff Area=22,420 sf 78.10% Impervious Runoff Depth=2.53"
Tc=6.0 min CN=WQ Runoff=1.4 cfs 4,727 cf

Subcatchment8.5S: Runoff Area=9,090 sf 0.00% Impervious Runoff Depth=1.33"
Tc=6.0 min CN=80 Runoff=0.3 cfs 1,004 cf

Subcatchment8.6S: Runoff Area=11,120 sf 70.91% Impervious Runoff Depth=2.42"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,242 cf

Subcatchment8.7S: Runoff Area=5,080 sf 35.43% Impervious Runoff Depth=1.87"
Tc=6.0 min CN=WQ Runoff=0.2 cfs 792 cf

Subcatchment8.8S: Runoff Area=9,920 sf 83.06% Impervious Runoff Depth=2.61"
Tc=6.0 min CN=WQ Runoff=0.6 cfs 2,155 cf

Subcatchment8.9S: Runoff Area=17,310 sf 96.50% Impervious Runoff Depth=2.81"
Tc=6.0 min CN=WQ Runoff=1.2 cfs 4,059 cf

Subcatchment9.1S: Runoff Area=6,800 sf 0.00% Impervious Runoff Depth=1.47"
Tc=6.0 min CN=WQ Runoff=0.3 cfs 832 cf

Pond 1P: B-41 Peak Elev=58.76' Inflow=2.4 cfs 8,185 cf
18.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=2.4 cfs 8,185 cf

Pond 2.11P: 21P (CB-8436) Peak Elev=57.49' Inflow=7.4 cfs 66,525 cf
24.0" Round Culvert n=0.013 L=80.0' S=0.0024 '/' Outflow=7.4 cfs 66,525 cf

Pond 2.1P: Peak Elev=57.59' Inflow=7.4 cfs 66,525 cf
24.0" Round Culvert n=0.013 L=40.0' S=0.0032 '/' Outflow=7.4 cfs 66,525 cf

Pond 2P: B-34 Peak Elev=59.27' Inflow=6.8 cfs 27,844 cf
18.0" Round Culvert n=0.013 L=140.0' S=0.0116 '/' Outflow=6.8 cfs 27,844 cf

Pond 3.11P: Peak Elev=66.16' Inflow=0.3 cfs 1,057 cf
12.0" Round Culvert n=0.013 L=30.0' S=0.0117 '/' Outflow=0.3 cfs 1,057 cf

Pond 3.1P: Peak Elev=67.45' Inflow=0.1 cfs 276 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0200 '/' Outflow=0.1 cfs 276 cf

Pond 3.2P: Peak Elev=67.04' Inflow=0.2 cfs 782 cf
12.0" Round Culvert n=0.013 L=80.0' S=0.0109 '/' Outflow=0.2 cfs 782 cf

Pond 3.31P: Peak Elev=62.55' Inflow=2.5 cfs 8,636 cf
24.0" Round Culvert n=0.013 L=42.0' S=0.0119 '/' Outflow=2.5 cfs 8,636 cf

Pond 3.32P: WQ DET & SF-2 Peak Elev=62.81' Storage=3,180 cf Inflow=6.8 cfs 23,255 cf
Primary=0.3 cfs 13,778 cf Secondary=6.3 cfs 9,478 cf Outflow=6.6 cfs 23,255 cf

Pond 3.33P: PEAK DET Peak Elev=62.04' Storage=8,295 cf Inflow=6.3 cfs 9,478 cf
Outflow=0.1 cfs 9,478 cf

Pond 3.34P: Peak Elev=57.80' Inflow=0.4 cfs 23,255 cf
24.0" Round Culvert n=0.013 L=62.0' S=0.0102 '/' Outflow=0.4 cfs 23,255 cf

Pond 3.35P: Peak Elev=57.35' Inflow=7.8 cfs 89,780 cf
24.0" Round Culvert n=0.013 L=25.0' S=0.0028 '/' Outflow=7.8 cfs 89,780 cf

Pond 3.3P: Peak Elev=63.64' Inflow=2.5 cfs 8,636 cf
18.0" Round Culvert n=0.013 L=45.0' S=0.0111 '/' Outflow=2.5 cfs 8,636 cf

Pond 3.4P: Peak Elev=66.58' Inflow=0.3 cfs 1,170 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0160 '/' Outflow=0.3 cfs 1,170 cf

Pond 3.5P: Peak Elev=64.85' Inflow=0.9 cfs 3,047 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=0.9 cfs 3,047 cf

Pond 3.6P: Peak Elev=64.19' Inflow=1.4 cfs 4,739 cf
15.0" Round Culvert n=0.013 L=45.0' S=0.0111 '/' Outflow=1.4 cfs 4,739 cf

Pond 3.7P: Peak Elev=65.16' Inflow=0.4 cfs 1,397 cf
12.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=0.4 cfs 1,397 cf

Pond 3P: B-32 (CB-8031) Peak Elev=57.17' Inflow=7.8 cfs 89,780 cf
24.0" Round Culvert n=0.013 L=22.0' S=-0.0036 '/' Outflow=7.8 cfs 89,780 cf

Pond 4.21P: Peak Elev=67.52' Inflow=0.8 cfs 2,615 cf
15.0" Round Culvert n=0.013 L=82.0' S=0.0121 '/' Outflow=0.8 cfs 2,615 cf

Pond 4.2P: Peak Elev=68.67' Inflow=0.8 cfs 2,615 cf
15.0" Round Culvert n=0.013 L=104.0' S=0.0100 '/' Outflow=0.8 cfs 2,615 cf

Pond 4.3P: Peak Elev=66.43' Inflow=1.5 cfs 5,001 cf
18.0" Round Culvert n=0.013 L=105.0' S=0.0158 '/' Outflow=1.5 cfs 5,001 cf

Pond 4.4P: Peak Elev=68.38' Inflow=0.7 cfs 2,399 cf
12.0" Round Culvert n=0.013 L=83.0' S=0.0169 '/' Outflow=0.7 cfs 2,399 cf

Pond 4.5P: Peak Elev=69.41' Inflow=0.3 cfs 1,069 cf
12.0" Round Culvert n=0.013 L=122.0' S=0.0213 '/' Outflow=0.3 cfs 1,069 cf

Pond 4.6P: Peak Elev=66.65' Inflow=1.6 cfs 5,500 cf
18.0" Round Culvert n=0.013 L=77.0' S=0.0169 '/' Outflow=1.6 cfs 5,500 cf

Pond 4.7P: Peak Elev=64.71' Inflow=2.0 cfs 6,938 cf
18.0" Round Culvert x 2.00 n=0.013 L=22.0' S=0.0227 '/' Outflow=2.0 cfs 6,938 cf

Pond 4.81P: Peak Elev=64.20' Inflow=4.3 cfs 14,619 cf
24.0" Round Culvert n=0.013 L=15.0' S=0.0267 '/' Outflow=4.3 cfs 14,619 cf

Pond 4.8P: Peak Elev=64.36' Inflow=2.2 cfs 7,680 cf
24.0" Round Culvert n=0.013 L=35.0' S=0.0100 '/' Outflow=2.2 cfs 7,680 cf

Pond 4P: B-32A (CB-8323) Peak Elev=57.12' Inflow=9.0 cfs 95,489 cf
Primary=9.0 cfs 95,489 cf Secondary=0.0 cfs 0 cf Outflow=9.0 cfs 95,489 cf

Pond 5P: Peak Elev=60.59' Inflow=1.2 cfs 3,863 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=1.2 cfs 3,863 cf

Pond 6P: Peak Elev=63.56' Inflow=3.0 cfs 13,479 cf
Primary=3.0 cfs 13,479 cf Secondary=0.0 cfs 0 cf Outflow=3.0 cfs 13,479 cf

Pond 7P: Peak Elev=66.08' Inflow=2.3 cfs 9,250 cf
12.0" Round Culvert n=0.013 L=100.0' S=0.0100 '/' Outflow=2.3 cfs 9,250 cf

Pond 8.10P: Peak Elev=69.73' Inflow=0.6 cfs 1,930 cf
12.0" Round Culvert n=0.013 L=15.0' S=0.0367 '/' Outflow=0.6 cfs 1,930 cf

Pond 8.111P: Peak Elev=68.67' Inflow=1.9 cfs 6,560 cf
18.0" Round Culvert n=0.013 L=160.0' S=0.0103 '/' Outflow=1.9 cfs 6,560 cf

Pond 8.11P: Peak Elev=70.69' Inflow=1.7 cfs 6,001 cf
15.0" Round Culvert n=0.013 L=144.0' S=0.0122 '/' Outflow=1.7 cfs 6,001 cf

Pond 8.12P: Peak Elev=70.97' Inflow=0.2 cfs 559 cf
12.0" Round Culvert n=0.013 L=120.0' S=0.0121 '/' Outflow=0.2 cfs 559 cf

Pond 8.21P: Peak Elev=71.51' Inflow=1.2 cfs 4,238 cf
24.0" Round Culvert n=0.013 L=100.0' S=0.0240 '/' Outflow=1.2 cfs 4,238 cf

Pond 8.22P: Peak Elev=69.27' Inflow=2.6 cfs 8,965 cf
24.0" Round Culvert n=0.013 L=30.0' S=0.0133 '/' Outflow=2.6 cfs 8,965 cf

Pond 8.2P: Peak Elev=74.27' Inflow=1.2 cfs 4,238 cf
18.0" Round Culvert n=0.013 L=120.0' S=0.0183 '/' Outflow=1.2 cfs 4,238 cf

Pond 8.3P: Peak Elev=69.24' Inflow=6.1 cfs 20,942 cf
24.0" Round Culvert n=0.013 L=45.0' S=0.0178 '/' Outflow=6.1 cfs 20,942 cf

Pond 8.4P: Peak Elev=70.65' Inflow=1.4 cfs 4,727 cf
15.0" Round Culvert n=0.013 L=40.0' S=0.0163 '/' Outflow=1.4 cfs 4,727 cf

Pond 8.5P: Peak Elev=74.76' Inflow=0.3 cfs 1,004 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0220 '/' Outflow=0.3 cfs 1,004 cf

Pond 8.6P: Peak Elev=71.73' Inflow=0.7 cfs 2,242 cf
15.0" Round Culvert n=0.013 L=60.0' S=0.0200 '/' Outflow=0.7 cfs 2,242 cf

Pond 8.7P: Peak Elev=68.12' Inflow=7.0 cfs 23,976 cf
30.0" Round Culvert n=0.013 L=57.0' S=0.0114 '/' Outflow=7.0 cfs 23,976 cf

Pond 8.81P: Peak Elev=67.63' Inflow=9.4 cfs 32,121 cf
36.0" Round Culvert n=0.013 L=13.0' S=0.0192 '/' Outflow=9.4 cfs 32,121 cf

Pond 8.82P: Peak Elev=66.85' Inflow=11.3 cfs 38,681 cf
36.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=11.3 cfs 38,681 cf

Pond 8.83P: WQ DET & SF-1 Peak Elev=69.22' Storage=4,933 cf Inflow=11.3 cfs 38,681 cf
Primary=0.5 cfs 22,563 cf Secondary=10.8 cfs 16,118 cf Outflow=11.2 cfs 38,681 cf

Pond 8.84P: Peak DET-1 Peak Elev=64.90' Storage=12,614 cf Inflow=10.8 cfs 16,118 cf
Outflow=1.0 cfs 16,118 cf

Pond 8.85P: Peak Elev=61.11' Inflow=1.4 cfs 38,681 cf
18.0" Round Culvert n=0.013 L=226.0' S=0.0084 '/' Outflow=1.4 cfs 38,681 cf

Pond 8.8P: Peak Elev=70.92' Inflow=0.6 cfs 2,155 cf
15.0" Round Culvert n=0.013 L=23.0' S=0.0217 '/' Outflow=0.6 cfs 2,155 cf

Pond 8.96P: Peak Elev=59.11' Inflow=1.4 cfs 38,681 cf
18.0" Round Culvert n=0.013 L=80.0' S=0.0311 '/' Outflow=1.4 cfs 38,681 cf

Pond 8.9P: Peak Elev=70.24' Inflow=1.7 cfs 5,989 cf
12.0" Round Culvert n=0.013 L=18.0' S=0.0361 '/' Outflow=1.7 cfs 5,989 cf

Pond 8P: Peak Elev=61.06' Inflow=0.7 cfs 2,349 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0100 '/' Outflow=0.7 cfs 2,349 cf

Link POA-1: B-30 Inflow=9.0 cfs 95,489 cf
Primary=9.0 cfs 95,489 cf

Link POA-2: Inflow=1.2 cfs 3,863 cf
Primary=1.2 cfs 3,863 cf

Link POA-3: Inflow=0.3 cfs 832 cf
Primary=0.3 cfs 832 cf

Link POA-4: Inflow=2.3 cfs 9,250 cf
Primary=2.3 cfs 9,250 cf

Total Runoff Area = 517,820 sf Runoff Volume = 109,434 cf Average Runoff Depth = 2.54"
22.92% Pervious = 118,690 sf 77.08% Impervious = 399,130 sf

Summary for Subcatchment 1S:

Runoff = 2.4 cfs @ 12.08 hrs, Volume= 8,185 cf, Depth= 2.82"
Routed to Pond 1P : B-41

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
33,500	98	Paved parking, HSG D
1,340	84	50-75% Grass cover, Fair, HSG D
34,840		Weighted Average
1,340		3.85% Pervious Area
33,500		96.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 2.1S:

Runoff = 1.8 cfs @ 12.08 hrs, Volume= 6,180 cf, Depth= 2.49"
Routed to Pond 2P : B-34

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
20,845	98	Paved parking, HSG D
8,995	84	50-75% Grass cover, Fair, HSG D
29,840		Weighted Average
8,995		30.14% Pervious Area
20,845		69.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.1S:

Runoff = 0.1 cfs @ 12.09 hrs, Volume= 276 cf, Depth= 2.28"
Routed to Pond 3.1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
550	80	>75% Grass cover, Good, HSG D
900	98	Paved parking, HSG D
1,450		Weighted Average
550		37.93% Pervious Area
900		62.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.2S:

Runoff = 0.2 cfs @ 12.09 hrs, Volume= 782 cf, Depth= 2.13"
Routed to Pond 3.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
2,100	80	>75% Grass cover, Good, HSG D
2,300	98	Paved parking, HSG D
4,400		Weighted Average
2,100		47.73% Pervious Area
2,300		52.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.3S:

Runoff = 0.5 cfs @ 12.08 hrs, Volume= 1,670 cf, Depth= 2.67"
Routed to Pond 3.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
950	80	>75% Grass cover, Good, HSG D
6,550	98	Paved parking, HSG D
7,500		Weighted Average
950		12.67% Pervious Area
6,550		87.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.4S:

Runoff = 0.3 cfs @ 12.08 hrs, Volume= 1,170 cf, Depth= 2.72"
Routed to Pond 3.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
510	80	>75% Grass cover, Good, HSG D
4,660	98	Paved parking, HSG D
5,170		Weighted Average
510		9.86% Pervious Area
4,660		90.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.5S:

Runoff = 0.5 cfs @ 12.08 hrs, Volume= 1,650 cf, Depth= 2.69"
Routed to Pond 3.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
6,520	98	Paved parking, HSG D
830	80	>75% Grass cover, Good, HSG D
7,350		Weighted Average
830		11.29% Pervious Area
6,520		88.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.6S:

Runoff = 0.5 cfs @ 12.08 hrs, Volume= 1,692 cf, Depth= 2.87"
Routed to Pond 3.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
7,080	98	Paved parking, HSG D
7,080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.7S:

Runoff = 0.4 cfs @ 12.08 hrs, Volume= 1,397 cf, Depth= 2.67"
Routed to Pond 3.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
810	80	>75% Grass cover, Good, HSG D
5,470	98	Paved parking, HSG D
6,280		Weighted Average
810		12.90% Pervious Area
5,470		87.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.1S:

Runoff = 1.4 cfs @ 12.16 hrs, Volume= 5,709 cf, Depth= 2.24"
Routed to Pond 4P : B-32A (CB-8323)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
12,790	98	Paved parking, HSG D
15,030	84	50-75% Grass cover, Fair, HSG D
2,720	98	Roofs, HSG D
30,540		Weighted Average
15,030		49.21% Pervious Area
15,510		50.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	110	0.0150	0.15		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.0	25	0.3300	8.62		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
12.1	135	Total			

Summary for Subcatchment 4.2S:

Runoff = 0.8 cfs @ 12.08 hrs, Volume= 2,615 cf, Depth= 2.65"
Routed to Pond 4.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
9,785	98	Paved parking, HSG D
2,075	84	50-75% Grass cover, Fair, HSG D
11,860		Weighted Average
2,075		17.50% Pervious Area
9,785		82.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.3S:

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,386 cf, Depth= 2.69"
Routed to Pond 4.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
1,205	80	>75% Grass cover, Good, HSG D
9,425	98	Paved parking, HSG D
10,630		Weighted Average
1,205		11.34% Pervious Area
9,425		88.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.4S:

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,399 cf, Depth= 2.61"
Routed to Pond 4.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
1,860	80	>75% Grass cover, Good, HSG D
9,180	98	Paved parking, HSG D
11,040		Weighted Average
1,860		16.85% Pervious Area
9,180		83.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.5S:

Runoff = 0.3 cfs @ 12.09 hrs, Volume= 1,069 cf, Depth= 2.28"
Routed to Pond 4.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
2,130	80	>75% Grass cover, Good, HSG D
3,490	98	Paved parking, HSG D
5,620		Weighted Average
2,130		37.90% Pervious Area
3,490		62.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.6S:

Runoff = 0.6 cfs @ 12.08 hrs, Volume= 2,031 cf, Depth= 2.68"
Routed to Pond 4.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
7,990	98	Paved parking, HSG D
1,100	80	>75% Grass cover, Good, HSG D
9,090		Weighted Average
1,100		12.10% Pervious Area
7,990		87.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.7S:

Runoff = 0.4 cfs @ 12.08 hrs, Volume= 1,439 cf, Depth= 2.87"
Routed to Pond 4.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
6,020	98	Paved parking, HSG D
6,020		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.8S:

Runoff = 0.8 cfs @ 12.08 hrs, Volume= 2,680 cf, Depth= 2.71"
Routed to Pond 4.8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
10,665	98	Paved parking, HSG D
1,185	80	>75% Grass cover, Good, HSG D
11,850		Weighted Average
1,185		10.00% Pervious Area
10,665		90.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 5.1S:

Runoff = 1.2 cfs @ 12.09 hrs, Volume= 3,863 cf, Depth= 2.24"
Routed to Pond 5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (sf)	CN	Description
*	10,495	98	Paved parking, HSG D
	10,165	84	50-75% Grass cover, Fair, HSG D
	20,660		Weighted Average
	10,165		49.20% Pervious Area
	10,495		50.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 6.1S:

Runoff = 2.5 cfs @ 12.19 hrs, Volume= 11,130 cf, Depth= 2.65"
Routed to Pond 6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
36,200	98	Paved parking, HSG D
6,030	98	Roofs, HSG D
1,670	79	50-75% Grass cover, Fair, HSG C
6,470	84	50-75% Grass cover, Fair, HSG D
50,370		Weighted Average
8,140		16.16% Pervious Area
42,230		83.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0700	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	65	0.0500	1.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.3	115	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
14.5	280	Total			

Summary for Subcatchment 7.1S:

Runoff = 2.3 cfs @ 12.15 hrs, Volume= 9,250 cf, Depth= 2.45"
Routed to Pond 7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
31,245	98	Paved parking, HSG D
11,760	79	50-75% Grass cover, Fair, HSG C
2,285	98	Unconnected pavement, HSG D
45,290		Weighted Average
11,760		25.97% Pervious Area
33,530		74.03% Impervious Area
2,285		6.81% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0200	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.7	75	0.0150	1.84		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.7	250	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
11.4	425	Total			

Summary for Subcatchment 8.10S:

Runoff = 0.6 cfs @ 12.08 hrs, Volume= 1,930 cf, Depth= 2.74"
Routed to Pond 8.10P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
675	80	>75% Grass cover, Good, HSG D
7,765	98	Paved parking, HSG D
8,440		Weighted Average
675		8.00% Pervious Area
7,765		92.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.11S:

Runoff = 1.7 cfs @ 12.08 hrs, Volume= 6,001 cf, Depth= 2.68"
Routed to Pond 8.11P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
3,330	80	>75% Grass cover, Good, HSG D
23,570	98	Paved parking, HSG D
26,900		Weighted Average
3,330		12.38% Pervious Area
23,570		87.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.12S:

Runoff = 0.2 cfs @ 12.08 hrs, Volume= 559 cf, Depth= 2.87"
Routed to Pond 8.12P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
2,340	98	Paved parking, HSG D
2,340		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.1S:

Runoff = 0.7 cfs @ 12.09 hrs, Volume= 2,349 cf, Depth= 2.02"
Routed to Pond 8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
6,910	98	Paved parking, HSG D
2,655	74	>75% Grass cover, Good, HSG C
4,365	80	>75% Grass cover, Good, HSG D
13,930		Weighted Average
7,020		50.39% Pervious Area
6,910		49.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.2S:

Runoff = 1.2 cfs @ 12.08 hrs, Volume= 4,238 cf, Depth= 2.63"
Routed to Pond 8.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
3,010	80	>75% Grass cover, Good, HSG D
16,340	98	Paved parking, HSG D
19,350		Weighted Average
3,010		15.56% Pervious Area
16,340		84.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.3S:

Runoff = 3.2 cfs @ 12.08 hrs, Volume= 10,974 cf, Depth= 2.73"
Routed to Pond 8.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
4,320	80	>75% Grass cover, Good, HSG D
43,920	98	Paved parking, HSG D
48,240		Weighted Average
4,320		8.96% Pervious Area
43,920		91.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.4S:

Runoff = 1.4 cfs @ 12.08 hrs, Volume= 4,727 cf, Depth= 2.53"
Routed to Pond 8.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
4,910	80	>75% Grass cover, Good, HSG D
17,510	98	Paved parking, HSG D
22,420		Weighted Average
4,910		21.90% Pervious Area
17,510		78.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.5S:

Runoff = 0.3 cfs @ 12.09 hrs, Volume= 1,004 cf, Depth= 1.33"
Routed to Pond 8.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
9,090	80	>75% Grass cover, Good, HSG D
9,090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.6S:

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,242 cf, Depth= 2.42"
Routed to Pond 8.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
3,235	80	>75% Grass cover, Good, HSG D
7,885	98	Paved parking, HSG D
11,120		Weighted Average
3,235		29.09% Pervious Area
7,885		70.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.7S:

Runoff = 0.2 cfs @ 12.09 hrs, Volume= 792 cf, Depth= 1.87"
Routed to Pond 8.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
3,280	80	>75% Grass cover, Good, HSG D
1,800	98	Paved parking, HSG D
5,080		Weighted Average
3,280		64.57% Pervious Area
1,800		35.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.8S:

Runoff = 0.6 cfs @ 12.08 hrs, Volume= 2,155 cf, Depth= 2.61"
Routed to Pond 8.8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
1,680	80	>75% Grass cover, Good, HSG D
8,240	98	Paved parking, HSG D
9,920		Weighted Average
1,680		16.94% Pervious Area
8,240		83.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.9S:

Runoff = 1.2 cfs @ 12.08 hrs, Volume= 4,059 cf, Depth= 2.81"
Routed to Pond 8.9P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
605	80	>75% Grass cover, Good, HSG D
16,705	98	Paved parking, HSG D
17,310		Weighted Average
605		3.50% Pervious Area
16,705		96.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 9.1S:

Runoff = 0.3 cfs @ 12.09 hrs, Volume= 832 cf, Depth= 1.47"
Routed to Link POA-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
4,800	83	Woods, Poor, HSG D
2,000	80	>75% Grass cover, Good, HSG D
6,800		Weighted Average
6,800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Pond 1P: B-41

Inflow Area = 34,840 sf, 96.15% Impervious, Inflow Depth = 2.82" for 2-YR event
Inflow = 2.4 cfs @ 12.08 hrs, Volume= 8,185 cf
Outflow = 2.4 cfs @ 12.08 hrs, Volume= 8,185 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.4 cfs @ 12.08 hrs, Volume= 8,185 cf
Routed to Pond 2P : B-34

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.76' @ 12.08 hrs
Flood Elev= 63.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.90'	**18.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.90' / 57.75' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.4 cfs @ 12.08 hrs HW=58.76' (Free Discharge)
1=Culvert (Barrel Controls 2.4 cfs @ 3.26 fps)

Summary for Pond 2.11P: 21P (CB-8436)

Inflow Area = 309,190 sf, 80.71% Impervious, Inflow Depth = 2.58" for 2-YR event
Inflow = 7.4 cfs @ 12.10 hrs, Volume= 66,525 cf
Outflow = 7.4 cfs @ 12.10 hrs, Volume= 66,525 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.4 cfs @ 12.10 hrs, Volume= 66,525 cf
Routed to Pond 3.35P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.49' @ 12.10 hrs
Flood Elev= 68.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.88'	**24.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.88' / 55.69' S= 0.0024 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.4 cfs @ 12.10 hrs HW=57.49' (Free Discharge)
1=Culvert (Barrel Controls 7.4 cfs @ 3.72 fps)

Summary for Pond 2.1P:

Inflow Area = 309,190 sf, 80.71% Impervious, Inflow Depth = 2.58" for 2-YR event
Inflow = 7.4 cfs @ 12.10 hrs, Volume= 66,525 cf
Outflow = 7.4 cfs @ 12.10 hrs, Volume= 66,525 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.4 cfs @ 12.10 hrs, Volume= 66,525 cf
Routed to Pond 2.11P : 21P (CB-8436)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.59' @ 12.10 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	56.01'	**24.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 56.01' / 55.88' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.4 cfs @ 12.10 hrs HW=57.59' (Free Discharge)
1=Culvert (Barrel Controls 7.4 cfs @ 3.80 fps)

Summary for Pond 2P: B-34

Inflow Area = 128,980 sf, 80.23% Impervious, Inflow Depth = 2.59" for 2-YR event
Inflow = 6.8 cfs @ 12.10 hrs, Volume= 27,844 cf
Outflow = 6.8 cfs @ 12.10 hrs, Volume= 27,844 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.8 cfs @ 12.10 hrs, Volume= 27,844 cf
Routed to Pond 2.1P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.27' @ 12.10 hrs
Flood Elev= 63.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**18.0" Round Culvert** L= 140.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 55.88' S= 0.0116 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.8 cfs @ 12.10 hrs HW=59.27' (Free Discharge)
1=Culvert (Inlet Controls 6.8 cfs @ 3.84 fps)

Summary for Pond 3.11P:

Inflow Area = 5,850 sf, 54.70% Impervious, Inflow Depth = 2.17" for 2-YR event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 1,057 cf
Outflow = 0.3 cfs @ 12.09 hrs, Volume= 1,057 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.09 hrs, Volume= 1,057 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 66.16' @ 12.09 hrs
Flood Elev= 71.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.85'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.85' / 65.50' S= 0.0117 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.3 cfs @ 12.09 hrs HW=66.16' (Free Discharge)
1=Culvert (Inlet Controls 0.3 cfs @ 1.50 fps)

Summary for Pond 3.1P:

Inflow Area = 1,450 sf, 62.07% Impervious, Inflow Depth = 2.28" for 2-YR event
Inflow = 0.1 cfs @ 12.09 hrs, Volume= 276 cf
Outflow = 0.1 cfs @ 12.09 hrs, Volume= 276 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.1 cfs @ 12.09 hrs, Volume= 276 cf
Routed to Pond 3.11P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.45' @ 12.09 hrs
Flood Elev= 72.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.30'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.30' / 65.90' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.1 cfs @ 12.09 hrs HW=67.45' (Free Discharge)
1=Culvert (Inlet Controls 0.1 cfs @ 1.05 fps)

Summary for Pond 3.2P:

Inflow Area = 4,400 sf, 52.27% Impervious, Inflow Depth = 2.13" for 2-YR event
Inflow = 0.2 cfs @ 12.09 hrs, Volume= 782 cf
Outflow = 0.2 cfs @ 12.09 hrs, Volume= 782 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.09 hrs, Volume= 782 cf
Routed to Pond 3.11P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.04' @ 12.09 hrs
Flood Elev= 70.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.77'	**12.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.77' / 65.90' S= 0.0109 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.2 cfs @ 12.09 hrs HW=67.04' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.2 cfs @ 1.39 fps)

Summary for Pond 3.31P:

Inflow Area = 39,230 sf, 85.34% Impervious, Inflow Depth = 2.64" for 2-YR event
Inflow = 2.5 cfs @ 12.08 hrs, Volume= 8,636 cf
Outflow = 2.5 cfs @ 12.08 hrs, Volume= 8,636 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.5 cfs @ 12.08 hrs, Volume= 8,636 cf
Routed to Pond 3.32P : WQ DET & SF-2

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.55' @ 12.08 hrs
Flood Elev= 70.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	61.80'	**24.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 61.80' / 61.30' S= 0.0119 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.5 cfs @ 12.08 hrs HW=62.55' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.5 cfs @ 2.33 fps)

Summary for Pond 3.32P: WQ DET & SF-2

Inflow Area = 105,340 sf, 85.47% Impervious, Inflow Depth = 2.65" for 2-YR event
Inflow = 6.8 cfs @ 12.08 hrs, Volume= 23,255 cf
Outflow = 6.6 cfs @ 12.10 hrs, Volume= 23,255 cf, Atten= 2%, Lag= 1.1 min
Primary = 0.3 cfs @ 12.10 hrs, Volume= 13,778 cf
Routed to Pond 3.34P :
Secondary = 6.3 cfs @ 12.10 hrs, Volume= 9,478 cf
Routed to Pond 3.33P : PEAK DET

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.81' @ 12.10 hrs Surf.Area= 1,634 sf Storage= 3,180 cf

Plug-Flow detention time= 55.9 min calculated for 23,251 cf (100% of inflow)
Center-of-Mass det. time= 55.9 min (819.3 - 763.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	60.00'	0 cf	**8.00'W x 204.25'L x 9.00'H Field A** 14,706 cf Overall - 10,166 cf Embedded = 4,540 cf x 0.0% Voids
#2A	60.00'	10,166 cf	**CMP Round 96** x 9 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +14.25' x 50.27 sf x 1 rows 8.00' Header x 50.27 sf x 1 = 402.1 cf Inside
		10,166 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	60.00'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 60.00' / 59.95' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	57.70'	**Tube/Siphon/Float Valve X 11.00** 0.668" Diameter, C= 0.600, 0.263" Trickle Diameter Starts@60.45'
#3	Primary	57.70'	**12.0" Round 12" Stormfilter Outlet** L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.70' / 57.60' S= 0.0077 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Secondary	62.40'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 2.40 2.48 2.56 2.64 2.72 2.80 2.88 2.96 3.04 3.12 3.20 3.28 3.36 3.44 3.52 3.60 3.68 3.76 3.84 3.92 4.00 4.08 4.16 4.24 4.32 4.40 4.48 4.56 4.64 4.72 4.80 4.88 4.96 5.04 5.12 5.20 5.28 5.36 5.44 5.52 5.60 5.68 5.76 5.84 5.92 6.00 6.08 6.16 6.24 6.32 6.40 6.48 6.56 6.64 6.72 6.80 6.88 6.96 7.04 7.12 7.20 7.28 7.36 7.44 7.52 7.60 7.68 7.76 7.84 7.92 8.00 Width (feet) 7.33 7.40 7.46 7.52 7.58 7.63 7.68 7.72 7.77 7.80 7.84 7.87 7.90 7.92 7.94 7.96 7.97 7.99 7.99 8.00 8.00 8.00 7.99 7.99 7.97 7.96 7.94 7.92 7.90 7.87 7.84 7.80 7.77 7.72 7.68 7.63 7.58 7.52 7.46 7.40 7.33 7.26 7.18 7.10 7.02 6.93 6.83 6.73 6.63 6.52 6.40 6.28 6.15 6.01 5.87 5.71 5.55 5.38 5.20 5.01 4.80 4.58 4.34 4.08 3.80 3.49 3.14 2.73 2.24 1.59 0.00

Primary OutFlow Max=0.3 cfs @ 12.10 hrs HW=62.81' (Free Discharge)
└**3=12" Stormfilter Outlet** (Passes 0.3 cfs of 6.4 cfs potential flow)
└**2=Tube/Siphon/Float Valve** (Orifice Controls 0.3 cfs @ 10.88 fps)
└**1=Culvert** (Passes 0.3 cfs of 5.7 cfs potential flow)

Secondary OutFlow Max=6.3 cfs @ 12.10 hrs HW=62.81' (Free Discharge)
└**4=Custom Weir/Orifice** (Weir Controls 6.3 cfs @ 2.08 fps)

Summary for Pond 3.33P: PEAK DET

Inflow = 6.3 cfs @ 12.10 hrs, Volume= 9,478 cf
Outflow = 0.1 cfs @ 13.71 hrs, Volume= 9,478 cf, Atten= 98%, Lag= 96.2 min
Primary = 0.1 cfs @ 13.71 hrs, Volume= 9,478 cf
Routed to Pond 3.34P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.04' @ 13.71 hrs Surf.Area= 8,258 sf Storage= 8,295 cf

Plug-Flow detention time= 616.5 min calculated for 9,476 cf (100% of inflow)
Center-of-Mass det. time= 616.7 min (1,357.2 - 740.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	60.00'	0 cf	**63.00'W x 124.00'L x 8.00'H Field A** 62,496 cf Overall - 38,152 cf Embedded = 24,344 cf x 0.0% Voids
#2A	60.00'	38,152 cf	**CMP Round 96** x 30 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +16.00' x 50.27 sf x 6 rows 63.00' Header x 50.27 sf x 1 = 3,166.7 cf Inside
#3	60.00'	3,217 cf	**CMP Round 96** x 3 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +4.00' x 50.27 sf x 1 rows
		41,368 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**2.0" Vert. DRAINDOWN ORIFICE** C= 0.600 Limited to weir flow at low heads
#2	Primary	65.50'	**0.5' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Primary	63.50'	**36.0" W x 6.0" H Vert. CAPACITY ORIFICE** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.1 cfs @ 13.71 hrs HW=62.04' (Free Discharge)
- **1=DRAINDOWN ORIFICE** (Orifice Controls 0.1 cfs @ 6.73 fps)
- **2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)
- **3=CAPACITY ORIFICE** (Controls 0.0 cfs)

Summary for Pond 3.34P:

Inflow Area = 105,340 sf, 85.47% Impervious, Inflow Depth = 2.65" for 2-YR event
Inflow = 0.4 cfs @ 13.56 hrs, Volume= 23,255 cf
Outflow = 0.4 cfs @ 13.56 hrs, Volume= 23,255 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.4 cfs @ 13.56 hrs, Volume= 23,255 cf
Routed to Pond 3.35P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.80' @ 13.56 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**24.0" Round Culvert** L= 62.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 56.87' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.4 cfs @ 13.56 hrs HW=57.80' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.4 cfs @ 1.46 fps)

Summary for Pond 3.35P:

Inflow Area = 414,530 sf, 81.92% Impervious, Inflow Depth = 2.60" for 2-YR event
Inflow = 7.8 cfs @ 12.10 hrs, Volume= 89,780 cf
Outflow = 7.8 cfs @ 12.10 hrs, Volume= 89,780 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.8 cfs @ 12.10 hrs, Volume= 89,780 cf
Routed to Pond 3P : B-32 (CB-8031)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.35' @ 12.10 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.69'	**24.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.69' / 55.62' S= 0.0028 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.8 cfs @ 12.10 hrs HW=57.35' (Free Discharge)
└**1=Culvert** (Barrel Controls 7.8 cfs @ 3.79 fps)

Summary for Pond 3.3P:

Inflow Area = 39,230 sf, 85.34% Impervious, Inflow Depth = 2.64" for 2-YR event
Inflow = 2.5 cfs @ 12.08 hrs, Volume= 8,636 cf
Outflow = 2.5 cfs @ 12.08 hrs, Volume= 8,636 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.5 cfs @ 12.08 hrs, Volume= 8,636 cf
Routed to Pond 3.31P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 63.64' @ 12.08 hrs
Flood Elev= 69.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.80'	**18.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.80' / 62.30' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.5 cfs @ 12.08 hrs HW=63.64' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.5 cfs @ 2.46 fps)

Summary for Pond 3.4P:

Inflow Area = 5,170 sf, 90.14% Impervious, Inflow Depth = 2.72" for 2-YR event
Inflow = 0.3 cfs @ 12.08 hrs, Volume= 1,170 cf
Outflow = 0.3 cfs @ 12.08 hrs, Volume= 1,170 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.08 hrs, Volume= 1,170 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.58' @ 12.08 hrs
Flood Elev= 69.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.25'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.25' / 65.45' S= 0.0160 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.3 cfs @ 12.08 hrs HW=66.57' (Free Discharge)
1=Culvert (Inlet Controls 0.3 cfs @ 1.53 fps)

Summary for Pond 3.5P:

Inflow Area = 13,630 sf, 87.97% Impervious, Inflow Depth = 2.68" for 2-YR event
Inflow = 0.9 cfs @ 12.08 hrs, Volume= 3,047 cf
Outflow = 0.9 cfs @ 12.08 hrs, Volume= 3,047 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.9 cfs @ 12.08 hrs, Volume= 3,047 cf
Routed to Pond 3.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.85' @ 12.08 hrs
Flood Elev= 68.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.30'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.30' / 63.80' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.9 cfs @ 12.08 hrs HW=64.85' (Free Discharge)
1=Culvert (Inlet Controls 0.9 cfs @ 1.99 fps)

Summary for Pond 3.6P:

Inflow Area = 20,710 sf, 92.08% Impervious, Inflow Depth = 2.75" for 2-YR event
Inflow = 1.4 cfs @ 12.08 hrs, Volume= 4,739 cf
Outflow = 1.4 cfs @ 12.08 hrs, Volume= 4,739 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.08 hrs, Volume= 4,739 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 64.19' @ 12.08 hrs
Flood Elev= 69.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.55'	**15.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.55' / 63.05' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.4 cfs @ 12.08 hrs HW=64.19' (Free Discharge)
1=Culvert (Inlet Controls 1.4 cfs @ 2.15 fps)

Summary for Pond 3.7P:

Inflow Area = 6,280 sf, 87.10% Impervious, Inflow Depth = 2.67" for 2-YR event
Inflow = 0.4 cfs @ 12.08 hrs, Volume= 1,397 cf
Outflow = 0.4 cfs @ 12.08 hrs, Volume= 1,397 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.4 cfs @ 12.08 hrs, Volume= 1,397 cf
Routed to Pond 3.5P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 65.16' @ 12.08 hrs
Flood Elev= 68.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.80'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.80' / 64.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.4 cfs @ 12.08 hrs HW=65.16' (Free Discharge)
1=Culvert (Inlet Controls 0.4 cfs @ 1.61 fps)

Summary for Pond 3P: B-32 (CB-8031)

Inflow Area = 414,530 sf, 81.92% Impervious, Inflow Depth = 2.60" for 2-YR event
Inflow = 7.8 cfs @ 12.10 hrs, Volume= 89,780 cf
Outflow = 7.8 cfs @ 12.10 hrs, Volume= 89,780 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.8 cfs @ 12.10 hrs, Volume= 89,780 cf
Routed to Pond 4P : B-32A (CB-8323)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.17' @ 12.10 hrs
Flood Elev= 66.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.44' / 55.52' S= -0.0036 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.8 cfs @ 12.10 hrs HW=57.17' (Free Discharge)
└**1=Culvert** (Barrel Controls 7.8 cfs @ 3.61 fps)

Summary for Pond 4.21P:

Inflow Area = 11,860 sf, 82.50% Impervious, Inflow Depth = 2.65" for 2-YR event
Inflow = 0.8 cfs @ 12.08 hrs, Volume= 2,615 cf
Outflow = 0.8 cfs @ 12.08 hrs, Volume= 2,615 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.08 hrs, Volume= 2,615 cf
Routed to Pond 4.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.52' @ 12.08 hrs
Flood Elev= 72.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.05'	**15.0" Round Culvert** L= 82.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.05' / 66.06' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.8 cfs @ 12.08 hrs HW=67.52' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.8 cfs @ 1.83 fps)

Summary for Pond 4.2P:

Inflow Area = 11,860 sf, 82.50% Impervious, Inflow Depth = 2.65" for 2-YR event
Inflow = 0.8 cfs @ 12.08 hrs, Volume= 2,615 cf
Outflow = 0.8 cfs @ 12.08 hrs, Volume= 2,615 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.08 hrs, Volume= 2,615 cf
Routed to Pond 4.21P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.67' @ 12.08 hrs
Flood Elev= 72.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.20'	**15.0" Round Culvert** L= 104.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.20' / 67.16' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.8 cfs @ 12.08 hrs HW=68.67' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.8 cfs @ 1.83 fps)

Summary for Pond 4.3P:

Inflow Area = 22,490 sf, 85.42% Impervious, Inflow Depth = 2.67" for 2-YR event
Inflow = 1.5 cfs @ 12.08 hrs, Volume= 5,001 cf
Outflow = 1.5 cfs @ 12.08 hrs, Volume= 5,001 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.5 cfs @ 12.08 hrs, Volume= 5,001 cf
Routed to Pond 4.8P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.43' @ 12.08 hrs
Flood Elev= 70.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.81'	**18.0" Round Culvert** L= 105.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.81' / 64.15' S= 0.0158 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.5 cfs @ 12.08 hrs HW=66.43' (Free Discharge)
1=Culvert (Inlet Controls 1.5 cfs @ 2.11 fps)

Summary for Pond 4.4P:

Inflow Area = 11,040 sf, 83.15% Impervious, Inflow Depth = 2.61" for 2-YR event
Inflow = 0.7 cfs @ 12.08 hrs, Volume= 2,399 cf
Outflow = 0.7 cfs @ 12.08 hrs, Volume= 2,399 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.08 hrs, Volume= 2,399 cf
Routed to Pond 4.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.38' @ 12.08 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.90'	**12.0" Round Culvert** L= 83.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.90' / 66.50' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.7 cfs @ 12.08 hrs HW=68.38' (Free Discharge)
1=Culvert (Inlet Controls 0.7 cfs @ 1.86 fps)

Summary for Pond 4.5P:

Inflow Area = 5,620 sf, 62.10% Impervious, Inflow Depth = 2.28" for 2-YR event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 1,069 cf
Outflow = 0.3 cfs @ 12.09 hrs, Volume= 1,069 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.09 hrs, Volume= 1,069 cf
Routed to Pond 4.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 69.41' @ 12.09 hrs
Flood Elev= 72.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.10'	**12.0" Round Culvert** L= 122.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.10' / 66.50' S= 0.0213 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.3 cfs @ 12.09 hrs HW=69.41' (Free Discharge)
1=Culvert (Inlet Controls 0.3 cfs @ 1.50 fps)

Summary for Pond 4.6P:

Inflow Area = 25,750 sf, 80.23% Impervious, Inflow Depth = 2.56" for 2-YR event
Inflow = 1.6 cfs @ 12.08 hrs, Volume= 5,500 cf
Outflow = 1.6 cfs @ 12.08 hrs, Volume= 5,500 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.6 cfs @ 12.08 hrs, Volume= 5,500 cf
Routed to Pond 4.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.65' @ 12.08 hrs
Flood Elev= 70.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.00'	**18.0" Round Culvert** L= 77.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.00' / 64.70' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.6 cfs @ 12.08 hrs HW=66.65' (Free Discharge)
1=Culvert (Inlet Controls 1.6 cfs @ 2.17 fps)

Summary for Pond 4.7P:

Inflow Area = 31,770 sf, 83.98% Impervious, Inflow Depth = 2.62" for 2-YR event
Inflow = 2.0 cfs @ 12.08 hrs, Volume= 6,938 cf
Outflow = 2.0 cfs @ 12.08 hrs, Volume= 6,938 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.0 cfs @ 12.08 hrs, Volume= 6,938 cf
Routed to Pond 4.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.71' @ 12.08 hrs
Flood Elev= 69.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.20'	**18.0" Round Culvert X 2.00** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.20' / 63.70' S= 0.0227 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.0 cfs @ 12.08 hrs HW=64.71' (Free Discharge)
1=Culvert (Inlet Controls 2.0 cfs @ 1.91 fps)

Summary for Pond 4.81P:

Inflow Area = 66,110 sf, 85.55% Impervious, Inflow Depth = 2.65" for 2-YR event
Inflow = 4.3 cfs @ 12.08 hrs, Volume= 14,619 cf
Outflow = 4.3 cfs @ 12.08 hrs, Volume= 14,619 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.3 cfs @ 12.08 hrs, Volume= 14,619 cf
Routed to Pond 3.32P : WQ DET & SF-2

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.20' @ 12.08 hrs
Flood Elev= 69.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.20'	**24.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.20' / 62.80' S= 0.0267 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.2 cfs @ 12.08 hrs HW=64.20' (Free Discharge)
1=Culvert (Inlet Controls 4.2 cfs @ 2.69 fps)

Summary for Pond 4.8P:

Inflow Area = 34,340 sf, 87.00% Impervious, Inflow Depth = 2.68" for 2-YR event
Inflow = 2.2 cfs @ 12.08 hrs, Volume= 7,680 cf
Outflow = 2.2 cfs @ 12.08 hrs, Volume= 7,680 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.2 cfs @ 12.08 hrs, Volume= 7,680 cf
Routed to Pond 4.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.36' @ 12.08 hrs
Flood Elev= 68.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.65'	**24.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.65' / 63.30' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.2 cfs @ 12.08 hrs HW=64.35' (Free Discharge)
1=Culvert (Inlet Controls 2.2 cfs @ 2.26 fps)

Summary for Pond 4P: B-32A (CB-8323)

Inflow Area = 445,070 sf, 79.79% Impervious, Inflow Depth = 2.57" for 2-YR event
Inflow = 9.0 cfs @ 12.11 hrs, Volume= 95,489 cf
Outflow = 9.0 cfs @ 12.11 hrs, Volume= 95,489 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.0 cfs @ 12.11 hrs, Volume= 95,489 cf
Routed to Link POA-1 : B-30
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA-1 : B-30

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.12' @ 12.11 hrs
Flood Elev= 59.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.52' / 54.90' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	59.39'	**15.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=9.0 cfs @ 12.11 hrs HW=57.12' (Free Discharge)
1=Culvert (Barrel Controls 9.0 cfs @ 4.57 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=55.52' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond 5P:

Inflow Area = 20,660 sf, 50.80% Impervious, Inflow Depth = 2.24" for 2-YR event
Inflow = 1.2 cfs @ 12.09 hrs, Volume= 3,863 cf
Outflow = 1.2 cfs @ 12.09 hrs, Volume= 3,863 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.09 hrs, Volume= 3,863 cf
Routed to Link POA-2 :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 60.59' @ 12.09 hrs
Flood Elev= 66.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 59.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.2 cfs @ 12.09 hrs HW=60.58' (Free Discharge)
1=Culvert (Inlet Controls 1.2 cfs @ 2.06 fps)

Summary for Pond 6P:

Inflow Area = 64,300 sf, 76.42% Impervious, Inflow Depth = 2.52" for 2-YR event
Inflow = 3.0 cfs @ 12.17 hrs, Volume= 13,479 cf
Outflow = 3.0 cfs @ 12.17 hrs, Volume= 13,479 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.0 cfs @ 12.17 hrs, Volume= 13,479 cf
Routed to Pond 2P : B-34
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 2P : B-34

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 63.56' @ 12.17 hrs
Flood Elev= 71.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.08'	**12.0" Round Culvert** L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.08' / 57.67' S= 0.0147 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	70.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=3.0 cfs @ 12.17 hrs HW=63.56' (Free Discharge)
1=Culvert (Inlet Controls 3.0 cfs @ 3.76 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=62.08' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond 7P:

Inflow Area = 45,290 sf, 74.03% Impervious, Inflow Depth = 2.45" for 2-YR event
Inflow = 2.3 cfs @ 12.15 hrs, Volume= 9,250 cf
Outflow = 2.3 cfs @ 12.15 hrs, Volume= 9,250 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.3 cfs @ 12.15 hrs, Volume= 9,250 cf
Routed to Link POA-4 :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.08' @ 12.15 hrs
Flood Elev= 69.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.00'	**12.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.00' / 64.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.3 cfs @ 12.15 hrs HW=66.08' (Free Discharge)
1=Culvert (Inlet Controls 2.3 cfs @ 2.89 fps)

Summary for Pond 8.10P:

Inflow Area = 8,440 sf, 92.00% Impervious, Inflow Depth = 2.74" for 2-YR event
Inflow = 0.6 cfs @ 12.08 hrs, Volume= 1,930 cf
Outflow = 0.6 cfs @ 12.08 hrs, Volume= 1,930 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.6 cfs @ 12.08 hrs, Volume= 1,930 cf
Routed to Pond 8.9P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.73' @ 12.08 hrs
Flood Elev= 72.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.30'	**12.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.30' / 68.75' S= 0.0367 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.6 cfs @ 12.08 hrs HW=69.73' (Free Discharge)
1=Culvert (Inlet Controls 0.6 cfs @ 1.75 fps)

Summary for Pond 8.111P:

Inflow Area = 29,240 sf, 88.61% Impervious, Inflow Depth = 2.69" for 2-YR event
Inflow = 1.9 cfs @ 12.08 hrs, Volume= 6,560 cf
Outflow = 1.9 cfs @ 12.08 hrs, Volume= 6,560 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.9 cfs @ 12.08 hrs, Volume= 6,560 cf
Routed to Pond 8.82P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.67' @ 12.08 hrs
Flood Elev= 74.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.95'	**18.0" Round Culvert** L= 160.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.95' / 66.30' S= 0.0103 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.9 cfs @ 12.08 hrs HW=68.67' (Free Discharge)
1=Culvert (Inlet Controls 1.9 cfs @ 2.28 fps)

Summary for Pond 8.11P:

Inflow Area = 26,900 sf, 87.62% Impervious, Inflow Depth = 2.68" for 2-YR event
Inflow = 1.7 cfs @ 12.08 hrs, Volume= 6,001 cf
Outflow = 1.7 cfs @ 12.08 hrs, Volume= 6,001 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.7 cfs @ 12.08 hrs, Volume= 6,001 cf
Routed to Pond 8.111P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 70.69' @ 12.08 hrs
Flood Elev= 73.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.95'	**15.0" Round Culvert** L= 144.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.95' / 68.20' S= 0.0122 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.7 cfs @ 12.08 hrs HW=70.69' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 1.7 cfs @ 2.31 fps)

Summary for Pond 8.12P:

Inflow Area = 2,340 sf,100.00% Impervious, Inflow Depth = 2.87" for 2-YR event
Inflow = 0.2 cfs @ 12.08 hrs, Volume= 559 cf
Outflow = 0.2 cfs @ 12.08 hrs, Volume= 559 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.08 hrs, Volume= 559 cf
Routed to Pond 8.111P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.97' @ 12.08 hrs
Flood Elev= 74.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.75'	**12.0" Round Culvert** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.75' / 69.30' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.2 cfs @ 12.08 hrs HW=70.97' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.2 cfs @ 1.26 fps)

Summary for Pond 8.21P:

Inflow Area = 19,350 sf, 84.44% Impervious, Inflow Depth = 2.63" for 2-YR event
Inflow = 1.2 cfs @ 12.08 hrs, Volume= 4,238 cf
Outflow = 1.2 cfs @ 12.08 hrs, Volume= 4,238 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.08 hrs, Volume= 4,238 cf
Routed to Pond 8.22P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.51' @ 12.08 hrs
Flood Elev= 76.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	**24.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.00' / 68.60' S= 0.0240 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.2 cfs @ 12.08 hrs HW=71.51' (Free Discharge)
1=Culvert (Inlet Controls 1.2 cfs @ 1.93 fps)

Summary for Pond 8.22P:

Inflow Area = 41,770 sf, 81.04% Impervious, Inflow Depth = 2.58" for 2-YR event
Inflow = 2.6 cfs @ 12.08 hrs, Volume= 8,965 cf
Outflow = 2.6 cfs @ 12.08 hrs, Volume= 8,965 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.08 hrs, Volume= 8,965 cf
Routed to Pond 8.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.27' @ 12.08 hrs
Flood Elev= 75.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.50'	**24.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.50' / 68.10' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.6 cfs @ 12.08 hrs HW=69.27' (Free Discharge)
1=Culvert (Inlet Controls 2.6 cfs @ 2.35 fps)

Summary for Pond 8.2P:

Inflow Area = 19,350 sf, 84.44% Impervious, Inflow Depth = 2.63" for 2-YR event
Inflow = 1.2 cfs @ 12.08 hrs, Volume= 4,238 cf
Outflow = 1.2 cfs @ 12.08 hrs, Volume= 4,238 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.08 hrs, Volume= 4,238 cf
Routed to Pond 8.21P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 74.27' @ 12.08 hrs
Flood Elev= 79.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.70'	**18.0" Round Culvert** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.70' / 71.50' S= 0.0183 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.2 cfs @ 12.08 hrs HW=74.26' (Free Discharge)
1=Culvert (Inlet Controls 1.2 cfs @ 2.02 fps)

Summary for Pond 8.3P:

Inflow Area = 99,100 sf, 78.48% Impervious, Inflow Depth = 2.54" for 2-YR event
Inflow = 6.1 cfs @ 12.08 hrs, Volume= 20,942 cf
Outflow = 6.1 cfs @ 12.08 hrs, Volume= 20,942 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.1 cfs @ 12.08 hrs, Volume= 20,942 cf
Routed to Pond 8.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.24' @ 12.08 hrs
Flood Elev= 74.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.00'	**24.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.00' / 67.20' S= 0.0178 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.1 cfs @ 12.08 hrs HW=69.24' (Free Discharge)
1=Culvert (Inlet Controls 6.1 cfs @ 2.99 fps)

Summary for Pond 8.4P:

Inflow Area = 22,420 sf, 78.10% Impervious, Inflow Depth = 2.53" for 2-YR event
Inflow = 1.4 cfs @ 12.08 hrs, Volume= 4,727 cf
Outflow = 1.4 cfs @ 12.08 hrs, Volume= 4,727 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.08 hrs, Volume= 4,727 cf
Routed to Pond 8.22P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.65' @ 12.08 hrs
Flood Elev= 75.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**15.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.00' / 69.35' S= 0.0163 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.4 cfs @ 12.08 hrs HW=70.64' (Free Discharge)
1=Culvert (Inlet Controls 1.4 cfs @ 2.16 fps)

Summary for Pond 8.5P:

Inflow Area = 9,090 sf, 0.00% Impervious, Inflow Depth = 1.33" for 2-YR event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 1,004 cf
Outflow = 0.3 cfs @ 12.09 hrs, Volume= 1,004 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.09 hrs, Volume= 1,004 cf
Routed to Pond 8.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 74.76' @ 12.09 hrs
Flood Elev= 77.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.45'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.45' / 73.35' S= 0.0220 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.3 cfs @ 12.09 hrs HW=74.76' (Free Discharge)
1=Culvert (Inlet Controls 0.3 cfs @ 1.51 fps)

Summary for Pond 8.6P:

Inflow Area = 11,120 sf, 70.91% Impervious, Inflow Depth = 2.42" for 2-YR event
Inflow = 0.7 cfs @ 12.08 hrs, Volume= 2,242 cf
Outflow = 0.7 cfs @ 12.08 hrs, Volume= 2,242 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.08 hrs, Volume= 2,242 cf
Routed to Pond 8.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.73' @ 12.08 hrs
Flood Elev= 75.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.30'	**15.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.30' / 70.10' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.7 cfs @ 12.08 hrs HW=71.73' (Free Discharge)
1=Culvert (Inlet Controls 0.7 cfs @ 1.76 fps)

Summary for Pond 8.7P:

Inflow Area = 115,300 sf, 75.85% Impervious, Inflow Depth = 2.50" for 2-YR event
Inflow = 7.0 cfs @ 12.08 hrs, Volume= 23,976 cf
Outflow = 7.0 cfs @ 12.08 hrs, Volume= 23,976 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.0 cfs @ 12.08 hrs, Volume= 23,976 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.12' @ 12.08 hrs
Flood Elev= 73.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.90'	**30.0" Round Culvert** L= 57.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.90' / 66.25' S= 0.0114 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=7.0 cfs @ 12.08 hrs HW=68.11' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.0 cfs @ 2.96 fps)

Summary for Pond 8.81P:

Inflow Area = 150,970 sf, 79.60% Impervious, Inflow Depth = 2.55" for 2-YR event
Inflow = 9.4 cfs @ 12.08 hrs, Volume= 32,121 cf
Outflow = 9.4 cfs @ 12.08 hrs, Volume= 32,121 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.4 cfs @ 12.08 hrs, Volume= 32,121 cf
Routed to Pond 8.82P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.63' @ 12.08 hrs
Flood Elev= 74.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.25'	**36.0" Round Culvert** L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.25' / 66.00' S= 0.0192 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=9.4 cfs @ 12.08 hrs HW=67.63' (Free Discharge)
└**1=Culvert** (Barrel Controls 9.4 cfs @ 4.34 fps)

Summary for Pond 8.82P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 2.58" for 2-YR event
Inflow = 11.3 cfs @ 12.08 hrs, Volume= 38,681 cf
Outflow = 11.3 cfs @ 12.08 hrs, Volume= 38,681 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.3 cfs @ 12.08 hrs, Volume= 38,681 cf
Routed to Pond 8.83P : WQ DET & SF-1

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.85' @ 12.08 hrs
Flood Elev= 75.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.25'	**36.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.25' / 65.10' S= 0.0214 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=11.3 cfs @ 12.08 hrs HW=66.85' (Free Discharge)
└**1=Culvert** (Barrel Controls 11.3 cfs @ 4.25 fps)

Summary for Pond 8.83P: WQ DET & SF-1

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 2.58" for 2-YR event
Inflow = 11.3 cfs @ 12.08 hrs, Volume= 38,681 cf
Outflow = 11.2 cfs @ 12.09 hrs, Volume= 38,681 cf, Atten= 0%, Lag= 0.5 min
Primary = 0.5 cfs @ 12.09 hrs, Volume= 22,563 cf
Routed to Pond 8.85P :
Secondary = 10.8 cfs @ 12.09 hrs, Volume= 16,118 cf
Routed to Pond 8.84P : Peak DET-1

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.22' @ 12.09 hrs Surf.Area= 1,115 sf Storage= 4,933 cf

Plug-Flow detention time= 61.1 min calculated for 38,674 cf (100% of inflow)
Center-of-Mass det. time= 61.1 min (826.7 - 765.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	62.50'	0 cf	**10.00'W x 111.50'L x 8.00'H Field A** 8,920 cf Overall - 5,504 cf Embedded = 3,416 cf x 0.0% Voids
#2A	62.50'	5,504 cf	**CMP Round 96** x 5 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +1.50' x 50.27 sf x 1 rows 8.00' Header x 50.27 sf x 1 = 402.1 cf Inside
		5,504 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	62.50'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 62.50' / 62.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	60.60'	**Tube/Siphon/Float Valve X 18.00** 0.586" Diameter, C= 0.600, 0.263" Trickle Diameter Starts@63.35'
#3	Primary	60.60'	**12.0" Round 12" Stormfilter Outlet** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.60' / 60.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Secondary	68.58'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 6.08 6.16 6.24 6.32 6.40 6.48 6.56 6.64 6.72 6.80 6.88 6.96 7.04 7.12 7.20 7.28 7.36 7.44 7.52 7.60 7.68 7.76 7.84 7.92 8.00 Width (feet) 6.83 6.73 6.63 6.52 6.40 6.28 6.15 6.01 5.87 5.71 5.55 5.38 5.20 5.01 4.80 4.58 4.34 4.08 3.80 3.49 3.14 2.73 2.24 1.59 0.00

Primary OutFlow Max=0.5 cfs @ 12.09 hrs HW=69.21' (Free Discharge)
└**3=12" Stormfilter Outlet** (Passes 0.5 cfs of 8.5 cfs potential flow)
└**2=Tube/Siphon/Float Valve** (Orifice Controls 0.5 cfs @ 14.13 fps)
└**1=Culvert** (Passes 0.5 cfs of 9.4 cfs potential flow)

Secondary OutFlow Max=10.7 cfs @ 12.09 hrs HW=69.21' (Free Discharge)
└**4=Custom Weir/Orifice** (Weir Controls 10.7 cfs @ 2.65 fps)

Summary for Pond 8.84P: Peak DET-1

Inflow = 10.8 cfs @ 12.09 hrs, Volume= 16,118 cf
Outflow = 1.0 cfs @ 12.66 hrs, Volume= 16,118 cf, Atten= 91%, Lag= 34.0 min
Primary = 1.0 cfs @ 12.66 hrs, Volume= 16,118 cf
Routed to Pond 8.85P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.90' @ 12.66 hrs Surf.Area= 10,780 sf Storage= 12,614 cf

Plug-Flow detention time= 576.8 min calculated for 16,118 cf (100% of inflow)
Center-of-Mass det. time= 576.8 min (1,316.4 - 739.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	62.50'	0 cf	**98.00'W x 110.00'L x 8.00'H Field A** 86,240 cf Overall - 50,064 cf Embedded = 36,176 cf x 0.0% Voids
#2A	62.50'	50,064 cf	**CMP Round 96** x 45 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L 45 Chambers in 9 Rows 96.00' Header x 50.27 sf x 1 = 4,825.5 cf Inside
		50,064 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**6.0' 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
#2	Primary	66.00'	**36.0" W x 12.0" H Vert. OVERFLOW ORIFICE** C= 0.600 Limited to weir flow at low heads
#3	Primary	62.50'	**2.0" Vert. DRAINDOWN ORIFICE** C= 0.600 Limited to weir flow at low heads
#4	Primary	64.50'	**6.0" W x 6.0" H Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.0 cfs @ 12.66 hrs HW=64.90' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)
└**2=OVERFLOW ORIFICE** (Controls 0.0 cfs)
└**3=DRAINDOWN ORIFICE** (Orifice Controls 0.2 cfs @ 7.32 fps)
└**4=Orifice/Grate** (Orifice Controls 0.8 cfs @ 2.02 fps)

Summary for Pond 8.85P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 2.58" for 2-YR event
Inflow = 1.4 cfs @ 12.66 hrs, Volume= 38,681 cf
Outflow = 1.4 cfs @ 12.66 hrs, Volume= 38,681 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.66 hrs, Volume= 38,681 cf
Routed to Pond 8.96P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 61.11' @ 12.66 hrs
Flood Elev= 73.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.50'	**18.0" Round Culvert** L= 226.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.50' / 58.60' S= 0.0084 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.4 cfs @ 12.66 hrs HW=61.11' (Free Discharge)
1=Culvert (Inlet Controls 1.4 cfs @ 2.10 fps)

Summary for Pond 8.8P:

Inflow Area = 9,920 sf, 83.06% Impervious, Inflow Depth = 2.61" for 2-YR event
Inflow = 0.6 cfs @ 12.08 hrs, Volume= 2,155 cf
Outflow = 0.6 cfs @ 12.08 hrs, Volume= 2,155 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.6 cfs @ 12.08 hrs, Volume= 2,155 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.92' @ 12.08 hrs
Flood Elev= 75.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.50'	**15.0" Round Culvert** L= 23.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.50' / 70.00' S= 0.0217 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.6 cfs @ 12.08 hrs HW=70.92' (Free Discharge)
1=Culvert (Inlet Controls 0.6 cfs @ 1.74 fps)

Summary for Pond 8.96P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 2.58" for 2-YR event
Inflow = 1.4 cfs @ 12.66 hrs, Volume= 38,681 cf
Outflow = 1.4 cfs @ 12.66 hrs, Volume= 38,681 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.66 hrs, Volume= 38,681 cf
Routed to Pond 2.1P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 59.11' @ 12.66 hrs
Flood Elev= 68.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	58.50'	**18.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 58.50' / 56.01' S= 0.0311 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.4 cfs @ 12.66 hrs HW=59.11' (Free Discharge)
1=Culvert (Inlet Controls 1.4 cfs @ 2.10 fps)

Summary for Pond 8.9P:

Inflow Area = 25,750 sf, 95.03% Impervious, Inflow Depth = 2.79" for 2-YR event
Inflow = 1.7 cfs @ 12.08 hrs, Volume= 5,989 cf
Outflow = 1.7 cfs @ 12.08 hrs, Volume= 5,989 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.7 cfs @ 12.08 hrs, Volume= 5,989 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.24' @ 12.08 hrs
Flood Elev= 73.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.40'	**12.0" Round Culvert** L= 18.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.40' / 68.75' S= 0.0361 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.7 cfs @ 12.08 hrs HW=70.24' (Free Discharge)
1=Culvert (Inlet Controls 1.7 cfs @ 2.46 fps)

Summary for Pond 8P:

Inflow Area = 13,930 sf, 49.61% Impervious, Inflow Depth = 2.02" for 2-YR event
Inflow = 0.7 cfs @ 12.09 hrs, Volume= 2,349 cf
Outflow = 0.7 cfs @ 12.09 hrs, Volume= 2,349 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.09 hrs, Volume= 2,349 cf
Routed to Pond 6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 61.06' @ 12.09 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.58'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.58' / 59.88' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.7 cfs @ 12.09 hrs HW=61.06' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.7 cfs @ 1.86 fps)

Summary for Link POA-1: B-30

Inflow Area = 445,070 sf, 79.79% Impervious, Inflow Depth = 2.57" for 2-YR event
Inflow = 9.0 cfs @ 12.11 hrs, Volume= 95,489 cf
Primary = 9.0 cfs @ 12.11 hrs, Volume= 95,489 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-2:

Inflow Area = 20,660 sf, 50.80% Impervious, Inflow Depth = 2.24" for 2-YR event
Inflow = 1.2 cfs @ 12.09 hrs, Volume= 3,863 cf
Primary = 1.2 cfs @ 12.09 hrs, Volume= 3,863 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-3:

Inflow Area = 6,800 sf, 0.00% Impervious, Inflow Depth = 1.47" for 2-YR event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 832 cf
Primary = 0.3 cfs @ 12.09 hrs, Volume= 832 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-4:

Inflow Area = 45,290 sf, 74.03% Impervious, Inflow Depth = 2.45" for 2-YR event
Inflow = 2.3 cfs @ 12.15 hrs, Volume= 9,250 cf
Primary = 2.3 cfs @ 12.15 hrs, Volume= 9,250 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=34,840 sf 96.15% Impervious Runoff Depth=4.31"
Tc=6.0 min CN=WQ Runoff=3.6 cfs 12,507 cf

Subcatchment2.1S: Runoff Area=29,840 sf 69.86% Impervious Runoff Depth=3.92"
Tc=6.0 min CN=WQ Runoff=2.9 cfs 9,759 cf

Subcatchment3.1S: Runoff Area=1,450 sf 62.07% Impervious Runoff Depth=3.67"
Tc=6.0 min CN=WQ Runoff=0.1 cfs 444 cf

Subcatchment3.2S: Runoff Area=4,400 sf 52.27% Impervious Runoff Depth=3.50"
Tc=6.0 min CN=WQ Runoff=0.4 cfs 1,282 cf

Subcatchment3.3S: Runoff Area=7,500 sf 87.33% Impervious Runoff Depth=4.13"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,584 cf

Subcatchment3.4S: Runoff Area=5,170 sf 90.14% Impervious Runoff Depth=4.18"
Tc=6.0 min CN=WQ Runoff=0.5 cfs 1,803 cf

Subcatchment3.5S: Runoff Area=7,350 sf 88.71% Impervious Runoff Depth=4.16"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,547 cf

Subcatchment3.6S: Runoff Area=7,080 sf 100.00% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=98 Runoff=0.7 cfs 2,575 cf

Subcatchment3.7S: Runoff Area=6,280 sf 87.10% Impervious Runoff Depth=4.13"
Tc=6.0 min CN=WQ Runoff=0.6 cfs 2,161 cf

Subcatchment4.1S: Runoff Area=30,540 sf 50.79% Impervious Runoff Depth=3.65"
Flow Length=135' Tc=12.1 min CN=WQ Runoff=2.3 cfs 9,281 cf

Subcatchment4.2S: Runoff Area=11,860 sf 82.50% Impervious Runoff Depth=4.11"
Tc=6.0 min CN=WQ Runoff=1.2 cfs 4,061 cf

Subcatchment4.3S: Runoff Area=10,630 sf 88.66% Impervious Runoff Depth=4.16"
Tc=6.0 min CN=WQ Runoff=1.1 cfs 3,683 cf

Subcatchment4.4S: Runoff Area=11,040 sf 83.15% Impervious Runoff Depth=4.06"
Tc=6.0 min CN=WQ Runoff=1.1 cfs 3,733 cf

Subcatchment4.5S: Runoff Area=5,620 sf 62.10% Impervious Runoff Depth=3.68"
Tc=6.0 min CN=WQ Runoff=0.5 cfs 1,721 cf

Subcatchment4.6S: Runoff Area=9,090 sf 87.90% Impervious Runoff Depth=4.14"
Tc=6.0 min CN=WQ Runoff=0.9 cfs 3,139 cf

Subcatchment4.7S: Runoff Area=6,020 sf 100.00% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=98 Runoff=0.6 cfs 2,189 cf

Subcatchment4.8S: Runoff Area=11,850 sf 90.00% Impervious Runoff Depth=4.18"
Tc=6.0 min CN=WQ Runoff=1.2 cfs 4,130 cf

Subcatchment5.1S: Runoff Area=20,660 sf 50.80% Impervious Runoff Depth=3.65"
Tc=6.0 min CN=WQ Runoff=1.9 cfs 6,279 cf

Subcatchment6.1S: Runoff Area=50,370 sf 83.84% Impervious Runoff Depth=4.11"
Flow Length=280' Tc=14.5 min CN=WQ Runoff=3.8 cfs 17,267 cf

Subcatchment7.1S: Runoff Area=45,290 sf 74.03% Impervious Runoff Depth=3.87"
Flow Length=425' Tc=11.4 min CN=WQ Runoff=3.6 cfs 14,605 cf

Subcatchment8.10S: Runoff Area=8,440 sf 92.00% Impervious Runoff Depth=4.22"
Tc=6.0 min CN=WQ Runoff=0.8 cfs 2,967 cf

Subcatchment8.11S: Runoff Area=26,900 sf 87.62% Impervious Runoff Depth=4.14"
Tc=6.0 min CN=WQ Runoff=2.7 cfs 9,278 cf

Subcatchment8.12S: Runoff Area=2,340 sf 100.00% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=98 Runoff=0.2 cfs 851 cf

Subcatchment8.1S: Runoff Area=13,930 sf 49.61% Impervious Runoff Depth=3.35"
Tc=6.0 min CN=WQ Runoff=1.2 cfs 3,893 cf

Subcatchment8.2S: Runoff Area=19,350 sf 84.44% Impervious Runoff Depth=4.08"
Tc=6.0 min CN=WQ Runoff=1.9 cfs 6,581 cf

Subcatchment8.3S: Runoff Area=48,240 sf 91.04% Impervious Runoff Depth=4.20"
Tc=6.0 min CN=WQ Runoff=4.8 cfs 16,889 cf

Subcatchment8.4S: Runoff Area=22,420 sf 78.10% Impervious Runoff Depth=3.97"
Tc=6.0 min CN=WQ Runoff=2.1 cfs 7,410 cf

Subcatchment8.5S: Runoff Area=9,090 sf 0.00% Impervious Runoff Depth=2.55"
Tc=6.0 min CN=80 Runoff=0.6 cfs 1,929 cf

Subcatchment8.6S: Runoff Area=11,120 sf 70.91% Impervious Runoff Depth=3.84"
Tc=6.0 min CN=WQ Runoff=1.0 cfs 3,554 cf

Subcatchment8.7S: Runoff Area=5,080 sf 35.43% Impervious Runoff Depth=3.19"
Tc=6.0 min CN=WQ Runoff=0.4 cfs 1,351 cf

Subcatchment8.8S: Runoff Area=9,920 sf 83.06% Impervious Runoff Depth=4.06"
Tc=6.0 min CN=WQ Runoff=1.0 cfs 3,353 cf

Subcatchment8.9S: Runoff Area=17,310 sf 96.50% Impervious Runoff Depth=4.30"
Tc=6.0 min CN=WQ Runoff=1.8 cfs 6,203 cf

Subcatchment9.1S: Runoff Area=6,800 sf 0.00% Impervious Runoff Depth=2.74"
Tc=6.0 min CN=WQ Runoff=0.5 cfs 1,550 cf

Pond 1P: B-41 Peak Elev=59.00' Inflow=3.6 cfs 12,507 cf
18.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=3.6 cfs 12,507 cf

Pond 2.11P: 21P (CB-8436) Peak Elev=58.18' Inflow=12.4 cfs 103,791 cf
24.0" Round Culvert n=0.013 L=80.0' S=0.0024 '/' Outflow=12.4 cfs 103,791 cf

Pond 2.1P: Peak Elev=58.25' Inflow=12.4 cfs 103,791 cf
24.0" Round Culvert n=0.013 L=40.0' S=0.0032 '/' Outflow=12.4 cfs 103,791 cf

Pond 2P: B-34 Peak Elev=60.68' Inflow=10.5 cfs 43,426 cf
18.0" Round Culvert n=0.013 L=140.0' S=0.0116 '/' Outflow=10.5 cfs 43,426 cf

Pond 3.11P: Peak Elev=66.26' Inflow=0.5 cfs 1,726 cf
12.0" Round Culvert n=0.013 L=30.0' S=0.0117 '/' Outflow=0.5 cfs 1,726 cf

Pond 3.1P: Peak Elev=67.50' Inflow=0.1 cfs 444 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0200 '/' Outflow=0.1 cfs 444 cf

Pond 3.2P: Peak Elev=67.12' Inflow=0.4 cfs 1,282 cf
12.0" Round Culvert n=0.013 L=80.0' S=0.0109 '/' Outflow=0.4 cfs 1,282 cf

Pond 3.31P: Peak Elev=62.75' Inflow=3.8 cfs 13,396 cf
24.0" Round Culvert n=0.013 L=42.0' S=0.0119 '/' Outflow=3.8 cfs 13,396 cf

Pond 3.32P: WQ DET & SF-2 Peak Elev=62.94' Storage=3,395 cf Inflow=10.4 cfs 36,052 cf
Primary=0.3 cfs 17,012 cf Secondary=9.9 cfs 19,040 cf Outflow=10.2 cfs 36,052 cf

Pond 3.33P: PEAK DET Peak Elev=63.37' Storage=16,581 cf Inflow=9.9 cfs 19,040 cf
Outflow=0.2 cfs 19,039 cf

Pond 3.34P: Peak Elev=57.81' Inflow=0.5 cfs 36,051 cf
24.0" Round Culvert n=0.013 L=62.0' S=0.0102 '/' Outflow=0.5 cfs 36,051 cf

Pond 3.35P: Peak Elev=58.01' Inflow=12.8 cfs 139,843 cf
24.0" Round Culvert n=0.013 L=25.0' S=0.0028 '/' Outflow=12.8 cfs 139,843 cf

Pond 3.3P: Peak Elev=63.89' Inflow=3.8 cfs 13,396 cf
18.0" Round Culvert n=0.013 L=45.0' S=0.0111 '/' Outflow=3.8 cfs 13,396 cf

Pond 3.4P: Peak Elev=66.66' Inflow=0.5 cfs 1,803 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0160 '/' Outflow=0.5 cfs 1,803 cf

Pond 3.5P: Peak Elev=65.01' Inflow=1.3 cfs 4,708 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=1.3 cfs 4,708 cf

Pond 3.6P: Peak Elev=64.37' Inflow=2.1 cfs 7,283 cf
15.0" Round Culvert n=0.013 L=45.0' S=0.0111 '/' Outflow=2.1 cfs 7,283 cf

Pond 3.7P: Peak Elev=65.25' Inflow=0.6 cfs 2,161 cf
12.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=0.6 cfs 2,161 cf

Pond 3P: B-32 (CB-8031) Peak Elev=57.86' Inflow=12.8 cfs 139,843 cf
24.0" Round Culvert n=0.013 L=22.0' S=-0.0036 '/' Outflow=12.8 cfs 139,843 cf

Pond 4.21P: Peak Elev=67.64' Inflow=1.2 cfs 4,061 cf
15.0" Round Culvert n=0.013 L=82.0' S=0.0121 '/' Outflow=1.2 cfs 4,061 cf

Pond 4.2P: Peak Elev=68.79' Inflow=1.2 cfs 4,061 cf
15.0" Round Culvert n=0.013 L=104.0' S=0.0100 '/' Outflow=1.2 cfs 4,061 cf

Pond 4.3P: Peak Elev=66.59' Inflow=2.2 cfs 7,744 cf
18.0" Round Culvert n=0.013 L=105.0' S=0.0158 '/' Outflow=2.2 cfs 7,744 cf

Pond 4.4P: Peak Elev=68.52' Inflow=1.1 cfs 3,733 cf
12.0" Round Culvert n=0.013 L=83.0' S=0.0169 '/' Outflow=1.1 cfs 3,733 cf

Pond 4.5P: Peak Elev=69.50' Inflow=0.5 cfs 1,721 cf
12.0" Round Culvert n=0.013 L=122.0' S=0.0213 '/' Outflow=0.5 cfs 1,721 cf

Pond 4.6P: Peak Elev=66.83' Inflow=2.5 cfs 8,593 cf
18.0" Round Culvert n=0.013 L=77.0' S=0.0169 '/' Outflow=2.5 cfs 8,593 cf

Pond 4.7P: Peak Elev=64.84' Inflow=3.1 cfs 10,783 cf
18.0" Round Culvert x 2.00 n=0.013 L=22.0' S=0.0227 '/' Outflow=3.1 cfs 10,783 cf

Pond 4.81P: Peak Elev=64.49' Inflow=6.5 cfs 22,657 cf
24.0" Round Culvert n=0.013 L=15.0' S=0.0267 '/' Outflow=6.5 cfs 22,657 cf

Pond 4.8P: Peak Elev=64.54' Inflow=3.4 cfs 11,874 cf
24.0" Round Culvert n=0.013 L=35.0' S=0.0100 '/' Outflow=3.4 cfs 11,874 cf

Pond 4P: B-32A (CB-8323) Peak Elev=58.09' Inflow=15.0 cfs 149,124 cf
Primary=15.0 cfs 149,124 cf Secondary=0.0 cfs 0 cf Outflow=15.0 cfs 149,124 cf

Pond 5P: Peak Elev=60.77' Inflow=1.9 cfs 6,279 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=1.9 cfs 6,279 cf

Pond 6P: Peak Elev=64.94' Inflow=4.6 cfs 21,160 cf
Primary=4.6 cfs 21,160 cf Secondary=0.0 cfs 0 cf Outflow=4.6 cfs 21,160 cf

Pond 7P: Peak Elev=66.93' Inflow=3.6 cfs 14,605 cf
12.0" Round Culvert n=0.013 L=100.0' S=0.0100 '/' Outflow=3.6 cfs 14,605 cf

Pond 8.10P: Peak Elev=69.84' Inflow=0.8 cfs 2,967 cf
12.0" Round Culvert n=0.013 L=15.0' S=0.0367 '/' Outflow=0.8 cfs 2,967 cf

Pond 8.111P: Peak Elev=68.86' Inflow=2.9 cfs 10,129 cf
18.0" Round Culvert n=0.013 L=160.0' S=0.0103 '/' Outflow=2.9 cfs 10,129 cf

Pond 8.11P: Peak Elev=70.91' Inflow=2.7 cfs 9,278 cf
15.0" Round Culvert n=0.013 L=144.0' S=0.0122 '/' Outflow=2.7 cfs 9,278 cf

Pond 8.12P: Peak Elev=71.02' Inflow=0.2 cfs 851 cf
12.0" Round Culvert n=0.013 L=120.0' S=0.0121 '/' Outflow=0.2 cfs 851 cf

Pond 8.21P: Peak Elev=71.64' Inflow=1.9 cfs 6,581 cf
24.0" Round Culvert n=0.013 L=100.0' S=0.0240 '/' Outflow=1.9 cfs 6,581 cf

Pond 8.22P: Peak Elev=69.47' Inflow=4.0 cfs 13,991 cf
24.0" Round Culvert n=0.013 L=30.0' S=0.0133 '/' Outflow=4.0 cfs 13,991 cf

Pond 8.2P: Peak Elev=74.42' Inflow=1.9 cfs 6,581 cf
18.0" Round Culvert n=0.013 L=120.0' S=0.0183 '/' Outflow=1.9 cfs 6,581 cf

Pond 8.3P: Peak Elev=69.64' Inflow=9.5 cfs 32,809 cf
24.0" Round Culvert n=0.013 L=45.0' S=0.0178 '/' Outflow=9.5 cfs 32,809 cf

Pond 8.4P: Peak Elev=70.84' Inflow=2.1 cfs 7,410 cf
15.0" Round Culvert n=0.013 L=40.0' S=0.0163 '/' Outflow=2.1 cfs 7,410 cf

Pond 8.5P: Peak Elev=74.90' Inflow=0.6 cfs 1,929 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0220 '/' Outflow=0.6 cfs 1,929 cf

Pond 8.6P: Peak Elev=71.85' Inflow=1.0 cfs 3,554 cf
15.0" Round Culvert n=0.013 L=60.0' S=0.0200 '/' Outflow=1.0 cfs 3,554 cf

Pond 8.7P: Peak Elev=68.47' Inflow=10.9 cfs 37,713 cf
30.0" Round Culvert n=0.013 L=57.0' S=0.0114 '/' Outflow=10.9 cfs 37,713 cf

Pond 8.81P: Peak Elev=68.04' Inflow=14.5 cfs 50,237 cf
36.0" Round Culvert n=0.013 L=13.0' S=0.0192 '/' Outflow=14.5 cfs 50,237 cf

Pond 8.82P: Peak Elev=67.33' Inflow=17.4 cfs 60,366 cf
36.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=17.4 cfs 60,366 cf

Pond 8.83P: WQ DET & SF-1 Peak Elev=69.45' Storage=5,079 cf Inflow=17.4 cfs 60,366 cf
Primary=0.5 cfs 27,880 cf Secondary=16.9 cfs 32,486 cf Outflow=17.4 cfs 60,366 cf

Pond 8.84P: Peak DET-1 Peak Elev=66.00' Storage=21,025 cf Inflow=16.9 cfs 32,486 cf
Outflow=2.9 cfs 32,486 cf

Pond 8.85P: Peak Elev=61.50' Inflow=3.3 cfs 60,366 cf
18.0" Round Culvert n=0.013 L=226.0' S=0.0084 '/' Outflow=3.3 cfs 60,366 cf

Pond 8.8P: Peak Elev=71.03' Inflow=1.0 cfs 3,353 cf
15.0" Round Culvert n=0.013 L=23.0' S=0.0217 '/' Outflow=1.0 cfs 3,353 cf

Pond 8.96P: Peak Elev=59.50' Inflow=3.3 cfs 60,366 cf
18.0" Round Culvert n=0.013 L=80.0' S=0.0311 '/' Outflow=3.3 cfs 60,366 cf

Pond 8.9P: Peak Elev=70.67' Inflow=2.6 cfs 9,170 cf
12.0" Round Culvert n=0.013 L=18.0' S=0.0361 '/' Outflow=2.6 cfs 9,170 cf

Pond 8P: Peak Elev=61.22' Inflow=1.2 cfs 3,893 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0100 '/' Outflow=1.2 cfs 3,893 cf

Link POA-1: B-30 Inflow=15.0 cfs 149,124 cf
Primary=15.0 cfs 149,124 cf

Link POA-2: Inflow=1.9 cfs 6,279 cf
Primary=1.9 cfs 6,279 cf

Link POA-3: Inflow=0.5 cfs 1,550 cf
Primary=0.5 cfs 1,550 cf

Link POA-4: Inflow=3.6 cfs 14,605 cf
Primary=3.6 cfs 14,605 cf

Total Runoff Area = 517,820 sf Runoff Volume = 171,559 cf Average Runoff Depth = 3.98"
22.92% Pervious = 118,690 sf 77.08% Impervious = 399,130 sf

Summary for Subcatchment 1S:

Runoff = 3.6 cfs @ 12.08 hrs, Volume= 12,507 cf, Depth= 4.31"
Routed to Pond 1P : B-41

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
33,500	98	Paved parking, HSG D
1,340	84	50-75% Grass cover, Fair, HSG D
34,840		Weighted Average
1,340		3.85% Pervious Area
33,500		96.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 2.1S:

Runoff = 2.9 cfs @ 12.08 hrs, Volume= 9,759 cf, Depth= 3.92"
Routed to Pond 2P : B-34

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
20,845	98	Paved parking, HSG D
8,995	84	50-75% Grass cover, Fair, HSG D
29,840		Weighted Average
8,995		30.14% Pervious Area
20,845		69.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.1S:

Runoff = 0.1 cfs @ 12.08 hrs, Volume= 444 cf, Depth= 3.67"
Routed to Pond 3.1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
550	80	>75% Grass cover, Good, HSG D
900	98	Paved parking, HSG D
1,450		Weighted Average
550		37.93% Pervious Area
900		62.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.2S:

Runoff = 0.4 cfs @ 12.09 hrs, Volume= 1,282 cf, Depth= 3.50"
Routed to Pond 3.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
2,100	80	>75% Grass cover, Good, HSG D
2,300	98	Paved parking, HSG D
4,400		Weighted Average
2,100		47.73% Pervious Area
2,300		52.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.3S:

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,584 cf, Depth= 4.13"
Routed to Pond 3.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
950	80	>75% Grass cover, Good, HSG D
6,550	98	Paved parking, HSG D
7,500		Weighted Average
950		12.67% Pervious Area
6,550		87.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.4S:

Runoff = 0.5 cfs @ 12.08 hrs, Volume= 1,803 cf, Depth= 4.18"
Routed to Pond 3.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
510	80	>75% Grass cover, Good, HSG D
4,660	98	Paved parking, HSG D
5,170		Weighted Average
510		9.86% Pervious Area
4,660		90.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.5S:

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,547 cf, Depth= 4.16"
Routed to Pond 3.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
6,520	98	Paved parking, HSG D
830	80	>75% Grass cover, Good, HSG D
7,350		Weighted Average
830		11.29% Pervious Area
6,520		88.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.6S:

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,575 cf, Depth= 4.36"
Routed to Pond 3.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
7,080	98	Paved parking, HSG D
7,080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.7S:

Runoff = 0.6 cfs @ 12.08 hrs, Volume= 2,161 cf, Depth= 4.13"
Routed to Pond 3.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
810	80	>75% Grass cover, Good, HSG D
5,470	98	Paved parking, HSG D
6,280		Weighted Average
810		12.90% Pervious Area
5,470		87.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.1S:

Runoff = 2.3 cfs @ 12.16 hrs, Volume= 9,281 cf, Depth= 3.65"
Routed to Pond 4P : B-32A (CB-8323)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
12,790	98	Paved parking, HSG D
15,030	84	50-75% Grass cover, Fair, HSG D
2,720	98	Roofs, HSG D
30,540		Weighted Average
15,030		49.21% Pervious Area
15,510		50.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	110	0.0150	0.15		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.0	25	0.3300	8.62		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
12.1	135	Total			

Summary for Subcatchment 4.2S:

Runoff = 1.2 cfs @ 12.08 hrs, Volume= 4,061 cf, Depth= 4.11"
Routed to Pond 4.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
9,785	98	Paved parking, HSG D
2,075	84	50-75% Grass cover, Fair, HSG D
11,860		Weighted Average
2,075		17.50% Pervious Area
9,785		82.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.3S:

Runoff = 1.1 cfs @ 12.08 hrs, Volume= 3,683 cf, Depth= 4.16"
Routed to Pond 4.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
1,205	80	>75% Grass cover, Good, HSG D
9,425	98	Paved parking, HSG D
10,630		Weighted Average
1,205		11.34% Pervious Area
9,425		88.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.4S:

Runoff = 1.1 cfs @ 12.08 hrs, Volume= 3,733 cf, Depth= 4.06"
Routed to Pond 4.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
1,860	80	>75% Grass cover, Good, HSG D
9,180	98	Paved parking, HSG D
11,040		Weighted Average
1,860		16.85% Pervious Area
9,180		83.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.5S:

Runoff = 0.5 cfs @ 12.08 hrs, Volume= 1,721 cf, Depth= 3.68"
Routed to Pond 4.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
2,130	80	>75% Grass cover, Good, HSG D
3,490	98	Paved parking, HSG D
5,620		Weighted Average
2,130		37.90% Pervious Area
3,490		62.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.6S:

Runoff = 0.9 cfs @ 12.08 hrs, Volume= 3,139 cf, Depth= 4.14"
Routed to Pond 4.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
7,990	98	Paved parking, HSG D
1,100	80	>75% Grass cover, Good, HSG D
9,090		Weighted Average
1,100		12.10% Pervious Area
7,990		87.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.7S:

Runoff = 0.6 cfs @ 12.08 hrs, Volume= 2,189 cf, Depth= 4.36"
Routed to Pond 4.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
6,020	98	Paved parking, HSG D
6,020		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.8S:

Runoff = 1.2 cfs @ 12.08 hrs, Volume= 4,130 cf, Depth= 4.18"
Routed to Pond 4.8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
10,665	98	Paved parking, HSG D
1,185	80	>75% Grass cover, Good, HSG D
11,850		Weighted Average
1,185		10.00% Pervious Area
10,665		90.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 5.1S:

Runoff = 1.9 cfs @ 12.09 hrs, Volume= 6,279 cf, Depth= 3.65"
Routed to Pond 5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

	Area (sf)	CN	Description
*	10,495	98	Paved parking, HSG D
	10,165	84	50-75% Grass cover, Fair, HSG D
	20,660		Weighted Average
	10,165		49.20% Pervious Area
	10,495		50.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 6.1S:

Runoff = 3.8 cfs @ 12.19 hrs, Volume= 17,267 cf, Depth= 4.11"
Routed to Pond 6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
36,200	98	Paved parking, HSG D
6,030	98	Roofs, HSG D
1,670	79	50-75% Grass cover, Fair, HSG C
6,470	84	50-75% Grass cover, Fair, HSG D
50,370		Weighted Average
8,140		16.16% Pervious Area
42,230		83.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0700	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	65	0.0500	1.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.3	115	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
14.5	280	Total			

Summary for Subcatchment 7.1S:

Runoff = 3.6 cfs @ 12.15 hrs, Volume= 14,605 cf, Depth= 3.87"
Routed to Pond 7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
31,245	98	Paved parking, HSG D
11,760	79	50-75% Grass cover, Fair, HSG C
2,285	98	Unconnected pavement, HSG D
45,290		Weighted Average
11,760		25.97% Pervious Area
33,530		74.03% Impervious Area
2,285		6.81% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0200	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.7	75	0.0150	1.84		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.7	250	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
11.4	425	Total			

Summary for Subcatchment 8.10S:

Runoff = 0.8 cfs @ 12.08 hrs, Volume= 2,967 cf, Depth= 4.22"
Routed to Pond 8.10P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
675	80	>75% Grass cover, Good, HSG D
7,765	98	Paved parking, HSG D
8,440		Weighted Average
675		8.00% Pervious Area
7,765		92.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.11S:

Runoff = 2.7 cfs @ 12.08 hrs, Volume= 9,278 cf, Depth= 4.14"
Routed to Pond 8.11P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
3,330	80	>75% Grass cover, Good, HSG D
23,570	98	Paved parking, HSG D
26,900		Weighted Average
3,330		12.38% Pervious Area
23,570		87.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.12S:

Runoff = 0.2 cfs @ 12.08 hrs, Volume= 851 cf, Depth= 4.36"
Routed to Pond 8.12P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
2,340	98	Paved parking, HSG D
2,340		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.1S:

Runoff = 1.2 cfs @ 12.09 hrs, Volume= 3,893 cf, Depth= 3.35"
Routed to Pond 8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
6,910	98	Paved parking, HSG D
2,655	74	>75% Grass cover, Good, HSG C
4,365	80	>75% Grass cover, Good, HSG D
13,930		Weighted Average
7,020		50.39% Pervious Area
6,910		49.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.2S:

Runoff = 1.9 cfs @ 12.08 hrs, Volume= 6,581 cf, Depth= 4.08"
Routed to Pond 8.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
3,010	80	>75% Grass cover, Good, HSG D
16,340	98	Paved parking, HSG D
19,350		Weighted Average
3,010		15.56% Pervious Area
16,340		84.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.3S:

Runoff = 4.8 cfs @ 12.08 hrs, Volume= 16,889 cf, Depth= 4.20"
Routed to Pond 8.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
4,320	80	>75% Grass cover, Good, HSG D
43,920	98	Paved parking, HSG D
48,240		Weighted Average
4,320		8.96% Pervious Area
43,920		91.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.4S:

Runoff = 2.1 cfs @ 12.08 hrs, Volume= 7,410 cf, Depth= 3.97"
Routed to Pond 8.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
4,910	80	>75% Grass cover, Good, HSG D
17,510	98	Paved parking, HSG D
22,420		Weighted Average
4,910		21.90% Pervious Area
17,510		78.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.5S:

Runoff = 0.6 cfs @ 12.09 hrs, Volume= 1,929 cf, Depth= 2.55"
Routed to Pond 8.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
9,090	80	>75% Grass cover, Good, HSG D
9,090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.6S:

Runoff = 1.0 cfs @ 12.08 hrs, Volume= 3,554 cf, Depth= 3.84"
Routed to Pond 8.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
3,235	80	>75% Grass cover, Good, HSG D
7,885	98	Paved parking, HSG D
11,120		Weighted Average
3,235		29.09% Pervious Area
7,885		70.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.7S:

Runoff = 0.4 cfs @ 12.09 hrs, Volume= 1,351 cf, Depth= 3.19"
Routed to Pond 8.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
3,280	80	>75% Grass cover, Good, HSG D
1,800	98	Paved parking, HSG D
5,080		Weighted Average
3,280		64.57% Pervious Area
1,800		35.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.8S:

Runoff = 1.0 cfs @ 12.08 hrs, Volume= 3,353 cf, Depth= 4.06"
Routed to Pond 8.8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
1,680	80	>75% Grass cover, Good, HSG D
8,240	98	Paved parking, HSG D
9,920		Weighted Average
1,680		16.94% Pervious Area
8,240		83.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.9S:

Runoff = 1.8 cfs @ 12.08 hrs, Volume= 6,203 cf, Depth= 4.30"
Routed to Pond 8.9P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
605	80	>75% Grass cover, Good, HSG D
16,705	98	Paved parking, HSG D
17,310		Weighted Average
605		3.50% Pervious Area
16,705		96.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 9.1S:

Runoff = 0.5 cfs @ 12.09 hrs, Volume= 1,550 cf, Depth= 2.74"
Routed to Link POA-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
4,800	83	Woods, Poor, HSG D
2,000	80	>75% Grass cover, Good, HSG D
6,800		Weighted Average
6,800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Pond 1P: B-41

Inflow Area = 34,840 sf, 96.15% Impervious, Inflow Depth = 4.31" for 10-YR event
Inflow = 3.6 cfs @ 12.08 hrs, Volume= 12,507 cf
Outflow = 3.6 cfs @ 12.08 hrs, Volume= 12,507 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.6 cfs @ 12.08 hrs, Volume= 12,507 cf
Routed to Pond 2P : B-34

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.00' @ 12.08 hrs
Flood Elev= 63.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.90'	**18.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.90' / 57.75' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.6 cfs @ 12.08 hrs HW=59.00' (Free Discharge)
1=Culvert (Barrel Controls 3.6 cfs @ 3.57 fps)

Summary for Pond 2.11P: 21P (CB-8436)

Inflow Area = 309,190 sf, 80.71% Impervious, Inflow Depth = 4.03" for 10-YR event
Inflow = 12.4 cfs @ 12.11 hrs, Volume= 103,791 cf
Outflow = 12.4 cfs @ 12.11 hrs, Volume= 103,791 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.4 cfs @ 12.11 hrs, Volume= 103,791 cf
Routed to Pond 3.35P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.18' @ 12.11 hrs
Flood Elev= 68.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.88'	**24.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.88' / 55.69' S= 0.0024 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.4 cfs @ 12.11 hrs HW=58.18' (Free Discharge)
1=Culvert (Barrel Controls 12.4 cfs @ 4.29 fps)

Summary for Pond 2.1P:

Inflow Area = 309,190 sf, 80.71% Impervious, Inflow Depth = 4.03" for 10-YR event
Inflow = 12.4 cfs @ 12.11 hrs, Volume= 103,791 cf
Outflow = 12.4 cfs @ 12.11 hrs, Volume= 103,791 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.4 cfs @ 12.11 hrs, Volume= 103,791 cf
Routed to Pond 2.11P : 21P (CB-8436)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.25' @ 12.11 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	56.01'	**24.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 56.01' / 55.88' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.4 cfs @ 12.11 hrs HW=58.24' (Free Discharge)
1=Culvert (Barrel Controls 12.4 cfs @ 4.41 fps)

Summary for Pond 2P: B-34

Inflow Area = 128,980 sf, 80.23% Impervious, Inflow Depth = 4.04" for 10-YR event
Inflow = 10.5 cfs @ 12.10 hrs, Volume= 43,426 cf
Outflow = 10.5 cfs @ 12.10 hrs, Volume= 43,426 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.5 cfs @ 12.10 hrs, Volume= 43,426 cf
Routed to Pond 2.1P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 60.68' @ 12.10 hrs
Flood Elev= 63.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**18.0" Round Culvert** L= 140.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 55.88' S= 0.0116 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=10.5 cfs @ 12.10 hrs HW=60.68' (Free Discharge)
1=Culvert (Inlet Controls 10.5 cfs @ 5.93 fps)

Summary for Pond 3.11P:

Inflow Area = 5,850 sf, 54.70% Impervious, Inflow Depth = 3.54" for 10-YR event
Inflow = 0.5 cfs @ 12.09 hrs, Volume= 1,726 cf
Outflow = 0.5 cfs @ 12.09 hrs, Volume= 1,726 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.09 hrs, Volume= 1,726 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 66.26' @ 12.09 hrs
Flood Elev= 71.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.85'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.85' / 65.50' S= 0.0117 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.5 cfs @ 12.09 hrs HW=66.26' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.5 cfs @ 1.71 fps)

Summary for Pond 3.1P:

Inflow Area = 1,450 sf, 62.07% Impervious, Inflow Depth = 3.67" for 10-YR event
Inflow = 0.1 cfs @ 12.08 hrs, Volume= 444 cf
Outflow = 0.1 cfs @ 12.08 hrs, Volume= 444 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.1 cfs @ 12.08 hrs, Volume= 444 cf
Routed to Pond 3.11P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.50' @ 12.08 hrs
Flood Elev= 72.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.30'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.30' / 65.90' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.1 cfs @ 12.08 hrs HW=67.50' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.1 cfs @ 1.19 fps)

Summary for Pond 3.2P:

Inflow Area = 4,400 sf, 52.27% Impervious, Inflow Depth = 3.50" for 10-YR event
Inflow = 0.4 cfs @ 12.09 hrs, Volume= 1,282 cf
Outflow = 0.4 cfs @ 12.09 hrs, Volume= 1,282 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.4 cfs @ 12.09 hrs, Volume= 1,282 cf
Routed to Pond 3.11P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.12' @ 12.09 hrs
Flood Elev= 70.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.77'	**12.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.77' / 65.90' S= 0.0109 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.4 cfs @ 12.09 hrs HW=67.12' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.4 cfs @ 1.58 fps)

Summary for Pond 3.31P:

Inflow Area = 39,230 sf, 85.34% Impervious, Inflow Depth = 4.10" for 10-YR event
Inflow = 3.8 cfs @ 12.08 hrs, Volume= 13,396 cf
Outflow = 3.8 cfs @ 12.08 hrs, Volume= 13,396 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.8 cfs @ 12.08 hrs, Volume= 13,396 cf
Routed to Pond 3.32P : WQ DET & SF-2

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.75' @ 12.08 hrs
Flood Elev= 70.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	61.80'	**24.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 61.80' / 61.30' S= 0.0119 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.8 cfs @ 12.08 hrs HW=62.75' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.8 cfs @ 2.62 fps)

Summary for Pond 3.32P: WQ DET & SF-2

Inflow Area = 105,340 sf, 85.47% Impervious, Inflow Depth = 4.11" for 10-YR event
Inflow = 10.4 cfs @ 12.08 hrs, Volume= 36,052 cf
Outflow = 10.2 cfs @ 12.10 hrs, Volume= 36,052 cf, Atten= 2%, Lag= 1.0 min
Primary = 0.3 cfs @ 12.10 hrs, Volume= 17,012 cf
Routed to Pond 3.34P :
Secondary = 9.9 cfs @ 12.10 hrs, Volume= 19,040 cf
Routed to Pond 3.33P : PEAK DET

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.94' @ 12.10 hrs Surf.Area= 1,634 sf Storage= 3,395 cf

Plug-Flow detention time= 48.5 min calculated for 36,046 cf (100% of inflow)
Center-of-Mass det. time= 48.5 min (804.8 - 756.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	60.00'	0 cf	**8.00'W x 204.25'L x 9.00'H Field A** 14,706 cf Overall - 10,166 cf Embedded = 4,540 cf x 0.0% Voids
#2A	60.00'	10,166 cf	**CMP Round 96** x 9 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +14.25' x 50.27 sf x 1 rows 8.00' Header x 50.27 sf x 1 = 402.1 cf Inside
		10,166 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	60.00'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 60.00' / 59.95' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	57.70'	**Tube/Siphon/Float Valve X 11.00** 0.668" Diameter, C= 0.600, 0.263" Trickle Diameter Starts@60.45'
#3	Primary	57.70'	**12.0" Round 12" Stormfilter Outlet** L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.70' / 57.60' S= 0.0077 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Secondary	62.40'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 2.40 2.48 2.56 2.64 2.72 2.80 2.88 2.96 3.04 3.12 3.20 3.28 3.36 3.44 3.52 3.60 3.68 3.76 3.84 3.92 4.00 4.08 4.16 4.24 4.32 4.40 4.48 4.56 4.64 4.72 4.80 4.88 4.96 5.04 5.12 5.20 5.28 5.36 5.44 5.52 5.60 5.68 5.76 5.84 5.92 6.00 6.08 6.16 6.24 6.32 6.40 6.48 6.56 6.64 6.72 6.80 6.88 6.96 7.04 7.12 7.20 7.28 7.36 7.44 7.52 7.60 7.68 7.76 7.84 7.92 8.00 Width (feet) 7.33 7.40 7.46 7.52 7.58 7.63 7.68 7.72 7.77 7.80 7.84 7.87 7.90 7.92 7.94 7.96 7.97 7.99 7.99 8.00 8.00 8.00 7.99 7.99 7.97 7.96 7.94 7.92 7.90 7.87 7.84 7.80 7.77 7.72 7.68 7.63 7.58 7.52 7.46 7.40 7.33 7.26 7.18 7.10 7.02 6.93 6.83 6.73 6.63 6.52 6.40 6.28 6.15 6.01 5.87 5.71 5.55 5.38 5.20 5.01 4.80 4.58 4.34 4.08 3.80 3.49 3.14 2.73 2.24 1.59 0.00

Primary OutFlow Max=0.3 cfs @ 12.10 hrs HW=62.94' (Free Discharge)
└**3=12" Stormfilter Outlet** (Passes 0.3 cfs of 6.5 cfs potential flow)
└**2=Tube/Siphon/Float Valve** (Orifice Controls 0.3 cfs @ 11.03 fps)
└**1=Culvert** (Passes 0.3 cfs of 5.9 cfs potential flow)

Secondary OutFlow Max=9.9 cfs @ 12.10 hrs HW=62.94' (Free Discharge)
└**4=Custom Weir/Orifice** (Weir Controls 9.9 cfs @ 2.40 fps)

Summary for Pond 3.33P: PEAK DET

Inflow = 9.9 cfs @ 12.10 hrs, Volume= 19,040 cf
Outflow = 0.2 cfs @ 14.65 hrs, Volume= 19,039 cf, Atten= 98%, Lag= 152.8 min
Primary = 0.2 cfs @ 14.65 hrs, Volume= 19,039 cf
Routed to Pond 3.34P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 63.37' @ 14.65 hrs Surf.Area= 8,318 sf Storage= 16,581 cf

Plug-Flow detention time= 947.8 min calculated for 19,036 cf (100% of inflow)
Center-of-Mass det. time= 948.1 min (1,691.2 - 743.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	60.00'	0 cf	**63.00'W x 124.00'L x 8.00'H Field A** 62,496 cf Overall - 38,152 cf Embedded = 24,344 cf x 0.0% Voids
#2A	60.00'	38,152 cf	**CMP Round 96** x 30 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +16.00' x 50.27 sf x 6 rows 63.00' Header x 50.27 sf x 1 = 3,166.7 cf Inside
#3	60.00'	3,217 cf	**CMP Round 96** x 3 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +4.00' x 50.27 sf x 1 rows
		41,368 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**2.0" Vert. DRAINDOWN ORIFICE** C= 0.600 Limited to weir flow at low heads
#2	Primary	65.50'	**0.5' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Primary	63.50'	**36.0" W x 6.0" H Vert. CAPACITY ORIFICE** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.2 cfs @ 14.65 hrs HW=63.37' (Free Discharge)
- **1=DRAINDOWN ORIFICE** (Orifice Controls 0.2 cfs @ 8.73 fps)
- **2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)
- **3=CAPACITY ORIFICE** (Controls 0.0 cfs)

Summary for Pond 3.34P:

Inflow Area = 105,340 sf, 85.47% Impervious, Inflow Depth > 4.11" for 10-YR event
Inflow = 0.5 cfs @ 14.43 hrs, Volume= 36,051 cf
Outflow = 0.5 cfs @ 14.43 hrs, Volume= 36,051 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 14.43 hrs, Volume= 36,051 cf
Routed to Pond 3.35P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.81' @ 14.43 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**24.0" Round Culvert** L= 62.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 56.87' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.5 cfs @ 14.43 hrs HW=57.81' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.5 cfs @ 1.50 fps)

Summary for Pond 3.35P:

Inflow Area = 414,530 sf, 81.92% Impervious, Inflow Depth = 4.05" for 10-YR event
Inflow = 12.8 cfs @ 12.11 hrs, Volume= 139,843 cf
Outflow = 12.8 cfs @ 12.11 hrs, Volume= 139,843 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.8 cfs @ 12.11 hrs, Volume= 139,843 cf
Routed to Pond 3P : B-32 (CB-8031)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.01' @ 12.11 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.69'	**24.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.69' / 55.62' S= 0.0028 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.8 cfs @ 12.11 hrs HW=58.01' (Free Discharge)
└**1=Culvert** (Barrel Controls 12.8 cfs @ 4.42 fps)

Summary for Pond 3.3P:

Inflow Area = 39,230 sf, 85.34% Impervious, Inflow Depth = 4.10" for 10-YR event
Inflow = 3.8 cfs @ 12.08 hrs, Volume= 13,396 cf
Outflow = 3.8 cfs @ 12.08 hrs, Volume= 13,396 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.8 cfs @ 12.08 hrs, Volume= 13,396 cf
Routed to Pond 3.31P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 63.89' @ 12.08 hrs
Flood Elev= 69.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.80'	**18.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.80' / 62.30' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.8 cfs @ 12.08 hrs HW=63.89' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.8 cfs @ 2.80 fps)

Summary for Pond 3.4P:

Inflow Area = 5,170 sf, 90.14% Impervious, Inflow Depth = 4.18" for 10-YR event
Inflow = 0.5 cfs @ 12.08 hrs, Volume= 1,803 cf
Outflow = 0.5 cfs @ 12.08 hrs, Volume= 1,803 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.08 hrs, Volume= 1,803 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.66' @ 12.08 hrs
Flood Elev= 69.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.25'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.25' / 65.45' S= 0.0160 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.5 cfs @ 12.08 hrs HW=66.66' (Free Discharge)
1=Culvert (Inlet Controls 0.5 cfs @ 1.71 fps)

Summary for Pond 3.5P:

Inflow Area = 13,630 sf, 87.97% Impervious, Inflow Depth = 4.15" for 10-YR event
Inflow = 1.3 cfs @ 12.08 hrs, Volume= 4,708 cf
Outflow = 1.3 cfs @ 12.08 hrs, Volume= 4,708 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.3 cfs @ 12.08 hrs, Volume= 4,708 cf
Routed to Pond 3.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 65.01' @ 12.08 hrs
Flood Elev= 68.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.30'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.30' / 63.80' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.3 cfs @ 12.08 hrs HW=65.01' (Free Discharge)
1=Culvert (Inlet Controls 1.3 cfs @ 2.26 fps)

Summary for Pond 3.6P:

Inflow Area = 20,710 sf, 92.08% Impervious, Inflow Depth = 4.22" for 10-YR event
Inflow = 2.1 cfs @ 12.08 hrs, Volume= 7,283 cf
Outflow = 2.1 cfs @ 12.08 hrs, Volume= 7,283 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.1 cfs @ 12.08 hrs, Volume= 7,283 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 64.37' @ 12.08 hrs
Flood Elev= 69.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.55'	**15.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.55' / 63.05' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.1 cfs @ 12.08 hrs HW=64.37' (Free Discharge)
1=Culvert (Inlet Controls 2.1 cfs @ 2.43 fps)

Summary for Pond 3.7P:

Inflow Area = 6,280 sf, 87.10% Impervious, Inflow Depth = 4.13" for 10-YR event
Inflow = 0.6 cfs @ 12.08 hrs, Volume= 2,161 cf
Outflow = 0.6 cfs @ 12.08 hrs, Volume= 2,161 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.6 cfs @ 12.08 hrs, Volume= 2,161 cf
Routed to Pond 3.5P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 65.25' @ 12.08 hrs
Flood Elev= 68.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.80'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.80' / 64.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.6 cfs @ 12.08 hrs HW=65.25' (Free Discharge)
1=Culvert (Inlet Controls 0.6 cfs @ 1.80 fps)

Summary for Pond 3P: B-32 (CB-8031)

Inflow Area = 414,530 sf, 81.92% Impervious, Inflow Depth = 4.05" for 10-YR event
Inflow = 12.8 cfs @ 12.11 hrs, Volume= 139,843 cf
Outflow = 12.8 cfs @ 12.11 hrs, Volume= 139,843 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.8 cfs @ 12.11 hrs, Volume= 139,843 cf
Routed to Pond 4P : B-32A (CB-8323)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.86' @ 12.11 hrs
Flood Elev= 66.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.44' / 55.52' S= -0.0036 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.8 cfs @ 12.11 hrs HW=57.85' (Free Discharge)
└**1=Culvert** (Barrel Controls 12.8 cfs @ 4.28 fps)

Summary for Pond 4.21P:

Inflow Area = 11,860 sf, 82.50% Impervious, Inflow Depth = 4.11" for 10-YR event
Inflow = 1.2 cfs @ 12.08 hrs, Volume= 4,061 cf
Outflow = 1.2 cfs @ 12.08 hrs, Volume= 4,061 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.08 hrs, Volume= 4,061 cf
Routed to Pond 4.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.64' @ 12.08 hrs
Flood Elev= 72.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.05'	**15.0" Round Culvert** L= 82.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.05' / 66.06' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.2 cfs @ 12.08 hrs HW=67.64' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.2 cfs @ 2.06 fps)

Summary for Pond 4.2P:

Inflow Area = 11,860 sf, 82.50% Impervious, Inflow Depth = 4.11" for 10-YR event
Inflow = 1.2 cfs @ 12.08 hrs, Volume= 4,061 cf
Outflow = 1.2 cfs @ 12.08 hrs, Volume= 4,061 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.08 hrs, Volume= 4,061 cf
Routed to Pond 4.21P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.79' @ 12.08 hrs
Flood Elev= 72.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.20'	**15.0" Round Culvert** L= 104.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.20' / 67.16' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.2 cfs @ 12.08 hrs HW=68.79' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.2 cfs @ 2.06 fps)

Summary for Pond 4.3P:

Inflow Area = 22,490 sf, 85.42% Impervious, Inflow Depth = 4.13" for 10-YR event
Inflow = 2.2 cfs @ 12.08 hrs, Volume= 7,744 cf
Outflow = 2.2 cfs @ 12.08 hrs, Volume= 7,744 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.2 cfs @ 12.08 hrs, Volume= 7,744 cf
Routed to Pond 4.8P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.59' @ 12.08 hrs
Flood Elev= 70.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.81'	**18.0" Round Culvert** L= 105.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.81' / 64.15' S= 0.0158 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.2 cfs @ 12.08 hrs HW=66.59' (Free Discharge)
1=Culvert (Inlet Controls 2.2 cfs @ 2.38 fps)

Summary for Pond 4.4P:

Inflow Area = 11,040 sf, 83.15% Impervious, Inflow Depth = 4.06" for 10-YR event
Inflow = 1.1 cfs @ 12.08 hrs, Volume= 3,733 cf
Outflow = 1.1 cfs @ 12.08 hrs, Volume= 3,733 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.1 cfs @ 12.08 hrs, Volume= 3,733 cf
Routed to Pond 4.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.52' @ 12.08 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.90'	**12.0" Round Culvert** L= 83.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.90' / 66.50' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.1 cfs @ 12.08 hrs HW=68.52' (Free Discharge)
1=Culvert (Inlet Controls 1.1 cfs @ 2.11 fps)

Summary for Pond 4.5P:

Inflow Area = 5,620 sf, 62.10% Impervious, Inflow Depth = 3.68" for 10-YR event
Inflow = 0.5 cfs @ 12.08 hrs, Volume= 1,721 cf
Outflow = 0.5 cfs @ 12.08 hrs, Volume= 1,721 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.08 hrs, Volume= 1,721 cf
Routed to Pond 4.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 69.50' @ 12.08 hrs
Flood Elev= 72.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.10'	**12.0" Round Culvert** L= 122.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.10' / 66.50' S= 0.0213 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.5 cfs @ 12.08 hrs HW=69.50' (Free Discharge)
1=Culvert (Inlet Controls 0.5 cfs @ 1.71 fps)

Summary for Pond 4.6P:

Inflow Area = 25,750 sf, 80.23% Impervious, Inflow Depth = 4.00" for 10-YR event
Inflow = 2.5 cfs @ 12.08 hrs, Volume= 8,593 cf
Outflow = 2.5 cfs @ 12.08 hrs, Volume= 8,593 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.5 cfs @ 12.08 hrs, Volume= 8,593 cf
Routed to Pond 4.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.83' @ 12.08 hrs
Flood Elev= 70.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.00'	**18.0" Round Culvert** L= 77.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.00' / 64.70' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.5 cfs @ 12.08 hrs HW=66.83' (Free Discharge)
1=Culvert (Inlet Controls 2.5 cfs @ 2.45 fps)

Summary for Pond 4.7P:

Inflow Area = 31,770 sf, 83.98% Impervious, Inflow Depth = 4.07" for 10-YR event
Inflow = 3.1 cfs @ 12.08 hrs, Volume= 10,783 cf
Outflow = 3.1 cfs @ 12.08 hrs, Volume= 10,783 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.1 cfs @ 12.08 hrs, Volume= 10,783 cf
Routed to Pond 4.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.84' @ 12.08 hrs
Flood Elev= 69.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.20'	**18.0" Round Culvert X 2.00** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.20' / 63.70' S= 0.0227 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.1 cfs @ 12.08 hrs HW=64.84' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.1 cfs @ 2.15 fps)

Summary for Pond 4.81P:

Inflow Area = 66,110 sf, 85.55% Impervious, Inflow Depth = 4.11" for 10-YR event
Inflow = 6.5 cfs @ 12.08 hrs, Volume= 22,657 cf
Outflow = 6.5 cfs @ 12.08 hrs, Volume= 22,657 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.5 cfs @ 12.08 hrs, Volume= 22,657 cf
Routed to Pond 3.32P : WQ DET & SF-2

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.49' @ 12.08 hrs
Flood Elev= 69.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.20'	**24.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.20' / 62.80' S= 0.0267 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.5 cfs @ 12.08 hrs HW=64.48' (Free Discharge)
└**1=Culvert** (Inlet Controls 6.5 cfs @ 3.05 fps)

Summary for Pond 4.8P:

Inflow Area = 34,340 sf, 87.00% Impervious, Inflow Depth = 4.15" for 10-YR event
Inflow = 3.4 cfs @ 12.08 hrs, Volume= 11,874 cf
Outflow = 3.4 cfs @ 12.08 hrs, Volume= 11,874 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.4 cfs @ 12.08 hrs, Volume= 11,874 cf
Routed to Pond 4.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.54' @ 12.08 hrs
Flood Elev= 68.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.65'	**24.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.65' / 63.30' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.4 cfs @ 12.08 hrs HW=64.54' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.4 cfs @ 2.53 fps)

Summary for Pond 4P: B-32A (CB-8323)

Inflow Area = 445,070 sf, 79.79% Impervious, Inflow Depth = 4.02" for 10-YR event
Inflow = 15.0 cfs @ 12.12 hrs, Volume= 149,124 cf
Outflow = 15.0 cfs @ 12.12 hrs, Volume= 149,124 cf, Atten= 0%, Lag= 0.0 min
Primary = 15.0 cfs @ 12.12 hrs, Volume= 149,124 cf
Routed to Link POA-1 : B-30
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA-1 : B-30

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.09' @ 12.12 hrs
Flood Elev= 59.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.52' / 54.90' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	59.39'	**15.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=14.9 cfs @ 12.12 hrs HW=58.09' (Free Discharge)
1=Culvert (Inlet Controls 14.9 cfs @ 4.76 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=55.52' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond 5P:

Inflow Area = 20,660 sf, 50.80% Impervious, Inflow Depth = 3.65" for 10-YR event
Inflow = 1.9 cfs @ 12.09 hrs, Volume= 6,279 cf
Outflow = 1.9 cfs @ 12.09 hrs, Volume= 6,279 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.9 cfs @ 12.09 hrs, Volume= 6,279 cf
Routed to Link POA-2 :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 60.77' @ 12.09 hrs
Flood Elev= 66.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 59.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.9 cfs @ 12.09 hrs HW=60.77' (Free Discharge)
1=Culvert (Inlet Controls 1.9 cfs @ 2.36 fps)

Summary for Pond 6P:

Inflow Area = 64,300 sf, 76.42% Impervious, Inflow Depth = 3.95" for 10-YR event
Inflow = 4.6 cfs @ 12.16 hrs, Volume= 21,160 cf
Outflow = 4.6 cfs @ 12.16 hrs, Volume= 21,160 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.6 cfs @ 12.16 hrs, Volume= 21,160 cf
Routed to Pond 2P : B-34
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 2P : B-34

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.94' @ 12.16 hrs
Flood Elev= 71.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.08'	**12.0" Round Culvert** L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.08' / 57.67' S= 0.0147 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	70.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=4.6 cfs @ 12.16 hrs HW=64.94' (Free Discharge)
1=Culvert (Inlet Controls 4.6 cfs @ 5.84 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=62.08' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond 7P:

Inflow Area = 45,290 sf, 74.03% Impervious, Inflow Depth = 3.87" for 10-YR event
Inflow = 3.6 cfs @ 12.15 hrs, Volume= 14,605 cf
Outflow = 3.6 cfs @ 12.15 hrs, Volume= 14,605 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.6 cfs @ 12.15 hrs, Volume= 14,605 cf
Routed to Link POA-4 :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.93' @ 12.15 hrs
Flood Elev= 69.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.00'	**12.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.00' / 64.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.6 cfs @ 12.15 hrs HW=66.92' (Free Discharge)
1=Culvert (Inlet Controls 3.6 cfs @ 4.54 fps)

Summary for Pond 8.10P:

Inflow Area = 8,440 sf, 92.00% Impervious, Inflow Depth = 4.22" for 10-YR event
Inflow = 0.8 cfs @ 12.08 hrs, Volume= 2,967 cf
Outflow = 0.8 cfs @ 12.08 hrs, Volume= 2,967 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.08 hrs, Volume= 2,967 cf
Routed to Pond 8.9P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.84' @ 12.08 hrs
Flood Elev= 72.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.30'	**12.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.30' / 68.75' S= 0.0367 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.8 cfs @ 12.08 hrs HW=69.84' (Free Discharge)
1=Culvert (Inlet Controls 0.8 cfs @ 1.97 fps)

Summary for Pond 8.111P:

Inflow Area = 29,240 sf, 88.61% Impervious, Inflow Depth = 4.16" for 10-YR event
Inflow = 2.9 cfs @ 12.08 hrs, Volume= 10,129 cf
Outflow = 2.9 cfs @ 12.08 hrs, Volume= 10,129 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.9 cfs @ 12.08 hrs, Volume= 10,129 cf
Routed to Pond 8.82P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.86' @ 12.08 hrs
Flood Elev= 74.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.95'	**18.0" Round Culvert** L= 160.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.95' / 66.30' S= 0.0103 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.9 cfs @ 12.08 hrs HW=68.86' (Free Discharge)
1=Culvert (Inlet Controls 2.9 cfs @ 2.57 fps)

Summary for Pond 8.11P:

Inflow Area = 26,900 sf, 87.62% Impervious, Inflow Depth = 4.14" for 10-YR event
Inflow = 2.7 cfs @ 12.08 hrs, Volume= 9,278 cf
Outflow = 2.7 cfs @ 12.08 hrs, Volume= 9,278 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.7 cfs @ 12.08 hrs, Volume= 9,278 cf
Routed to Pond 8.111P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 70.91' @ 12.08 hrs
Flood Elev= 73.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.95'	**15.0" Round Culvert** L= 144.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.95' / 68.20' S= 0.0122 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.7 cfs @ 12.08 hrs HW=70.91' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 2.7 cfs @ 2.63 fps)

Summary for Pond 8.12P:

Inflow Area = 2,340 sf,100.00% Impervious, Inflow Depth = 4.36" for 10-YR event
Inflow = 0.2 cfs @ 12.08 hrs, Volume= 851 cf
Outflow = 0.2 cfs @ 12.08 hrs, Volume= 851 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.08 hrs, Volume= 851 cf
Routed to Pond 8.111P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.02' @ 12.08 hrs
Flood Elev= 74.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.75'	**12.0" Round Culvert** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.75' / 69.30' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.2 cfs @ 12.08 hrs HW=71.02' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.2 cfs @ 1.40 fps)

Summary for Pond 8.21P:

Inflow Area = 19,350 sf, 84.44% Impervious, Inflow Depth = 4.08" for 10-YR event
Inflow = 1.9 cfs @ 12.08 hrs, Volume= 6,581 cf
Outflow = 1.9 cfs @ 12.08 hrs, Volume= 6,581 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.9 cfs @ 12.08 hrs, Volume= 6,581 cf
Routed to Pond 8.22P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.64' @ 12.08 hrs
Flood Elev= 76.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	**24.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.00' / 68.60' S= 0.0240 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.9 cfs @ 12.08 hrs HW=71.64' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.9 cfs @ 2.16 fps)

Summary for Pond 8.22P:

Inflow Area = 41,770 sf, 81.04% Impervious, Inflow Depth = 4.02" for 10-YR event
Inflow = 4.0 cfs @ 12.08 hrs, Volume= 13,991 cf
Outflow = 4.0 cfs @ 12.08 hrs, Volume= 13,991 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.0 cfs @ 12.08 hrs, Volume= 13,991 cf
Routed to Pond 8.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.47' @ 12.08 hrs
Flood Elev= 75.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.50'	**24.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.50' / 68.10' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.0 cfs @ 12.08 hrs HW=69.47' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.0 cfs @ 2.65 fps)

Summary for Pond 8.2P:

Inflow Area = 19,350 sf, 84.44% Impervious, Inflow Depth = 4.08" for 10-YR event
Inflow = 1.9 cfs @ 12.08 hrs, Volume= 6,581 cf
Outflow = 1.9 cfs @ 12.08 hrs, Volume= 6,581 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.9 cfs @ 12.08 hrs, Volume= 6,581 cf
Routed to Pond 8.21P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 74.42' @ 12.08 hrs
Flood Elev= 79.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.70'	**18.0" Round Culvert** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.70' / 71.50' S= 0.0183 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.9 cfs @ 12.08 hrs HW=74.41' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.9 cfs @ 2.27 fps)

Summary for Pond 8.3P:

Inflow Area = 99,100 sf, 78.48% Impervious, Inflow Depth = 3.97" for 10-YR event
Inflow = 9.5 cfs @ 12.08 hrs, Volume= 32,809 cf
Outflow = 9.5 cfs @ 12.08 hrs, Volume= 32,809 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.5 cfs @ 12.08 hrs, Volume= 32,809 cf
Routed to Pond 8.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.64' @ 12.08 hrs
Flood Elev= 74.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.00'	**24.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.00' / 67.20' S= 0.0178 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=9.5 cfs @ 12.08 hrs HW=69.64' (Free Discharge)
1=Culvert (Inlet Controls 9.5 cfs @ 3.44 fps)

Summary for Pond 8.4P:

Inflow Area = 22,420 sf, 78.10% Impervious, Inflow Depth = 3.97" for 10-YR event
Inflow = 2.1 cfs @ 12.08 hrs, Volume= 7,410 cf
Outflow = 2.1 cfs @ 12.08 hrs, Volume= 7,410 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.1 cfs @ 12.08 hrs, Volume= 7,410 cf
Routed to Pond 8.22P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.84' @ 12.08 hrs
Flood Elev= 75.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**15.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.00' / 69.35' S= 0.0163 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.1 cfs @ 12.08 hrs HW=70.83' (Free Discharge)
1=Culvert (Inlet Controls 2.1 cfs @ 2.46 fps)

Summary for Pond 8.5P:

Inflow Area = 9,090 sf, 0.00% Impervious, Inflow Depth = 2.55" for 10-YR event
Inflow = 0.6 cfs @ 12.09 hrs, Volume= 1,929 cf
Outflow = 0.6 cfs @ 12.09 hrs, Volume= 1,929 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.6 cfs @ 12.09 hrs, Volume= 1,929 cf
Routed to Pond 8.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 74.90' @ 12.09 hrs
Flood Elev= 77.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.45'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.45' / 73.35' S= 0.0220 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.6 cfs @ 12.09 hrs HW=74.90' (Free Discharge)
1=Culvert (Inlet Controls 0.6 cfs @ 1.81 fps)

Summary for Pond 8.6P:

Inflow Area = 11,120 sf, 70.91% Impervious, Inflow Depth = 3.84" for 10-YR event
Inflow = 1.0 cfs @ 12.08 hrs, Volume= 3,554 cf
Outflow = 1.0 cfs @ 12.08 hrs, Volume= 3,554 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.0 cfs @ 12.08 hrs, Volume= 3,554 cf
Routed to Pond 8.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.85' @ 12.08 hrs
Flood Elev= 75.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.30'	**15.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.30' / 70.10' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.0 cfs @ 12.08 hrs HW=71.85' (Free Discharge)
1=Culvert (Inlet Controls 1.0 cfs @ 1.99 fps)

Summary for Pond 8.7P:

Inflow Area = 115,300 sf, 75.85% Impervious, Inflow Depth = 3.93" for 10-YR event
Inflow = 10.9 cfs @ 12.08 hrs, Volume= 37,713 cf
Outflow = 10.9 cfs @ 12.08 hrs, Volume= 37,713 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.9 cfs @ 12.08 hrs, Volume= 37,713 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.47' @ 12.08 hrs
Flood Elev= 73.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.90'	**30.0" Round Culvert** L= 57.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.90' / 66.25' S= 0.0114 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=10.9 cfs @ 12.08 hrs HW=68.47' (Free Discharge)
└**1=Culvert** (Inlet Controls 10.9 cfs @ 3.37 fps)

Summary for Pond 8.81P:

Inflow Area = 150,970 sf, 79.60% Impervious, Inflow Depth = 3.99" for 10-YR event
Inflow = 14.5 cfs @ 12.08 hrs, Volume= 50,237 cf
Outflow = 14.5 cfs @ 12.08 hrs, Volume= 50,237 cf, Atten= 0%, Lag= 0.0 min
Primary = 14.5 cfs @ 12.08 hrs, Volume= 50,237 cf
Routed to Pond 8.82P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.04' @ 12.08 hrs
Flood Elev= 74.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.25'	**36.0" Round Culvert** L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.25' / 66.00' S= 0.0192 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=14.5 cfs @ 12.08 hrs HW=68.04' (Free Discharge)
└**1=Culvert** (Barrel Controls 14.5 cfs @ 4.73 fps)

Summary for Pond 8.82P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 4.02" for 10-YR event
Inflow = 17.4 cfs @ 12.08 hrs, Volume= 60,366 cf
Outflow = 17.4 cfs @ 12.08 hrs, Volume= 60,366 cf, Atten= 0%, Lag= 0.0 min
Primary = 17.4 cfs @ 12.08 hrs, Volume= 60,366 cf
Routed to Pond 8.83P : WQ DET & SF-1

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.33' @ 12.08 hrs
Flood Elev= 75.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.25'	**36.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.25' / 65.10' S= 0.0214 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=17.4 cfs @ 12.08 hrs HW=67.32' (Free Discharge)
└**1=Culvert** (Barrel Controls 17.4 cfs @ 4.70 fps)

Summary for Pond 8.83P: WQ DET & SF-1

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 4.02" for 10-YR event
Inflow = 17.4 cfs @ 12.08 hrs, Volume= 60,366 cf
Outflow = 17.4 cfs @ 12.09 hrs, Volume= 60,366 cf, Atten= 0%, Lag= 0.4 min
Primary = 0.5 cfs @ 12.09 hrs, Volume= 27,880 cf
Routed to Pond 8.85P :
Secondary = 16.9 cfs @ 12.09 hrs, Volume= 32,486 cf
Routed to Pond 8.84P : Peak DET-1

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.45' @ 12.09 hrs Surf.Area= 1,115 sf Storage= 5,079 cf

Plug-Flow detention time= 53.2 min calculated for 60,356 cf (100% of inflow)
Center-of-Mass det. time= 53.2 min (811.8 - 758.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	62.50'	0 cf	**10.00'W x 111.50'L x 8.00'H Field A** 8,920 cf Overall - 5,504 cf Embedded = 3,416 cf x 0.0% Voids
#2A	62.50'	5,504 cf	**CMP Round 96** x 5 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +1.50' x 50.27 sf x 1 rows 8.00' Header x 50.27 sf x 1 = 402.1 cf Inside
		5,504 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	62.50'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 62.50' / 62.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	60.60'	**Tube/Siphon/Float Valve X 18.00** 0.586" Diameter, C= 0.600, 0.263" Trickle Diameter Starts@63.35'
#3	Primary	60.60'	**12.0" Round 12" Stormfilter Outlet** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.60' / 60.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Secondary	68.58'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 6.08 6.16 6.24 6.32 6.40 6.48 6.56 6.64 6.72 6.80 6.88 6.96 7.04 7.12 7.20 7.28 7.36 7.44 7.52 7.60 7.68 7.76 7.84 7.92 8.00 Width (feet) 6.83 6.73 6.63 6.52 6.40 6.28 6.15 6.01 5.87 5.71 5.55 5.38 5.20 5.01 4.80 4.58 4.34 4.08 3.80 3.49 3.14 2.73 2.24 1.59 0.00

Primary OutFlow Max=0.5 cfs @ 12.09 hrs HW=69.45' (Free Discharge)
└**3=12" Stormfilter Outlet** (Passes 0.5 cfs of 8.6 cfs potential flow)
└**2=Tube/Siphon/Float Valve** (Orifice Controls 0.5 cfs @ 14.33 fps)
└**1=Culvert** (Passes 0.5 cfs of 9.6 cfs potential flow)

Secondary OutFlow Max=16.9 cfs @ 12.09 hrs HW=69.45' (Free Discharge)
└**4=Custom Weir/Orifice** (Weir Controls 16.9 cfs @ 3.13 fps)

Summary for Pond 8.84P: Peak DET-1

Inflow = 16.9 cfs @ 12.09 hrs, Volume= 32,486 cf
Outflow = 2.9 cfs @ 12.53 hrs, Volume= 32,486 cf, Atten= 83%, Lag= 26.5 min
Primary = 2.9 cfs @ 12.53 hrs, Volume= 32,486 cf
Routed to Pond 8.85P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.00' @ 12.53 hrs Surf.Area= 10,780 sf Storage= 21,025 cf

Plug-Flow detention time= 344.9 min calculated for 32,486 cf (100% of inflow)
Center-of-Mass det. time= 344.9 min (1,087.2 - 742.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	62.50'	0 cf	**98.00'W x 110.00'L x 8.00'H Field A** 86,240 cf Overall - 50,064 cf Embedded = 36,176 cf x 0.0% Voids
#2A	62.50'	50,064 cf	**CMP Round 96** x 45 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L 45 Chambers in 9 Rows 96.00' Header x 50.27 sf x 1 = 4,825.5 cf Inside
		50,064 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**6.0' 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
#2	Primary	66.00'	**36.0" W x 12.0" H Vert. OVERFLOW ORIFICE** C= 0.600 Limited to weir flow at low heads
#3	Primary	62.50'	**2.0" Vert. DRAINDOWN ORIFICE** C= 0.600 Limited to weir flow at low heads
#4	Primary	64.50'	**6.0" W x 6.0" H Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.9 cfs @ 12.53 hrs HW=66.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)
└**2=OVERFLOW ORIFICE** (Controls 0.0 cfs)
└**3=DRAINDOWN ORIFICE** (Orifice Controls 0.2 cfs @ 8.89 fps)
└**4=Orifice/Grate** (Orifice Controls 2.7 cfs @ 5.37 fps)

Summary for Pond 8.85P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 4.02" for 10-YR event
Inflow = 3.3 cfs @ 12.53 hrs, Volume= 60,366 cf
Outflow = 3.3 cfs @ 12.53 hrs, Volume= 60,366 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.3 cfs @ 12.53 hrs, Volume= 60,366 cf
Routed to Pond 8.96P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 61.50' @ 12.53 hrs
Flood Elev= 73.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.50'	**18.0" Round Culvert** L= 226.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.50' / 58.60' S= 0.0084 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.3 cfs @ 12.53 hrs HW=61.50' (Free Discharge)
1=Culvert (Inlet Controls 3.3 cfs @ 2.68 fps)

Summary for Pond 8.8P:

Inflow Area = 9,920 sf, 83.06% Impervious, Inflow Depth = 4.06" for 10-YR event
Inflow = 1.0 cfs @ 12.08 hrs, Volume= 3,353 cf
Outflow = 1.0 cfs @ 12.08 hrs, Volume= 3,353 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.0 cfs @ 12.08 hrs, Volume= 3,353 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.03' @ 12.08 hrs
Flood Elev= 75.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.50'	**15.0" Round Culvert** L= 23.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.50' / 70.00' S= 0.0217 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.0 cfs @ 12.08 hrs HW=71.03' (Free Discharge)
1=Culvert (Inlet Controls 1.0 cfs @ 1.95 fps)

Summary for Pond 8.96P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 4.02" for 10-YR event
Inflow = 3.3 cfs @ 12.53 hrs, Volume= 60,366 cf
Outflow = 3.3 cfs @ 12.53 hrs, Volume= 60,366 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.3 cfs @ 12.53 hrs, Volume= 60,366 cf
Routed to Pond 2.1P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 59.50' @ 12.53 hrs
Flood Elev= 68.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	58.50'	**18.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 58.50' / 56.01' S= 0.0311 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.3 cfs @ 12.53 hrs HW=59.50' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 3.3 cfs @ 2.68 fps)

Summary for Pond 8.9P:

Inflow Area = 25,750 sf, 95.03% Impervious, Inflow Depth = 4.27" for 10-YR event
Inflow = 2.6 cfs @ 12.08 hrs, Volume= 9,170 cf
Outflow = 2.6 cfs @ 12.08 hrs, Volume= 9,170 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.08 hrs, Volume= 9,170 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.67' @ 12.08 hrs
Flood Elev= 73.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.40'	**12.0" Round Culvert** L= 18.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.40' / 68.75' S= 0.0361 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.6 cfs @ 12.08 hrs HW=70.66' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 2.6 cfs @ 3.32 fps)

Summary for Pond 8P:

Inflow Area = 13,930 sf, 49.61% Impervious, Inflow Depth = 3.35" for 10-YR event
Inflow = 1.2 cfs @ 12.09 hrs, Volume= 3,893 cf
Outflow = 1.2 cfs @ 12.09 hrs, Volume= 3,893 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.09 hrs, Volume= 3,893 cf
Routed to Pond 6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 61.22' @ 12.09 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.58'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.58' / 59.88' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.2 cfs @ 12.09 hrs HW=61.22' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.2 cfs @ 2.16 fps)

Summary for Link POA-1: B-30

Inflow Area = 445,070 sf, 79.79% Impervious, Inflow Depth = 4.02" for 10-YR event
Inflow = 15.0 cfs @ 12.12 hrs, Volume= 149,124 cf
Primary = 15.0 cfs @ 12.12 hrs, Volume= 149,124 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-2:

Inflow Area = 20,660 sf, 50.80% Impervious, Inflow Depth = 3.65" for 10-YR event
Inflow = 1.9 cfs @ 12.09 hrs, Volume= 6,279 cf
Primary = 1.9 cfs @ 12.09 hrs, Volume= 6,279 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-3:

Inflow Area = 6,800 sf, 0.00% Impervious, Inflow Depth = 2.74" for 10-YR event
Inflow = 0.5 cfs @ 12.09 hrs, Volume= 1,550 cf
Primary = 0.5 cfs @ 12.09 hrs, Volume= 1,550 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-4:

Inflow Area = 45,290 sf, 74.03% Impervious, Inflow Depth = 3.87" for 10-YR event
Inflow = 3.6 cfs @ 12.15 hrs, Volume= 14,605 cf
Primary = 3.6 cfs @ 12.15 hrs, Volume= 14,605 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=34,840 sf 96.15% Impervious Runoff Depth=5.50"
Tc=6.0 min CN=WQ Runoff=4.5 cfs 15,975 cf

Subcatchment2.1S: Runoff Area=29,840 sf 69.86% Impervious Runoff Depth=5.09"
Tc=6.0 min CN=WQ Runoff=3.7 cfs 12,667 cf

Subcatchment3.1S: Runoff Area=1,450 sf 62.07% Impervious Runoff Depth=4.82"
Tc=6.0 min CN=WQ Runoff=0.2 cfs 582 cf

Subcatchment3.2S: Runoff Area=4,400 sf 52.27% Impervious Runoff Depth=4.63"
Tc=6.0 min CN=WQ Runoff=0.5 cfs 1,696 cf

Subcatchment3.3S: Runoff Area=7,500 sf 87.33% Impervious Runoff Depth=5.31"
Tc=6.0 min CN=WQ Runoff=0.9 cfs 3,321 cf

Subcatchment3.4S: Runoff Area=5,170 sf 90.14% Impervious Runoff Depth=5.37"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,313 cf

Subcatchment3.5S: Runoff Area=7,350 sf 88.71% Impervious Runoff Depth=5.34"
Tc=6.0 min CN=WQ Runoff=0.9 cfs 3,271 cf

Subcatchment3.6S: Runoff Area=7,080 sf 100.00% Impervious Runoff Depth=5.56"
Tc=6.0 min CN=98 Runoff=0.9 cfs 3,282 cf

Subcatchment3.7S: Runoff Area=6,280 sf 87.10% Impervious Runoff Depth=5.31"
Tc=6.0 min CN=WQ Runoff=0.8 cfs 2,778 cf

Subcatchment4.1S: Runoff Area=30,540 sf 50.79% Impervious Runoff Depth=4.80"
Flow Length=135' Tc=12.1 min CN=WQ Runoff=3.0 cfs 12,211 cf

Subcatchment4.2S: Runoff Area=11,860 sf 82.50% Impervious Runoff Depth=5.29"
Tc=6.0 min CN=WQ Runoff=1.5 cfs 5,229 cf

Subcatchment4.3S: Runoff Area=10,630 sf 88.66% Impervious Runoff Depth=5.34"
Tc=6.0 min CN=WQ Runoff=1.3 cfs 4,730 cf

Subcatchment4.4S: Runoff Area=11,040 sf 83.15% Impervious Runoff Depth=5.23"
Tc=6.0 min CN=WQ Runoff=1.4 cfs 4,813 cf

Subcatchment4.5S: Runoff Area=5,620 sf 62.10% Impervious Runoff Depth=4.82"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,257 cf

Subcatchment4.6S: Runoff Area=9,090 sf 87.90% Impervious Runoff Depth=5.32"
Tc=6.0 min CN=WQ Runoff=1.1 cfs 4,034 cf

Subcatchment4.7S: Runoff Area=6,020 sf 100.00% Impervious Runoff Depth=5.56"
Tc=6.0 min CN=98 Runoff=0.8 cfs 2,790 cf

Subcatchment4.8S: Runoff Area=11,850 sf 90.00% Impervious Runoff Depth=5.37"
Tc=6.0 min CN=WQ Runoff=1.5 cfs 5,299 cf

Subcatchment5.1S: Runoff Area=20,660 sf 50.80% Impervious Runoff Depth=4.80"
Tc=6.0 min CN=WQ Runoff=2.5 cfs 8,261 cf

Subcatchment6.1S: Runoff Area=50,370 sf 83.84% Impervious Runoff Depth=5.29"
Flow Length=280' Tc=14.5 min CN=WQ Runoff=4.9 cfs 22,223 cf

Subcatchment7.1S: Runoff Area=45,290 sf 74.03% Impervious Runoff Depth=5.03"
Flow Length=425' Tc=11.4 min CN=WQ Runoff=4.6 cfs 18,973 cf

Subcatchment8.10S: Runoff Area=8,440 sf 92.00% Impervious Runoff Depth=5.41"
Tc=6.0 min CN=WQ Runoff=1.1 cfs 3,802 cf

Subcatchment8.11S: Runoff Area=26,900 sf 87.62% Impervious Runoff Depth=5.32"
Tc=6.0 min CN=WQ Runoff=3.4 cfs 11,924 cf

Subcatchment8.12S: Runoff Area=2,340 sf 100.00% Impervious Runoff Depth=5.56"
Tc=6.0 min CN=98 Runoff=0.3 cfs 1,085 cf

Subcatchment8.1S: Runoff Area=13,930 sf 49.61% Impervious Runoff Depth=4.46"
Tc=6.0 min CN=WQ Runoff=1.5 cfs 5,180 cf

Subcatchment8.2S: Runoff Area=19,350 sf 84.44% Impervious Runoff Depth=5.26"
Tc=6.0 min CN=WQ Runoff=2.4 cfs 8,477 cf

Subcatchment8.3S: Runoff Area=48,240 sf 91.04% Impervious Runoff Depth=5.39"
Tc=6.0 min CN=WQ Runoff=6.1 cfs 21,654 cf

Subcatchment8.4S: Runoff Area=22,420 sf 78.10% Impervious Runoff Depth=5.13"
Tc=6.0 min CN=WQ Runoff=2.8 cfs 9,590 cf

Subcatchment8.5S: Runoff Area=9,090 sf 0.00% Impervious Runoff Depth=3.60"
Tc=6.0 min CN=80 Runoff=0.9 cfs 2,728 cf

Subcatchment8.6S: Runoff Area=11,120 sf 70.91% Impervious Runoff Depth=4.99"
Tc=6.0 min CN=WQ Runoff=1.3 cfs 4,626 cf

Subcatchment8.7S: Runoff Area=5,080 sf 35.43% Impervious Runoff Depth=4.30"
Tc=6.0 min CN=WQ Runoff=0.6 cfs 1,819 cf

Subcatchment8.8S: Runoff Area=9,920 sf 83.06% Impervious Runoff Depth=5.23"
Tc=6.0 min CN=WQ Runoff=1.2 cfs 4,323 cf

Subcatchment8.9S: Runoff Area=17,310 sf 96.50% Impervious Runoff Depth=5.49"
Tc=6.0 min CN=WQ Runoff=2.2 cfs 7,924 cf

Subcatchment9.1S: Runoff Area=6,800 sf 0.00% Impervious Runoff Depth=3.82"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,163 cf

Pond 1P: B-41 Peak Elev=59.18' Inflow=4.5 cfs 15,975 cf
18.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=4.5 cfs 15,975 cf

Pond 2.11P: 21P (CB-8436) Peak Elev=58.94' Inflow=16.6 cfs 133,997 cf
24.0" Round Culvert n=0.013 L=80.0' S=0.0024 '/' Outflow=16.6 cfs 133,997 cf

Pond 2.1P: Peak Elev=58.94' Inflow=16.6 cfs 133,997 cf
24.0" Round Culvert n=0.013 L=40.0' S=0.0032 '/' Outflow=16.6 cfs 133,997 cf

Pond 2P: B-34 Peak Elev=62.26' Inflow=13.4 cfs 56,046 cf
18.0" Round Culvert n=0.013 L=140.0' S=0.0116 '/' Outflow=13.4 cfs 56,046 cf

Pond 3.11P: Peak Elev=66.32' Inflow=0.7 cfs 2,279 cf
12.0" Round Culvert n=0.013 L=30.0' S=0.0117 '/' Outflow=0.7 cfs 2,279 cf

Pond 3.1P: Peak Elev=67.53' Inflow=0.2 cfs 582 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0200 '/' Outflow=0.2 cfs 582 cf

Pond 3.2P: Peak Elev=67.17' Inflow=0.5 cfs 1,696 cf
12.0" Round Culvert n=0.013 L=80.0' S=0.0109 '/' Outflow=0.5 cfs 1,696 cf

Pond 3.31P: Peak Elev=62.89' Inflow=4.9 cfs 17,244 cf
24.0" Round Culvert n=0.013 L=42.0' S=0.0119 '/' Outflow=4.9 cfs 17,244 cf

Pond 3.32P: WQ DET & SF-2 Peak Elev=63.04' Storage=3,551 cf Inflow=13.2 cfs 46,396 cf
Primary=0.3 cfs 19,032 cf Secondary=12.7 cfs 27,363 cf Outflow=13.0 cfs 46,396 cf

Pond 3.33P: PEAK DET Peak Elev=63.81' Storage=19,431 cf Inflow=12.7 cfs 27,363 cf
Outflow=1.9 cfs 27,359 cf

Pond 3.34P: Peak Elev=58.19' Inflow=2.2 cfs 46,391 cf
24.0" Round Culvert n=0.013 L=62.0' S=0.0102 '/' Outflow=2.2 cfs 46,391 cf

Pond 3.35P: Peak Elev=58.73' Inflow=17.0 cfs 180,388 cf
24.0" Round Culvert n=0.013 L=25.0' S=0.0028 '/' Outflow=17.0 cfs 180,388 cf

Pond 3.3P: Peak Elev=64.09' Inflow=4.9 cfs 17,244 cf
18.0" Round Culvert n=0.013 L=45.0' S=0.0111 '/' Outflow=4.9 cfs 17,244 cf

Pond 3.4P: Peak Elev=66.72' Inflow=0.7 cfs 2,313 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0160 '/' Outflow=0.7 cfs 2,313 cf

Pond 3.5P: Peak Elev=65.14' Inflow=1.7 cfs 6,050 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=1.7 cfs 6,050 cf

Pond 3.6P: Peak Elev=64.51' Inflow=2.6 cfs 9,331 cf
15.0" Round Culvert n=0.013 L=45.0' S=0.0111 '/' Outflow=2.6 cfs 9,331 cf

Pond 3.7P: Peak Elev=65.32' Inflow=0.8 cfs 2,778 cf
12.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=0.8 cfs 2,778 cf

Pond 3P: B-32 (CB-8031) Peak Elev=58.56' Inflow=17.0 cfs 180,388 cf
24.0" Round Culvert n=0.013 L=22.0' S=-0.0036 '/' Outflow=17.0 cfs 180,388 cf

Pond 4.21P: Peak Elev=67.73' Inflow=1.5 cfs 5,229 cf
15.0" Round Culvert n=0.013 L=82.0' S=0.0121 '/' Outflow=1.5 cfs 5,229 cf

Pond 4.2P: Peak Elev=68.88' Inflow=1.5 cfs 5,229 cf
15.0" Round Culvert n=0.013 L=104.0' S=0.0100 '/' Outflow=1.5 cfs 5,229 cf

Pond 4.3P: Peak Elev=66.71' Inflow=2.8 cfs 9,959 cf
18.0" Round Culvert n=0.013 L=105.0' S=0.0158 '/' Outflow=2.8 cfs 9,959 cf

Pond 4.4P: Peak Elev=68.62' Inflow=1.4 cfs 4,813 cf
12.0" Round Culvert n=0.013 L=83.0' S=0.0169 '/' Outflow=1.4 cfs 4,813 cf

Pond 4.5P: Peak Elev=69.57' Inflow=0.7 cfs 2,257 cf
12.0" Round Culvert n=0.013 L=122.0' S=0.0213 '/' Outflow=0.7 cfs 2,257 cf

Pond 4.6P: Peak Elev=66.97' Inflow=3.2 cfs 11,104 cf
18.0" Round Culvert n=0.013 L=77.0' S=0.0169 '/' Outflow=3.2 cfs 11,104 cf

Pond 4.7P: Peak Elev=64.94' Inflow=4.0 cfs 13,894 cf
18.0" Round Culvert x 2.00 n=0.013 L=22.0' S=0.0227 '/' Outflow=4.0 cfs 13,894 cf

Pond 4.81P: Peak Elev=64.70' Inflow=8.3 cfs 29,152 cf
24.0" Round Culvert n=0.013 L=15.0' S=0.0267 '/' Outflow=8.3 cfs 29,152 cf

Pond 4.8P: Peak Elev=64.67' Inflow=4.3 cfs 15,258 cf
24.0" Round Culvert n=0.013 L=35.0' S=0.0100 '/' Outflow=4.3 cfs 15,258 cf

Pond 4P: B-32A (CB-8323) Peak Elev=59.27' Inflow=19.8 cfs 192,599 cf
Primary=19.8 cfs 192,599 cf Secondary=0.0 cfs 0 cf Outflow=19.8 cfs 192,599 cf

Pond 5P: Peak Elev=60.91' Inflow=2.5 cfs 8,261 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=2.5 cfs 8,261 cf

Pond 6P: Peak Elev=68.61' Inflow=5.9 cfs 27,403 cf
Primary=5.9 cfs 27,403 cf Secondary=0.0 cfs 0 cf Outflow=5.9 cfs 27,403 cf

Pond 7P: Peak Elev=67.89' Inflow=4.6 cfs 18,973 cf
12.0" Round Culvert n=0.013 L=100.0' S=0.0100 '/' Outflow=4.6 cfs 18,973 cf

Pond 8.10P: Peak Elev=69.92' Inflow=1.1 cfs 3,802 cf
12.0" Round Culvert n=0.013 L=15.0' S=0.0367 '/' Outflow=1.1 cfs 3,802 cf

Pond 8.111P: Peak Elev=69.01' Inflow=3.7 cfs 13,009 cf
18.0" Round Culvert n=0.013 L=160.0' S=0.0103 '/' Outflow=3.7 cfs 13,009 cf

Pond 8.11P: Peak Elev=71.10' Inflow=3.4 cfs 11,924 cf
15.0" Round Culvert n=0.013 L=144.0' S=0.0122 '/' Outflow=3.4 cfs 11,924 cf

Pond 8.12P: Peak Elev=71.06' Inflow=0.3 cfs 1,085 cf
12.0" Round Culvert n=0.013 L=120.0' S=0.0121 '/' Outflow=0.3 cfs 1,085 cf

Pond 8.21P: Peak Elev=71.74' Inflow=2.4 cfs 8,477 cf
24.0" Round Culvert n=0.013 L=100.0' S=0.0240 '/' Outflow=2.4 cfs 8,477 cf

Pond 8.22P: Peak Elev=69.62' Inflow=5.2 cfs 18,067 cf
24.0" Round Culvert n=0.013 L=30.0' S=0.0133 '/' Outflow=5.2 cfs 18,067 cf

Pond 8.2P: Peak Elev=74.52' Inflow=2.4 cfs 8,477 cf
18.0" Round Culvert n=0.013 L=120.0' S=0.0183 '/' Outflow=2.4 cfs 8,477 cf

Pond 8.3P: Peak Elev=70.04' Inflow=12.2 cfs 42,448 cf
24.0" Round Culvert n=0.013 L=45.0' S=0.0178 '/' Outflow=12.2 cfs 42,448 cf

Pond 8.4P: Peak Elev=70.98' Inflow=2.8 cfs 9,590 cf
15.0" Round Culvert n=0.013 L=40.0' S=0.0163 '/' Outflow=2.8 cfs 9,590 cf

Pond 8.5P: Peak Elev=75.00' Inflow=0.9 cfs 2,728 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0220 '/' Outflow=0.9 cfs 2,728 cf

Pond 8.6P: Peak Elev=71.93' Inflow=1.3 cfs 4,626 cf
15.0" Round Culvert n=0.013 L=60.0' S=0.0200 '/' Outflow=1.3 cfs 4,626 cf

Pond 8.7P: Peak Elev=68.74' Inflow=14.1 cfs 48,892 cf
30.0" Round Culvert n=0.013 L=57.0' S=0.0114 '/' Outflow=14.1 cfs 48,892 cf

Pond 8.81P: Peak Elev=68.34' Inflow=18.6 cfs 64,942 cf
36.0" Round Culvert n=0.013 L=13.0' S=0.0192 '/' Outflow=18.6 cfs 64,942 cf

Pond 8.82P: Peak Elev=67.67' Inflow=22.4 cfs 77,951 cf
36.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=22.4 cfs 77,951 cf

Pond 8.83P: WQ DET & SF-1 Peak Elev=69.63' Storage=5,179 cf Inflow=22.4 cfs 77,951 cf
Primary=0.5 cfs 31,184 cf Secondary=21.8 cfs 46,767 cf Outflow=22.3 cfs 77,951 cf

Pond 8.84P: Peak DET-1 Peak Elev=66.56' Storage=25,516 cf Inflow=21.8 cfs 46,767 cf
Outflow=7.5 cfs 46,766 cf

Pond 8.85P: Peak Elev=62.66' Inflow=8.0 cfs 77,951 cf
18.0" Round Culvert n=0.013 L=226.0' S=0.0084 '/' Outflow=8.0 cfs 77,951 cf

Pond 8.8P: Peak Elev=71.11' Inflow=1.2 cfs 4,323 cf
15.0" Round Culvert n=0.013 L=23.0' S=0.0217 '/' Outflow=1.2 cfs 4,323 cf

Pond 8.96P: Peak Elev=60.66' Inflow=8.0 cfs 77,951 cf
18.0" Round Culvert n=0.013 L=80.0' S=0.0311 '/' Outflow=8.0 cfs 77,951 cf

Pond 8.9P: Peak Elev=71.13' Inflow=3.3 cfs 11,726 cf
12.0" Round Culvert n=0.013 L=18.0' S=0.0361 '/' Outflow=3.3 cfs 11,726 cf

Pond 8P: Peak Elev=61.35' Inflow=1.5 cfs 5,180 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0100 '/' Outflow=1.5 cfs 5,180 cf

Link POA-1: B-30 Inflow=19.8 cfs 192,599 cf
Primary=19.8 cfs 192,599 cf

Link POA-2: Inflow=2.5 cfs 8,261 cf
Primary=2.5 cfs 8,261 cf

Link POA-3: Inflow=0.7 cfs 2,163 cf
Primary=0.7 cfs 2,163 cf

Link POA-4: Inflow=4.6 cfs 18,973 cf
Primary=4.6 cfs 18,973 cf

Total Runoff Area = 517,820 sf Runoff Volume = 222,000 cf Average Runoff Depth = 5.14"
22.92% Pervious = 118,690 sf 77.08% Impervious = 399,130 sf

Summary for Subcatchment 1S:

Runoff = 4.5 cfs @ 12.08 hrs, Volume= 15,975 cf, Depth= 5.50"
Routed to Pond 1P : B-41

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
33,500	98	Paved parking, HSG D
1,340	84	50-75% Grass cover, Fair, HSG D
34,840		Weighted Average
1,340		3.85% Pervious Area
33,500		96.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 2.1S:

Runoff = 3.7 cfs @ 12.08 hrs, Volume= 12,667 cf, Depth= 5.09"
Routed to Pond 2P : B-34

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
20,845	98	Paved parking, HSG D
8,995	84	50-75% Grass cover, Fair, HSG D
29,840		Weighted Average
8,995		30.14% Pervious Area
20,845		69.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.1S:

Runoff = 0.2 cfs @ 12.08 hrs, Volume= 582 cf, Depth= 4.82"
Routed to Pond 3.1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
550	80	>75% Grass cover, Good, HSG D
900	98	Paved parking, HSG D
1,450		Weighted Average
550		37.93% Pervious Area
900		62.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.2S:

Runoff = 0.5 cfs @ 12.09 hrs, Volume= 1,696 cf, Depth= 4.63"
Routed to Pond 3.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
2,100	80	>75% Grass cover, Good, HSG D
2,300	98	Paved parking, HSG D
4,400		Weighted Average
2,100		47.73% Pervious Area
2,300		52.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.3S:

Runoff = 0.9 cfs @ 12.08 hrs, Volume= 3,321 cf, Depth= 5.31"
Routed to Pond 3.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
950	80	>75% Grass cover, Good, HSG D
6,550	98	Paved parking, HSG D
7,500		Weighted Average
950		12.67% Pervious Area
6,550		87.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.4S:

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,313 cf, Depth= 5.37"
Routed to Pond 3.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
510	80	>75% Grass cover, Good, HSG D
4,660	98	Paved parking, HSG D
5,170		Weighted Average
510		9.86% Pervious Area
4,660		90.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.5S:

Runoff = 0.9 cfs @ 12.08 hrs, Volume= 3,271 cf, Depth= 5.34"
Routed to Pond 3.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
6,520	98	Paved parking, HSG D
830	80	>75% Grass cover, Good, HSG D
7,350		Weighted Average
830		11.29% Pervious Area
6,520		88.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.6S:

Runoff = 0.9 cfs @ 12.08 hrs, Volume= 3,282 cf, Depth= 5.56"
Routed to Pond 3.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
7,080	98	Paved parking, HSG D
7,080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.7S:

Runoff = 0.8 cfs @ 12.08 hrs, Volume= 2,778 cf, Depth= 5.31"
Routed to Pond 3.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
810	80	>75% Grass cover, Good, HSG D
5,470	98	Paved parking, HSG D
6,280		Weighted Average
810		12.90% Pervious Area
5,470		87.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.1S:

Runoff = 3.0 cfs @ 12.16 hrs, Volume= 12,211 cf, Depth= 4.80"
Routed to Pond 4P : B-32A (CB-8323)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
12,790	98	Paved parking, HSG D
15,030	84	50-75% Grass cover, Fair, HSG D
2,720	98	Roofs, HSG D
30,540		Weighted Average
15,030		49.21% Pervious Area
15,510		50.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	110	0.0150	0.15		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.0	25	0.3300	8.62		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
12.1	135	Total			

Summary for Subcatchment 4.2S:

Runoff = 1.5 cfs @ 12.08 hrs, Volume= 5,229 cf, Depth= 5.29"
Routed to Pond 4.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
9,785	98	Paved parking, HSG D
2,075	84	50-75% Grass cover, Fair, HSG D
11,860		Weighted Average
2,075		17.50% Pervious Area
9,785		82.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.3S:

Runoff = 1.3 cfs @ 12.08 hrs, Volume= 4,730 cf, Depth= 5.34"
Routed to Pond 4.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
1,205	80	>75% Grass cover, Good, HSG D
9,425	98	Paved parking, HSG D
10,630		Weighted Average
1,205		11.34% Pervious Area
9,425		88.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.4S:

Runoff = 1.4 cfs @ 12.08 hrs, Volume= 4,813 cf, Depth= 5.23"
Routed to Pond 4.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
1,860	80	>75% Grass cover, Good, HSG D
9,180	98	Paved parking, HSG D
11,040		Weighted Average
1,860		16.85% Pervious Area
9,180		83.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.5S:

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,257 cf, Depth= 4.82"
Routed to Pond 4.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
2,130	80	>75% Grass cover, Good, HSG D
3,490	98	Paved parking, HSG D
5,620		Weighted Average
2,130		37.90% Pervious Area
3,490		62.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.6S:

Runoff = 1.1 cfs @ 12.08 hrs, Volume= 4,034 cf, Depth= 5.32"
Routed to Pond 4.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
7,990	98	Paved parking, HSG D
1,100	80	>75% Grass cover, Good, HSG D
9,090		Weighted Average
1,100		12.10% Pervious Area
7,990		87.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.7S:

Runoff = 0.8 cfs @ 12.08 hrs, Volume= 2,790 cf, Depth= 5.56"
Routed to Pond 4.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
6,020	98	Paved parking, HSG D
6,020		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.8S:

Runoff = 1.5 cfs @ 12.08 hrs, Volume= 5,299 cf, Depth= 5.37"
Routed to Pond 4.8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
10,665	98	Paved parking, HSG D
1,185	80	>75% Grass cover, Good, HSG D
11,850		Weighted Average
1,185		10.00% Pervious Area
10,665		90.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 5.1S:

Runoff = 2.5 cfs @ 12.08 hrs, Volume= 8,261 cf, Depth= 4.80"
Routed to Pond 5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	10,495	98	Paved parking, HSG D
	10,165	84	50-75% Grass cover, Fair, HSG D
	20,660		Weighted Average
	10,165		49.20% Pervious Area
	10,495		50.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 6.1S:

Runoff = 4.9 cfs @ 12.19 hrs, Volume= 22,223 cf, Depth= 5.29"
Routed to Pond 6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
36,200	98	Paved parking, HSG D
6,030	98	Roofs, HSG D
1,670	79	50-75% Grass cover, Fair, HSG C
6,470	84	50-75% Grass cover, Fair, HSG D
50,370		Weighted Average
8,140		16.16% Pervious Area
42,230		83.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0700	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	65	0.0500	1.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.3	115	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
14.5	280	Total			

Summary for Subcatchment 7.1S:

Runoff = 4.6 cfs @ 12.15 hrs, Volume= 18,973 cf, Depth= 5.03"
Routed to Pond 7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
31,245	98	Paved parking, HSG D
11,760	79	50-75% Grass cover, Fair, HSG C
2,285	98	Unconnected pavement, HSG D
45,290		Weighted Average
11,760		25.97% Pervious Area
33,530		74.03% Impervious Area
2,285		6.81% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0200	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.7	75	0.0150	1.84		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.7	250	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
11.4	425	Total			

Summary for Subcatchment 8.10S:

Runoff = 1.1 cfs @ 12.08 hrs, Volume= 3,802 cf, Depth= 5.41"
Routed to Pond 8.10P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
675	80	>75% Grass cover, Good, HSG D
7,765	98	Paved parking, HSG D
8,440		Weighted Average
675		8.00% Pervious Area
7,765		92.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.11S:

Runoff = 3.4 cfs @ 12.08 hrs, Volume= 11,924 cf, Depth= 5.32"
Routed to Pond 8.11P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
3,330	80	>75% Grass cover, Good, HSG D
23,570	98	Paved parking, HSG D
26,900		Weighted Average
3,330		12.38% Pervious Area
23,570		87.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.12S:

Runoff = 0.3 cfs @ 12.08 hrs, Volume= 1,085 cf, Depth= 5.56"
Routed to Pond 8.12P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
2,340	98	Paved parking, HSG D
2,340		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.1S:

Runoff = 1.5 cfs @ 12.09 hrs, Volume= 5,180 cf, Depth= 4.46"
Routed to Pond 8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
6,910	98	Paved parking, HSG D
2,655	74	>75% Grass cover, Good, HSG C
4,365	80	>75% Grass cover, Good, HSG D
13,930		Weighted Average
7,020		50.39% Pervious Area
6,910		49.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.2S:

Runoff = 2.4 cfs @ 12.08 hrs, Volume= 8,477 cf, Depth= 5.26"
Routed to Pond 8.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
3,010	80	>75% Grass cover, Good, HSG D
16,340	98	Paved parking, HSG D
19,350		Weighted Average
3,010		15.56% Pervious Area
16,340		84.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.3S:

Runoff = 6.1 cfs @ 12.08 hrs, Volume= 21,654 cf, Depth= 5.39"
Routed to Pond 8.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
4,320	80	>75% Grass cover, Good, HSG D
43,920	98	Paved parking, HSG D
48,240		Weighted Average
4,320		8.96% Pervious Area
43,920		91.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.4S:

Runoff = 2.8 cfs @ 12.08 hrs, Volume= 9,590 cf, Depth= 5.13"
Routed to Pond 8.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
4,910	80	>75% Grass cover, Good, HSG D
17,510	98	Paved parking, HSG D
22,420		Weighted Average
4,910		21.90% Pervious Area
17,510		78.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.5S:

Runoff = 0.9 cfs @ 12.09 hrs, Volume= 2,728 cf, Depth= 3.60"
Routed to Pond 8.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
9,090	80	>75% Grass cover, Good, HSG D
9,090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.6S:

Runoff = 1.3 cfs @ 12.08 hrs, Volume= 4,626 cf, Depth= 4.99"
Routed to Pond 8.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
3,235	80	>75% Grass cover, Good, HSG D
7,885	98	Paved parking, HSG D
11,120		Weighted Average
3,235		29.09% Pervious Area
7,885		70.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.7S:

Runoff = 0.6 cfs @ 12.09 hrs, Volume= 1,819 cf, Depth= 4.30"
Routed to Pond 8.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
3,280	80	>75% Grass cover, Good, HSG D
1,800	98	Paved parking, HSG D
5,080		Weighted Average
3,280		64.57% Pervious Area
1,800		35.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.8S:

Runoff = 1.2 cfs @ 12.08 hrs, Volume= 4,323 cf, Depth= 5.23"
Routed to Pond 8.8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
1,680	80	>75% Grass cover, Good, HSG D
8,240	98	Paved parking, HSG D
9,920		Weighted Average
1,680		16.94% Pervious Area
8,240		83.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.9S:

Runoff = 2.2 cfs @ 12.08 hrs, Volume= 7,924 cf, Depth= 5.49"
Routed to Pond 8.9P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
605	80	>75% Grass cover, Good, HSG D
16,705	98	Paved parking, HSG D
17,310		Weighted Average
605		3.50% Pervious Area
16,705		96.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 9.1S:

Runoff = 0.7 cfs @ 12.09 hrs, Volume= 2,163 cf, Depth= 3.82"
Routed to Link POA-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
4,800	83	Woods, Poor, HSG D
2,000	80	>75% Grass cover, Good, HSG D
6,800		Weighted Average
6,800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Pond 1P: B-41

Inflow Area = 34,840 sf, 96.15% Impervious, Inflow Depth = 5.50" for 25-YR event
Inflow = 4.5 cfs @ 12.08 hrs, Volume= 15,975 cf
Outflow = 4.5 cfs @ 12.08 hrs, Volume= 15,975 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.5 cfs @ 12.08 hrs, Volume= 15,975 cf
Routed to Pond 2P : B-34

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.18' @ 12.08 hrs
Flood Elev= 63.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.90'	**18.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.90' / 57.75' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.5 cfs @ 12.08 hrs HW=59.18' (Free Discharge)
1=Culvert (Barrel Controls 4.5 cfs @ 3.77 fps)

Summary for Pond 2.11P: 21P (CB-8436)

Inflow Area = 309,190 sf, 80.71% Impervious, Inflow Depth = 5.20" for 25-YR event
Inflow = 16.6 cfs @ 12.11 hrs, Volume= 133,997 cf
Outflow = 16.6 cfs @ 12.11 hrs, Volume= 133,997 cf, Atten= 0%, Lag= 0.0 min
Primary = 16.6 cfs @ 12.11 hrs, Volume= 133,997 cf
Routed to Pond 3.35P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.94' @ 12.11 hrs
Flood Elev= 68.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.88'	**24.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.88' / 55.69' S= 0.0024 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=16.6 cfs @ 12.11 hrs HW=58.94' (Free Discharge)
1=Culvert (Barrel Controls 16.6 cfs @ 5.27 fps)

Summary for Pond 2.1P:

Inflow Area = 309,190 sf, 80.71% Impervious, Inflow Depth = 5.20" for 25-YR event
Inflow = 16.6 cfs @ 12.11 hrs, Volume= 133,997 cf
Outflow = 16.6 cfs @ 12.11 hrs, Volume= 133,997 cf, Atten= 0%, Lag= 0.0 min
Primary = 16.6 cfs @ 12.11 hrs, Volume= 133,997 cf
Routed to Pond 2.11P : 21P (CB-8436)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.94' @ 12.11 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	56.01'	**24.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 56.01' / 55.88' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=16.6 cfs @ 12.11 hrs HW=58.94' (Free Discharge)
1=Culvert (Inlet Controls 16.6 cfs @ 5.28 fps)

Summary for Pond 2P: B-34

Inflow Area = 128,980 sf, 80.23% Impervious, Inflow Depth = 5.21" for 25-YR event
Inflow = 13.4 cfs @ 12.10 hrs, Volume= 56,046 cf
Outflow = 13.4 cfs @ 12.10 hrs, Volume= 56,046 cf, Atten= 0%, Lag= 0.0 min
Primary = 13.4 cfs @ 12.10 hrs, Volume= 56,046 cf
Routed to Pond 2.1P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.26' @ 12.10 hrs
Flood Elev= 63.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**18.0" Round Culvert** L= 140.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 55.88' S= 0.0116 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=13.4 cfs @ 12.10 hrs HW=62.25' (Free Discharge)
1=Culvert (Inlet Controls 13.4 cfs @ 7.60 fps)

Summary for Pond 3.11P:

Inflow Area = 5,850 sf, 54.70% Impervious, Inflow Depth = 4.67" for 25-YR event
Inflow = 0.7 cfs @ 12.08 hrs, Volume= 2,279 cf
Outflow = 0.7 cfs @ 12.08 hrs, Volume= 2,279 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.08 hrs, Volume= 2,279 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 66.32' @ 12.08 hrs
Flood Elev= 71.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.85'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.85' / 65.50' S= 0.0117 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.7 cfs @ 12.08 hrs HW=66.32' (Free Discharge)
1=Culvert (Inlet Controls 0.7 cfs @ 1.85 fps)

Summary for Pond 3.1P:

Inflow Area = 1,450 sf, 62.07% Impervious, Inflow Depth = 4.82" for 25-YR event
Inflow = 0.2 cfs @ 12.08 hrs, Volume= 582 cf
Outflow = 0.2 cfs @ 12.08 hrs, Volume= 582 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.08 hrs, Volume= 582 cf
Routed to Pond 3.11P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.53' @ 12.08 hrs
Flood Elev= 72.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.30'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.30' / 65.90' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.2 cfs @ 12.08 hrs HW=67.52' (Free Discharge)
1=Culvert (Inlet Controls 0.2 cfs @ 1.27 fps)

Summary for Pond 3.2P:

Inflow Area = 4,400 sf, 52.27% Impervious, Inflow Depth = 4.63" for 25-YR event
Inflow = 0.5 cfs @ 12.09 hrs, Volume= 1,696 cf
Outflow = 0.5 cfs @ 12.09 hrs, Volume= 1,696 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.09 hrs, Volume= 1,696 cf
Routed to Pond 3.11P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.17' @ 12.09 hrs
Flood Elev= 70.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.77'	**12.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.77' / 65.90' S= 0.0109 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.5 cfs @ 12.09 hrs HW=67.17' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.5 cfs @ 1.70 fps)

Summary for Pond 3.31P:

Inflow Area = 39,230 sf, 85.34% Impervious, Inflow Depth = 5.27" for 25-YR event
Inflow = 4.9 cfs @ 12.08 hrs, Volume= 17,244 cf
Outflow = 4.9 cfs @ 12.08 hrs, Volume= 17,244 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.9 cfs @ 12.08 hrs, Volume= 17,244 cf
Routed to Pond 3.32P : WQ DET & SF-2

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.89' @ 12.08 hrs
Flood Elev= 70.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	61.80'	**24.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 61.80' / 61.30' S= 0.0119 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.9 cfs @ 12.08 hrs HW=62.89' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.9 cfs @ 2.81 fps)

Summary for Pond 3.32P: WQ DET & SF-2

Inflow Area = 105,340 sf, 85.47% Impervious, Inflow Depth = 5.29" for 25-YR event
Inflow = 13.2 cfs @ 12.08 hrs, Volume= 46,396 cf
Outflow = 13.0 cfs @ 12.10 hrs, Volume= 46,396 cf, Atten= 2%, Lag= 0.9 min
Primary = 0.3 cfs @ 12.10 hrs, Volume= 19,032 cf
Routed to Pond 3.34P :
Secondary = 12.7 cfs @ 12.10 hrs, Volume= 27,363 cf
Routed to Pond 3.33P : PEAK DET

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 63.04' @ 12.10 hrs Surf.Area= 1,634 sf Storage= 3,551 cf

Plug-Flow detention time= 45.1 min calculated for 46,388 cf (100% of inflow)
Center-of-Mass det. time= 45.1 min (797.7 - 752.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	60.00'	0 cf	**8.00'W x 204.25'L x 9.00'H Field A** 14,706 cf Overall - 10,166 cf Embedded = 4,540 cf x 0.0% Voids
#2A	60.00'	10,166 cf	**CMP Round 96** x 9 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +14.25' x 50.27 sf x 1 rows 8.00' Header x 50.27 sf x 1 = 402.1 cf Inside
		10,166 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	60.00'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 60.00' / 59.95' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	57.70'	**Tube/Siphon/Float Valve X 11.00** 0.668" Diameter, C= 0.600, 0.263" Trickle Diameter Starts@60.45'
#3	Primary	57.70'	**12.0" Round 12" Stormfilter Outlet** L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.70' / 57.60' S= 0.0077 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Secondary	62.40'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 2.40 2.48 2.56 2.64 2.72 2.80 2.88 2.96 3.04 3.12 3.20 3.28 3.36 3.44 3.52 3.60 3.68 3.76 3.84 3.92 4.00 4.08 4.16 4.24 4.32 4.40 4.48 4.56 4.64 4.72 4.80 4.88 4.96 5.04 5.12 5.20 5.28 5.36 5.44 5.52 5.60 5.68 5.76 5.84 5.92 6.00 6.08 6.16 6.24 6.32 6.40 6.48 6.56 6.64 6.72 6.80 6.88 6.96 7.04 7.12 7.20 7.28 7.36 7.44 7.52 7.60 7.68 7.76 7.84 7.92 8.00 Width (feet) 7.33 7.40 7.46 7.52 7.58 7.63 7.68 7.72 7.77 7.80 7.84 7.87 7.90 7.92 7.94 7.96 7.97 7.99 7.99 8.00 8.00 8.00 7.99 7.99 7.97 7.96 7.94 7.92 7.90 7.87 7.84 7.80 7.77 7.72 7.68 7.63 7.58 7.52 7.46 7.40 7.33 7.26 7.18 7.10 7.02 6.93 6.83 6.73 6.63 6.52 6.40 6.28 6.15 6.01 5.87 5.71 5.55 5.38 5.20 5.01 4.80 4.58 4.34 4.08 3.80 3.49 3.14 2.73 2.24 1.59 0.00

Primary OutFlow Max=0.3 cfs @ 12.10 hrs HW=63.04' (Free Discharge)
└**3=12" Stormfilter Outlet** (Passes 0.3 cfs of 6.6 cfs potential flow)
└**2=Tube/Siphon/Float Valve** (Orifice Controls 0.3 cfs @ 11.13 fps)
└**1=Culvert** (Passes 0.3 cfs of 6.0 cfs potential flow)

Secondary OutFlow Max=12.7 cfs @ 12.10 hrs HW=63.04' (Free Discharge)
└**4=Custom Weir/Orifice** (Weir Controls 12.7 cfs @ 2.61 fps)

Summary for Pond 3.33P: PEAK DET

Inflow = 12.7 cfs @ 12.10 hrs, Volume= 27,363 cf
Outflow = 1.9 cfs @ 12.58 hrs, Volume= 27,359 cf, Atten= 85%, Lag= 28.9 min
Primary = 1.9 cfs @ 12.58 hrs, Volume= 27,359 cf
Routed to Pond 3.34P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 63.81' @ 12.58 hrs Surf.Area= 8,323 sf Storage= 19,431 cf

Plug-Flow detention time= 763.4 min calculated for 27,354 cf (100% of inflow)
Center-of-Mass det. time= 763.7 min (1,507.1 - 743.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	60.00'	0 cf	**63.00'W x 124.00'L x 8.00'H Field A** 62,496 cf Overall - 38,152 cf Embedded = 24,344 cf x 0.0% Voids
#2A	60.00'	38,152 cf	**CMP Round 96** x 30 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +16.00' x 50.27 sf x 6 rows 63.00' Header x 50.27 sf x 1 = 3,166.7 cf Inside
#3	60.00'	3,217 cf	**CMP Round 96** x 3 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +4.00' x 50.27 sf x 1 rows
		41,368 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**2.0" Vert. DRAINDOWN ORIFICE** C= 0.600 Limited to weir flow at low heads
#2	Primary	65.50'	**0.5' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Primary	63.50'	**36.0" W x 6.0" H Vert. CAPACITY ORIFICE** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.9 cfs @ 12.58 hrs HW=63.81' (Free Discharge)
- **1=DRAINDOWN ORIFICE** (Orifice Controls 0.2 cfs @ 9.29 fps)
- **2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)
- **3=CAPACITY ORIFICE** (Orifice Controls 1.7 cfs @ 1.79 fps)

Summary for Pond 3.34P:

Inflow Area = 105,340 sf, 85.47% Impervious, Inflow Depth > 5.28" for 25-YR event
Inflow = 2.2 cfs @ 12.58 hrs, Volume= 46,391 cf
Outflow = 2.2 cfs @ 12.58 hrs, Volume= 46,391 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.2 cfs @ 12.58 hrs, Volume= 46,391 cf
Routed to Pond 3.35P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.19' @ 12.58 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**24.0" Round Culvert** L= 62.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 56.87' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.2 cfs @ 12.58 hrs HW=58.19' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.2 cfs @ 2.24 fps)

Summary for Pond 3.35P:

Inflow Area = 414,530 sf, 81.92% Impervious, Inflow Depth = 5.22" for 25-YR event
Inflow = 17.0 cfs @ 12.11 hrs, Volume= 180,388 cf
Outflow = 17.0 cfs @ 12.11 hrs, Volume= 180,388 cf, Atten= 0%, Lag= 0.0 min
Primary = 17.0 cfs @ 12.11 hrs, Volume= 180,388 cf
Routed to Pond 3P : B-32 (CB-8031)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.73' @ 12.11 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.69'	**24.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.69' / 55.62' S= 0.0028 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=17.0 cfs @ 12.11 hrs HW=58.72' (Free Discharge)
└**1=Culvert** (Inlet Controls 17.0 cfs @ 5.42 fps)

Summary for Pond 3.3P:

Inflow Area = 39,230 sf, 85.34% Impervious, Inflow Depth = 5.27" for 25-YR event
Inflow = 4.9 cfs @ 12.08 hrs, Volume= 17,244 cf
Outflow = 4.9 cfs @ 12.08 hrs, Volume= 17,244 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.9 cfs @ 12.08 hrs, Volume= 17,244 cf
Routed to Pond 3.31P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.09' @ 12.08 hrs
Flood Elev= 69.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.80'	**18.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.80' / 62.30' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.9 cfs @ 12.08 hrs HW=64.09' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.9 cfs @ 3.05 fps)

Summary for Pond 3.4P:

Inflow Area = 5,170 sf, 90.14% Impervious, Inflow Depth = 5.37" for 25-YR event
Inflow = 0.7 cfs @ 12.08 hrs, Volume= 2,313 cf
Outflow = 0.7 cfs @ 12.08 hrs, Volume= 2,313 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.08 hrs, Volume= 2,313 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.72' @ 12.08 hrs
Flood Elev= 69.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.25'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.25' / 65.45' S= 0.0160 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.7 cfs @ 12.08 hrs HW=66.72' (Free Discharge)
1=Culvert (Inlet Controls 0.7 cfs @ 1.83 fps)

Summary for Pond 3.5P:

Inflow Area = 13,630 sf, 87.97% Impervious, Inflow Depth = 5.33" for 25-YR event
Inflow = 1.7 cfs @ 12.08 hrs, Volume= 6,050 cf
Outflow = 1.7 cfs @ 12.08 hrs, Volume= 6,050 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.7 cfs @ 12.08 hrs, Volume= 6,050 cf
Routed to Pond 3.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 65.14' @ 12.08 hrs
Flood Elev= 68.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.30'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.30' / 63.80' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.7 cfs @ 12.08 hrs HW=65.13' (Free Discharge)
1=Culvert (Inlet Controls 1.7 cfs @ 2.46 fps)

Summary for Pond 3.6P:

Inflow Area = 20,710 sf, 92.08% Impervious, Inflow Depth = 5.41" for 25-YR event
Inflow = 2.6 cfs @ 12.08 hrs, Volume= 9,331 cf
Outflow = 2.6 cfs @ 12.08 hrs, Volume= 9,331 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.08 hrs, Volume= 9,331 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 64.51' @ 12.08 hrs
Flood Elev= 69.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.55'	**15.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.55' / 63.05' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.6 cfs @ 12.08 hrs HW=64.50' (Free Discharge)
1=Culvert (Inlet Controls 2.6 cfs @ 2.63 fps)

Summary for Pond 3.7P:

Inflow Area = 6,280 sf, 87.10% Impervious, Inflow Depth = 5.31" for 25-YR event
Inflow = 0.8 cfs @ 12.08 hrs, Volume= 2,778 cf
Outflow = 0.8 cfs @ 12.08 hrs, Volume= 2,778 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.08 hrs, Volume= 2,778 cf
Routed to Pond 3.5P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 65.32' @ 12.08 hrs
Flood Elev= 68.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.80'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.80' / 64.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.8 cfs @ 12.08 hrs HW=65.32' (Free Discharge)
1=Culvert (Inlet Controls 0.8 cfs @ 1.93 fps)

Summary for Pond 3P: B-32 (CB-8031)

Inflow Area = 414,530 sf, 81.92% Impervious, Inflow Depth = 5.22" for 25-YR event
Inflow = 17.0 cfs @ 12.11 hrs, Volume= 180,388 cf
Outflow = 17.0 cfs @ 12.11 hrs, Volume= 180,388 cf, Atten= 0%, Lag= 0.0 min
Primary = 17.0 cfs @ 12.11 hrs, Volume= 180,388 cf
Routed to Pond 4P : B-32A (CB-8323)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.56' @ 12.11 hrs
Flood Elev= 66.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.44' / 55.52' S= -0.0036 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=17.0 cfs @ 12.11 hrs HW=58.55' (Free Discharge)
└**1=Culvert** (Inlet Controls 17.0 cfs @ 5.42 fps)

Summary for Pond 4.21P:

Inflow Area = 11,860 sf, 82.50% Impervious, Inflow Depth = 5.29" for 25-YR event
Inflow = 1.5 cfs @ 12.08 hrs, Volume= 5,229 cf
Outflow = 1.5 cfs @ 12.08 hrs, Volume= 5,229 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.5 cfs @ 12.08 hrs, Volume= 5,229 cf
Routed to Pond 4.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.73' @ 12.08 hrs
Flood Elev= 72.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.05'	**15.0" Round Culvert** L= 82.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.05' / 66.06' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.5 cfs @ 12.08 hrs HW=67.73' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.5 cfs @ 2.21 fps)

Summary for Pond 4.2P:

Inflow Area = 11,860 sf, 82.50% Impervious, Inflow Depth = 5.29" for 25-YR event
Inflow = 1.5 cfs @ 12.08 hrs, Volume= 5,229 cf
Outflow = 1.5 cfs @ 12.08 hrs, Volume= 5,229 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.5 cfs @ 12.08 hrs, Volume= 5,229 cf
Routed to Pond 4.21P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.88' @ 12.08 hrs
Flood Elev= 72.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.20'	**15.0" Round Culvert** L= 104.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.20' / 67.16' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.5 cfs @ 12.08 hrs HW=68.88' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.5 cfs @ 2.21 fps)

Summary for Pond 4.3P:

Inflow Area = 22,490 sf, 85.42% Impervious, Inflow Depth = 5.31" for 25-YR event
Inflow = 2.8 cfs @ 12.08 hrs, Volume= 9,959 cf
Outflow = 2.8 cfs @ 12.08 hrs, Volume= 9,959 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.8 cfs @ 12.08 hrs, Volume= 9,959 cf
Routed to Pond 4.8P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.71' @ 12.08 hrs
Flood Elev= 70.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.81'	**18.0" Round Culvert** L= 105.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.81' / 64.15' S= 0.0158 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.8 cfs @ 12.08 hrs HW=66.71' (Free Discharge)
1=Culvert (Inlet Controls 2.8 cfs @ 2.55 fps)

Summary for Pond 4.4P:

Inflow Area = 11,040 sf, 83.15% Impervious, Inflow Depth = 5.23" for 25-YR event
Inflow = 1.4 cfs @ 12.08 hrs, Volume= 4,813 cf
Outflow = 1.4 cfs @ 12.08 hrs, Volume= 4,813 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.08 hrs, Volume= 4,813 cf
Routed to Pond 4.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.62' @ 12.08 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.90'	**12.0" Round Culvert** L= 83.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.90' / 66.50' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.4 cfs @ 12.08 hrs HW=68.62' (Free Discharge)
1=Culvert (Inlet Controls 1.4 cfs @ 2.28 fps)

Summary for Pond 4.5P:

Inflow Area = 5,620 sf, 62.10% Impervious, Inflow Depth = 4.82" for 25-YR event
Inflow = 0.7 cfs @ 12.08 hrs, Volume= 2,257 cf
Outflow = 0.7 cfs @ 12.08 hrs, Volume= 2,257 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.08 hrs, Volume= 2,257 cf
Routed to Pond 4.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 69.57' @ 12.08 hrs
Flood Elev= 72.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.10'	**12.0" Round Culvert** L= 122.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.10' / 66.50' S= 0.0213 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.7 cfs @ 12.08 hrs HW=69.57' (Free Discharge)
1=Culvert (Inlet Controls 0.7 cfs @ 1.84 fps)

Summary for Pond 4.6P:

Inflow Area = 25,750 sf, 80.23% Impervious, Inflow Depth = 5.17" for 25-YR event
Inflow = 3.2 cfs @ 12.08 hrs, Volume= 11,104 cf
Outflow = 3.2 cfs @ 12.08 hrs, Volume= 11,104 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.2 cfs @ 12.08 hrs, Volume= 11,104 cf
Routed to Pond 4.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.97' @ 12.08 hrs
Flood Elev= 70.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.00'	**18.0" Round Culvert** L= 77.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.00' / 64.70' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.2 cfs @ 12.08 hrs HW=66.97' (Free Discharge)
1=Culvert (Inlet Controls 3.2 cfs @ 2.64 fps)

Summary for Pond 4.7P:

Inflow Area = 31,770 sf, 83.98% Impervious, Inflow Depth = 5.25" for 25-YR event
Inflow = 4.0 cfs @ 12.08 hrs, Volume= 13,894 cf
Outflow = 4.0 cfs @ 12.08 hrs, Volume= 13,894 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.0 cfs @ 12.08 hrs, Volume= 13,894 cf
Routed to Pond 4.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.94' @ 12.08 hrs
Flood Elev= 69.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.20'	**18.0" Round Culvert X 2.00** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.20' / 63.70' S= 0.0227 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.0 cfs @ 12.08 hrs HW=64.93' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.0 cfs @ 2.30 fps)

Summary for Pond 4.81P:

Inflow Area = 66,110 sf, 85.55% Impervious, Inflow Depth = 5.29" for 25-YR event
Inflow = 8.3 cfs @ 12.08 hrs, Volume= 29,152 cf
Outflow = 8.3 cfs @ 12.08 hrs, Volume= 29,152 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.3 cfs @ 12.08 hrs, Volume= 29,152 cf
Routed to Pond 3.32P : WQ DET & SF-2

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.70' @ 12.08 hrs
Flood Elev= 69.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.20'	**24.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.20' / 62.80' S= 0.0267 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.3 cfs @ 12.08 hrs HW=64.70' (Free Discharge)
└**1=Culvert** (Inlet Controls 8.3 cfs @ 3.29 fps)

Summary for Pond 4.8P:

Inflow Area = 34,340 sf, 87.00% Impervious, Inflow Depth = 5.33" for 25-YR event
Inflow = 4.3 cfs @ 12.08 hrs, Volume= 15,258 cf
Outflow = 4.3 cfs @ 12.08 hrs, Volume= 15,258 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.3 cfs @ 12.08 hrs, Volume= 15,258 cf
Routed to Pond 4.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.67' @ 12.08 hrs
Flood Elev= 68.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.65'	**24.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.65' / 63.30' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.3 cfs @ 12.08 hrs HW=64.67' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.3 cfs @ 2.71 fps)

Summary for Pond 4P: B-32A (CB-8323)

Inflow Area = 445,070 sf, 79.79% Impervious, Inflow Depth = 5.19" for 25-YR event
Inflow = 19.8 cfs @ 12.18 hrs, Volume= 192,599 cf
Outflow = 19.8 cfs @ 12.18 hrs, Volume= 192,599 cf, Atten= 0%, Lag= 0.0 min
Primary = 19.8 cfs @ 12.18 hrs, Volume= 192,599 cf
Routed to Link POA-1 : B-30
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA-1 : B-30

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.27' @ 12.18 hrs
Flood Elev= 59.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.52' / 54.90' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	59.39'	**15.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=19.8 cfs @ 12.18 hrs HW=59.27' (Free Discharge)
1=Culvert (Inlet Controls 19.8 cfs @ 6.30 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=55.52' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond 5P:

Inflow Area = 20,660 sf, 50.80% Impervious, Inflow Depth = 4.80" for 25-YR event
Inflow = 2.5 cfs @ 12.08 hrs, Volume= 8,261 cf
Outflow = 2.5 cfs @ 12.08 hrs, Volume= 8,261 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.5 cfs @ 12.08 hrs, Volume= 8,261 cf
Routed to Link POA-2 :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 60.91' @ 12.08 hrs
Flood Elev= 66.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 59.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.4 cfs @ 12.08 hrs HW=60.91' (Free Discharge)
1=Culvert (Inlet Controls 2.4 cfs @ 2.56 fps)

Summary for Pond 6P:

Inflow Area = 64,300 sf, 76.42% Impervious, Inflow Depth = 5.11" for 25-YR event
Inflow = 5.9 cfs @ 12.16 hrs, Volume= 27,403 cf
Outflow = 5.9 cfs @ 12.16 hrs, Volume= 27,403 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.9 cfs @ 12.16 hrs, Volume= 27,403 cf
Routed to Pond 2P : B-34
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 2P : B-34

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.61' @ 12.16 hrs
Flood Elev= 71.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.08'	**12.0" Round Culvert** L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.08' / 57.67' S= 0.0147 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	70.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=5.9 cfs @ 12.16 hrs HW=68.60' (Free Discharge)
1=Culvert (Barrel Controls 5.9 cfs @ 7.52 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=62.08' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond 7P:

Inflow Area = 45,290 sf, 74.03% Impervious, Inflow Depth = 5.03" for 25-YR event
Inflow = 4.6 cfs @ 12.15 hrs, Volume= 18,973 cf
Outflow = 4.6 cfs @ 12.15 hrs, Volume= 18,973 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.6 cfs @ 12.15 hrs, Volume= 18,973 cf
Routed to Link POA-4 :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.89' @ 12.15 hrs
Flood Elev= 69.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.00'	**12.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.00' / 64.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.6 cfs @ 12.15 hrs HW=67.88' (Free Discharge)
1=Culvert (Inlet Controls 4.6 cfs @ 5.87 fps)

Summary for Pond 8.10P:

Inflow Area = 8,440 sf, 92.00% Impervious, Inflow Depth = 5.41" for 25-YR event
Inflow = 1.1 cfs @ 12.08 hrs, Volume= 3,802 cf
Outflow = 1.1 cfs @ 12.08 hrs, Volume= 3,802 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.1 cfs @ 12.08 hrs, Volume= 3,802 cf
Routed to Pond 8.9P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.92' @ 12.08 hrs
Flood Elev= 72.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.30'	**12.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.30' / 68.75' S= 0.0367 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.1 cfs @ 12.08 hrs HW=69.92' (Free Discharge)
1=Culvert (Inlet Controls 1.1 cfs @ 2.11 fps)

Summary for Pond 8.111P:

Inflow Area = 29,240 sf, 88.61% Impervious, Inflow Depth = 5.34" for 25-YR event
Inflow = 3.7 cfs @ 12.08 hrs, Volume= 13,009 cf
Outflow = 3.7 cfs @ 12.08 hrs, Volume= 13,009 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.7 cfs @ 12.08 hrs, Volume= 13,009 cf
Routed to Pond 8.82P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.01' @ 12.08 hrs
Flood Elev= 74.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.95'	**18.0" Round Culvert** L= 160.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.95' / 66.30' S= 0.0103 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.7 cfs @ 12.08 hrs HW=69.01' (Free Discharge)
1=Culvert (Inlet Controls 3.7 cfs @ 2.77 fps)

Summary for Pond 8.11P:

Inflow Area = 26,900 sf, 87.62% Impervious, Inflow Depth = 5.32" for 25-YR event
Inflow = 3.4 cfs @ 12.08 hrs, Volume= 11,924 cf
Outflow = 3.4 cfs @ 12.08 hrs, Volume= 11,924 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.4 cfs @ 12.08 hrs, Volume= 11,924 cf
Routed to Pond 8.111P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 71.10' @ 12.08 hrs
Flood Elev= 73.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.95'	**15.0" Round Culvert** L= 144.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.95' / 68.20' S= 0.0122 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.4 cfs @ 12.08 hrs HW=71.10' (Free Discharge)
↑**1=Culvert** (Inlet Controls 3.4 cfs @ 2.88 fps)

Summary for Pond 8.12P:

Inflow Area = 2,340 sf,100.00% Impervious, Inflow Depth = 5.56" for 25-YR event
Inflow = 0.3 cfs @ 12.08 hrs, Volume= 1,085 cf
Outflow = 0.3 cfs @ 12.08 hrs, Volume= 1,085 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.08 hrs, Volume= 1,085 cf
Routed to Pond 8.111P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.06' @ 12.08 hrs
Flood Elev= 74.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.75'	**12.0" Round Culvert** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.75' / 69.30' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.3 cfs @ 12.08 hrs HW=71.06' (Free Discharge)
↑**1=Culvert** (Inlet Controls 0.3 cfs @ 1.49 fps)

Summary for Pond 8.21P:

Inflow Area = 19,350 sf, 84.44% Impervious, Inflow Depth = 5.26" for 25-YR event
Inflow = 2.4 cfs @ 12.08 hrs, Volume= 8,477 cf
Outflow = 2.4 cfs @ 12.08 hrs, Volume= 8,477 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.4 cfs @ 12.08 hrs, Volume= 8,477 cf
Routed to Pond 8.22P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.74' @ 12.08 hrs
Flood Elev= 76.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	**24.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.00' / 68.60' S= 0.0240 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.4 cfs @ 12.08 hrs HW=71.74' (Free Discharge)
1=Culvert (Inlet Controls 2.4 cfs @ 2.31 fps)

Summary for Pond 8.22P:

Inflow Area = 41,770 sf, 81.04% Impervious, Inflow Depth = 5.19" for 25-YR event
Inflow = 5.2 cfs @ 12.08 hrs, Volume= 18,067 cf
Outflow = 5.2 cfs @ 12.08 hrs, Volume= 18,067 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.2 cfs @ 12.08 hrs, Volume= 18,067 cf
Routed to Pond 8.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.62' @ 12.08 hrs
Flood Elev= 75.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.50'	**24.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.50' / 68.10' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.2 cfs @ 12.08 hrs HW=69.62' (Free Discharge)
1=Culvert (Inlet Controls 5.2 cfs @ 2.85 fps)

Summary for Pond 8.2P:

Inflow Area = 19,350 sf, 84.44% Impervious, Inflow Depth = 5.26" for 25-YR event
Inflow = 2.4 cfs @ 12.08 hrs, Volume= 8,477 cf
Outflow = 2.4 cfs @ 12.08 hrs, Volume= 8,477 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.4 cfs @ 12.08 hrs, Volume= 8,477 cf
Routed to Pond 8.21P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 74.52' @ 12.08 hrs
Flood Elev= 79.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.70'	**18.0" Round Culvert** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.70' / 71.50' S= 0.0183 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.4 cfs @ 12.08 hrs HW=74.52' (Free Discharge)
1=Culvert (Inlet Controls 2.4 cfs @ 2.44 fps)

Summary for Pond 8.3P:

Inflow Area = 99,100 sf, 78.48% Impervious, Inflow Depth = 5.14" for 25-YR event
Inflow = 12.2 cfs @ 12.08 hrs, Volume= 42,448 cf
Outflow = 12.2 cfs @ 12.08 hrs, Volume= 42,448 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.2 cfs @ 12.08 hrs, Volume= 42,448 cf
Routed to Pond 8.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.04' @ 12.08 hrs
Flood Elev= 74.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.00'	**24.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.00' / 67.20' S= 0.0178 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.2 cfs @ 12.08 hrs HW=70.04' (Free Discharge)
1=Culvert (Inlet Controls 12.2 cfs @ 3.88 fps)

Summary for Pond 8.4P:

Inflow Area = 22,420 sf, 78.10% Impervious, Inflow Depth = 5.13" for 25-YR event
Inflow = 2.8 cfs @ 12.08 hrs, Volume= 9,590 cf
Outflow = 2.8 cfs @ 12.08 hrs, Volume= 9,590 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.8 cfs @ 12.08 hrs, Volume= 9,590 cf
Routed to Pond 8.22P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.98' @ 12.08 hrs
Flood Elev= 75.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**15.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.00' / 69.35' S= 0.0163 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.8 cfs @ 12.08 hrs HW=70.98' (Free Discharge)
1=Culvert (Inlet Controls 2.8 cfs @ 2.66 fps)

Summary for Pond 8.5P:

Inflow Area = 9,090 sf, 0.00% Impervious, Inflow Depth = 3.60" for 25-YR event
Inflow = 0.9 cfs @ 12.09 hrs, Volume= 2,728 cf
Outflow = 0.9 cfs @ 12.09 hrs, Volume= 2,728 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.9 cfs @ 12.09 hrs, Volume= 2,728 cf
Routed to Pond 8.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 75.00' @ 12.09 hrs
Flood Elev= 77.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.45'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.45' / 73.35' S= 0.0220 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.9 cfs @ 12.09 hrs HW=75.00' (Free Discharge)
1=Culvert (Inlet Controls 0.9 cfs @ 1.99 fps)

Summary for Pond 8.6P:

Inflow Area = 11,120 sf, 70.91% Impervious, Inflow Depth = 4.99" for 25-YR event
Inflow = 1.3 cfs @ 12.08 hrs, Volume= 4,626 cf
Outflow = 1.3 cfs @ 12.08 hrs, Volume= 4,626 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.3 cfs @ 12.08 hrs, Volume= 4,626 cf
Routed to Pond 8.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.93' @ 12.08 hrs
Flood Elev= 75.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.30'	**15.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.30' / 70.10' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.3 cfs @ 12.08 hrs HW=71.93' (Free Discharge)
1=Culvert (Inlet Controls 1.3 cfs @ 2.14 fps)

Summary for Pond 8.7P:

Inflow Area = 115,300 sf, 75.85% Impervious, Inflow Depth = 5.09" for 25-YR event
Inflow = 14.1 cfs @ 12.08 hrs, Volume= 48,892 cf
Outflow = 14.1 cfs @ 12.08 hrs, Volume= 48,892 cf, Atten= 0%, Lag= 0.0 min
Primary = 14.1 cfs @ 12.08 hrs, Volume= 48,892 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.74' @ 12.08 hrs
Flood Elev= 73.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.90'	**30.0" Round Culvert** L= 57.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.90' / 66.25' S= 0.0114 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=14.1 cfs @ 12.08 hrs HW=68.74' (Free Discharge)
└**1=Culvert** (Inlet Controls 14.1 cfs @ 3.64 fps)

Summary for Pond 8.81P:

Inflow Area = 150,970 sf, 79.60% Impervious, Inflow Depth = 5.16" for 25-YR event
Inflow = 18.6 cfs @ 12.08 hrs, Volume= 64,942 cf
Outflow = 18.6 cfs @ 12.08 hrs, Volume= 64,942 cf, Atten= 0%, Lag= 0.0 min
Primary = 18.6 cfs @ 12.08 hrs, Volume= 64,942 cf
Routed to Pond 8.82P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.34' @ 12.08 hrs
Flood Elev= 74.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.25'	**36.0" Round Culvert** L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.25' / 66.00' S= 0.0192 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=18.6 cfs @ 12.08 hrs HW=68.34' (Free Discharge)
└**1=Culvert** (Barrel Controls 18.6 cfs @ 4.99 fps)

Summary for Pond 8.82P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 5.19" for 25-YR event
Inflow = 22.4 cfs @ 12.08 hrs, Volume= 77,951 cf
Outflow = 22.4 cfs @ 12.08 hrs, Volume= 77,951 cf, Atten= 0%, Lag= 0.0 min
Primary = 22.4 cfs @ 12.08 hrs, Volume= 77,951 cf
Routed to Pond 8.83P : WQ DET & SF-1

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.67' @ 12.08 hrs
Flood Elev= 75.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.25'	**36.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.25' / 65.10' S= 0.0214 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=22.3 cfs @ 12.08 hrs HW=67.67' (Free Discharge)
└**1=Culvert** (Barrel Controls 22.3 cfs @ 5.00 fps)

Summary for Pond 8.83P: WQ DET & SF-1

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 5.19" for 25-YR event
Inflow = 22.4 cfs @ 12.08 hrs, Volume= 77,951 cf
Outflow = 22.3 cfs @ 12.09 hrs, Volume= 77,951 cf, Atten= 0%, Lag= 0.3 min
Primary = 0.5 cfs @ 12.09 hrs, Volume= 31,184 cf
Routed to Pond 8.85P :
Secondary = 21.8 cfs @ 12.09 hrs, Volume= 46,767 cf
Routed to Pond 8.84P : Peak DET-1

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.63' @ 12.09 hrs Surf.Area= 1,115 sf Storage= 5,179 cf

Plug-Flow detention time= 48.9 min calculated for 77,938 cf (100% of inflow)
Center-of-Mass det. time= 48.9 min (803.7 - 754.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	62.50'	0 cf	**10.00'W x 111.50'L x 8.00'H Field A** 8,920 cf Overall - 5,504 cf Embedded = 3,416 cf x 0.0% Voids
#2A	62.50'	5,504 cf	**CMP Round 96** x 5 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +1.50' x 50.27 sf x 1 rows 8.00' Header x 50.27 sf x 1 = 402.1 cf Inside
		5,504 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	62.50'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 62.50' / 62.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	60.60'	**Tube/Siphon/Float Valve X 18.00** 0.586" Diameter, C= 0.600, 0.263" Trickle Diameter Starts@63.35'
#3	Primary	60.60'	**12.0" Round 12" Stormfilter Outlet** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.60' / 60.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Secondary	68.58'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 6.08 6.16 6.24 6.32 6.40 6.48 6.56 6.64 6.72 6.80 6.88 6.96 7.04 7.12 7.20 7.28 7.36 7.44 7.52 7.60 7.68 7.76 7.84 7.92 8.00 Width (feet) 6.83 6.73 6.63 6.52 6.40 6.28 6.15 6.01 5.87 5.71 5.55 5.38 5.20 5.01 4.80 4.58 4.34 4.08 3.80 3.49 3.14 2.73 2.24 1.59 0.00

Primary OutFlow Max=0.5 cfs @ 12.09 hrs HW=69.63' (Free Discharge)
└**3=12" Stormfilter Outlet** (Passes 0.5 cfs of 8.7 cfs potential flow)
└**2=Tube/Siphon/Float Valve** (Orifice Controls 0.5 cfs @ 14.47 fps)
└**1=Culvert** (Passes 0.5 cfs of 9.7 cfs potential flow)

Secondary OutFlow Max=21.8 cfs @ 12.09 hrs HW=69.63' (Free Discharge)
└**4=Custom Weir/Orifice** (Weir Controls 21.8 cfs @ 3.46 fps)

Summary for Pond 8.84P: Peak DET-1

Inflow = 21.8 cfs @ 12.09 hrs, Volume= 46,767 cf
Outflow = 7.5 cfs @ 12.35 hrs, Volume= 46,766 cf, Atten= 66%, Lag= 15.6 min
Primary = 7.5 cfs @ 12.35 hrs, Volume= 46,766 cf
Routed to Pond 8.85P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.56' @ 12.35 hrs Surf.Area= 10,780 sf Storage= 25,516 cf

Plug-Flow detention time= 265.4 min calculated for 46,759 cf (100% of inflow)
Center-of-Mass det. time= 265.7 min (1,008.4 - 742.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	62.50'	0 cf	**98.00'W x 110.00'L x 8.00'H Field A** 86,240 cf Overall - 50,064 cf Embedded = 36,176 cf x 0.0% Voids
#2A	62.50'	50,064 cf	**CMP Round 96** x 45 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L 45 Chambers in 9 Rows 96.00' Header x 50.27 sf x 1 = 4,825.5 cf Inside
		50,064 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**6.0' 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
#2	Primary	66.00'	**36.0" W x 12.0" H Vert. OVERFLOW ORIFICE** C= 0.600 Limited to weir flow at low heads
#3	Primary	62.50'	**2.0" Vert. DRAINDOWN ORIFICE** C= 0.600 Limited to weir flow at low heads
#4	Primary	64.50'	**6.0" W x 6.0" H Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.5 cfs @ 12.35 hrs HW=66.56' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)
└**2=OVERFLOW ORIFICE** (Orifice Controls 4.0 cfs @ 2.40 fps)
└**3=DRAINDOWN ORIFICE** (Orifice Controls 0.2 cfs @ 9.60 fps)
└**4=Orifice/Grate** (Orifice Controls 3.2 cfs @ 6.47 fps)

Summary for Pond 8.85P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 5.19" for 25-YR event
Inflow = 8.0 cfs @ 12.35 hrs, Volume= 77,951 cf
Outflow = 8.0 cfs @ 12.35 hrs, Volume= 77,951 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.0 cfs @ 12.35 hrs, Volume= 77,951 cf
Routed to Pond 8.96P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.66' @ 12.35 hrs
Flood Elev= 73.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.50'	**18.0" Round Culvert** L= 226.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.50' / 58.60' S= 0.0084 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.0 cfs @ 12.35 hrs HW=62.66' (Free Discharge)
1=Culvert (Inlet Controls 8.0 cfs @ 4.51 fps)

Summary for Pond 8.8P:

Inflow Area = 9,920 sf, 83.06% Impervious, Inflow Depth = 5.23" for 25-YR event
Inflow = 1.2 cfs @ 12.08 hrs, Volume= 4,323 cf
Outflow = 1.2 cfs @ 12.08 hrs, Volume= 4,323 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.08 hrs, Volume= 4,323 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.11' @ 12.08 hrs
Flood Elev= 75.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.50'	**15.0" Round Culvert** L= 23.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.50' / 70.00' S= 0.0217 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.2 cfs @ 12.08 hrs HW=71.11' (Free Discharge)
1=Culvert (Inlet Controls 1.2 cfs @ 2.09 fps)

Summary for Pond 8.96P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 5.19" for 25-YR event
Inflow = 8.0 cfs @ 12.35 hrs, Volume= 77,951 cf
Outflow = 8.0 cfs @ 12.35 hrs, Volume= 77,951 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.0 cfs @ 12.35 hrs, Volume= 77,951 cf
Routed to Pond 2.1P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 60.66' @ 12.35 hrs
Flood Elev= 68.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	58.50'	**18.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 58.50' / 56.01' S= 0.0311 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.0 cfs @ 12.35 hrs HW=60.66' (Free Discharge)
1=Culvert (Inlet Controls 8.0 cfs @ 4.51 fps)

Summary for Pond 8.9P:

Inflow Area = 25,750 sf, 95.03% Impervious, Inflow Depth = 5.46" for 25-YR event
Inflow = 3.3 cfs @ 12.08 hrs, Volume= 11,726 cf
Outflow = 3.3 cfs @ 12.08 hrs, Volume= 11,726 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.3 cfs @ 12.08 hrs, Volume= 11,726 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.13' @ 12.08 hrs
Flood Elev= 73.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.40'	**12.0" Round Culvert** L= 18.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.40' / 68.75' S= 0.0361 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.3 cfs @ 12.08 hrs HW=71.13' (Free Discharge)
1=Culvert (Inlet Controls 3.3 cfs @ 4.21 fps)

Summary for Pond 8P:

Inflow Area = 13,930 sf, 49.61% Impervious, Inflow Depth = 4.46" for 25-YR event
Inflow = 1.5 cfs @ 12.09 hrs, Volume= 5,180 cf
Outflow = 1.5 cfs @ 12.09 hrs, Volume= 5,180 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.5 cfs @ 12.09 hrs, Volume= 5,180 cf
Routed to Pond 6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 61.35' @ 12.09 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.58'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.58' / 59.88' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.5 cfs @ 12.09 hrs HW=61.35' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.5 cfs @ 2.36 fps)

Summary for Link POA-1: B-30

Inflow Area = 445,070 sf, 79.79% Impervious, Inflow Depth = 5.19" for 25-YR event
Inflow = 19.8 cfs @ 12.18 hrs, Volume= 192,599 cf
Primary = 19.8 cfs @ 12.18 hrs, Volume= 192,599 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-2:

Inflow Area = 20,660 sf, 50.80% Impervious, Inflow Depth = 4.80" for 25-YR event
Inflow = 2.5 cfs @ 12.08 hrs, Volume= 8,261 cf
Primary = 2.5 cfs @ 12.08 hrs, Volume= 8,261 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-3:

Inflow Area = 6,800 sf, 0.00% Impervious, Inflow Depth = 3.82" for 25-YR event
Inflow = 0.7 cfs @ 12.09 hrs, Volume= 2,163 cf
Primary = 0.7 cfs @ 12.09 hrs, Volume= 2,163 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-4:

Inflow Area = 45,290 sf, 74.03% Impervious, Inflow Depth = 5.03" for 25-YR event
Inflow = 4.6 cfs @ 12.15 hrs, Volume= 18,973 cf
Primary = 4.6 cfs @ 12.15 hrs, Volume= 18,973 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

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Summary for Pond 6P:

Inflow Area = 148,505 sf, 34.60% Impervious, Inflow Depth = 4.17" for 25-YR event
Inflow = 9.5 cfs @ 12.23 hrs, Volume= 51,602 cf
Outflow = 9.5 cfs @ 12.23 hrs, Volume= 51,602 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.5 cfs @ 12.23 hrs, Volume= 48,670 cf
Secondary = 3.0 cfs @ 12.23 hrs, Volume= 2,932 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.69' @ 12.23 hrs
Flood Elev= 71.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.08'	**12.0" Round Culvert** L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.08' / 57.67' S= 0.0147 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	70.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=6.5 cfs @ 12.23 hrs HW=70.69' (Free Discharge)
└**1=Culvert** (Barrel Controls 6.5 cfs @ 8.27 fps)

Secondary OutFlow Max=2.9 cfs @ 12.23 hrs HW=70.69' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 2.9 cfs @ 1.24 fps)

Summary for Pond 7P:

Inflow Area = 71,445 sf, 40.30% Impervious, Inflow Depth = 4.55" for 25-YR event
Inflow = 5.0 cfs @ 12.34 hrs, Volume= 27,091 cf
Outflow = 5.0 cfs @ 12.34 hrs, Volume= 27,091 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.0 cfs @ 12.34 hrs, Volume= 27,091 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.28' @ 12.34 hrs
Flood Elev= 69.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.00'	**12.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.00' / 64.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=5.0 cfs @ 12.34 hrs HW=68.27' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.0 cfs @ 6.33 fps)

Summary for Pond 8P:

Inflow Area = 84,725 sf, 9.68% Impervious, Inflow Depth = 3.60" for 25-YR event
Inflow = 4.7 cfs @ 12.39 hrs, Volume= 25,399 cf
Outflow = 4.7 cfs @ 12.39 hrs, Volume= 25,399 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.7 cfs @ 12.39 hrs, Volume= 25,399 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.50' @ 12.39 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.50' / 62.18' S= 0.0189 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.7 cfs @ 12.39 hrs HW=66.50' (Free Discharge)
1=Culvert (Inlet Controls 4.7 cfs @ 6.00 fps)

Summary for Pond 21P: 21P (CB-8436)

Inflow Area = 206,895 sf, 48.15% Impervious, Inflow Depth = 4.49" for 25-YR event
Inflow = 14.3 cfs @ 12.12 hrs, Volume= 77,433 cf
Outflow = 14.3 cfs @ 12.12 hrs, Volume= 77,433 cf, Atten= 0%, Lag= 0.0 min
Primary = 14.3 cfs @ 12.12 hrs, Volume= 77,433 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.59' @ 12.12 hrs
Flood Elev= 67.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.88'	**24.0" Round Culvert** L= 90.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.88' / 55.62' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=14.3 cfs @ 12.12 hrs HW=58.59' (Free Discharge)
1=Culvert (Barrel Controls 14.3 cfs @ 4.54 fps)

Summary for Link POA-1: B-30

Inflow Area = 395,015 sf, 40.02% Impervious, Inflow Depth = 4.65" for 25-YR event
Inflow = 27.0 cfs @ 12.12 hrs, Volume= 153,175 cf
Primary = 27.0 cfs @ 12.12 hrs, Volume= 153,175 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-2:

Inflow Area = 35,560 sf, 28.26% Impervious, Inflow Depth = 5.28" for 25-YR event
Inflow = 4.5 cfs @ 12.08 hrs, Volume= 15,635 cf
Primary = 4.5 cfs @ 12.08 hrs, Volume= 15,635 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-3:

Inflow Area = 15,800 sf, 0.00% Impervious, Inflow Depth = 3.91" for 25-YR event
Inflow = 1.6 cfs @ 12.09 hrs, Volume= 5,143 cf
Primary = 1.6 cfs @ 12.09 hrs, Volume= 5,143 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-4:

Inflow Area = 71,445 sf, 40.30% Impervious, Inflow Depth = 4.55" for 25-YR event
Inflow = 5.0 cfs @ 12.34 hrs, Volume= 27,091 cf
Primary = 5.0 cfs @ 12.34 hrs, Volume= 27,091 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Appendix 3

Inspection, Maintenance and Housekeeping Plan

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

For:
Portland International Jetport (PWM) Parking Expansion
Portland, ME

By:
Sebago Technics, Inc.
75 John Roberts Road, Suite 4A
South Portland, Maine

Introduction

The following plan outlines the anticipated inspection and maintenance procedures for the erosion and sedimentation control measures as well as stormwater management facilities for the project. This plan also outlines several housekeeping requirements that shall be followed during and after construction. These procedures shall be followed in order to ensure the intended function of the designed measures and to prevent unreasonably adverse impacts to the surrounding environment.

The procedures outlined in this Inspection, Maintenance and Housekeeping Plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the Maine Department of Environmental Protection (MDEP).

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event (0.5" of rainfall), and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (0.5" of rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed

to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Sediment Barriers:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event (0.5" of rainfall). They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

C. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

D. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.
- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains

into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

E. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

F. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.

B. Groundwater protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

C. Fugitive sediment and dust: Actions must be taken to 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.

D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

E. Trench or foundation dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area

that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

Post-Construction

1. **Inspection:** After construction, it is the responsibility of the owner or assigned heirs to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. The owner shall inspect and maintain the BMPs, including but not limited to any parking areas, catch basins, drainage swales, detention basins and ponds, pipes and related structures, in accordance with all municipal and state inspection, cleaning and maintenance requirements of the approved post-construction stormwater management plan.

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction. If the BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator of the BMP shall take corrective action(s) to address the deficiency or deficiencies as soon as possible after the deficiency is discovered and shall provide a record of the deficiency and corrective action(s) to the local municipality in the annual report.

   A. Vegetated Areas:

   - Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains (>0.5”) to identify active or potential erosion problems.
   - Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. Ditches, Swales and Other Open Channels:

   - Inspect ditches, swales, level spreaders and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow, and repair any erosion of the ditch lining.
   - Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
   - Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
   - If the ditch has a riprap lining, replace riprap in areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged.

C. Culverts:

- Inspect culverts in the spring, in the late fall, and after heavy rains (>0.5") to remove any obstructions to flow.
- Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
- Inspect and repair any erosion damage at the culvert's inlet and outlet.

D. Removal of Winter Sand:

- Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring.
- Accumulations on pavement may be removed by pavement sweeping.
- Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader or other acceptable method.

E. Stormfilter:

- Refer to the Contech – Stormfilter Operation Manual for guidance on required maintenance and inspection.

3. Documentation:

A. The owner or operator of a BMP or a qualified post-construction stormwater inspector hired by that person, shall, as required by the local municipality, provide a completed and signed certification on a form provided by the local municipality, certifying that the person has inspected the BMP(s) and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they required maintenance or repair, including the record of the deficiency and corrective action(s) taken.

B. A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. A sample "Stormwater Inspection and Maintenance Form" has been included as Attachment 1 of this Inspection, Maintenance, and Housekeeping Plan.

4. Duration of Maintenance: Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

ATTACHMENT 1 – STORMWATER INSPECTION AND MAINTENANCE LOG

Portland International Jetport (PWM) Parking Expansion
Portland, ME

This log is intended to accompany the Inspection, Maintenance, and Housekeeping Plan for the parking expansion at the Portland International Jetport (PWM) in Portland, Maine. The following items shall be checked, cleaned, and maintained on a regular basis as specified in the Maintenance Plan and as described in the sections below. This log shall be kept on file for a minimum of five (5) years and shall be available for review by the City of Portland and the Maine DEP. Qualified personnel familiar with the drainage systems and soils shall perform all inspections. A copy of the construction and post-construction maintenance logs are provided.

INSPECTION MAINTENANCE AND HOUSEKEEPING FORM			
General Information			
Project Name:		**Inspection Date:**	
Project Location:		**Current Weather:**	
		Date / Amount Last Precip:	
BMP Owner:		**Company conducting inspection:**	
Owner Mailing Address:		**Company Mailing Address**	
Owner Phone #:		**Company Phone #:**	
Owner Email:		**Inspector Name:**	
		Inspector Email:	
Site Element	**Suggested Maintenance (recm'd frequency)**	**Observations**	**Inspection Notes/Recommended Action**
Vegetated Areas	Inspect Slopes/Embankments for erosion (annually)		
	Replant bare areas or areas of sparse growth (annually)		
Ditches/Swales	Remove obstructions/debris/sediment (monthly)		
	Inspect for erosion/repair as needed (annually)		
	Remove woody vegetation (annually)		
	Mow vegetated ditches (annually)		
Catch Basins	Remove sediment/debris from sump (annually)		
	Remove accumulated debris from inlet grate		
Culverts	Remove sediment/debris from inlet/outlet aprons (annually)		
	Inspect inlet/outlet aprons for erosion, repair as needed (annually)		
	Inspect, repair as needed, riprap aprons for dislodged/sparse coverage (annually)		
Pipe Outlets	Remove sediment/debris from outlet aprons (annually)		
	Inspect outlet aprons for erosion, repair as needed (annually)		
	Inspect, repair as needed, riprap aprons for dislodged/sparse coverage (annually)		
Stormfilter	Inspect Anually		
Additional Notes/Observations:			

Appendix 4

Subsurface Investigations

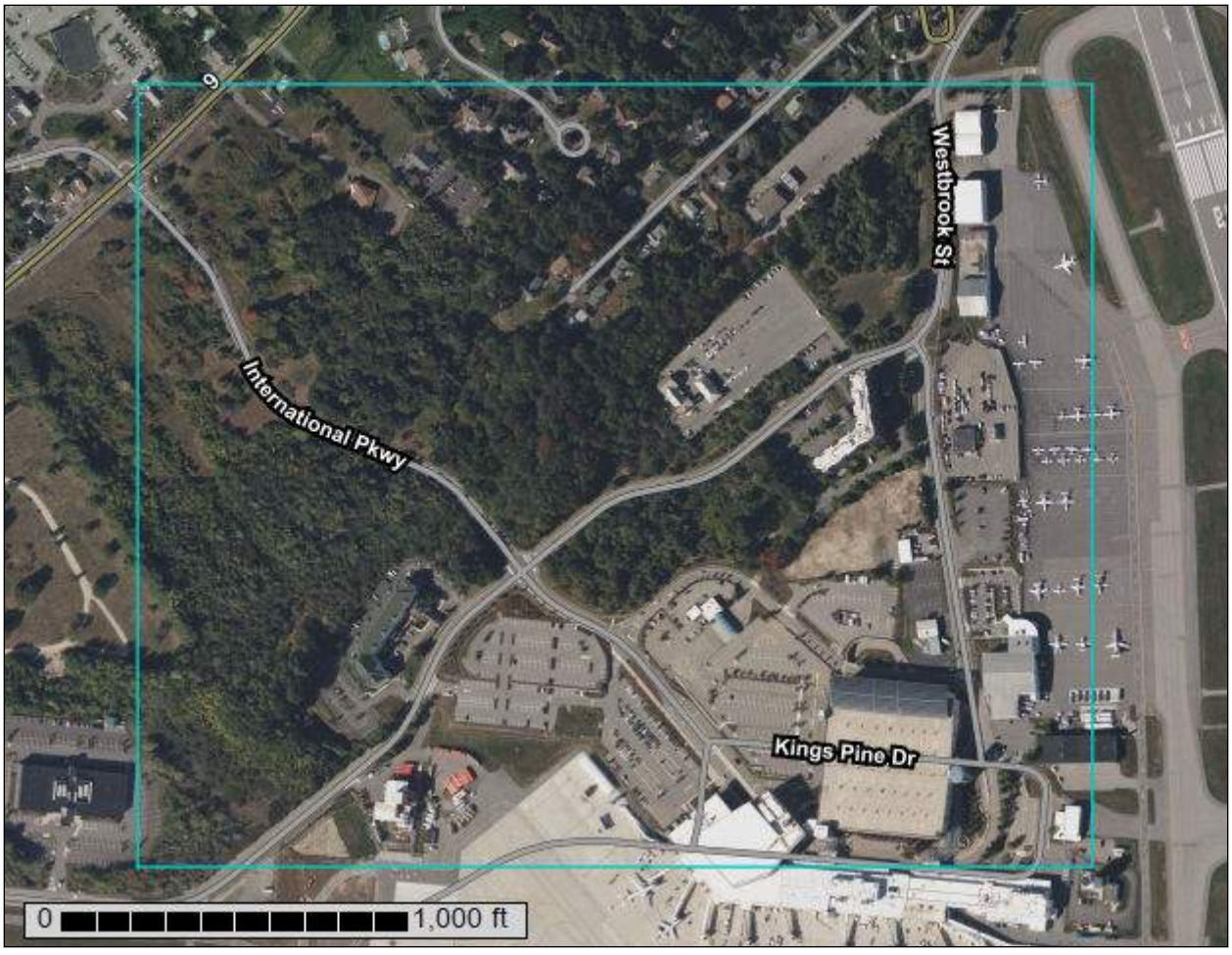
United States Department of Agriculture

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



August 14, 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.

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

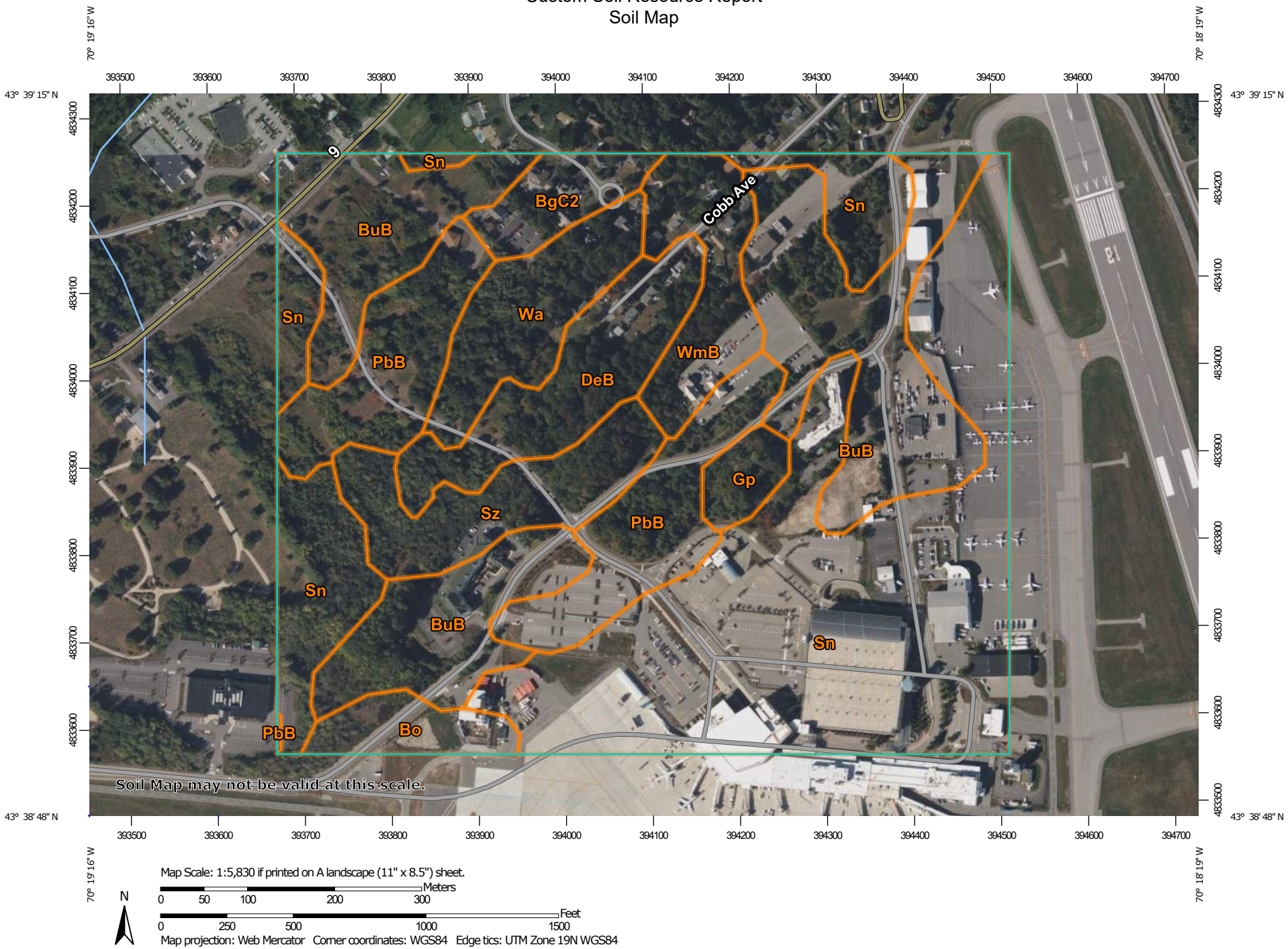
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Soil Map

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.


70° 19' 16" W
70° 18' 19" W
43° 39' 15" N
43° 38' 48" N
393500
393600
393700
393800
393900
394000
394100
394200
394300
394400
394500
394600
394700
4834300
4834200
4834100
4834000
4833900
4833800
4833700
4833600
4833500
9
Cobb Ave
Sn
BgC2
BuB
Wa
WmB
PbB
DeB
Gp
Sz
Bo
Soil Map may not be valid at this scale.
Map Scale: 1:5,830 if printed on A landscape (11" x 8.5") sheet.
Meters
0 50 100 200 300
Feet
0 250 500 1000 1500
N
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—Oct 7, 2021

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
BgC2	Nicholville very fine sandy loam, 8 to 15 percent slopes	3.6	2.5%
Bo	Biddeford mucky peat, 0 to 3 percent slopes	3.3	2.3%
BuB	Lamoine silt loam, 3 to 8 percent slopes	32.7	22.8%
DeB	Deerfield loamy fine sand, 3 to 8 percent slopes	8.9	6.2%
Gp	Gravel pits	2.0	1.4%
PbB	Paxton fine sandy loam, 3 to 8 percent slopes	16.1	11.2%
Sn	Scantic silt loam, 0 to 3 percent slopes	54.6	38.0%
Sz	Swanton fine sandy loam	8.3	5.7%
Wa	Walpole fine sandy loam	7.4	5.1%
WmB	Windsor loamy sand, 0 to 8 percent slopes	6.8	4.7%
Totals for Area of Interest		**143.6**	**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

BgC2—Nicholville very fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2yjg6
Elevation: 20 to 2,300 feet
Mean annual precipitation: 34 to 50 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Nicholville and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nicholville

Setting

Landform: Lakebeds (relict), eskers
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciomarine deposits

Typical profile

Ap - 0 to 7 inches: very fine sandy loam
Bs - 7 to 19 inches: very fine sandy loam
BC - 19 to 30 inches: very fine sandy loam
C - 30 to 65 inches: loamy very fine sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 18 to 30 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: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F144BY501ME - Loamy Slope (Northern Hardwoods)
Hydric soil rating: No

Bo—Biddeford mucky peat, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2t0jn
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

Biddeford and similar soils: 82 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Biddeford

Setting

Landform: Marine terraces, river valleys
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave, linear
Parent material: Organic material over glaciomarine deposits

Typical profile

Oe - 0 to 12 inches: mucky peat
Eg - 12 to 16 inches: silt loam
Bg - 16 to 45 inches: silty clay
Cg - 45 to 65 inches: clay

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very 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 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: D
Ecological site: F144BY002ME - Marine Terrace Depression, F144BY304ME - Wet Clay Flat
Hydric soil rating: Yes

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: Marine terraces, river valleys
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

DeB—Deerfield loamy fine sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2xfg9
Elevation: 0 to 1,190 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Deerfield and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deerfield

Setting

Landform: Kame terraces, outwash plains, outwash terraces, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy outwash derived from granite, gneiss, and/or quartzite

Typical profile

Ap - 0 to 9 inches: loamy fine sand
Bw - 9 to 25 inches: loamy fine sand
BC - 25 to 33 inches: fine sand
Cg - 33 to 60 inches: sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: About 15 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum: 11.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Gp—Gravel pits

Map Unit Composition

Gravel pits: 92 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gravel Pits

Typical profile

H1 - 0 to 6 inches: extremely gravelly sand
H2 - 6 to 60 inches: extremely gravelly sand

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Ecological site: F144BY601ME - Dry Sand
Hydric soil rating: No

PbB—Paxton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: bljf
Elevation: 0 to 930 feet
Mean annual precipitation: 48 to 50 inches
Mean annual air temperature: 45 to 46 degrees F
Frost-free period: 145 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Paxton and similar soils: 87 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Drumlinoid ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from mica schist

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 20 inches: fine sandy loam
H3 - 20 to 65 inches: fine sandy loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 18 to 40 inches to densic material
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 30 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F144BY501ME - Loamy Slope (Northern Hardwoods)
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: Marine terraces, river valleys
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

Sz—Swanton fine sandy loam

Map Unit Setting

National map unit symbol: blk4
Elevation: 10 to 900 feet
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 39 to 46 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Swanton and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swanton

Setting

Landform: Outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: fine sandy loam
H2 - 9 to 32 inches: fine sandy loam
H3 - 32 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 high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Wa—Walpole fine sandy loam

Map Unit Setting

National map unit symbol: blk7
Elevation: 0 to 540 feet
Mean annual precipitation: 48 to 49 inches
Mean annual air temperature: 45 to 46 degrees F
Frost-free period: 145 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Walpole and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Walpole

Setting

Landform: Outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 20 inches: fine sandy loam
H3 - 20 to 65 inches: gravelly loamy sand

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): High (2.00 to 6.00 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F144BY303ME - Acidic Swamp
Hydric soil rating: Yes

WmB—Windsor loamy sand, 0 to 8 percent slopes

Map Unit Setting

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

Map Unit Composition

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

Description of Windsor

Setting

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

Typical profile

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

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144BY601ME - Dry Sand
Hydric soil rating: No

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REPORT

19-0714 S

November 16, 2023

Explorations and Geotechnical Engineering Services

Proposed Parking Lot Expansion
Jetport Blvd and Loop Road
Portland, Maine

Prepared For:
Sebago Technics, Inc.
Attention: Owens McCullough, P.E., LEED AP
75 John Roberts Road
South Portland, Maine 04106

Prepared By:
S. W. Cole Engineering, Inc.
286 Portland Road
Gray, Maine
T: 207-657-2866

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19-0714 S

November 16, 2023

Sebago Technics, Inc.
Attention: Owens McCullough, P.E., LEED AP
75 Jon Roberts Road
South Portland ME 04106

Subject: Explorations and Geotechnical Engineering Services
Proposed Parking Lots
Jetport Blvd
Portland, Maine

Dear Owens:

In accordance with our revised Proposal, dated October 23, 2023, we have performed subsurface explorations for the subject project. This report summarizes our findings and geotechnical recommendations, and its contents are subject to the limitations set forth in Appendix A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our services was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to earthwork and pavement associated with the proposed construction. Our scope of services included test pit explorations, soils laboratory testing, a geotechnical analysis of the subsurface findings and preparation of this report.

1.2 Site and Proposed Construction

We understand the site consists of four parcels:

1) A large, wooded lot located on the northerly side of the Portland Jetport Terminal building and parking garage, between Loop Road and Jetport Blvd. This parcel

is approximately 300 by 800 feet in plan dimensions. Existing grades vary in elevation from approximately 72 to 87 feet.

2) A small, wooded lot located on the north side of Jetport Blvd approximately 200 by 300 feet in plan dimensions. Existing grades appear to vary from about elevation 80 to 89.
3) A gravel parking lot (Park & Jet Lot) located south of the Embassy Suites hotel and west of Westbrook Street. This parcel is approximately 175 by 400 feet in plan dimensions. Existing grades appear to vary from about elevation 68 to 77.
4) A paved parking lot (Cell Phone Lot) located adjacent to the northerly side of Loop Road. This parcel is approximately 170 by 270 feet in plan dimensions. Existing grades appear to vary from about 68 to 71 feet.

We understand development plans call for construction of new paved parking lots on each of these parcels. We understand subsurface stormwater systems are planned in some areas. Based on the plans provided, existing site grades vary from about elevation 68 to 89 feet (southeast to northwest) and finish site pavement grades will vary from about elevation 68 to 89 feet. It appears much of the proposed parking lot area(s) will require up to about 3 feet of tapered cuts and fills to establish proposed pavement grades. A portion of the site, however, located between Jetport Blvd and Loop Road will require tapered cuts varying from greater than 3 to as much as 9+/- feet to establish proposed pavement grades.

Proposed and existing site features are shown on the “Exploration Location Plan” attached in Appendix B.

2.0 EXPLORATION AND TESTING

2.1 Explorations

Twenty-four test pits (TP-1 through TP-4, TP-6 through TP-9, TP-11 through TP-13, TP-15 through TP-17, TP-19, TP-21 through TP-23, TP-25, TP-27, and TP-29 through TP-32) were made at the site on October 25 and 26, 2023 by Shaw Earthworks, Inc. As requested by STI, certain test pit locations were omitted due to exploration time constraints. The exploration locations were selected and established in the field by STI using GPS methods. The approximate exploration locations are shown on the “Exploration Location Plan” attached in Appendix B. Logs of the explorations and a key

to the notes and symbols used on the logs are attached in Appendix C. The approximate, interpolated elevations shown on the logs were estimated based on topographic information shown on the “Exploration Location Plan”.

2.2 Testing

The explorations were made using a small excavator. Soil samples obtained from the explorations were returned to our laboratory for further classification and testing. Moisture content test results are noted on the logs. The results of four soil gradation tests are attached in Appendix D.

3.0 SUBSURFACE CONDITIONS

3.1 Soil and Bedrock

The test pits were attempted to depths of either 6 feet or 10 feet (10 feet in possible subsurface stormwater management areas) as directed by STI. Below a surficial layer of forest duff and topsoil with organics or uncontrolled fill, the explorations encountered a subsurface profile generally consisting of native deposits of sand with varying amounts of silt and gravel, some cobbles, and a few small boulders as well as sandy clayey silt and stiff to medium silty clay. An uncontrolled fill consisting of mixed clayey silty sand with some organics and clayey silty sand was encountered at test pits TP-1 and TP-2 (cell phone lot) to depths of about 7 and 2.5 feet respectively. Test pits TP-3, TP-4, TP-6, and TP-7 (gravel Park & Jet lot) encountered about 18 to 30 inches of gravelly sand, some silt (uncontrolled fill) overlying about 6-inches of relic topsoil and/or soils with rootlets overlying native soils. Test pits made in wooded areas encountered tree roots to depths varying from about 1.5 to 2.5 feet below the ground surface. Practical refusal surfaces (probable boulders) were encountered at depths of about 10 and 9 feet at test pits TP-2 and TP-12, respectively.

Not all the strata were encountered at each exploration; refer to the attached logs for more detailed subsurface information.

3.2 Groundwater

The soils encountered at the test pits were moist to wet from the ground surface. Where encountered, saturated soil and groundwater seepage was observed at depths varying from about 3.5 to 9.5 feet below the existing ground surface. Groundwater likely becomes

perched on the relatively impervious clayey silt and silty clay encountered at some of the test pits. Long term groundwater information is not available. It should be anticipated that groundwater levels will fluctuate, particularly in response to periods of snowmelt and precipitation, as well as changes in site use.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations include:

- All topsoil, soils with roots and organics, buried relic topsoil, uncontrolled fill and disturbed soils must be completely removed from beneath proposed paved areas.

- The soil encountered was generally wet, becoming saturated with depth with groundwater seepage noted in some test pits. Care will need to be taken not to disturb the native soils during construction. Earthwork and grading activities should occur during drier, non-freezing weather of Spring, Summer, and Fall. Rubber tired construction equipment should not operate directly on the native soil subgrades, particularly when wet. Excavation of bearing surfaces should be completed with a smooth-edged bucket to lessen subgrade disturbance.

- Swales and subsurface drainage systems may be needed in some areas, particularly in deeper planned cut areas.

4.2 Site and Subgrade Preparation

We recommend that site preparation begin with the construction of an erosion control system to protect adjacent drainage ways and areas outside the construction limits. All topsoil, soils with roots and organics, buried relic topsoil, uncontrolled fill and disturbed soils must be completely removed from beneath proposed paved areas. The extent of removal should extend 1 foot laterally outward from outside edge of pavement for every 1-foot of excavation depth (1H:1V bearing splay). The over-excavated area should be backfilled with compacted Granular Borrow. As much vegetation as possible should remain outside the construction areas to lessen the potential for erosion and site disturbance.

Beneath pipes and utility structures with soft trench bottoms, we recommend over excavating with a smooth-edged bucket and installing at least 1 foot of Underdrain Sand below customary bedding materials wrapped in non-woven geotextile fabric. The depth of customary bedding materials for soft trench bottoms should be at least 12 inches below pipes and 24 inches below structures.

4.3 Excavation and Dewatering

Excavation work will generally encounter topsoil, soils with roots and organics, buried relic topsoil, uncontrolled fills, native granular soils, silty clay, and clayey silt soils. Wet to saturated soils and groundwater should be expected with depth. Care must be exercised during construction to limit disturbance of the subgrade soils. Earthwork and grading activities should occur during drier, non-freezing weather of Spring, Summer and Fall. Rubber tired construction equipment should not operate directly on the subgrades, particularly when wet. Low ground pressure tracked equipment may be needed and temporary haul roads overlying geotextile fabric may be necessary. Final cuts to subgrade should be performed with a smooth-edged bucket to help reduce strength loss from soil disturbance.

Sumping and pumping and/or temporary ditching dewatering techniques should be adequate to control groundwater in excavations. Controlling the water levels to at least one foot below planned excavation depths will help stabilize subgrades during construction. Excavations must be properly shored or sloped in accordance with OSHA Regulations to prevent sloughing and caving of the sidewalls during construction. Care must be taken to preclude undermining adjacent structures, utilities, and roadways. The design and planning of excavations, excavation support systems, and dewatering is the responsibility of the contractor.

4.4 Site Drainage

Surface grades should be sloped away from paved areas for positive surface water drainage. Perimeter drainage swales should be deep enough to help control water from intruding into adjacent pavement subbase/base aggregates. We recommend a deeper swale or groundwater cut-off trench drain be considered beneath the proposed swale located in the proposed deeper cut planned in the area near test pit TP-25 to help control water intrusion beneath adjacent pavemen. The trench drain should follow the MaineDOT specifications for French Drains. The underdrain pipe should consist of 6-inch diameter,

perforated foundation drainpipe bedded in Crushed Stone and wrapped in non-woven geotextile filter fabric. The underdrain pipe must have a positive gravity outlet protected from freezing, clogging and backflow.

4.5 Fill, Backfill and Compaction

We recommend the following fill and backfill materials: recycled products must also be tested in accordance with applicable environmental regulations and approved by a qualified environmental consultant.

Common Borrow: Fill to raise grades in landscape areas should be non-organic compactable earth meeting the requirements of 2020 MaineDOT Standard Specification 703.18 Common Borrow.

Granular Borrow: Fill to raise grades in paved areas, as well as to repair soft areas, should be sand or silty sand meeting the requirements of 2020 MaineDOT Standard Specification 703.19 Granular Borrow.

Underdrain Sand: Sand used beneath bedding materials in soft trench bottoms should be clean, free-draining sand meeting the requirements of 2020 MaineDOT Standard Specification 703.22 Underdrain Backfill Material Type B.

Crushed Stone: Crushed Stone, used for underdrain aggregate should be washed ¾-inch crushed stone meeting the requirements of 2020 MaineDOT Standard Specification 703.13 Crushed Stone ¾-Inch.

Reuse of Site Soils: The organic soils, soils with roots and silty clay are unsuitable for reuse as fill in paved areas but may be suitable for reuse as Common Borrow in landscape areas, provided they are at a compactable moisture content at the time of reuse. The native granular soils and granular portions of existing fills can likely be re-used as Granular Borrow provided the soil is at a compactable moisture content at the time of re-use.

Placement and Compaction: Fill should be placed in horizontal lifts and compacted such that the desired density is achieved throughout the lift thickness with 3 to 5 passes of the compaction equipment. Loose lift thicknesses for grading, fill and backfill

activities should not exceed 12 inches. We recommend that fill and backfill in paved areas be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557. Crushed Stone should be compacted with 3 to 5 passes of a vibratory plate compactor having a static weight of at least 500 pounds.

4.6 Weather Considerations

Construction activity should be limited during wet and freezing weather and the site soil may require drying or thawing before construction activities may continue. The contractor should anticipate the need for water to temper fills to facilitate compaction during dry weather. If construction takes place during cold weather, subgrades must be protected during freezing conditions.

4.7 Paved Areas

We anticipate paved areas will be subjected primarily to passenger vehicle and light delivery truck traffic. Considering the findings at the explorations and proposed usage, we offer the following pavement section for consideration.

FLEXIBLE (HMA) PAVEMENT SECTION – 2020 MaineDOT Standard Specs	
Pavement Layer	**Material Thickness**
MaineDOT 9.5 mm Hot Mix Asphalt	1 ½ inches
MaineDOT 12.5 mm Hot Mix Asphalt	2 ½ inches
MaineDOT 703.06 Aggregate Base Type A	3 inches
MaineDOT 703.06 Aggregate Subbase Type D	18 inches

The base and subbase materials should be compacted to at least 95 percent of their maximum dry density as determined by ASTM D-1557. Hot mix asphalt pavement should be compacted to 92 to 97 percent of its theoretical maximum density as determined by ASTM D-2041. A tack coat should be used between successive lifts of bituminous pavement.

Frost penetration can be on the order of 4.5 feet in this area. It should be understood that in the absence of full depth excavation of frost susceptible soils below paved areas and subsequent replacement with non-frost susceptible compacted fill, frost penetration into the subgrade will occur and some heaving and distress of pavement must be anticipated.

4.8 Design Review and Construction Testing

S.W.COLE should be retained to review the construction documents prior to bidding to determine that our earthwork and pavement recommendations have been properly interpreted and implemented.

A construction materials testing and quality assurance program should be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to observe earthwork activities, the preparation of pavement subgrades, as well as to provide laboratory and field testing of soil and asphalt construction materials.

5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the construction phase of the project.

Sincerely,

S. W. Cole Engineering, Inc.



Paul F. Kohler, P.E.
Principal Geotechnical Engineer

PFK:tjb

APPENDIX A

Limitations

This report has been prepared for the exclusive use of Sebago Technics, Inc. for specific application to the proposed parking lots at the Portland Jetport Facility in Portland, Maine. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct our services in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE's scope of services has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE.

APPENDIX B

Figures

JETPORT BLVD

WESTBROOK ST

INTERNATIONAL PKWY

LOOP ROAD

TP-1
TP-2
TP-3
TP-4
TP-5 (OMITTED)
TP-6
TP-7
TP-8
TP-9
TP-10 (OMITTED)
TP-11
TP-12
TP-13
TP-14 (OMITTED)
TP-15
TP-16
TP-17
TP-18 (OMITTED)
TP-19
TP-20 (OMITTED)
TP-21
TP-22
TP-23
TP-24 (OMITTED)
TP-25
TP-26 (OMITTED)
TP-27
TP-28 (OMITTED)
TP-29
TP-30
TP-31
TP-32

LEGEND:

APPROXIMATE TEST PIT LOCATION

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A SCALE PLAN OF THE SITE PROVIDED SEBAGO TECHNICS, INC., RECEIVED 11/08/2023.
2. THE TEST PIT LOCATIONS WERE SELECTED AND ESTABLISHED IN THE FIELD BY SEBAGO TECHNICS, INC AND PROVIDED ON THE ABOVE REFERENCED PLAN.
3. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
4. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

0 40 80 Feet

S.W.COLE ENGINEERING, INC.

SEBAGO TECHNICS, INC.

EXPLORATION LOCATION PLAN

PROPOSED PARKING LOTS
PORTLAND JETPORT
JETPORT BLVD AND LOOP ROAD, PORTLAND, MAINE

Job No.:	19-0714	Scale:	1" = 40'
Date :	11/14/2023	Sheet:	1

APPENDIX C

Exploration Logs and Key

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Paul Kohler
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP- 1

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 67.5' Estimated **COMPLETION DEPTH (FT):** 10.0
WATER LEVEL DEPTHS (FT): Soils wet, Some seepage at 3.5'. **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Grassed Topsoil					
		1.7 Brown clayey SILT and SAND, some organics (Mixed FILL)	▽ 3.5				
5							
		7.0 Stiff brown-gray silty CLAY					
10		Bottom of Exploration at 10.0 feet					

TEST PIT TP- 2

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 71' Estimated **COMPLETION DEPTH (FT):** 10.0
WATER LEVEL DEPTHS (FT): Soils moist to wet. Free water at 9.5 ft **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Grassed Topsoil					
		1.0 Brown silty SAND, some gravel, trace clay (Mixed Fill)					
		2.5 Very stiff gray-brown silty CLAY					
5							
		8.0 Medium dark gray silty CLAY, boulder at bottom of test pit	▽ 9				
10		Bottom of Exploration at 10.0 feet					

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP- 3

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 69.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): Soils appear saturated below 5 feet **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Brown gravelly SAND some silt; occasional cobbles (Fill)					
		2.5 Buried Topsoil					
		2.6 Brown-orange gravelly SAND, some silt					
		4.0 Gray-brown gravelly silty SAND					
5							

Bottom of Exploration at 6.0 feet

TEST PIT TP- 4

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 71.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Brown gravelly SAND some silt; occasional cobbles (Fill)					
		1.5 Brown-light brown silty gravelly SAND					
		3.8 Brown-gray fine to medium SAND some gravel, some silt					
5							

Bottom of Exploration at 6.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP- 6

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 74' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Brown gravelly SAND some silt (Fill)					
		1.5 Dark brown silty fine SAND; with rootlets (Probable Fill)					
		3.0 Gray-brown SILT and CLAY					
				1S		4-5	
5							
		Bottom of Exploration at 6.0 feet					

TEST PIT TP- 7

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 73' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Brown GRAVEL and SAND, some silt (Fill)		1S		0-1	ID 23292S w =6.6 %
		1.5 Buried Topsoil with roots					
		2.0 Gray-brown SILT and CLAY					
5							
		Bottom of Exploration at 6.0 feet					

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP- 8

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 72' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Grassed Topsoil					
		1.5 Gray SILT and fine SAND with roots (probable Buried Topsoil)					
		2.0 Gray-brown fine sandy clayey SILT					
5							
		Bottom of Exploration at 6.0 feet					

TEST PIT TP- 9

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 73.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		2.0 Gray-brown clayey fine sandy SILT					
5							
		Bottom of Exploration at 6.0 feet					

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Paul Kohler
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-11

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 76.5' Estimated **COMPLETION DEPTH (FT):** 10.0
WATER LEVEL DEPTHS (FT): Soils wet to saturated below 8'+/- **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.0 Brown silty SAND with gravel, some cobbles					
		3.5 Gray-brown SILT and SAND, trace gravel					
5							
		6.5 Brown SILT and SAND, trace clay					
		8.0 Gray clayey SILT and SAND, some gravel, some cobbles					
10							

Bottom of Exploration at 10.0 feet

TEST PIT TP-12

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 79.5' Estimated **COMPLETION DEPTH (FT):** 9.0
WATER LEVEL DEPTHS (FT): Soils moist to wet. Saturated below 8'+/- **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Topsoil and organics					
		0.7 Brown silty SAND with gravel, some cobbles					
5		5.0 Gray-brown silty SAND, some gravel, some cobbles Small boulder at bottom of test pit					

Bottom of Exploration at 9.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-13

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 79.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		0.8 Gray-brown gravelly SILT and fine SAND					
		2.5 Gray SILT and CLAY					
5							

Bottom of Exploration at 6.0 feet

TEST PIT TP-15

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 79' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Grassed Topsoil					
		1.5 Brown, gravelly silty SAND		1S		3-4	ID 23293S w =11.2 %
5							

Bottom of Exploration at 6.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-16

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 77.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.0 Brown, silty SAND, some gravel					
		3.5 Gray-brown gravelly silty SAND					
5							

Bottom of Exploration at 6.0 feet

TEST PIT TP-17

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 78.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): Soils appear saturated below 5.8 feet **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		2.0 Gray-brown silty fine to medium SAND, some gravel					
5							
		5.8 Gray SILT and fine SAND					

Bottom of Exploration at 6.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-19

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 83' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		0.7 Light gray silty fine SAND, some gravel		1S		3-4	ID 23294S w =8.5 %
5							
		Bottom of Exploration at 6.0 feet					

TEST PIT TP-21

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 81' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.5 Brown gravelly silty SAND					
		3.0 Gray gravelly SILT and fine SAND					
5							
		Bottom of Exploration at 6.0 feet					

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Paul Kohler
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-22

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 80.5' Estimated **COMPLETION DEPTH (FT):** 9.5
WATER LEVEL DEPTHS (FT): Soils wet to saturated. Slight seepage at 8.5'. **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.0 Light brown layered,silty SAND and clayey SILT, some gravel, some cobbles					
5		4.5 Gray-brown clayey SILT and SAND, trace gravel, some cobbles					
		8.5 Gray-brown silty SAND with gravel, cobbles	▽ 8.5				

Bottom of Exploration at 9.5 feet

TEST PIT TP-23

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 79' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.5 Light brown-gray Silty SAND some gravel; occasional cobbles					
5		4.0 Gray, SILT and fine SAND					

Bottom of Exploration at 6.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-25

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 86.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.5 Light gray gravelly silty fine SAND					
5							
		Bottom of Exploration at 6.0 feet					

TEST PIT TP-27

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 83' Estimated **COMPLETION DEPTH (FT):** 8.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.5 Gray gravelly SILT and fine SAND					
5							
		Bottom of Exploration at 8.0 feet					

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Paul Kohler
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-29

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 83.5' Estimated **COMPLETION DEPTH (FT):** 9.5
WATER LEVEL DEPTHS (FT): Soils wet **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.0 Light brown gravelly silty SAND, some cobbles					
		2.5 Gray-brown silty SAND, trace clay					
5							
		7.0 Gray-brown silty SAND, trace clay, some gravel, some cobbles					

Bottom of Exploration at 9.5 feet

TEST PIT TP-30

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 81' Estimated **COMPLETION DEPTH (FT):** 10.0
WATER LEVEL DEPTHS (FT): Soils moist to wet **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.0 Brown silty SAND, some gravel, some cobbles, small boulder					
		4.0 Gray-brown SAND. some silt, some gravel					
5							
		6.0 Gray-brown silty SAND, trace clay					
10							

Bottom of Exploration at 10.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-31

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 86' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Grassed Topsoil					
		1.8 Gray Silty fine to medium SAND some gravel					
		3.0 Gray SILT and fine SAND, trace gravel		1S		4-5	ID 23295S w =17.7 %
5		5.0 Gray SILT and CLAY					

Bottom of Exploration at 6.0 feet

TEST PIT TP-32

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 85.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): Soils appear saturated below 4 feet **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.5 Brown silty gravelly SAND					
		2.5 Gray-brown silty fine to medium SAND, some gravel					
5							

Bottom of Exploration at 6.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

KEY TO NOTES & SYMBOLS

Test Boring and Test Pit Explorations

Stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - laboratory test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. – pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight

Description of Proportions:

Trace:	0 to 5%
Some:	5 to 12%
"Y"	12 to 35%
And	35+%
With	Undifferentiated

Description of Stratified Soils

Parting:	0 to 1/16" thickness
Seam:	1/16" to 1/2" thickness
Layer:	½" to 12" thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

APPENDIX D

Laboratory Test Results

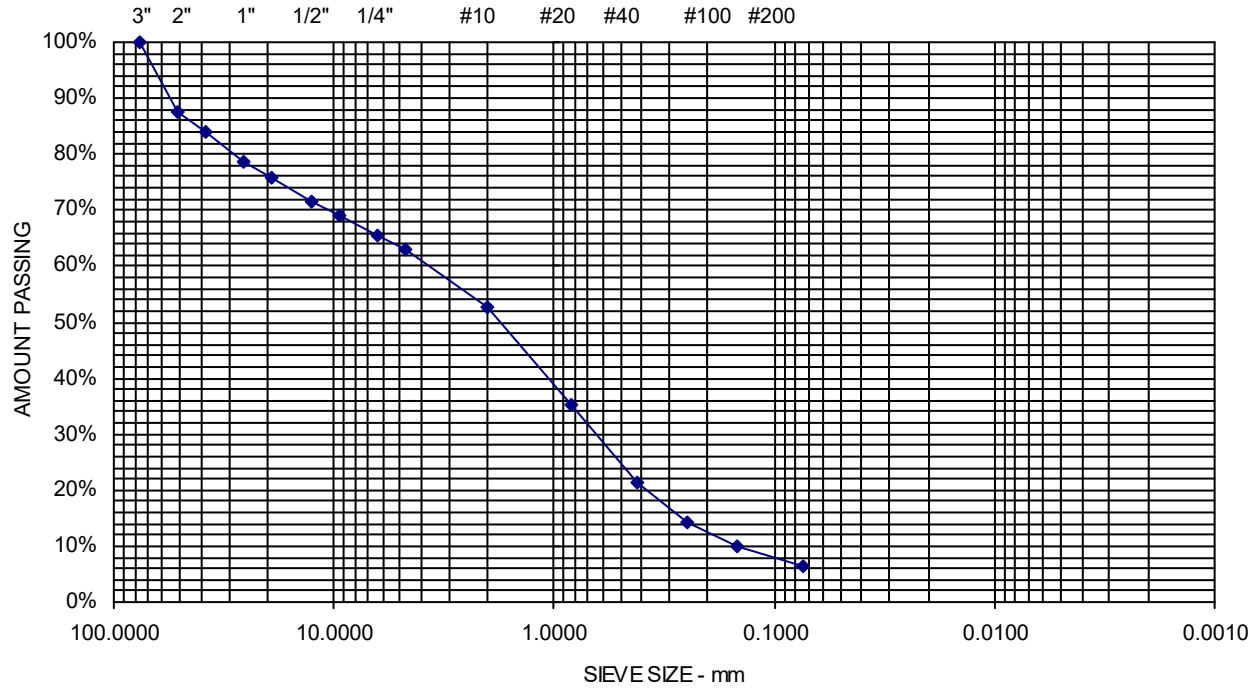
S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED JETPORT PARKING LOTS - EXPLORATIONS AND GEOTECHNICAL ENGINEERING SERVICES	Project Number	19-0714
Client	SEBAGO TECHNICS, INC.	Lab ID	23292S
		Date Received	10/31/2023
		Date Completed	11/8/2023
Material Source	**TP-7, 1S, 0.0'-1.0'**	Tested By	BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
75 mm	**3"**	**100**	
50 mm	**2"**	**87**	
38.1 mm	**1-1/2"**	**84**	
25.0 mm	**1"**	**78**	
19.0 mm	**3/4"**	**76**	
12.5 mm	**1/2"**	**72**	
9.5 mm	**3/8"**	**69**	
6.3 mm	**1/4"**	**65**	
4.75 mm	**No. 4**	**63**	37.1% Gravel
2.00 mm	**No. 10**	**53**	
850 um	**No. 20**	**35**	
425 um	**No. 40**	**21**	56.6% Sand
250 um	**No. 60**	**14**	
150 um	**No. 100**	**10**	
75 um	**No. 200**	**6.3**	6.3% Fines



Comments: Moisture Content = 6.6%

Sheet

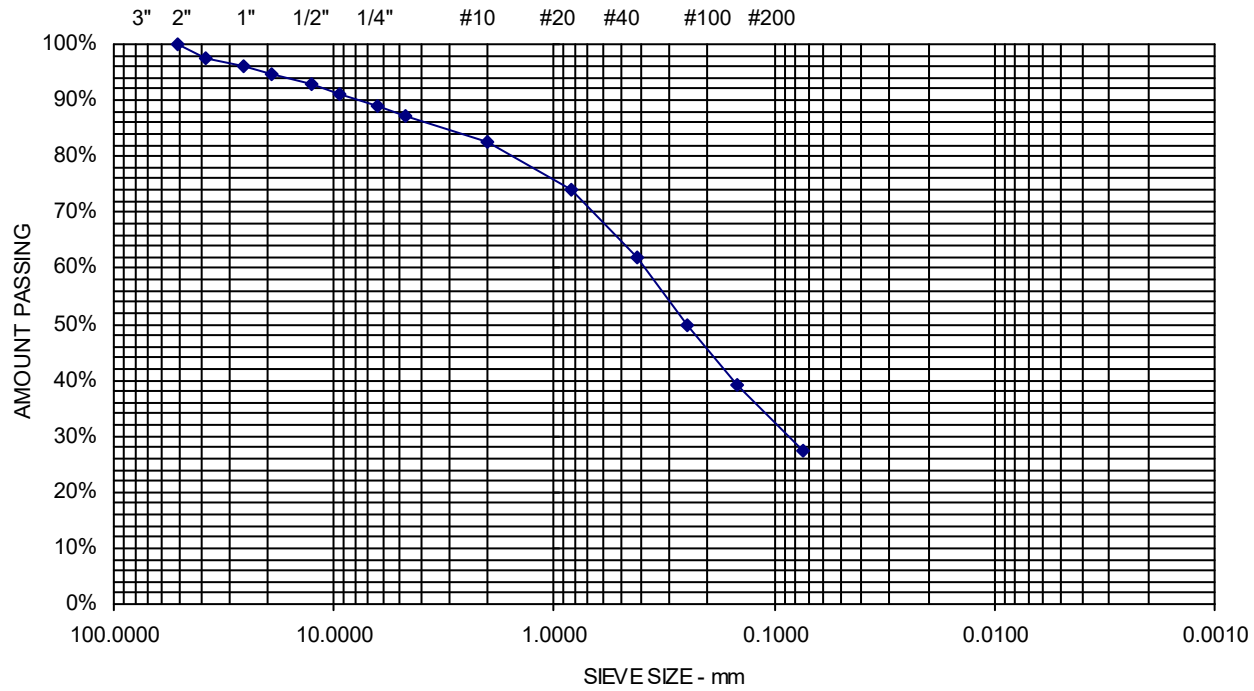
S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED JETPORT PARKING LOTS - EXPLORATIONS AND GEOTECHNICAL ENGINEERING SERVICES	Project Number	19-0714
Client	SEBAGO TECHNICS, INC.	Lab ID	23293S
		Date Received	10/31/2023
		Date Completed	11/8/2023
Material Source	**TP-15, 1S, 3.0'-4.0'**	Tested By	BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**98**	
25.0 mm	**1"**	**96**	
19.0 mm	**3/4"**	**95**	
12.5 mm	**1/2"**	**93**	
9.5 mm	**3/8"**	**91**	
6.3 mm	**1/4"**	**89**	
4.75 mm	**No. 4**	**87**	12.6% Gravel
2.00 mm	**No. 10**	**83**	
850 um	**No. 20**	**74**	
425 um	**No. 40**	**62**	59.9% Sand
250 um	**No. 60**	**50**	
150 um	**No. 100**	**39**	
75 um	**No. 200**	**27.5**	27.5% Fines



Comments: Moisture Content = 11.2%

Sheet

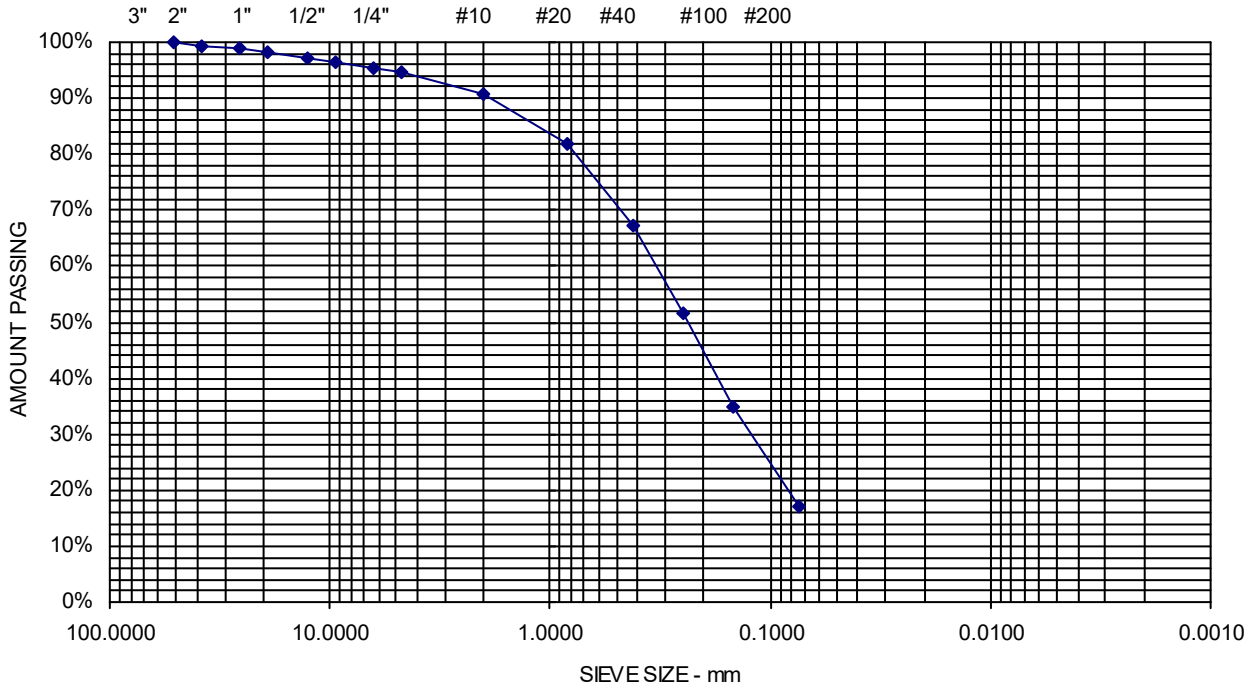
S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED JETPORT PARKING LOTS - EXPLORATIONS AND GEOTECHNICAL ENGINEERING SERVICES	Project Number	19-0714
Client	SEBAGO TECHNICS, INC.	Lab ID	23294S
		Date Received	10/31/2023
		Date Completed	11/8/2023
Material Source	**TP-19, 1S, 3.0'-4.0'**	Tested By	BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**99**	
25.0 mm	**1"**	**99**	
19.0 mm	**3/4"**	**98**	
12.5 mm	**1/2"**	**97**	
9.5 mm	**3/8"**	**96**	
6.3 mm	**1/4"**	**95**	
4.75 mm	**No. 4**	**95**	5.4% Gravel
2.00 mm	**No. 10**	**91**	
850 um	**No. 20**	**82**	
425 um	**No. 40**	**67**	77.5% Sand
250 um	**No. 60**	**52**	
150 um	**No. 100**	**35**	
75 um	**No. 200**	**17.1**	17.1% Fines



Comments: Moisture Content = 8.5%

Sheet

S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

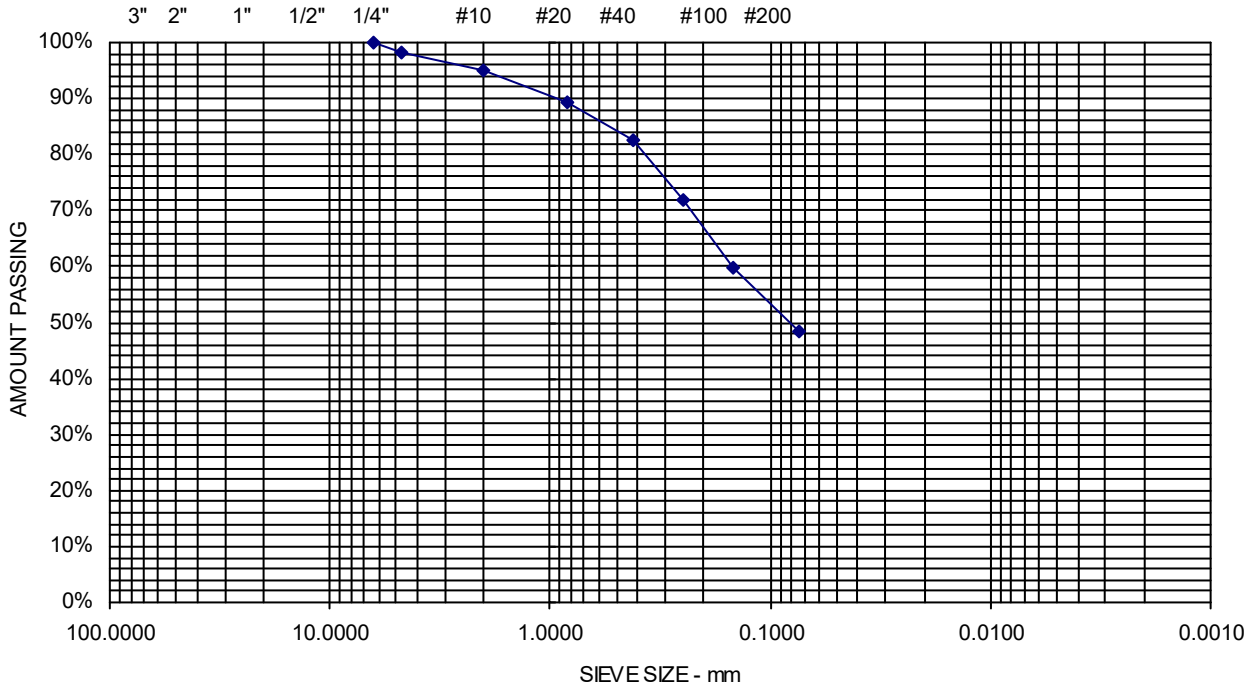
Project Name: PORTLAND ME - PROPOSED JETPORT PARKING LOTS - EXPLORATIONS AND GEOTECHNICAL ENGINEERING SERVICES

Client: SEBAGO TECHNICS, INC.

Material Source: **TP-31, 1S, 4.0'-5.0'**

Project Number: 19-0714
Lab ID: 23295S
Date Received: 10/31/2023
Date Completed: 11/8/2023
Tested By: BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
6.3 mm	**1/4"**	**100**	
4.75 mm	**No. 4**	**98**	1.9% Gravel
2.00 mm	**No. 10**	**95**	
850 um	**No. 20**	**89**	
425 um	**No. 40**	**83**	49.6% Sand
250 um	**No. 60**	**72**	
150 um	**No. 100**	**60**	
75 um	**No. 200**	**48.5**	48.5% Fines



Comments: Moisture Content = 17.7%

Sheet

Appendix 5

Stormwater Management Plans

SOIL TYPES				
SYMBOL	SOIL TYPES	SLOPES (%)	HSG	DRAINAGE CLASS
BuB	LAMOINE SILT LOAM	3-8	C/D	SOMEWHAT POORLY DRAINED
Gp	GRAVEL PITS	-	-	-
PbB	PAXTON FINE SANDY LOAM	3-8	C	WELL DRAINED
Sn	SCANTIC SILT LOAM	0-3	D	POORLY DRAINED
Sz	SWANTON FINE SANDY LOAM	-	C/D	POORLY DRAINED
WmB	WINDSOR LOAMY SAND	0-8	A	EXCESSIVELY DRAINED

NOTES:

1. ON-SITE SOIL INFORMATION IS BASED ON THE NATURAL RESOURCES CONSERVATION SERVICE (NRCS) CUSTOM SOIL RESOURCE REPORT FOR CUMBERLAND COUNTY, MAINE, DATED AUGUST 14, 2023.
2. OFF-SITE SOIL INFORMATION FOR THE PROJECT WAS OBTAINED VIA THE USDA UNITED STATES DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES CONSERVATION SERVICE'S WEB SOIL SURVEY. THE HYDROLOGIC SOIL GROUP (HSG) OF THE SITE SOILS ARE CLASSIFIED BY TECHNICAL RELEASE TR-55 OF THE SOIL CONSERVATION SERVICE.
3. TC PATHS NOT SHOWN ARE ASSUMED TO HAVE A MINIMUM VALUE OF 6.0 MINUTES BASED ON TR-55 STANDARDS.

EXISTING CONDITIONS LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION (A, B)
- REACH
- #### SUBCATCHMENT LABEL
- #### REACH
- #### POINT OF ANALYSIS
- #### STORMWATER TREATMENT/DETENTION POND
- HSG # / HSG # SOILS BOUNDARY

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

PAUL D. OSTROWSKI PE 11175
STATE OF MAINE — PAUL D. OSTROWSKI — 11175 — REGISTERED PROFESSIONAL ENGINEER — 02/28/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS MADE TO THIS PLAN WITHOUT THE WRITTEN AUTHORIZATION OF SEBAGO TECHNICS, INC. ARE UNAUTHORIZED AND OTHERWISE SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100
WWW.SEBAGOTECHNICS.COM

EXISTING CONDITIONS WATERSHED PLAN
OF:
PORTLAND INTL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTL JETPORT - PWM
CITY OF PORTLAND
1001 WESTBROOK STREET, PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET 1 OF 2

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19059 SW Pre.dwg, TAB:Existing Conditions

SOIL TYPES				
SYMBOL	SOIL TYPES	SLOPES (%)	HSG	DRAINAGE CLASS
BuB	LAMOINE SILT LOAM	3-8	C/D	SOMEWHAT POORLY DRAINED
Gp	GRAVEL PITS	-	-	-
PbB	PAXTON FINE SANDY LOAM	3-8	C	WELL DRAINED
Sn	SCANTIC SILT LOAM	0-3	D	POORLY DRAINED
Sz	SWANTON FINE SANDY LOAM	-	C/D	POORLY DRAINED
WmB	WINDSOR LOAMY SAND	0-8	A	EXCESSIVELY DRAINED

NOTES:

1. ON-SITE SOIL INFORMATION IS BASED ON THE NATURAL RESOURCES CONSERVATION SERVICE (NRCS) CUSTOM SOIL RESOURCE REPORT FOR CUMBERLAND COUNTY, MAINE. DATED AUGUST 14, 2023.
2. OFF-SITE SOIL INFORMATION FOR THE PROJECT WAS OBTAINED VIA THE USDA UNITED STATES DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES CONSERVATION SERVICE'S WEB SOIL SURVEY. THE HYDROLOGIC SOIL GROUP (HSG) OF THE SITE SOILS ARE CLASSIFIED BY TECHNICAL RELEASE TR-55 OF THE SOIL CONSERVATION SERVICE.
3. TC PATHS NOT SHOWN ARE ASSUMED TO HAVE A MINIMUM VALUE OF 6.0 MINUTES BASED ON TR-55 STANDARDS.

PROPOSED CONDITIONS LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION (A, B)
- REACH
- SUBCATCHMENT LABEL
- #### REACH
- #### POINT OF ANALYSIS
- #### STORMWATER TREATMENT/DETENTION POND
- HSG # / HSG # SOILS BOUNDARY

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

PAUL D. OSTROWSKI PE 11175

STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — REGISTERED PROFESSIONAL ENGINEER — 02/28/2024

REV.	BY	DATE:	STATUS:
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

PROPOSED CONDITIONS WATERSHED PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT - PWM
CITY OF PORTLAND
1001 WESTBROOK STREET, PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	08/14/2023
SCALE	1" = 50'
PROJECT	19059

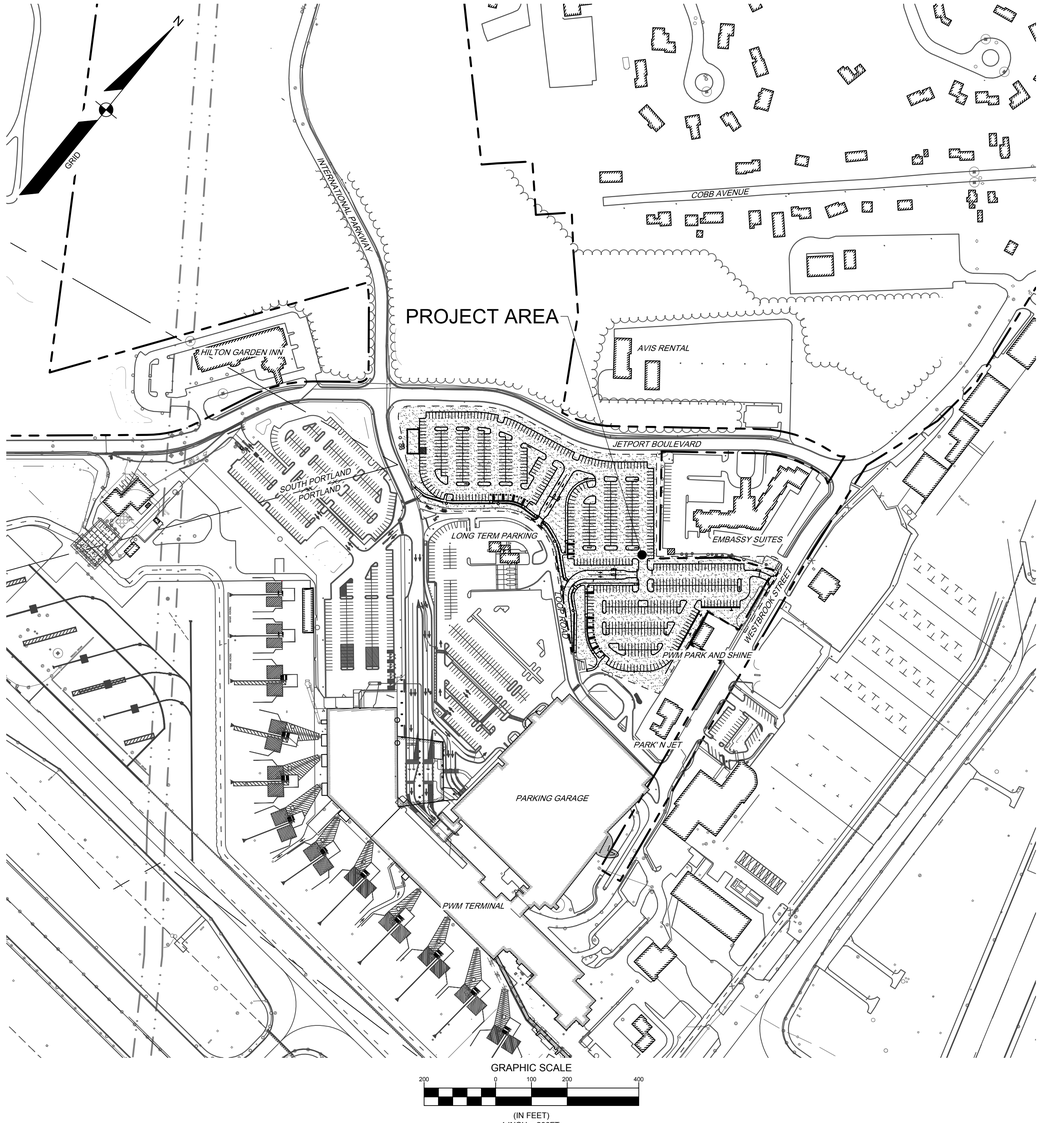
SHEET 2 OF 2

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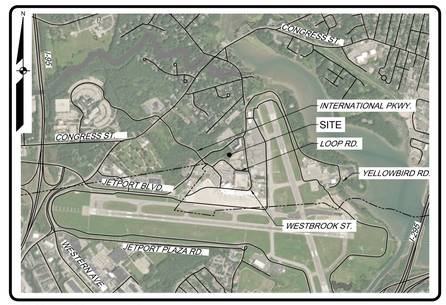
19059 SW Post.dwg, TAB:Overall Proposed Conditions

PORTLAND INTERNATIONAL JETPORT
PARKING EXPANSION

1001 WESTBROOK STREET
PORTLAND, MAINE 04102



GRAPHIC SCALE
200 0 100 200 400
(IN FEET)
1 INCH = 200FT.



LOCATION MAP NTS

Sheet List Table

SHEET	TITLE
G-001	COVER SHEET
G-002	NOTES & LEGEND
C-003	DEMOLITION PLAN
C-100	OVERALL SITE PLAN
C-101	SITE PLAN
C-102	SITE PLAN
C-103	SITE PLAN
C-200	OVERALL GRADING PLAN
C-201	GRADING PLAN
C-202	GRADING PLAN
C-203	GRADING PLAN
C-300	OVERALL UTILITY PLAN
C-301	UTILITY PLAN
C-302	UTILITY PLAN
C-303	UTILITY PLAN
C-304	PIPE AND STRUCTURE DATA TABLES
L-100	OVERALL LANDSCAPE PLAN
L-101	TREE REMOVAL & PRESERVATION PLAN
L-102	LANDSCAPE PLAN
L-103	LANDSCAPE PLAN
L-104	LANDSCAPE PLAN
C-500	EROSION CONTROL NOTES
C-501	EROSION CONTROL DETAILS
C-502	SITE DETAILS
C-503	SITE DETAILS
C-504	SITE DETAILS
C-505	SITE DETAILS
C-506	SITE DETAILS
C-507	SITE DETAILS
1 OF 5	BOUNDARY SURVEY
2 OF 5	BOUNDARY SURVEY
3 OF 5	BOUNDARY SURVEY
4 OF 5	BOUNDARY SURVEY
5 OF 5	BOUNDARY SURVEY

APPLICANT:

PORTLAND INTERNATIONAL JETPORT
PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

ENGINEER/SURVEYOR/
LANDSCAPE ARCHITECT:

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

NOT FOR CONSTRUCTION

PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

STATE OF MAINE PAUL D. OSTROWSKI No. 11175 REGISTERED PROFESSIONAL ENGINEER 02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

COVER SHEET
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 200'
PROJECT	19059

SHEET G-001

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19059 C.dwg, TAB:G-001 Cover

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	DEED LINE/R.O.W.	
	TIE LINE	
	SETBACK	
	EASEMENT	
	BUFFER	
	FLOODPLAIN	
	FLOODWAY	
	CENTERLINE	
⊡	MONUMENT	■
⊙	IRON PIPE/ROD	●
◎	DRILL HOLE	◉
C1/L1	DEED CALL	
C1/L1	CURVE/LINE NO.	C1/L1
	SOILS	
	ZONE LINE	
	ZONE LINE ON PL	
BENCHMARK DESCRIPTION WITH ELEVATION	BENCHMARK	
△	SURVEY CONTROL	
TP-1	TEST PIT	
MW-1	MONITORING WELL	
B-1	BORING	
	BUILDING	
	DECK/STEPS/ OVERHANG	
	EDGE WETLAND	
	WETLANDS	
	UPLANDS	
	STREAM	
	LEDGE	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
120 118	CONTOURS	120
×120.00	SPOT GRADE	+120.00
	CHAIN LINK FENCE	
X	BARB WIRE FENCE	X
	STOCKADE FENCE	
	GUARD RAIL	
	STONE WALL	
	RETAINING WALL	
	DECIDUOUS TREE	X
	CONIFEROUS TREE	X
	MULCH LINE	
	BOLLARD	●
	SIGN	
	RAILROAD	
G	GAS	G
GV	GAS GATE VALVE	GV
GM	GAS METER	
G	GAS MANHOLE	
W	WATER	W
WV	WATER GATE VALVE	WV
	WATER SHUT OFF	
	HYDRANT	
W	WATER MANHOLE	
W	WELL	W
S	SANITARY SEWER	S
FM	FORCE MAIN	FM
S	SANITARY MANHOLE	
	SEWER CLEAN OUT	
SD	STORM DRAIN	SD
UD	UNDER DRAIN	UD
D	DRAINAGE MANHOLE	
	CATCH BASIN	
OHU	OVERHEAD UTILITY	OHU
UGU	UNDERGROUND UTILITY	UGU
T	TRANSFORMER PAD	T
E	ELECTRICAL MANHOLE	E
EM	ELECTRIC METER	
H	HVAC UNIT	
T	TELEPHONE MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	
	DRAINAGE DITCH	
	EROSION CONTROL BLANKET	
	FILTER BARRIER	FB
	RIPRAP	
	CHECK DAM	
	INLET PROTECTION	
	BOULDER	

GENERAL NOTES

1. BOOK AND PAGE CITATIONS SHOWN HEREON REFER TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. NO MONUMENTS WERE SET AS OF THE DATE OF THIS PLAN.
3. A WRITTEN REPORT OF FINDINGS AND OPINIONS AS REQUIRED BY SECTION 10.A.3.D OF THE TECHNICAL STANDARDS OF PRACTICE OF THE STATE OF MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS WAS NOT PREPARED.
4. THE PURPOSE OF THIS SURVEY WAS TO DEFINE THE PERIMETER BOUNDARY OF THE PORTLAND INTERNATIONAL JETPORT PARCEL AND ACCESSORY PARCELS IN THE VICINITY OF THE JETPORT. INTERIOR PARCEL BOUNDARIES WERE NOT RESEARCHED OR DEFINED EXCEPT WHERE REQUIRED TO DEFINE THE PERIMETER BOUNDARY. EASEMENTS DEPICTED ON THIS PLAN WERE NOT COMPLETELY RESEARCHED OR LOCATED IN THE FIELD BUT SHOW THEIR GENERAL LOCATION RELATIVE TO THE PERIMETER BOUNDARY.
5. CURRENT OWNER:

   CITY OF PORTLAND
   389 CONGRESS ST.
   PORTLAND, MAINE 04101
6. ALL WORK SHALL CONFORM TO THE APPLICABLE CODES AND ORDINANCES.
7. CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIM OR HERSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIM OR HERSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
8. CONTRACTOR SHALL NOTIFY ENGINEER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND IN THE FIELD.
9. PROVIDE ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND OWNER'S REQUIREMENTS UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
10. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
11. CONTRACTOR SHALL CLEAN AND REMOVE DEBRIS AND SEDIMENT DEPOSITED ON PUBLIC STREETS, SIDEWALKS, ADJACENT AREAS, OR OTHER PUBLIC WAYS DUE TO CONSTRUCTION.
12. CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN CONSTRUCTION TO PROTECT EXISTING STRUCTURES, PHYSICAL FEATURES, AND MAINTAIN SITE STABILITY DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE ALL AREAS TO ORIGINAL CONDITION AND AS DIRECTED BY DESIGN DRAWINGS.
13. SITE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.
14. ALL PAVEMENT MARKINGS AND DIRECTIONAL SIGNAGE SHOWN ON THE PLAN SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS.
15. ALL PAVEMENT JOINTS SHALL BE SAWCUT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
16. NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.
17. IMMEDIATELY UPON COMPLETION OF CUTS/FILLS, THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH EROSION CONTROL NOTES AND AS SPECIFIED ON PLANS.
18. THE CONTRACTOR SHALL BE FULLY AND SOLELY RESPONSIBLE FOR THE REMOVAL, REPLACEMENT AND RECTIFICATION OF ALL DAMAGED AND DEFECTIVE MATERIAL AND WORKMANSHIP IN CONNECTION WITH THE CONTRACT WORK. THE CONTRACTOR SHALL REPLACE OR REPAIR AS DIRECTED BY THE ENGINEER ALL SUCH DAMAGED OR DEFECTIVE MATERIALS WHICH APPEAR WITHIN A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.
19. ALL WORK PERFORMED BY THE GENERAL CONTRACTOR AND/OR TRADE SUBCONTRACTOR SHALL CONFORM TO THE REQUIREMENTS OF LOCAL, STATE OR FEDERAL LAWS, AS WELL AS ANY OTHER GOVERNING REQUIREMENTS, WHETHER OR NOT SPECIFIED ON THE DRAWINGS.
20. WHERE THE TERMS "APPROVED EQUAL", "OTHER APPROVED", "EQUAL TO", "ACCEPTABLE" OR OTHER GENERAL QUALIFYING TERMS ARE USED IN THESE NOTES, IT SHALL BE UNDERSTOOD THAT REFERENCE IS MADE TO THE RULING AND JUDGEMENT OF SEBAGO TECHNICS, INC.
21. THE GENERAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PROTECTION FOR THE WORK UNTIL TURNED OVER TO THE OWNER.
22. THE GENERAL CONTRACTOR SHALL MAINTAIN A CURRENT AND COMPLETE SET OF CONSTRUCTION DRAWINGS ON SITE DURING ALL PHASES OF CONSTRUCTION FOR USE OF ALL TRADES.
23. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.
24. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. ANY MODIFICATION TO SUIT FIELD DIMENSION AND CONDITION SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ANY WORK.
25. BEFORE THE FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL REMOVE ALL EQUIPMENT AND MATERIALS, REPAIR OR REPLACE PRIVATE OR PUBLIC PROPERTY WHICH MAY HAVE BEEN DAMAGED OR DESTROYED DURING CONSTRUCTION, CLEAN THE AREAS WITHIN AND ADJACENT TO THE PROJECT WHICH HAVE BEEN OBSTRUCTED BY HIS/HER OPERATIONS, AND LEAVE THE PROJECT AREA NEAT AND PRESENTABLE.
26. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING FLOW THROUGH THE EXISTING CLOSED STORM DRAINAGE SYSTEM DURING CONSTRUCTION AND SHALL SUBMIT A WORK PLAN FOR APPROVAL BY THE DESIGN ENGINEER.
27. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE MAY OF 2023 BY COLE PETERS, PROFESSIONAL WETLAND SCIENTIST OF SEBAGO TECHNICS, INC. AND LOCATED BY GROUND SURVEY. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND NORTHEAST REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS.

UTILITY DEMOLITION NOTES

1. PROTECT EXISTING BOUNDARY LINE MONUMENTATION. IF DISTURBED, EXISTING MONUMENTATION TO BE RESET BY A PROFESSIONAL LAND SURVEYOR.
2. DEMOLITION OF UTILITIES REQUIRING TREE REMOVAL SHALL BE COORDINATED WITH THE OWNER AND IN ACCORDANCE WITH PROJECT PLANS.
3. UTILITY DEMOLITION SHALL BE COMPLETED IN COORDINATION WITH NEW INFRASTRUCTURE. CONTRACTOR SHALL ENSURE EXISTING SURFACE DRAINAGE IS MAINTAINED DURING CONSTRUCTION.
4. EXISTING SEWER AND STORM DRAINAGE INFRASTRUCTURE TO REMAIN ACTIVE DURING CONSTRUCTION AND UPON COMPLETION OF PROJECT. DEMOLITION/CONSTRUCTION ACTIVITIES SHALL NOT INTERFERE OR IMPEDE EXISTING FLOWS. CONTRACTOR SHALL PROVIDE BYPASS PUMPING AS REQUIRED DURING SEWER AND STORM DEMOLITION AND NEW CONSTRUCTION. DAMAGE TO EXISTING SEWER INFRASTRUCTURE SHALL BE REPAIRED BY CONTRACTOR AT THEIR EXPENSE.
5. DEMOLITION SHOWN IS FOR MAJOR SITE ELEMENTS TO BE DEMOLISHED. OTHER MINOR DEMOLITION MAY BE REQUIRED AS PART OF CONSTRUCTION AND SHALL BE CONSIDERED INCIDENTAL TO THE COST OF CONSTRUCTION. COORDINATE ALL DEMOLITION WORK WITH SITE AND BUILDING DRAWINGS.
6. PRIOR TO ANY DEMOLITION, THE CONTRACTOR SHALL SUBMIT A SEQUENCE OF DEMOLITION PLANS TO THE OWNER. THIS PLAN SHALL DEPICT LOCATIONS OF PROPOSED TERMINATIONS AND ANY TEMPORARY SERVICES THAT WILL BE NEEDED.
7. CONTRACTOR REQUIRED TO CONFIRM/MAINTAIN BENCHMARKS. IF IMPACTED CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION/RELOCATION AND COORDINATION WITH PROJECT TEAM.

GRADING & EROSION NOTES

1. SIDESLOPES SHALL NOT BE STEEPER THAN 3:1 (H:V) EXCEPT AS OTHERWISE IDENTIFIED ON THIS PLAN. ALL SIDESLOPES STEEPER THAN 3:1 (H: V) SHALL BE LINED WITH EROSION CONTROL BLANKET, OR ADDITIONAL MEASURES AS INDICATED.
2. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENT CONTROL BMPS" MANUAL PUBLISHED BY BUREAU OF LAND AND WATER QUALITY MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
3. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE LOAM AND SEED PER DETAIL.
4. SEE UTILITY DRAWINGS FOR PIPE AND STRUCTURE DATA TABLES.

CONSTRUCTION PLAN

1. PROVIDE EROSION CONTROL MEASURES PRIOR TO SITE DISTURBANCE.
2. WETLANDS, ASSOCIATED SETBACKS AND STREAM SETBACKS TO BE STAKED BY OWNER PRIOR TO SITE DISTURBANCE.
3. GRADING AND CLEARING LIMITS SHALL NOT ENCROACH ON ADJACENT PROPERTIES UNLESS NOTED OTHERWISE ON THE PLANS.
4. OPEN AREAS SHALL BE LIMITED TO AREAS BEING WORKED IN. THE AREA STRIPPED OF EXISTING VEGETATION AT ANY GIVEN TIME SHALL BE MINIMIZED AND BE PHASED WHERE PRACTICAL SO THAT AREAS ARE REVEGETATED AND PERMANENTLY STABILIZED BEFORE ADDITIONAL AREAS ARE STRIPPED OF EXISTING VEGETATION. STABILIZE CONSTRUCTION AREAS BY USE OF RIPRAP, SEED, MULCH, OR OTHER GROUND COVER WITHIN ONE WEEK FROM THE TIME IT WAS ACTIVELY WORKED. SURFACES SHALL BE STABILIZED PRIOR TO DIRECTING STORMWATER RUNOFF TOWARD STORMWATER BMPS. PLEASE REFER TO DRAINAGE PLANS FOR WATERSHED AREAS.

LANDSCAPE NOTES

1. PLANT QUANTITIES SHOWN ON PLANT LISTS ARE FOR CONVENIENCE TO THE CONTRACTOR ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ALL PLANT MATERIAL INSTALLATION AS SHOWN ON PLANS.
2. SIZE AND GRADING STANDARDS OF PLANT MATERIALS SHALL CONFORM TO THE LATEST EDITION OF "U.S.A. STANDARD FOR NURSERY STOCK," BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
3. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
4. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING, STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE BY THE OWNER.
5. PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR BY THE CONTRACTOR AND A PERIOD OF TWO YEARS THEREAFTER BY THE OWNER FROM DATE OF INSTALLATION. DURING THE ONE YEAR GUARANTEE PERIOD, DEAD PLANT MATERIAL SHALL BE REPLACED AT NO COST TO THE OWNER. AT THE END OF THE ONE YEAR PERIOD, THE CONTRACTOR SHALL OBTAIN FINAL ACCEPTANCE FROM THE OWNER.
6. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
7. EXISTING TREES TO BE PRESERVED WILL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
8. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF THE UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER.
9. ALL SHRUB BEDS SHALL BE MULCHED WITH 3" CLEAN SHREDDED DARK BROWN BARK MULCH.
10. THE CONTRACTOR SHALL PROVIDE 4" LOAM FOR ALL AREAS TO BE SODDED OR SEEDED. PLANTING AREAS SHALL RECEIVE 12" ROLLED THICKNESS OF LOAM. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
11. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT (AND MUNICIPAL AUTHORITY, IF APPLICABLE) PRIOR TO INSTALLATION ON SITE.
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR PERENNIAL AND ANNUAL FLOWER BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
13. DURING CLEANING OF SITE AND PRIOR TO TREE AND SHRUB INSTALLATION, CONTRACTOR SHALL REMOVE INVASIVE PLANTS. AREAS WHERE INVASIVE PLANTS ARE REMOVED AND NO OTHER PLANTING IS PROPOSED, AREA SHALL BE LOAM AND SEEDED.

UTILITY NOTES

1. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION. PROTECT EXISTING ONSITE SEWER PIPE AND ADJUST MANHOLE RIMS TO GRADE WHERE APPLICABLE.
2. ALL GRAVITY CONDUIT PIPES SHALL BE INSTALLED USING A PIPE LASER AND TARGET SYSTEM THROUGH THE PIPE. ON PIPE RUNS 50 FEET OR LESS, THE CONTRACTOR SHALL REQUEST ENGINEER'S APPROVAL TO USE OR NOT USE A GROUND LASER.
3. MAINTAIN MINIMUM 5'-6" OF COVER ABOVE TOP OF WATER SERVICE PIPE.
4. MAINTAIN MINIMUM 10 FEET HORIZONTAL SEPARATION BETWEEN WATER SERVICES AND OTHER UTILITIES. MAINTAIN MINIMUM 18 INCHES VERTICAL SEPARATION BETWEEN WATER SERVICES AND OTHER UTILITIES.
5. LOWER OR RAISE WATER SERVICES AS REQUIRED TO MAINTAIN MINIMUM 12 INCH VERTICAL SEPARATION FROM OTHER UTILITIES. WATER SERVICES CROSSING SEWERS SHALL MAINTAIN 12 INCH MINIMUM SEPARATION BETWEEN THE BOTTOM OF WATER LINE AND TOP OF SEWER UNLESS NOTED OTHERWISE ON THE PLANS.
6. PIPE:
   - SEWER PIPE SHALL BE SDR 35 PVC OR APPROVED EQUAL.
   - STORMDRAIN SHALL BE ADS N-12 DUAL WALL HDPE PIPE WITH SMOOTH-WALLED INTERIOR OR APPROVED EQUAL UNLESS NOTED OTHERWISE ON THE UTILITY PLANS.
   - WATER PIPE AND FITTINGS SHALL CONFORM TO THE DISTRICT HAVING JURISDICTION'S SPECIFICATIONS. MAIN WATER SERVICE PIPE SHALL BE DUCTILE IRON, CLASS 52 PUSH-ON PIPE MEETING THE REQUIREMENTS OF AWWA/ANSI C-111/A21.11 (LATEST REVISION). PIPE SHALL BE CEMENT-LINED AWWA/ANSI C104/A21.4 WITH LINING TWICE THE THICKNESS SPECIFIED, AND COATED TWICE WITH A BITUMINOUS SEAL COATING. PROVIDE THRUST BLOCKS AT ALL WATER SERVICE BENDS.
7. COORDINATE ALL UTILITY LOCATIONS AND INVERTS AT BUILDING WITH ARCHITECTURAL, STRUCTURAL AND PLUMBING DRAWINGS.
8. WATER SERVICE ENTRANCE DESIGNS TO INCLUDE METERS AND BACKFLOW PREVENTERS TO MEET ALL STANDARDS AND REQUIREMENTS OF THE DISTRICT HAVING JURISDICTION.
9. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY GRADE CHANGES THAT WILL IMPACT STORM DRAINAGE INFRASTRUCTURE OR OTHER UTILITIES.
10. UTILITIES WITHIN 5 FEET FROM FACE OF BUILDING ARE COORDINATED ON RELEVANT M.E.P. DRAWINGS. CONTRACTOR SHALL COORDINATE INVERTS, CONNECTIONS AND MATERIALS WITH ALL DRAWINGS.
11. CONTRACTOR SHALL FURNISH AND INSTALL TRENCHING, MATERIALS AND BACKFILL FOR ALL UTILITIES. ELECTRICAL AND TELECOM/DATA PROVIDERS WILL PULL PRIMARY SERVICE TO TRANSFORMER AND PANEL. CONTRACTOR RESPONSIBLE FOR TIMING AND COORDINATION WITH UTILITIES AND DRAWINGS. COORDINATE WITH ELECTRICAL DRAWINGS FOR CONDUIT SCHEDULE, TYPE AND SIZES.
12. COORDINATE ALL WATER RELATED WORK WITH DISTRICT HAVING JURISDICTION.
13. THE CONTRACTOR IS HEREBY CAUTIONED THAT ALL SITE FEATURES SHOWN HEREON ARE BASED ON FIELD OBSERVATIONS BY THE SURVEYOR AND BY INFORMATION PROVIDED BY UTILITY COMPANIES. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT DIG SAFE (811) AT LEAST THREE (3) BUT NOT MORE THAN THIRTY (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES.
14. CONTRACTOR SHALL BE AWARE THAT DIG SAFE ONLY NOTIFIES ITS "MEMBER" UTILITIES ABOUT THE DIG. WHEN NOTIFIED, DIG SAFE WILL ADVISE CONTRACTOR OF MEMBER UTILITIES IN THE AREA. CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND CONTACTING NON-MEMBER UTILITIES DIRECTLY. NON-MEMBER UTILITIES MAY INCLUDE TOWN OR CITY WATER AND SEWER DISTRICTS AND SMALL LOCAL UTILITIES, AS WELL AS USG PUBLIC WORKS SYSTEMS.
15. CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF 23 MRSA 3360-A. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITIES TO OBTAIN AUTHORIZATION PRIOR TO RELOCATION OF ANY EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS. IF A UTILITY CONFLICT ARISES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER, THE MUNICIPALITY AND APPROPRIATE UTILITY COMPANY PRIOR TO PROCEEDING WITH ANY RELOCATION.

TYPICAL ABBREVIATIONS

AC	ACRE
AFG	ABOVE FINISH GRADE
APPROX.	APPROXIMATELY
BC	BOTTOM OF CURB
BCC	BITUMINOUS CONCRETE CURB
BIT	BITUMINOUS
BLDG	BUILDING
BW	BOTTOM OF WALL
CB	CATCH BASIN
CONC	CONCRETE
CONT	CONTINUOUS
DI	DUCTILE IRON
DIA	DIAMETER
DMH	DRAIN MANHOLE
E.W.	EACH WAY
ELEV	ELEVATION
FFE	FINISH FLOOR ELEVATION
FIN. GR.	FINISH GRADE
FTG	FOOTING
HDPE	HIGH DENSITY POLYETHYLENE
HGT	HEIGHT
HMA	HOT MIX ASPHALT
INV	INVERT
LF	LINEAR FEET
OC	ON CENTER
PVC	POLYVINYL CHLORIDE
PWD	PORTLAND WATER DISTRICT
R	RADIUS
R.O.W.	RIGHT OF WAY
S.F.	SQUARE FEET
SCH	SCHEDULE
SCSC	SLIPFORM CONCRETE SLOPED CURB
SCVC	SLIPFORM CONCRETE VERTICAL CURB
SD	STORM DRAIN
SGC	SLOPED GRANITE CURB
SMH	SEWER MANHOLE SPECS SPECIFICATIONS
SS	SANITARY SEWER
SSGC	SALVAGED SLOPED GRANITE CURB
SVGC	SALVAGED VERTICAL GRANITE CURB
TC	TOP OF CURB
TW	TOP OF WALL
TYP	TYPICAL
VGC	VERTICAL GRANITE CURB
VIF	VERIFY IN FIELD

AMY BELL SEGAL RLA 2265

LICENSED LANDSCAPE ARCHITECT — Amy Bell Segal — No. 2265 — STATE OF MAINE — 02/29/2024

PAUL D. OSTROWSKI PE 11175

STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — REGISTERED PROFESSIONAL ENGINEER — 02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS MADE TO THIS PLAN SHALL BE DONE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS INC.

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WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

NOTES & LEGEND

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

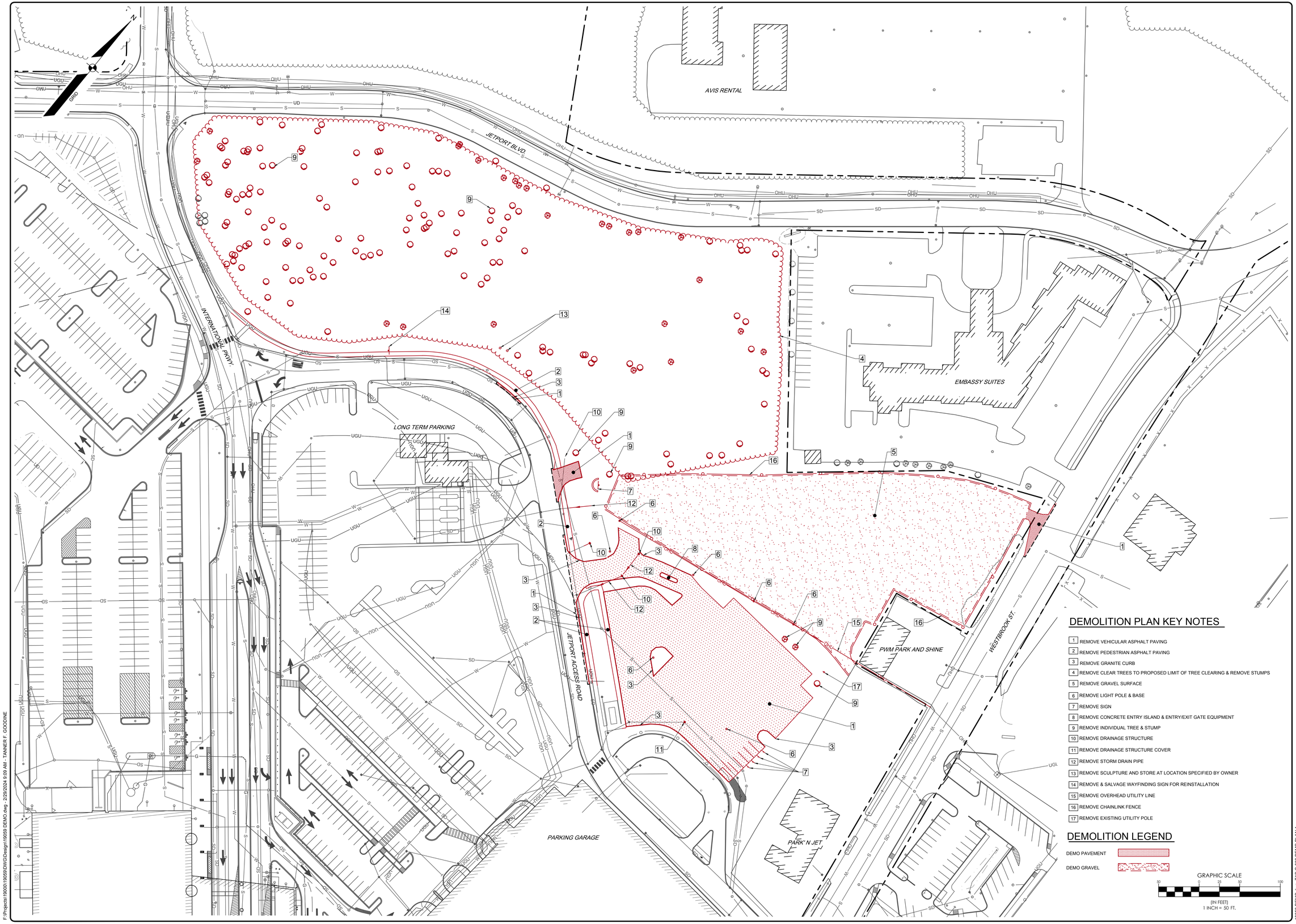
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET G-002

NOT FOR CONSTRUCTION

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19059 NL.dwg - TAB:G-002 Notes & Legend



DEMOLITION PLAN KEY NOTES

1. REMOVE VEHICULAR ASPHALT PAVING
2. REMOVE PEDESTRIAN ASPHALT PAVING
3. REMOVE GRANITE CURB
4. REMOVE CLEAR TREES TO PROPOSED LIMIT OF TREE CLEARING & REMOVE STUMPS
5. REMOVE GRAVEL SURFACE
6. REMOVE LIGHT POLE & BASE
7. REMOVE SIGN
8. REMOVE CONCRETE ENTRY ISLAND & ENTRY/EXIT GATE EQUIPMENT
9. REMOVE INDIVIDUAL TREE & STUMP
10. REMOVE DRAINAGE STRUCTURE
11. REMOVE DRAINAGE STRUCTURE COVER
12. REMOVE STORM DRAIN PIPE
13. REMOVE SCULPTURE AND STORE AT LOCATION SPECIFIED BY OWNER
14. REMOVE & SALVAGE WAYFINDING SIGN FOR REINSTALLATION
15. REMOVE OVERHEAD UTILITY LINE
16. REMOVE CHAINLINK FENCE
17. REMOVE EXISTING UTILITY POLE

DEMOLITION LEGEND

DEMO PAVEMENT

DEMO GRAVEL

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 INCH = 50 FT.

NOT FOR CONSTRUCTION

AMY BELL SEGAL RLA 2265

LICENSED LANDSCAPE ARCHITECT
Amy Bell Segal
No. 2265
STATE OF MAINE
02/29/2024

PAUL D. OSTROWSKI PE 11175

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

REV.:	BY:	DATE:	STATUS:
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

DEMOLITION PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET C-003

F:\Projects\19000\19059\DWG\Design\19059 DEMO.dwg 2/29/2024 9:09 AM - TANNER F. GOODINE

19059 DEMO.dwg, TAB:C-002 DEMO PLAN 1

TOTAL PARKING SPACES

STANDARD PARKING SPACES	= 664
ADA PARKING SPACES	= 20
TOTAL PARKING SPACES	= 684

PROPOSED LONG TERM PARKING
237 PARKING SPACES

PROPOSED LONG TERM PARKING
195 PARKING SPACES

PROPOSED LONG TERM PARKING
252 PARKING SPACES

AVIS RENTAL

JETPORT BLVD.

INTERNATIONAL PKWY.

PROPOSED PRIMARY EXIT

LONG TERM PARKING

PROPOSED ENTRY

EMBASSY SUITES

PROPOSED SECONDARY EXIT

JETPORT ACCESS ROAD

PARKING GARAGE

PWM PARK AND SHINE

WESTBROOK ST.

PARK' N JET

SHEET C-102
SHEET C-202
SHEET C-302
SHEET L-103

SHEET C-103
SHEET C-203
SHEET C-303
SHEET L-104

SHEET C-101
SHEET C-201
SHEET C-301
SHEET L-102

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

NOT FOR CONSTRUCTION

AMY BELL SEGAL RLA 2265
02/29/2024

PAUL D. OSTROWSKI PE 11175
02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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South Portland, ME 04106
Tel. 207-200-2100

OVERALL SITE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET C-100

F:\Projects\19000\19059\DWG\Design\19059 S.dwg 2/29/2024 8:09 AM - TANNER F. GOODINE

19059 S.dwg TAB:C-100 Overall Site

MATCH LINE - SEE SHEET C-102

CURB ABBREVIATIONS

VSCC -	VERTICAL SLIPFORM CONCRETE CURB
SSCC -	SLOPED SLIPFORM CONCRETE CURB
FSCC -	FLUSH SLIPFORM CONCRETE CURB
VGC -	VERTICAL GRANITE CURB
FGC -	FLUSH GRANITE CURB

TIPDOWN ABBREVIATIONS

TD1 -	SLIPFORM CONCRETE TIPDOWN
TD2 -	VERTICAL GRANITE TIPDOWN

SIGN SCHEDULE

S-1 -	STOP SIGN
S-2 -	DO NOT ENTER SIGN
S-3 -	ADA ACCESSIBLE PARKING SIGN [*MOUNTED ON BOLLARD*]

LUMINAIRE SCHEDULE

LABEL	MOUNTING HEIGHT	LLF	LUM. LUMENS	LUM. WATTS	DESCRIPTION
A5	30'-0" AFG	0.900	23445	240	VP-2-72L-240-3K7-5QW
B5	30'-0" AFG	0.900	23445	240	VP-2-72L-240-3K7-5QW
A4	30'-0" AFG	0.900	21466	240	VP-2-72L-240-3K7-4W

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

NOT FOR CONSTRUCTION

AMY BELL SEGAL RLA 2265
STATE OF MAINE LICENSED LANDSCAPE ARCHITECT Amy Bell Segal No. 2265 02/29/2024

PAUL D. OSTROWSKI PE 11175
STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER PAUL D. OSTROWSKI No. 11175 02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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75 John Roberts Rd.
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South Portland, ME 04106
Tel. 207-200-2100

SITE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-101

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19059 S.dwg, TAB:C-101 Site

CURB ABBREVIATIONS

VSCC - VERTICAL SLIPFORM CONCRETE CURB
SSCC - SLOPED SLIPFORM CONCRETE CURB
FSCC - FLUSH SLIPFORM CONCRETE CURB
VGC - VERTICAL GRANITE CURB
FGC - FLUSH GRANITE CURB

TIPDOWN ABBREVIATIONS

TD1 - SLIPFORM CONCRETE TIPDOWN
TD2 - VERTICAL GRANITE TIPDOWN

SIGN SCHEDULE

S-1 - STOP SIGN
S-2 - DO NOT ENTER SIGN
S-3 - ADA ACCESSIBLE PARKING SIGN (*MOUNTED ON BOLLARD*)

LUMINAIRE SCHEDULE

LABEL	MOUNTING HEIGHT	LLF	LUM. LUMENS	LUM. WATTS	DESCRIPTION
A5	30'-0" AFG	0.900	23445	240	VP-2-72L-240-3K7-5QW
B5	30'-0" AFG	0.900	23445	240	VP-2-72L-240-3K7-5QW
A4	30'-0" AFG	0.900	21466	240	VP-2-72L-240-3K7-4W

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

MATCH LINE - SEE SHEET C-103

MATCH LINE - SEE SHEET C-101

JETPORT BLVD.

EMBASSY SUITES

SEE LUMINAIRE SCHEDULE FOR ADDITIONAL LIGHTING INFORMATION

(21) 9' X 18' PARKING SPACES

(18) 9' X 18' PARKING SPACES

(13) 9' X 18' PARKING SPACES

(20) 9' X 18' PARKING SPACES

(28) 9' X 18' PARKING SPACES

(12) 9' X 18' PARKING SPACES

(26) 9' X 18' PARKING SPACES

CURB MATERIAL TRANSITION POINT

ENTRY GATE ISLAND, SEE DETAIL

EXIT GATE ISLAND, SEE DETAIL

SECONDARY EXIT GATE ISLAND, SEE DETAIL

QUEUING FOR ONE PASSENGER VEHICLE

GATE ARM, TYP.

STOP BAR

PAVEMENT SAWCUT

TRASH RECEPTACLE, TYP. BY OTHERS

EXISTING LIGHT POLE, TO REMAIN

6' CROSSWALK

ADA DETECTABLE WARNING PANELS, TYP.

DIRECTIONAL ARROW, TYP.

4" WHITE PARKING PAINT STRIPING

PEDESTRIAN PAVEMENT

VEHICULAR PAVEMENT

INSTALL PEDESTRIAN FENCE, TYP.

7" HARDWOOD
8" HARDWOOD
13" ASH
12" ASH
12" ASH
15" ASH
17" ASH
16" PINE
15" PINE
21" ASH
11" CEDAR
14" CEDAR
24" PINE
20" PINE
16" PINE
20" ASH
20" PINE

NOT FOR CONSTRUCTION

AMY BELL SEGAL RLA 2265
02/29/2024

PAUL D. OSTROWSKI PE 11175
02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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75 John Roberts Rd.
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SITE PLAN

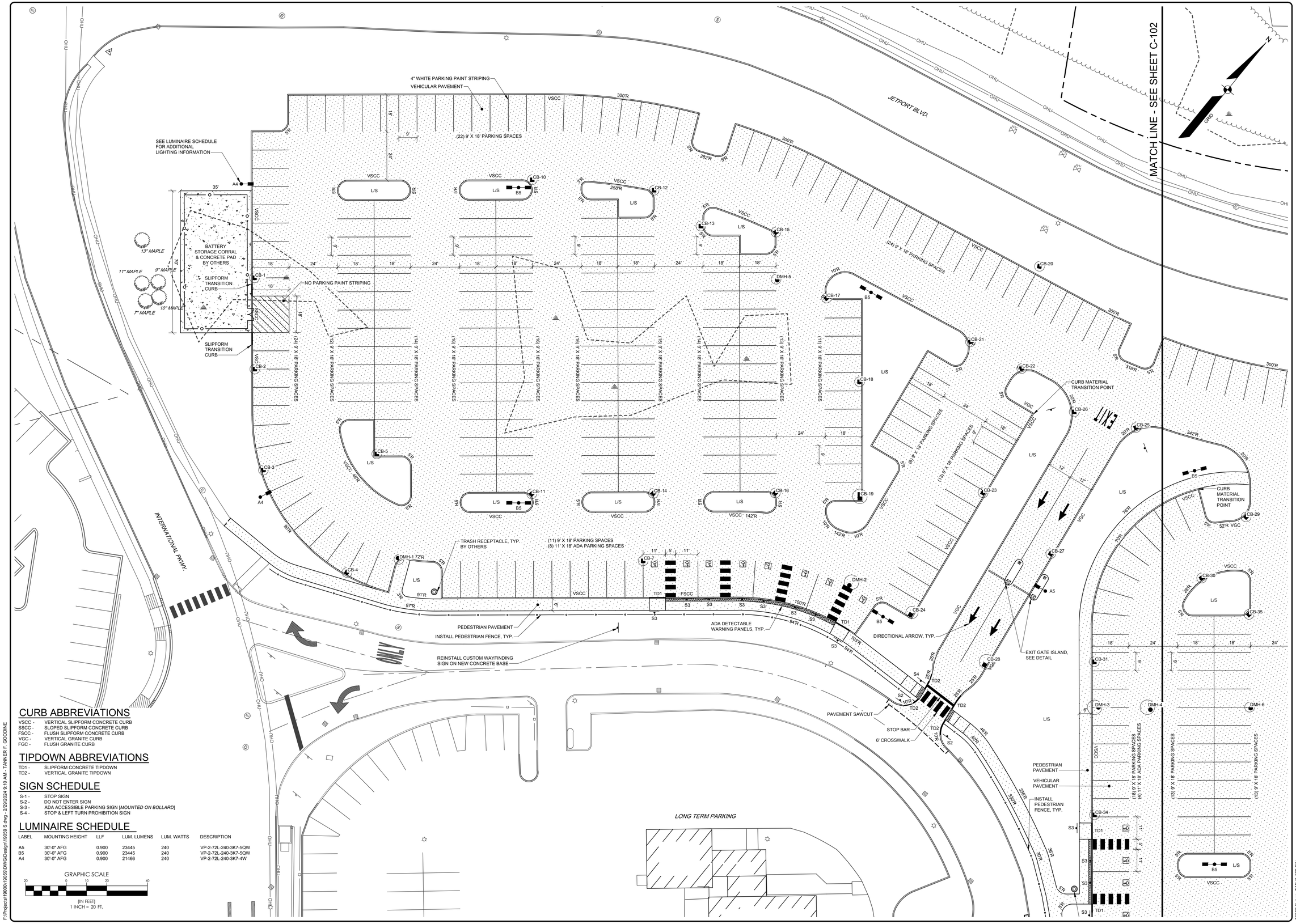
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-102

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19059 S.dwg, TAB:C-102 Site



CURB ABBREVIATIONS

VSCC - VERTICAL SLIPFORM CONCRETE CURB
SSCC - SLOPED SLIPFORM CONCRETE CURB
FSCC - FLUSH SLIPFORM CONCRETE CURB
VGC - VERTICAL GRANITE CURB
FGC - FLUSH GRANITE CURB

TIPDOWN ABBREVIATIONS

TD1 - SLIPFORM CONCRETE TIPDOWN
TD2 - VERTICAL GRANITE TIPDOWN

SIGN SCHEDULE

S-1 - STOP SIGN
S-2 - DO NOT ENTER SIGN
S-3 - ADA ACCESSIBLE PARKING SIGN [*MOUNTED ON BOLLARD*]
S-4 - STOP & LEFT TURN PROHIBITION SIGN

LUMINAIRE SCHEDULE

LABEL	MOUNTING HEIGHT	LLF	LUM. LUMENS	LUM. WATTS	DESCRIPTION
A5	30'-0" AFG	0.900	23445	240	VP-2-72L-240-3K7-5QW
B5	30'-0" AFG	0.900	23445	240	VP-2-72L-240-3K7-5QW
A4	30'-0" AFG	0.900	21466	240	VP-2-72L-240-3K7-4W

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

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AMY BELL SEGAL RLA 2265

LICENSED LANDSCAPE ARCHITECT — Amy Bell Segal — No. 2265 — STATE OF MAINE — 02/29/2024

PAUL D. OSTROWSKI PE 11175

STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — REGISTERED PROFESSIONAL ENGINEER — 02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel. 207-200-2100

SITE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-103

19059 S.dwg - TAB-C-103 Site

NOT FOR CONSTRUCTION

PROPOSED WETLAND IMPACT, 5,812 SF

PROPOSED WETLAND IMPACT, 2,806 SF

JETPORT BLVD.

INTERNATIONAL PKWY.

AVIS RENTAL

EMBASSY SUITES

LONG TERM PARKING

JETPORT ACCESS ROAD

PARKING GARAGE

PWM PARK AND SHINE

WEST BOOTH ST.

PARK 'N JET

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 INCH = 50 FT.

NOT FOR CONSTRUCTION

F:\Projects\19000\19059\DWG\Design\19059 G.dwg 2/29/2024 9:10 AM - TANNER F. GOODINE

19059 G.dwg, TAB:C-200 Overall Grading

PAUL D. OSTROWSKI PE 11175

AMY BELL SEGAL RLA 2265

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS AUTHORIZED BY OTHERS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS INC.

SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

OVERALL GRADING PLAN

OF:

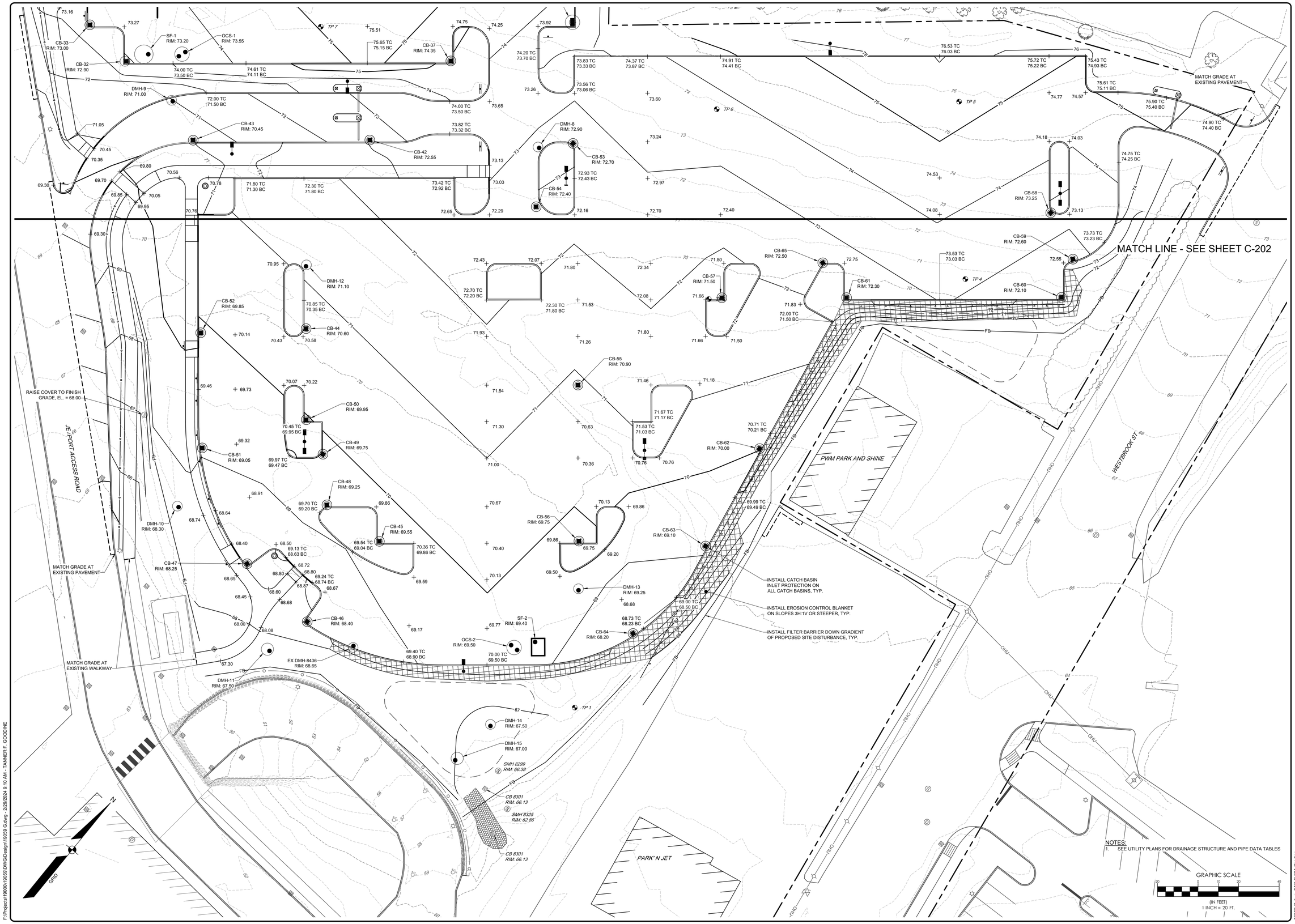
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:

PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET C-200



PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL, RLA 2265

STATE OF MAINE
PAUL D. OSTROWSKI
LICENSED PROFESSIONAL ENGINEER
No. 11175
02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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GRADING PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-201

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19059 G.dwg, TAB C-201 Grading

NOT FOR CONSTRUCTION

MATCH LINE - SEE SHEET C-203

MATCH LINE - SEE SHEET C-201

JETPORT BLVD.

EMBASSY SUITES

GRND

FB

INSTALL FILTER BARRIER DOWN GRADIENT OF PROPOSED SITE DISTURBANCE, TYP.

INSTALL EROSION CONTROL BLANKET ON SLOPES 3H:1V OR STEEPER, TYP.

INSTALL CATCH BASIN INLET PROTECTION ON ALL CATCH BASINS, TYP.

MATCH GRADE AT EXISTING PAVEMENT

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

NOT FOR CONSTRUCTION

STATE OF MAINE
PAUL D. OSTROWSKI
LICENSED PROFESSIONAL ENGINEER
No. 11175
02/29/2024

PAUL D. OSTROWSKI, PE 11175
AMY BELL SEGAL, RLA 2265

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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South Portland, ME 04106
Tel. 207-200-2100

GRADING PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-202

F:\Projects\19000\19059\DWG\Design\19059 G.dwg - 2/29/2024 9:10 AM - TANNER.F. GOODINE

19059 G.dwg, TAB C-202 Grading

INSTALL FILTER BARRIER DOWN GRADIENT OF PROPOSED SITE DISTURBANCE, TYP.

PROPOSED WETLAND IMPACT, 2,806 SF

PROPOSED WETLAND IMPACT, 5,812 SF

INSTALL CATCH BASIN INLET PROTECTION ON ALL CATCH BASINS, TYP.

INSTALL EROSION CONTROL BLANKET ON SLOPES 3H:1V OR STEEPER, TYP.

MATCH GRADE AT EXISTING PAVEMENT

INSTALL STABILIZED CONSTRUCTION ENTRANCE / EXIT

LONG TERM PARKING

JETPORT BLVD.

INTERNATIONAL PRWY.

SMH 8108 RIM: 82.13

CB 8121 RIM: 81.09

SMH 8116 RIM: 84.63

CB 8112 RIM: 83.63

CB 8435 RIM: 76.33

CB 8437 RIM: 74.87

SMH 8439 RIM: 75.62

CB 8441 RIM: 74.17

CB 8443 RIM: 74.17

CB 8445 RIM: 73.22

CB 8448 RIM: 74.86

MH 8452 RIM: 73.64

DMH 8450 RIM: 73.36 (PAVED OVER)

CB-1 RIM: 80.80

CB-2 RIM: 79.80

CB-3 RIM: 78.85

CB-4 RIM: 78.50

CB-5 RIM: 80.00

CB-10 RIM: 82.05

CB-11 RIM: 79.00

CB-12 RIM: 80.75

CB-13 RIM: 79.95

CB-14 RIM: 77.80

CB-15 RIM: 79.20

CB-16 RIM: 76.65

CB-17 RIM: 78.20

CB-18 RIM: 77.00

CB-19 RIM: 75.80

CB-20 RIM: 77.45

CB-21 RIM: 77.60

CB-22 RIM: 77.20

CB-23 RIM: 75.80

CB-24 RIM: 74.55

CB-25 RIM: 77.80

CB-26 RIM: 77.60

CB-27 RIM: 74.60

CB-28 RIM: 73.30

CB-29 RIM: 78.15

CB-30 RIM: 77.15

CB-31 RIM: 75.25

CB-34 RIM: 73.80

CB-35 RIM: 77.25

DMH-1 RIM: 79.45

DMH-2 RIM: 75.10

DMH-3 RIM: 74.80

DMH-4 RIM: 75.35

DMH-5 RIM: 78.75

DMH-6 RIM: 76.40

TP 29 TP 30 TP 22 TP 21 TP 27 TP 25 TP 19 TP 15 TP 14 TP 13 TP 11 TP 8

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

MATCH LINE - SEE SHEET C-202

NOT FOR CONSTRUCTION

F:\Projects\19000\19059\DWG\Design\19059 G.dwg - 2/29/2024 9:10 AM - TANNER F. GOODINE

19059 G.dwg, TAB-C-203 Grading

PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

STATE OF MAINE PAUL D. OSTROWSKI No. 11175 REGISTERED PROFESSIONAL ENGINEER 02/29/2024

REV.	BY	DATE:	STATUS:
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

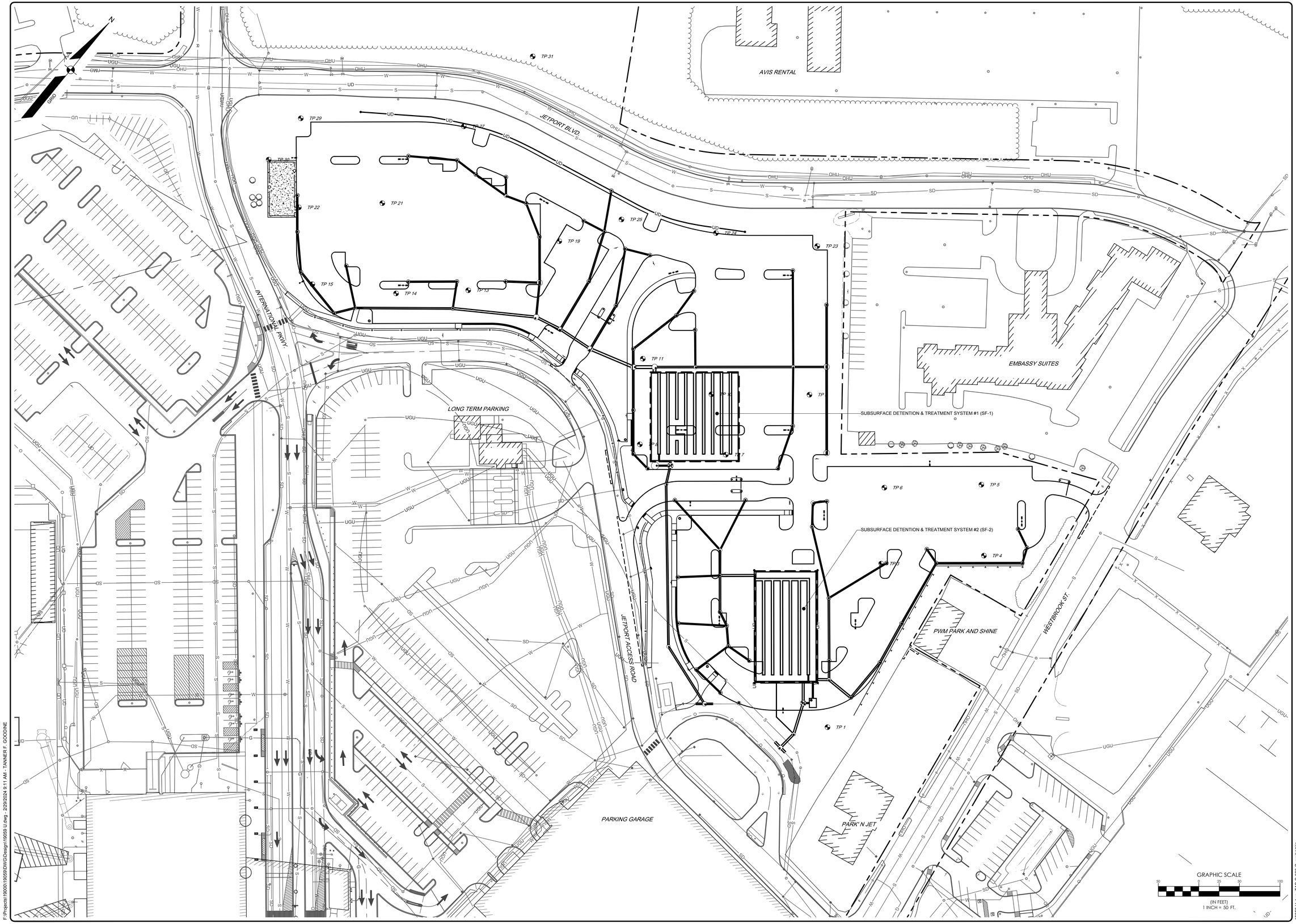
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GRADING PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-203



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NOT FOR CONSTRUCTION

AMY BELL SEGAL, RLA 2265

PAUL D. OSTROWSKI, PE 11175

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

REV.	BY	DATE	STATUS
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Tel. 207-200-2100

OVERALL UTILITY PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

19059 U.dwg, TAB:C-300 Overall Utility

SHEET C-300

MATCH LINE - SEE SHEET C-302

CB-33
SD-46
SD-35
18" SD
INV=62.50
SD-48
OCS-1
CB-32
SF-1
SD-47
SD-49
INSTALL WEIR PANEL IN STRUCTURE, SEE OCS-1 DETAIL
CB-37
CAP EXISTING PIPE AND ABANDON IN PLACE
DMH-9
CB-43
CB-42
SD-53
SD-52
CB-41
DMH-8
SD-64
CB-53
SD-65
CB-54
CB-58
SD-71
CB-59
CB-60
CB-57
CB-65
SD-74
CB-61
SD-73
SD-72
DMH-12
CAP EXISTING PIPES AND ABANDON IN PLACE
INSTALL DRAINAGE STRUCTURE WITH 4 FOOT SUMP FOR PRETREATMENT PRIOR TO ENTERING CMP DETENTION
24" SD
INV=61.30
CB-52
SD-63
CB-44
SD-55
SD-68
SD-70
CB-55
SD-50
SD-60
CB-50
CB-51
SD-62
SD-59
CB-49
MAINTAIN MINIMUM 1' VERTICAL SEPARATION BETWEEN PROPOSED STORM DRAIN AND EXISTING SEWER PIPES.
PROPOSED 96" SUBSURFACE CMP DETENTION, #2, SEE DETAILS
SD-67
SD-75
CB-62
CB-56
CB-48
SD-58
SD-61
DMH-10
CB-45
CB-63
SD-66
SD-57
CB-47
SD-56
SD-51
24" SD
INV=62.80
DMH-13
SD-69
SD-77
SD-76
INSTALL DRAINAGE STRUCTURE WITH 4 FOOT SUMP FOR PRETREATMENT PRIOR TO ENTERING CMP DETENTION
INSTALL DRAIN MANHOLE AT EXISTING 18" SD PIPE, INV. = 56.01
CB-46
DMH-11
INSTALL WEIR PANEL IN STRUCTURE, SEE OCS-1 DETAIL
SD-81
SD-79
CB-64
EX DMH-8436
REPLACE CATCH BASIN RIM WITH SOLID DRAIN MANHOLE COVER
SD-80
OCS-2
SD-82
STORMFILTER TREATMENT UNIT #2 (SF-2)
SF-2
DMH-14
SD-83
MAINTAIN MINIMUM 1' VERTICAL SEPARATION BETWEEN PROPOSED STORM DRAIN AND EXISTING SEWER PIPES.
EXISTING 12" SEWER, TO REMAIN
SAWCUT EXISTING PIPE & CONNECT NEW STUB WITH WATERTIGHT SEAL
DMH-15
SMH 8299
RIM: 66.38
SAWCUT EXISTING PIPE & CONNECT NEW STUB WITH WATERTIGHT SEAL
INSTALL DRAIN MANHOLE AT EXISTING 24" SD PIPE, INV. = 55.67
CB 8301
RIM: 66.13
SMH 8325
RIM: 62.86
CB 8301
RIM: 66.13
JETPORT ACCESS ROAD
PWM PARK AND SHINE
WESTBROOK ST.
PARK' N JET
8'
3'
GRID
N
GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

NOT FOR CONSTRUCTION

Page 1274

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19059 U.dwg, TAB:C-301 Utility

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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Tel. 207-200-2100

UTILITY PLAN

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-301

MATCH LINE - SEE SHEET C-303

JETPORT BLVD.

EMBASSY SUITES

CB-20
CB-22
CB-25
CB-26
CB-27
CB-28
CB-29
CB-30
CB-31
CB-32
CB-33
CB-34
CB-35
CB-36
CB-37
CB-38
CB-39
CB-40
CB-41
CB-42
CB-43
CB-53
CB-54
CB-58

SD-21
SD-25
SD-26
SD-27
SD-28
SD-29
SD-30
SD-32
SD-33
SD-34
SD-35
SD-36
SD-37
SD-38
SD-39
SD-40
SD-41
SD-43
SD-44
SD-46
SD-47
SD-48
SD-52
SD-53
SD-64
SD-65

CB 8267
RIM: 79.95
DMH 8265
RIM: 80.50
SMH 8139
RIM: 80.64
CB 8135
RIM: 79.95
CB 8267
RIM: 75.37
DMH 8265
RIM: 75.64
CB 8263
RIM: 75.25

INSTALL STONE DRIP EDGE, SEE DETAIL
INSTALL DRAINAGE CLEANOUT
INSTALL DRAINAGE STRUCTURE WITH 4 FOOT SUMP FOR PRETREATMENT PRIOR TO ENTERING CMP DETENTION
PROPOSED SUBSURFACE CMP DETENTION, #1, SEE DETAIL
36" SD INV=65.10
12" SD INV=62.50
18" SD INV=62.50
INSTALL WEIR PANEL IN STRUCTURE, SEE OCS-1 DETAIL
CAP EXISTING PIPE AND ABANDON IN PLACE

DMH-3
DMH-4
DMH-6
DMH-7
DMH-8
DMH-9
SF-1
OCS-1

8'
3'

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

MATCH LINE - SEE SHEET C-301

NOT FOR CONSTRUCTION

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19059 U.dwg, TAB C-302 Utility

PAUL D. OSTROWSKI PE 11175

AMY BELL SEGAL, RLA 2265

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

REV.	BY	DATE	STATUS
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UTILITY PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-302

SMH 8108
RIM: 82.13

CB 8121
RIM: 81.09

INSTALL DRAINAGE CLEANOUT

INSTALL STONE DRIP EDGE, SEE DETAIL

CB 8112
RIM: 83.63

SMH 8116
RIM: 84.63

JETPORT BLVD.

INTERNATIONAL PKWY.

CB-1
CB-2
CB-3
CB-4
CB-5
CB-7
CB-10
CB-11
CB-12
CB-13
CB-14
CB-15
CB-16
CB-17
CB-18
CB-19
CB-20
CB-21
CB-22
CB-23
CB-24
CB-25
CB-26
CB-27
CB-28
CB-29
CB-30
CB-31
CB-34
CB-35

SD-1
SD-2
SD-3
SD-4
SD-6
SD-9
SD-10
SD-11
SD-12
SD-13
SD-14
SD-15
SD-16
SD-17
SD-18
SD-19
SD-20
SD-21
SD-22
SD-23
SD-24
SD-25
SD-26
SD-27
SD-28
SD-29
SD-30
SD-31
SD-32
SD-33
SD-34
SD-35
SD-36
SD-37
SD-40

DMH-1
DMH-2
DMH-3
DMH-4
DMH-5
DMH-6

CB 8435
RIM: 76.33

CB 8437
RIM: 74.87

SMH 8439
RIM: 75.62

CB 8441
RIM: 74.17

CB 8443
RIM: 74.17

CB 8445
RIM: 73.22

CB 8448
RIM: 74.86

MH 8336
RIM: 73.84

DMH 8450
RIM: 73.36
(PAVED OVER)

LONG TERM PARKING

36" SD
INV=65.10

12" SD
INV=62.50

CAP EXISTING PIPE AND ABANDON IN PLACE

-MATCH LINE - SEE SHEET C-302

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

NOT FOR CONSTRUCTION

F:\Projects\19000\19059\DWG\Design\19059 U.dwg 2/29/2024 9:11 AM - TANNER F. GOODINE

19059 U.dwg, TAB:C-303 Utility

PAUL D. OSTROWSKI PE 11175

AMY BELL SEGAL RLA 2265

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

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UTILITY PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-303

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-1	80.80		77.20 (SD-1)	48" DIA.
CB-2	79.80	76.20 (SD-1)	76.10 (SD-2)	48" DIA.
CB-3	78.85	75.25 (SD-2)	75.00 (SD-3)	48" DIA.
CB-4	78.50	74.25 (SD-3)	74.00 (SD-4)	48" DIA.
CB-5	80.00		75.50 (SD-9)	48" DIA.
CB-7	76.55	71.75 (SD-11) 71.50 (SD-5)	71.00 (SD-6)	48" DIA.
CB-10	82.05		78.45 (SD-12)	48" DIA.
CB-11	79.00		74.25 (SD-10)	48" DIA.
CB-12	80.75	76.90 (SD-12)	76.80 (SD-13)	48" DIA.
CB-13	79.95	76.35 (SD-13)	76.10 (SD-14)	48" DIA.
CB-14	77.80	72.60 (SD-10)	72.50 (SD-11)	48" DIA.
CB-15	79.20		75.60 (SD-15)	48" DIA.
CB-16	76.65		72.90 (SD-19)	48" DIA.
CB-17	78.20	74.20 (SD-16)	74.10 (SD-17)	48" DIA.
CB-18	77.00	73.40 (SD-17)	73.30 (SD-18)	48" DIA.
CB-19	75.80	72.20 (SD-18) 72.15 (SD-19)	70.00 (SD-20)	72" DOUBLE GRATE
CB-20	77.45	74.45 (UD-1) 74.45 (UD-2)	74.35 (SD-21)	48" DIA.
CB-21	77.60		73.65 (SD-22)	48" DIA.
CB-22	77.20	73.35 (SD-22) 73.35 (SD-21)	73.10 (SD-23)	48" DIA.
CB-23	75.80	71.85 (SD-23)	71.75 (SD-24)	48" DIA.
CB-24	74.55	70.70 (SD-24) 68.10 (SD-7)	68.00 (SD-8)	60" DIA.
CB-25	77.80		74.00 (SD-25)	48" DIA.
CB-26	77.60	73.20 (SD-25)	73.10 (SD-26)	48" DIA.
CB-27	74.60	71.00 (SD-26)	69.30 (SD-27)	48" DIA.
CB-28	73.30	68.15 (SD-27) 67.40 (SD-8)	66.90 (SD-28)	72" DIA.
CB-29	78.15		74.55 (SD-31)	48" DIA.
CB-30	77.15	73.30 (SD-31)	73.05 (SD-32)	48" DIA.
CB-31	75.25	70.75 (SD-32)	70.50 (SD-33)	48" DIA.
CB-32	72.90		68.95 (SD-35)	48" DIA.

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-33	73.00	68.80 (SD-35)	68.70 (SD-36)	48" DIA.
CB-34	73.80	68.25 (SD-36)	68.00 (SD-37)	48" DIA.
CB-35	77.25		73.65 (SD-34)	48" DIA.
CB-36	78.90		75.30 (SD-38)	48" DIA.
CB-37	74.35		70.75 (SD-41)	48" DIA.
CB-38	75.00	70.15 (SD-41)	70.05 (SD-42)	48" DIA.
CB-39	77.10		73.50 (SD-43)	48" DIA.
CB-40	75.80	72.20 (SD-43) 68.90 (SD-44)	68.65 (SD-45)	72" DOUBLE GRATE
CB-41	73.55		69.95 (SD-44)	72" DOUBLE GRATE
CB-42	72.55		67.30 (SD-52)	48" DIA.
CB-43	70.45		66.77 (SD-53)	48" DIA.
CB-44	70.60	62.30 (SD-60) 65.50 (SD-54) 65.45 (SD-63)	61.80 (SD-55)	48" DIA.
CB-45	69.55		65.95 (SD-61)	48" DIA.
CB-46	68.40		64.80 (SD-56)	48" DIA.
CB-47	68.25	64.40 (SD-56)	64.30 (SD-57)	48" DIA.
CB-48	69.25	65.65 (SD-61) 63.80 (SD-57)	63.55 (SD-58)	48" DIA.
CB-49	69.75	63.30 (SD-58) 64.80 (SD-62)	63.20 (SD-59)	48" DIA.
CB-50	69.95	63.05 (SD-59)	62.80 (SD-60)	48" DIA.
CB-51	69.05		65.45 (SD-62)	48" DIA.
CB-52	69.85		66.05 (SD-63)	48" DIA.
CB-53	72.70		69.10 (SD-64)	48" DIA.
CB-54	72.40	68.40 (SD-65)	68.30 (SD-66)	48" DIA.
CB-55	70.90	66.50 (SD-66) 66.50 (SD-70)	66.00 (SD-67)	48" DIA.
CB-56	69.75	64.70 (SD-67)	64.20 (SD-68)	48" DIA.
CB-57	71.50		67.90 (SD-70)	48" DIA.
CB-58	73.25		69.55 (SD-71)	48" DIA.
CB-59	72.60	69.00 (SD-71)	68.90 (SD-72)	48" DIA.
CB-60	72.10	68.30 (SD-72)	68.20 (SD-73)	48" DIA.
CB-61	72.30	67.16 (SD-73) 67.93 (SD-74)	67.05 (SD-75)	48" DIA.

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-62	70.00	66.06 (SD-75)	65.81 (SD-76)	48" DIA.
CB-63	69.10	64.81 (SD-76)	64.71 (SD-77)	48" DIA.
CB-64	68.20	64.15 (SD-77)	63.65 (SD-78)	48" DIA.
CB-65	72.50		68.50 (SD-74)	48" DIA.
DMH-1	79.45	73.70 (SD-4) 74.20 (SD-9)	73.60 (SD-5)	48" DIA.
DMH-2	75.10	69.35 (SD-20) 68.60 (SD-6)	68.50 (SD-7)	72" DIA.
DMH-3	74.80	66.25 (SD-28) 70.00 (SD-33) 67.50 (SD-37)	65.75 (SD-29)	72" DIA.
DMH-4	75.35	65.35 (SD-29) 66.30 (SD-40)	65.25 (SD-30)	72" DIA.
DMH-5	78.75	76.10 (SD-14) 75.30 (SD-15)	75.20 (SD-16)	48" DIA.
DMH-6	76.40	66.82 (SD-39) 72.50 (SD-34)	66.72 (SD-40)	48" DIA.
DMH-7	76.50	72.90 (SD-38) 69.30 (SD-42) 68.20 (SD-45)	67.95 (SD-39)	48" DIA.
DMH-8	72.90	68.95 (SD-64)	68.85 (SD-65)	48" DIA.
DMH-9	71.00	60.30 (SD-49)	60.20 (SD-50)	48" DIA.
DMH-10	68.30	58.60 (SD-50)	58.50 (SD-51)	48" DIA.
DMH-11	67.50	56.01 (SD-51) 56.01 (EX. SD-1)	56.01 (EX. SD-2)	60" DIA.
DMH-12	71.10	65.95 (SD-52) 65.95 (SD-53)	65.85 (SD-54)	48" DIA.
DMH-13	69.25	63.70 (SD-68) 63.30 (SD-78)	63.20 (SD-69)	48" DIA.
DMH-14	67.50	57.20 (SD-82) 58.92 (GW-1)	57.10 (SD-83)	48" DIA.
DMH-15	67.00	56.87 (SD-83) 55.67 (EX. SD-3)	55.67 (EX. SD-4)	60" DIA.
EX DMH-8436	68.65			SEE SHEET C-301
OCS-1	73.55	62.50 (SD-48) 60.50 (SD-47)	60.40 (SD-49)	72" DIA.
OCS-2	69.50	57.60 (SD-80) 60.00 (SD-81)	57.50 (SD-82)	72" DIA.
SF-1	73.20	62.50 (SD-46)	60.60 (SD-47)	96" DIA.
SF-2	69.40	60.00 (SD-79)	57.70 (SD-80)	72 x 96 inch Rectangular Structure

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
EX. SD-1	18"	8'	0.40%
EX. SD-2	18"	8'	0.30%
EX. SD-3	24"	7'	0.38%
EX. SD-4	24"	6'	0.41%
GW-1	6"	28'	0.50%
SD-1	12"	43'	2.33%
SD-2	12"	48'	1.77%
SD-3	15"	61'	1.23%
SD-4	15"	22'	1.36%
SD-5	18"	118'	1.77%
SD-6	24"	100'	2.39%
SD-7	24"	28'	1.44%
SD-8	24"	39'	1.56%
SD-9	12"	49'	2.64%
SD-10	15"	58'	2.85%
SD-11	12"	32'	2.37%
SD-12	12"	58'	2.66%
SD-13	12"	27'	1.66%
SD-14	12"	43'	0.00%
SD-15	12"	19'	1.56%
SD-16	12"	23'	4.42%
SD-17	12"	40'	1.73%
SD-18	12"	52'	2.14%
SD-19	15"	37'	2.04%
SD-20	15"	37'	1.78%
SD-21	12"	47'	2.12%
SD-22	12"	25'	1.22%
SD-23	15"	60'	2.08%
SD-24	15"	64'	1.64%
SD-25	12"	29'	2.72%

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
SD-26	12"	67'	3.14%
SD-27	15"	57'	2.02%
SD-28	30"	52'	1.25%
SD-29	36"	20'	1.99%
SD-30	36"	4'	3.44%
SD-31	12"	33'	3.76%
SD-32	15"	63'	3.64%
SD-33	15"	18'	2.85%
SD-34	12"	44'	2.63%
SD-35	12"	21'	0.72%
SD-36	12"	50'	0.90%
SD-37	15"	48'	1.04%
SD-38	12"	115'	2.09%
SD-39	18"	117'	0.97%
SD-40	18"	45'	0.92%
SD-41	12"	51'	1.17%
SD-42	12"	69'	1.09%
SD-43	12"	72'	1.82%
SD-44	15"	103'	1.02%
SD-45	15"	36'	1.25%
SD-46	12"	2'	0.00%
SD-47	12"	12'	0.84%
SD-48	18"	3'	0.00%
SD-49	18"	18'	0.54%
SD-50	18"	196'	0.82%
SD-51	18"	79'	3.15%
SD-52	12"	65'	2.07%
SD-53	12"	79'	1.04%
SD-54	15"	27'	1.27%
SD-55	24"	42'	1.18%

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
SD-56	12"	37'	1.08%
SD-57	12"	45'	1.11%
SD-58	15"	23'	1.08%
SD-59	15"	15'	1.01%
SD-60	18"	41'	1.22%
SD-61	12"	28'	1.09%
SD-62	12"	56'	1.17%
SD-63	12"	50'	1.20%
SD-64	12"	13'	1.12%
SD-65	12"	28'	1.64%
SD-66	12"	86'	2.08%
SD-67	18"	77'	1.69%
SD-68	18"	22'	2.32%
SD-69	24"	14'	2.86%
SD-70	12"	83'	1.69%
SD-71	12"	21'	2.56%
SD-72	12"	18'	3.39%
SD-73	15"	104'	1.00%
SD-74	12"	21'	2.74%
SD-75	15"	82'	1.21%
SD-76	18"	51'	1.96%
SD-77	18"	54'	1.04%
SD-78	24"	33'	1.07%
SD-79	12"	23'	0.00%
SD-80	12"	6'	1.70%
SD-81	24"	24'	0.00%
SD-82	24"	35'	0.86%
SD-83	24"	19'	1.19%
UD-1	6"	34'	1.61%
UD-2	6"	26'	2.15%

AMY BELL SEGAL RLA 2265

PAUL D. OSTROWSKI PE 11175

STATE OF MAINE PAUL D. OSTROWSKI No. 11175 PROFESSIONAL ENGINEER 02/29/2024

REV.:	BY:	DATE:	STATUS:
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS AS AUTHORIZED BY OTHERS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

PIPE AND STRUCTURE DATA TABLES
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

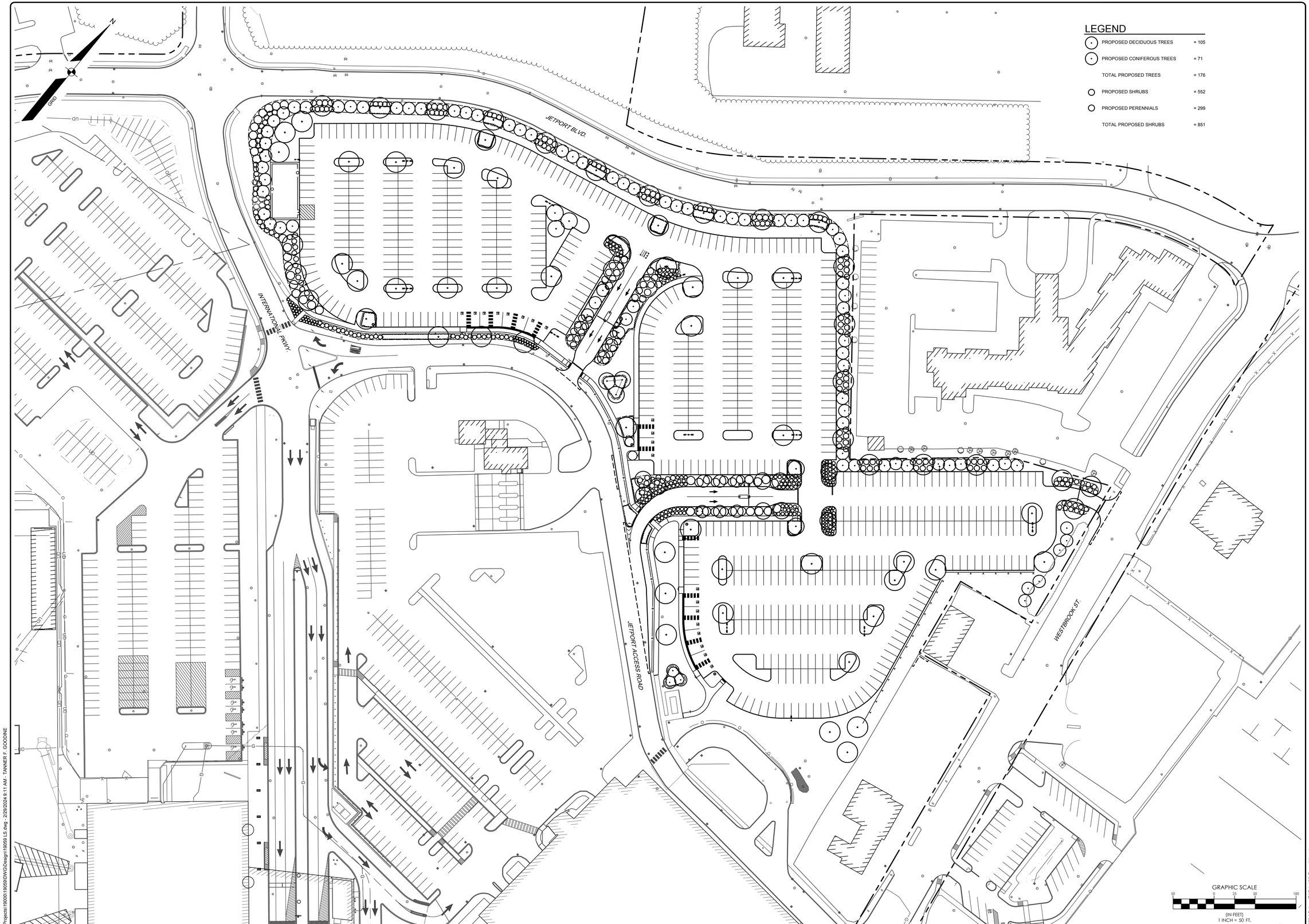
DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-304

19059 U.dwg - TAB:Structure & Pipe Data

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NOT FOR CONSTRUCTION



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19059 LS.dwg - TAB:L-100 Overall Landscape

AMY BELL SEGAL RLA 2265

PAUL D. OSTROVSKI PE 11175

LICENSED LANDSCAPE ARCHITECT
Amy Bell Segal
No. 2265
STATE OF MAINE
02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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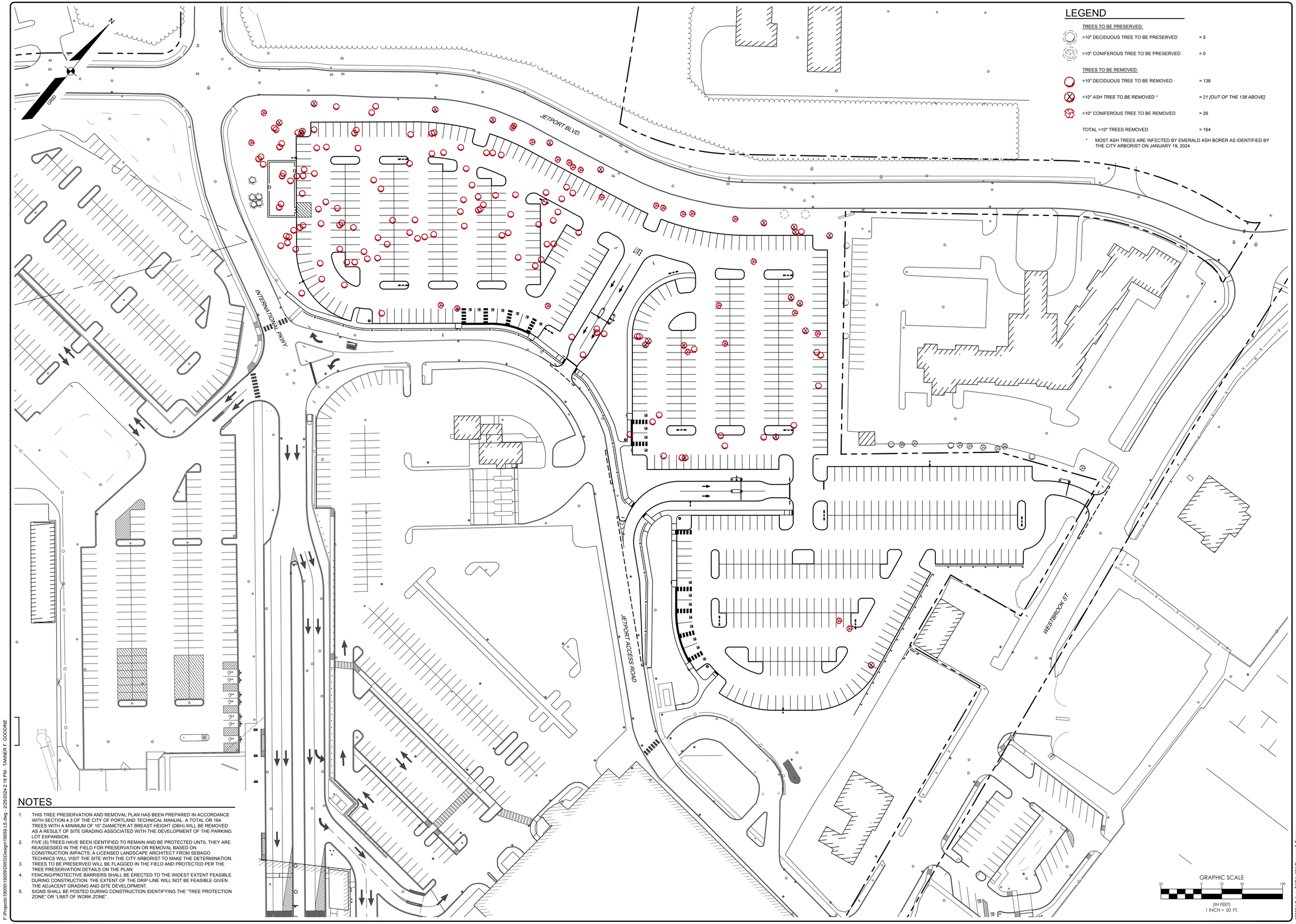
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel. 207-200-2100

OVERALL LANDSCAPE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET L-100

NOT FOR CONSTRUCTION



LEGEND

TREES TO BE PRESERVED:

>10" DECIDUOUS TREE TO BE PRESERVED	= 5
>10" CONIFEROUS TREE TO BE PRESERVED	= 0

TREES TO BE REMOVED:

>10" DECIDUOUS TREE TO BE REMOVED	= 138
*>10" ASH TREE TO BE REMOVED **	*= 21 [OUT OF THE 138 ABOVE]*
>10" CONIFEROUS TREE TO BE REMOVED	= 26
TOTAL >10" TREES REMOVED	= 164

* MOST ASH TREES ARE INFECTED BY EMERALD ASH BORER AS IDENTIFIED BY THE CITY ARBORIST ON JANUARY 19, 2024

NOTES

1. THIS TREE PRESERVATION AND REMOVAL PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 4.3 OF THE CITY OF PORTLAND TECHNICAL MANUAL. A TOTAL OR 164 TREES WITH A MINIMUM OF 10" DIAMETER AT BREAST HEIGHT (DBH) WILL BE REMOVED AS A RESULT OF SITE GRADING ASSOCIATED WITH THE DEVELOPMENT OF THE PARKING LOT EXPANSION.
2. FIVE (5) TREES HAVE BEEN IDENTIFIED TO REMAIN AND BE PROTECTED UNTIL THEY ARE REASSESSED IN THE FIELD FOR PRESERVATION OR REMOVAL BASED ON CONSTRUCTION IMPACTS; A LICENSED LANDSCAPE ARCHITECT FROM SEBAGO TECHNICS WILL VISIT THE SITE WITH THE CITY ARBORIST TO MAKE THE DETERMINATION.
3. TREES TO BE PRESERVED WILL BE FLAGGED IN THE FIELD AND PROTECTED PER THE TREE PRESERVATION DETAILS ON THE PLAN.
4. FENCING/PROTECTIVE BARRIERS SHALL BE ERECTED TO THE WIDEST EXTENT FEASIBLE DURING CONSTRUCTION. THE EXTENT OF THE DRIP LINE WILL NOT BE FEASIBLE GIVEN THE ADJACENT GRADING AND SITE DEVELOPMENT.
5. SIGNS SHALL BE POSTED DURING CONSTRUCTION IDENTIFYING THE "TREE PROTECTION ZONE" OR "LIMIT OF WORK ZONE".

NOT FOR CONSTRUCTION

AMY BELL SEGAL RLA 2265

PAUL D. OSTROVSKI PE 11175

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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75 John Roberts Rd.
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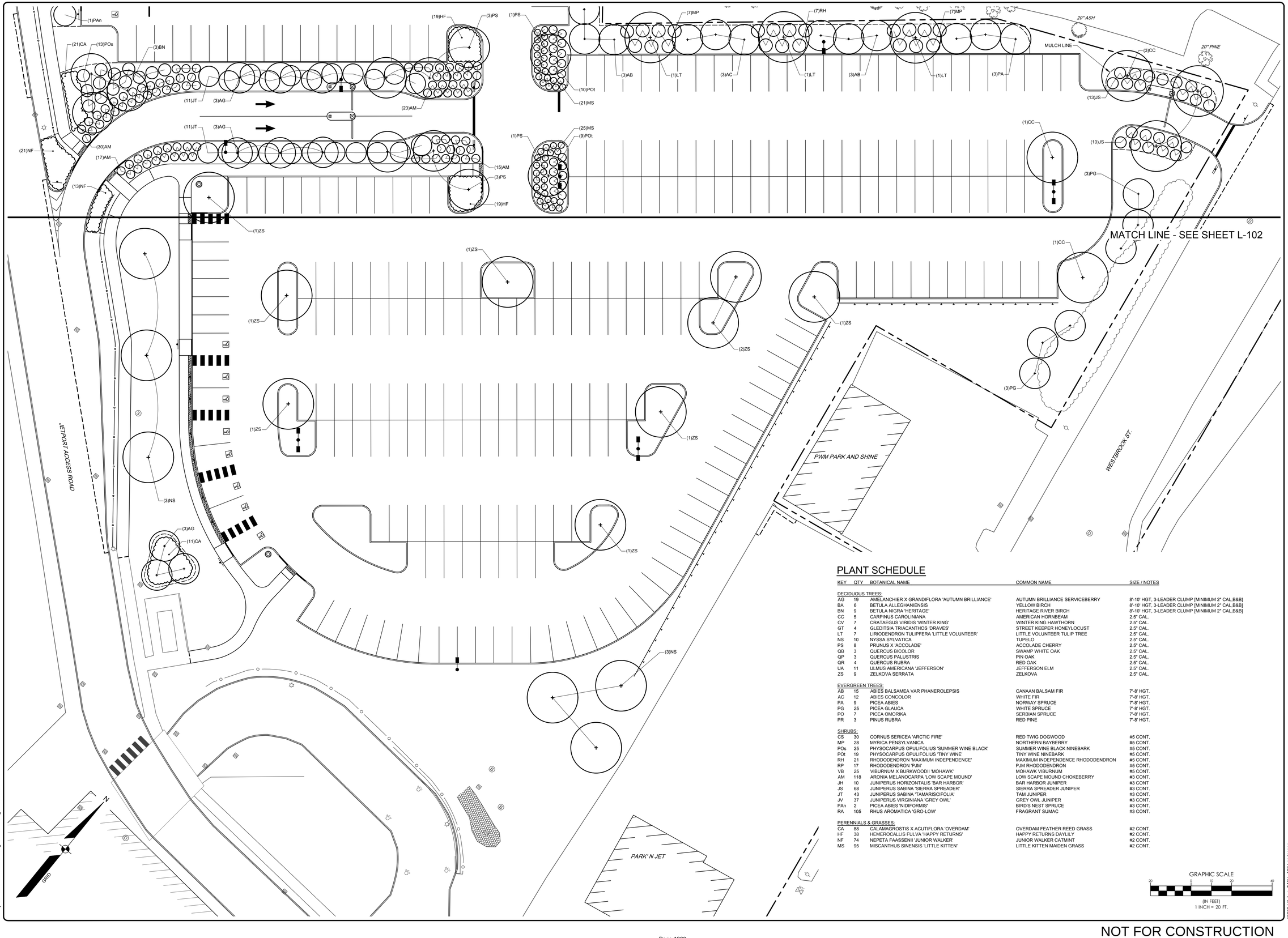
TREE REMOVAL & PRESERVATION PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET L-101

F:\Projects\19000\19059\DWG\Design\19059 LS.dwg - 2/29/2024 2:18 PM - TANNER F. GOODINE

19059 LS.dwg - TAB:L-101 Remove & Preserve



PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE / NOTES
DECIDUOUS TREES:				
AG	19	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
BA	6	BETULA ALLEGHANIENSIS	YELLOW BIRCH	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
BN	9	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
CC	5	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2.5" CAL.
CV	7	CRATAEGUS VIRIDIS 'WINTER KING'	WINTER KING HAWTHORN	2.5" CAL.
GT	4	GLEDITSIA TRIACANTHOS 'DRAVES'	STREET KEEPER HONEYLOCUST	2.5" CAL.
LT	7	LIRIODENDRON TULIPFERA 'LITTLE VOLUNTEER'	LITTLE VOLUNTEER TULIP TREE	2.5" CAL.
NS	10	NYSSA SYLVATICA	TUPELO	2.5" CAL.
PS	8	PRUNUS X 'ACCOLADE'	ACCOLADE CHERRY	2.5" CAL.
QB	3	QUERCUS BICOLOR	SWAMP WHITE OAK	2.5" CAL.
QP	3	QUERCUS PALUSTRIS	PIN OAK	2.5" CAL.
QR	4	QUERCUS RUBRA	RED OAK	2.5" CAL.
UA	11	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2.5" CAL.
ZS	9	ZELKOVA SERRATA	ZELKOVA	2.5" CAL.
EVERGREEN TREES:				
AB	15	ABIES BALSAMEA VAR PHANEROLEPSIS	CANAAN BALSAM FIR	7'-8' HGT.
AC	12	ABIES CONCOLOR	WHITE FIR	7'-8' HGT.
PA	9	PICEA ABIES	NORWAY SPRUCE	7'-8' HGT.
PG	25	PICEA GLAUCA	WHITE SPRUCE	7'-8' HGT.
PO	7	PICEA OMORIKA	SERBIAN SPRUCE	7'-8' HGT.
PR	3	PINUS RUBRA	RED PINE	7'-8' HGT.
SHRUBS:				
CS	30	CORNUS SERICEA 'ARCTIC FIRE'	RED TWIG DOGWOOD	#5 CONT.
MP	28	MYRICA PENSYLVANICA	NORTHERN BAYBERRY	#5 CONT.
POs	25	PHYSOCARPUS OPULIFOLIUS 'SUMMER WINE BLACK'	SUMMER WINE BLACK NINEBARK	#5 CONT.
POt	19	PHYSOCARPUS OPULIFOLIUS 'TINY WINE'	TINY WINE NINEBARK	#5 CONT.
RH	21	RHODODENDRON 'MAXIMUM INDEPENDENCE'	MAXIMUM INDEPENDENCE RHODODENDRON	#5 CONT.
RP	17	RHODODENDRON 'PJM'	PJM RHODODENDRON	#5 CONT.
VB	25	VIBURNUM X BURKWOODII 'MOHAWK'	MOHAWK VIBURNUM	#5 CONT.
AM	118	ARONIA MELANOCARPA 'LOW SCAPE MOUND'	LOW SCAPE MOUND CHOKEBERRY	#3 CONT.
JH	10	JUNIPERUS HORIZONTALIS 'BAR HARBOR'	BAR HARBOR JUNIPER	#3 CONT.
JS	68	JUNIPERUS SABINA 'SIERRA SPREADER'	SIERRA SPREADER JUNIPER	#3 CONT.
JT	43	JUNIPERUS SABINA 'TAMARISCIFOLIA'	TAM JUNIPER	#3 CONT.
JV	37	JUNIPERUS VIRGINIANA 'GREY OWL'	GREY OWL JUNIPER	#3 CONT.
PAn	2	PICEA ABIES 'NIDIFORMIS'	BIRD'S NEST SPRUCE	#3 CONT.
RA	105	RHUS AROMATICA 'GRO-LOW'	FRAGRANT SUMAC	#3 CONT.
PERENNIALS & GRASSES:				
CA	88	CALAMAGROSTIS X ACUTIFLORA 'OVERDAM'	OVERDAM FEATHER REED GRASS	#2 CONT.
HF	38	HEMEROCALLIS FULVA 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	#2 CONT.
NF	74	NEPETA FAASSENII 'JUNIOR WALKER'	JUNIOR WALKER CATMINT	#2 CONT.
MS	95	MISCANTHUS SINENSIS 'LITTLE KITTEN'	LITTLE KITTEN MAIDEN GRASS	#2 CONT.

GRAPHIC SCALE
0 5 10 20 40
(IN FEET)
1 INCH = 20 FT.

NOT FOR CONSTRUCTION

F:\Projects\19000\19059\DWG\Design\19059 LS.dwg - 2/29/2024 9:12 AM - TANNER F. GOODINE

AMY BELL SEGAL RLA 2265
PAUL D. OSTROVSKI PE 11175

Amy Bell Segal No. 2265 LICENSED LANDSCAPE ARCHITECT STATE OF MAINE
02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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75 John Roberts Rd.
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South Portland, ME 04106
Tel. 207-200-2100

LANDSCAPE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET L-102

19059 LS.dwg, TAB L-102 Landscape

PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE / NOTES
DECIDUOUS TREES:				
AG	19	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
BA	6	BETULA ALLEGHANIENSIS	YELLOW BIRCH	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
BN	9	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
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CV	7	CRATAEGUS VIRIDIS 'WINTER KING'	WINTER KING HAWTHORN	2.5" CAL.
GT	4	GLEDITSIA TRIACANTHOS 'DRAVES'	STREET KEEPER HONEYLOCUST	2.5" CAL.
LT	7	LIRIODENDRON TULIPFERA 'LITTLE VOLUNTEER'	LITTLE VOLUNTEER TULIP TREE	2.5" CAL.
NS	10	NYSSA SYLVATICA	TUPELO	2.5" CAL.
PS	8	PRUNUS X 'ACCOLADE'	ACCOLADE CHERRY	2.5" CAL.
QB	3	QUERCUS BICOLOR	SWAMP WHITE OAK	2.5" CAL.
QP	3	QUERCUS PALUSTRIS	PIN OAK	2.5" CAL.
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UA	11	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2.5" CAL.
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CS	30	CORNUS SERICEA 'ARCTIC FIRE'	RED TWIG DOGWOOD	#5 CONT.
MP	28	MYRICA PENSYLVANICA	NORTHERN BAYBERRY	#5 CONT.
POs	25	PHYSOCARPUS OPULIFOLIUS 'SUMMER WINE BLACK'	SUMMER WINE BLACK NINEBARK	#5 CONT.
POt	19	PHYSOCARPUS OPULIFOLIUS 'TINY WINE'	TINY WINE NINEBARK	#5 CONT.
RH	21	RHODODENDRON 'MAXIMUM INDEPENDENCE'	MAXIMUM INDEPENDENCE RHODODENDRON	#5 CONT.
RP	17	RHODODENDRON 'PJM'	PJM RHODODENDRON	#5 CONT.
VB	25	VIBURNUM X BURKWOODII 'MOHAWK'	MOHAWK VIBURNUM	#5 CONT.
AM	118	ARONIA MELANOCARPA 'LOW SCAPE MOUND'	LOW SCAPE MOUND CHOKEBERRY	#3 CONT.
JH	10	JUNIPERUS HORIZONTALIS 'BAR HARBOR'	BAR HARBOR JUNIPER	#3 CONT.
JS	68	JUNIPERUS SABINA 'SIERRA SPREADER'	SIERRA SPREADER JUNIPER	#3 CONT.
JT	43	JUNIPERUS SABINA 'TAMARISCIFOLIA'	TAM JUNIPER	#3 CONT.
JV	37	JUNIPERUS VIRGINIANA 'GREY OWL'	GREY OWL JUNIPER	#3 CONT.
PAn	2	PICEA ABIES 'NIDIFORMIS'	BIRD'S NEST SPRUCE	#3 CONT.
RA	105	RHUS AROMATICA 'GRO-LOW'	FRAGRANT SUMAC	#3 CONT.
PERENNIALS & GRASSES:				
CA	88	CALAMAGROSTIS X ACUTIFLORA 'OVERDAM'	OVERDAM FEATHER REED GRASS	#2 CONT.
HF	38	HEMEROCALLIS FULVA 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	#2 CONT.
NF	74	NEPETA FAASSENII 'JUNIOR WALKER'	JUNIOR WALKER CATMINT	#2 CONT.
MS	95	MISCANTHUS SINENSIS 'LITTLE KITTEN'	LITTLE KITTEN MAIDEN GRASS	#2 CONT.

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

MATCH LINE - SEE SHEET L-103

MATCH LINE - SEE SHEET L-101

NOT FOR CONSTRUCTION

AMY BELL SEGAL RLA 2265
PAUL D. OSTROVSKI PE 11175

REV.:	BY:	DATE:	STATUS:
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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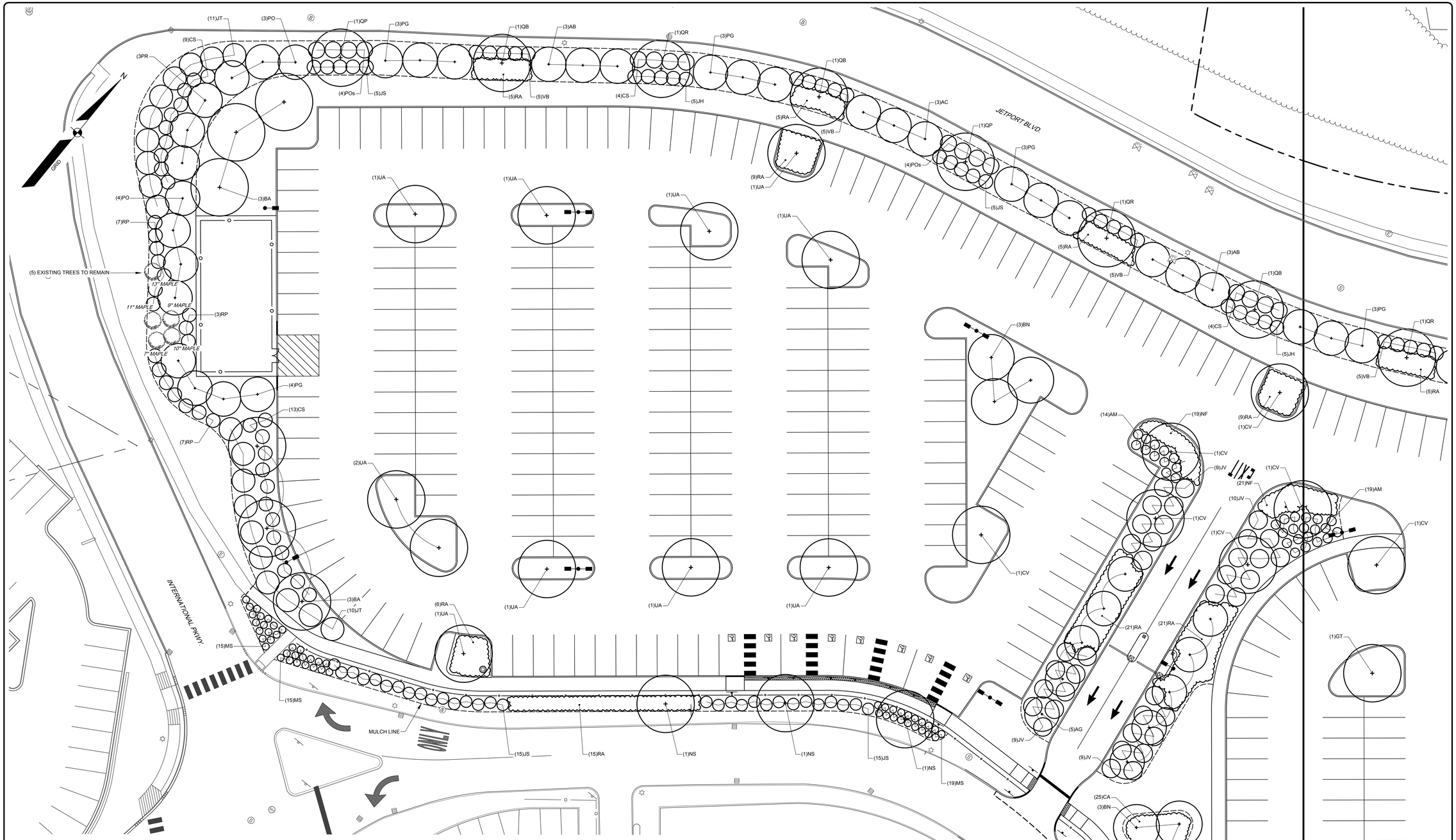
SEBAGO TECHNICS
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South Portland, ME 04106
Tel. 207-200-2100

LANDSCAPE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET L-103

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19059 LS.dwg TAB:L-103 Landscape



PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE / NOTES
DECIDUOUS TREES:				
AG	19	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
BA	6	BETULA ALLEGHANIENSIS	YELLOW BIRCH	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
BN	9	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
CC	5	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2.5" CAL.
CV	7	CRATAEGUS VIRIDIS 'WINTER KING'	WINTER KING HAWTHORN	2.5" CAL.
GT	4	GLEDITSIA TRIACANTHOS 'DRAVES'	STREET KEEPER HONEYLOCUST	2.5" CAL.
LT	7	LIRIODENDRON TULIPFERA 'LITTLE VOLUNTEER'	LITTLE VOLUNTEER TULIP TREE	2.5" CAL.
NS	10	NYSSA SYLVATICA	TUPELO	2.5" CAL.
PS	8	PRUNUS X 'ACCOLADE'	ACCOLADE CHERRY	2.5" CAL.
QB	3	QUERCUS BICOLOR	SWAMP WHITE OAK	2.5" CAL.
QP	3	QUERCUS PALUSTRIS	PIN OAK	2.5" CAL.
QR	4	QUERCUS RUBRA	RED OAK	2.5" CAL.
UA	11	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2.5" CAL.
ZS	9	ZELKOVA SERRATA	ZELKOVA	2.5" CAL.
EVERGREEN TREES:				
AB	15	ABIES BALSAMEA VAR PHANEROLEPSIS	CANAAN BALSAM FIR	7'-8' HGT.
AC	12	ABIES CONCOLOR	WHITE FIR	7'-8' HGT.
PA	9	PICEA ABIES	NORWAY SPRUCE	7'-8' HGT.
PG	25	PICEA GLAUCA	WHITE SPRUCE	7'-8' HGT.
PO	7	PICEA OMORIKA	SERBIAN SPRUCE	7'-8' HGT.
PR	3	PINUS RUBRA	RED PINE	7'-8' HGT.
PR	3	PINUS RUBRA	RED PINE	7'-8' HGT.

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE / NOTES
SHRUBS:				
CS	30	CORNUS SERICEA 'ARCTIC FIRE'	RED TWIG DOGWOOD	#5 CONT.
MP	28	MYRICA PENSYLVANICA	NORTHERN BAYBERRY	#5 CONT.
POs	25	PHYSOCARPUS OPULIFOLIUS 'SUMMER WINE BLACK'	SUMMER WINE BLACK NINEBARK	#5 CONT.
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GROUNDCOVERS:				
AM	118	ARONIA MELANOCARPA 'LOW SCAPE MOUND'	LOW SCAPE MOUND CHOKEBERRY	#3 CONT.
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NOT FOR CONSTRUCTION

AMY BELL SEGAL RLA 2265
PAUL D. OSTROVSKI PE 11175

LICENSED LANDSCAPE ARCHITECT — Amy Bell Segal — No. 2265 — STATE OF MAINE — 02/29/2024

REV.	BY	DATE
A	PDO	02/29/2024

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LANDSCAPE PLAN
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1001 WESTBROOK STREET
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FOR:
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DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET L-104

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19059 LS.dwg, T-ABL-104 Landscape

EROSION CONTROL MEASURES

PRE-CONSTRUCTION PHASE

PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS (SILT FENCE) WILL BE STAKED/INSTALLED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. THE PLACEMENT OF SEDIMENT BARRIERS SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THIS EROSION CONTROL PLAN AND DETAILS IN THIS PLAN SET. THIS NETWORK IS TO BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED.

PRIOR TO ANY CLEARING OR GRUBBING, A CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED AT THE INTERSECTION OF THE PROPOSED ENTRANCES AND EXISTING ROADWAY TO AVOID TRACKING OF MUD, DUST AND DEBRIS FROM THE SITE.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE A DETAILED SCHEDULE AND MARKED UP PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE MUNICIPAL STAFF. THREE COPIES OF THE SCHEDULE AND MARKED UP PLAN SHALL BE PROVIDED TO THE MUNICIPALITY THREE DAYS PRIOR TO THE SCHEDULED PRE-CONSTRUCTION MEETING. SPECIAL ATTENTION SHALL BE GIVEN TO THE 14 DAY LIMIT OF DISTURBANCE IN THE SCHEDULE ADDRESSING TEMPORARY AND PERMANENT VEGETATION MEASURES.

CONSTRUCTION AND POST-CONSTRUCTION PHASE

AREAS UNDERGOING ACTUAL CONSTRUCTION SHALL ONLY EXPOSE THAT AMOUNT OF MINERAL SOIL NECESSARY FOR PROGRESSIVE AND EFFICIENT CONSTRUCTION. AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD, SUCH AS ACTIVE EXCAVATION AND ACTIVE GRADING. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS ACTIVELY OCCURRING OR CAN BE MULCHED IN THE SAME DAY. OPEN AREAS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL AS SHOWN ON THE DESIGN PLANS AND AS DESCRIBED WITHIN THIS EROSION CONTROL PLAN WITHIN SEVEN (7) DAYS OF DISTURBANCE. AREAS LOCATED WITHIN 100 FEET OF STREAMS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL WITHIN SEVEN (7) DAYS. REFER TO WINTER EROSION CONTROL NOTES FOR THE TREATMENT OF OPEN AREAS AFTER OCTOBER 1ST OF THE CONSTRUCTION YEAR.

THE CONTRACTOR MUST INSTALL ANY ADDED MEASURES WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE DEPENDENT UPON THE ACTUAL SITE AND WEATHER CONDITIONS. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, IN ORDER TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION.

EROSION CONTROL APPLICATIONS & MEASURES
THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET.

1. TEMPORARY MULCHING:

ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 14 DAYS SHALL BE MULCHED. DISTURBED AREAS ADJACENT TO NATURAL RESOURCES THAT ARE NOT GRADED WITHIN SEVEN (7) DAYS SHALL BE MULCHED. ALSO, AREAS, WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED, SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING. EROSION CONTROL BLANKETS ARE RECOMMENDED TO BE USED AT THE BASE OF GRASSED WATERWAYS AND ON SLOPES GREATER THAN 33%. MULCH ANCHORING SHOULD BE USED ON SLOPES GREATER THAN 5% AFTER SEPTEMBER 15TH OF THE CONSTRUCTION YEAR (SEE WINTER EROSION CONTROL NOTES).
TYPES OF MULCH:

HAY OR STRAW: SHALL BE APPLIED AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE).

EROSION CONTROL MIX: SHALL BE PLACED EVENLY AND MUST PROVIDE 100% SOIL COVERAGE. EROSION CONTROL MIX SHALL BE APPLIED SUCH THAT THE THICKNESS ON SLOPES 3:1 OR LESS IS 2 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THE THICKNESS ON SLOPES BETWEEN 3:1 AND 2:1 SHALL BE 4 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THIS SHALL NOT BE USED ON SLOPES GREATER THAN 2:1.

EROSION CONTROL BLANKET: SHALL BE INSTALLED SUCH THAT CONTINUOUS CONTACT BETWEEN THE MAT AND THE SOIL IS OBTAINED. INSTALL BLANKETS AND STAPLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

2. SOIL STOCKPILES:

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES. SEDIMENT BARRIERS SHALL BE INSTALLED DOWNGRADIENT OF STOCKPILES, AND STORMWATER SHALL BE PREVENTED FROM RUNNING ONTO THE STOCKPILE.

3. NATURAL RESOURCES PROTECTION:

ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES SHALL BE MULCHED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1 OF THIS SECTION) WITHIN 7 DAYS OF EXPOSURE OR PRIOR TO ANY STORM EVENT. SEDIMENT BARRIERS (AS DESCRIBED IN PART 4 OF THIS SECTION) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE.

4. SEDIMENT BARRIERS:

PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. SEDIMENT BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

HAY BALES: SHALL NOT BE INSTALLED ADJACENT TO WETLAND. INSTALL PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.

EROSION CONTROL MIX: SHALL NOT BE USED ADJACENT TO WETLANDS. INSTALL PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER. EROSION CONTROL MIX BERMS SHALL NOT BE USED AT THE BOTTOM OF STEEP SLOPES (>8%) OR SLOPES WITH FLOWING WATER.

CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

5. TEMPORARY CHECK DAMS:

SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

STONE CHECK DAMS: STONE DAMS SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

HAY BALE CHECK DAMS: BALES SHALL BE WIRE-BOUND OR STRING-TIED. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER. HAY BALES SHALL BE PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL, STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS.

6. STORMDRAIN INLET PROTECTION:

INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLET OR CURB INLET PRIOR TO PERMANENT STABILIZATION OF THE IMMEDIATE AND UPSTREAM DISTURBED AREAS. THEY SHALL BE CONSTRUCTED IN A MANNER THAT WILL FACILITATE CLEAN-OUT AND DISPOSAL OF TRAPPED SEDIMENTS AND MINIMIZE INTERFERENCE WITH CONSTRUCTION ACTIVITIES. ANY RESULTANT PONDING OF WATER FROM THE PROTECTION METHOD MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.

HAY BALE DROP INLET PROTECTION: WE DO NOT RECOMMEND THE USE OF HAY BALES AS INLET PROTECTION.

CONCRETE BLOCK AND STONE INLET SEDIMENT FILTER (DROP OR CURB INLET): SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE HEIGHT OF THE CONCRETE BLOCK BARRIER CAN VARY BUT MUST BE BETWEEN 12 AND 24 INCHES TALL. A MINIMUM OF 1 INCH CRUSHED STONE SHALL BE USED.

MANUFACTURED SEDIMENT BARRIERS AND FILTER (DROP OR CURB INLET): MANUFACTURED FILTERS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

7. STABILIZED CONSTRUCTION ENTRANCE/EXIT:

PRIOR TO CLEARING AND/OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICALLY SWEPT TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. THE TERM "SWEEP" IS UNDERSTOOD TO MEAN REMOVAL AND RECOVERY OF TRACKED SEDIMENT WITH A STREET SWEEPER, NOT BRUSHING THE MATERIAL INTO SWALES OR STRUCTURES WITH A MECHANICAL BROOM. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS. THE CONTRACTOR SHALL MAINTAIN THE STABILIZED CONSTRUCTION ENTRANCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

DUST CONTROL:

DUST CONTROL DURING CONSTRUCTION SHALL BE ACHIEVED BY THE USE OF A WATERING TRUCK TO PERIODICALLY SPRINKLE THE EXPOSED ROADWAY AREAS AS NECESSARY TO REDUCE DUST DURING THE DRY MONTHS. APPLYING OTHER DUST CONTROL PRODUCTS SUCH AS CALCIUM CHLORIDE OR OTHER MANUFACTURED PRODUCTS ARE ALLOWED IF AUTHORIZED BY THE PROPER LOCAL, STATE AND/OR FEDERAL REGULATING AGENCIES. HOWEVER, IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO MITIGATE DUST AND SOIL LOSS FROM THE SITE. IF OFFSITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NOT LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS.

TEMPORARY VEGETATION:

TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDBED PREPARATION AND APPLICATION OF SEED SHALL BE CONDUCTED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUALS FOR CONTRACTORS AND ENGINEERS, LATEST REVISION. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

PERMANENT VEGETATION:

REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE APPLICATION OF SEED SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR, PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

SEEDBED PREPARATION:

A. FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.

B. SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P205-K20 OR EQUAL)	18.4 LBS./1,000 S.F.
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS./1,000 S.F.

C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDBED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

APPLICATION OF SEED:

A. SEEDING: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS: (MDOT SEED MIX METHOD #1 - PARK MIXTURE)

SEED TYPE	APPLICATION RATE
CREEPING RED FESCUE	1.8 LBS/1,000 S.F. (78.4 LBS/ACRE)
KENTUCKY BLUEGRASS	1.0 LBS/1,000 S.F. (43.6 LBS/ACRE)
CHEWINGS FESCUE	0.60 LBS/1,000 S.F. (26.1 LBS/ACRE)
PERENNIAL RYEGRASS	0.40 LBS/1,000 S.F. (17.4 LBS/ACRE)
ANNUAL RYEGRASS	0.20 LBS/1,000 S.F. (8.70 LBS/ACRE)
TOTAL	4.00 LBS/1,000 S.F. (174.20 LBS/ACRE)

NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND SEED MIXTURES. MDEP RECOMMENDED SEED MIXTURES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 2016 OR LATEST REVISION.

B. HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. RECOMMENDED SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

C. MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS.

SODDING:
FOLLOWING SEEDBED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES, AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW, STARTING AT THE LOWEST ELEVATION. SOD SHOULD BE ROLLED OR TAMPED DOWN TO EVEN OUT THE JOINTS ONCE LAID DOWN. WHERE FLOW IS PREVALENT THE SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE ESTABLISHED BETWEEN APRIL 1ST AND NOVEMBER 15TH OF THE CONSTRUCTION YEAR, HOWEVER, REFER TO THE WINTER EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% (10H:1V) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.
A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE CONTRACTOR WILL COVER THE SLOPE WITH A LAYER OF WOOD WASTE COMPOST AS DESCRIBED IN ITEM 2(C.) OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM 2(D.) OF THIS STANDARD.
B. STABILIZE THE SLOPE WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE 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 WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).
C. STABILIZE THE SLOPE WITH WOOD WASTE COMPOST -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF WOOD WASTE COMPOST ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE WOOD WASTE COMPOST, THE CONTRACTOR WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. THE CONTRACTOR WILL NOT USE WOOD WASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
D. STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE CONTRACTOR WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOIL S -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15%. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.
A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE CONTRACTOR WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 3(C.) OF THIS STANDARD.
B. STABILIZE THE SOIL WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
C. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE CONTRACTOR WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE CONTRACTOR WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE CONTRACTOR WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

1. MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, AND AT LEAST EVERY SEVEN (7) DAYS, THE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES. THE CONTRACTOR SHALL PERFORM REPAIRS NO LATER THAN THE END OF THE NEXT WORKDAY, TO ALLOW CONTINUED PROPER FUNCTIONING OF THE EROSION CONTROL MEASURE. THE CONTRACTOR SHALL PROVIDE THE NECESSARY REGULATING AGENCIES WITH WRITTEN DOCUMENTATION DESCRIBING DATES OF INSPECTIONS AND NECESSARY FOLLOW-UP WORK TO MAINTAIN EROSION CONTROL MEASURES MEETING THE REQUIREMENTS OF THIS PLAN WITHIN SEVEN (7) DAYS.

2. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDINGS, THE CONTRACTOR SHALL INSPECT THE WORK AREA SEMIMONTHLY UNTIL THE SEEDINGS HAVE BEEN ESTABLISHED. ESTABLISHED MEANS A MINIMUM OF 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH. RESEEDING SHALL BE CARRIED OUT BY THE CONTRACTOR WITH FOLLOW-UP INSPECTIONS IN THE EVENT OF ANY FAILURES UNTIL VEGETATION IS ADEQUATELY ESTABLISHED.

HOUSEKEEPING:

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.

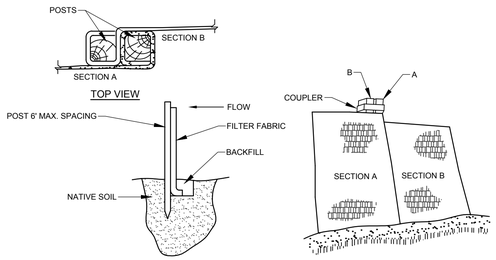
2. GROUNDWATER PROTECTION. DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE-TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.

3. FUGITIVE SEDIMENT AND DUST. ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF-SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.

4. DEBRIS AND OTHER MATERIALS. MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

5. EXCAVATION DE-WATERING. EXCAVATION DE-WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

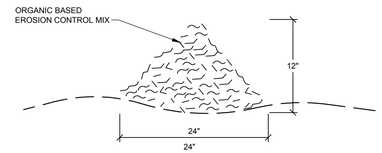
6. AUTHORIZED NON-STORMWATER DISCHARGES. IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE:
A. DISCHARGES FROM FIREFIGHTING ACTIVITY;
B. FIRE HYDRANT FLUSHINGS;
C. VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE



INSTALLATION:

1. EXCAVATE A 6"x 6" TRENCH ALONG THE LINE OF PLACEMENT FOR THE FILTER BARRIER.
2. UNROLL A SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH.
3. DRIVE POSTS INTO THE GROUND UNTIL APPROXIMATELY 2" OF FABRIC IS LYING ON THE TRENCH BOTTOM.
4. LAY THE TOE-IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL THE TRENCH AND TAMP THE SOIL. TOE-IN CAN ALSO BE ACCOMPLISHED BY LAYING THE FABRIC FLAP ON UNDISTURBED GROUND AND PILING AND TAMPING FILL AT THE BASE. BUT MUST BE ACCOMPANIED BY AN INTERCEPTION DITCH.
5. JOIN SECTION AS SHOWN ABOVE.
6. BARRIER SHALL BE MIRAFI SILT FENCE OR EQUAL.

FILTER BARRIER
NOT TO SCALE



COMPOSITION:

EROSION CONTROL MIX SHALL BE MANUFACTURED ON OR OFF THE PROJECT SITE SUCH THAT ITS COMPOSITION IS IN ACCORDANCE WITH THE MDEP MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL, LAST REVISED 3/2003 OR LATER. IT MUST CONSIST PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.

INSTALLATION:

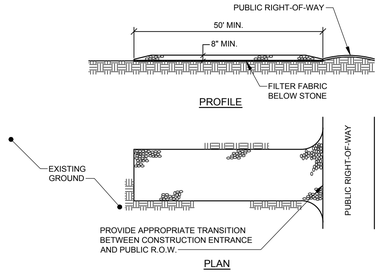
1. THE BARRIER MUST BE PLACED ACROSS THE SLOPE, ALONG THE CONTOUR.

2. EXISTING GROUND SHALL BE PREPARED SUCH THAT THE BARRIER MAY LIE NEARLY FLAT ALONG THE GROUND TO AVOID THE CREATION OF VOIDS AND BRIDGES IN ORDER TO MINIMIZE THE POTENTIAL OF WASH OUTS UNDER THE BARRIER

3. THE BARRIER SHALL BE A MINIMUM OF 1 FOOT HIGH (AS MEASURED ON THE UPHILL SIDE) AND 2 FEET WIDE FOR SLOPES LESS THAN 5% IN GRADE AND SHALL BE WIDER TO ACCOMMODATE THE ADDITIONAL RUNOFF.

4. EROSION CONTROL MIX CAN BE INSTALLED WHERE SILT FENCE IS ILLUSTRATED ON THE DESIGN PLANS IN AREAS EXCEPT IN, BUT NOT LIMITED TO, THE FOLLOWING AREAS: WETLAND AREAS, AT POINTS OF CONCENTRATED FLOW, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS AND CLOSED STORM SYSTEMS AND AT THE BOTTOM OF STEEP SLOPES THAT ARE MORE THAN 50 FEET FROM TOP TO BOTTOM.

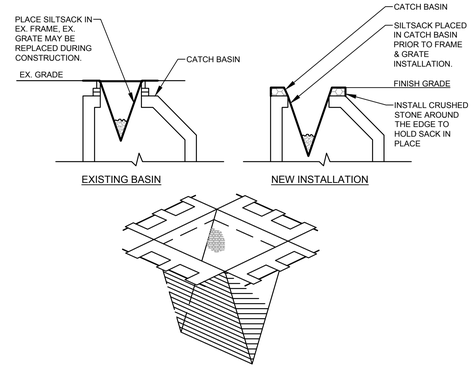
EROSION CONTROL MIX BERM
NOT TO SCALE



NOTES:

1. STONE SIZE- AASHTO DESIGNATION M43, SIZE NO. 2 (2 1/2" TO 1 1/2"). USE CRUSHED STONE.
2. LENGTH- AS SHOWN ON PLANS, MIN. 50 FEET.
3. THICKNESS- NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH- NOT LESS THAN FULL WIDTH OF ALL POINT OF INGRESS OR EGRESS.
5. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



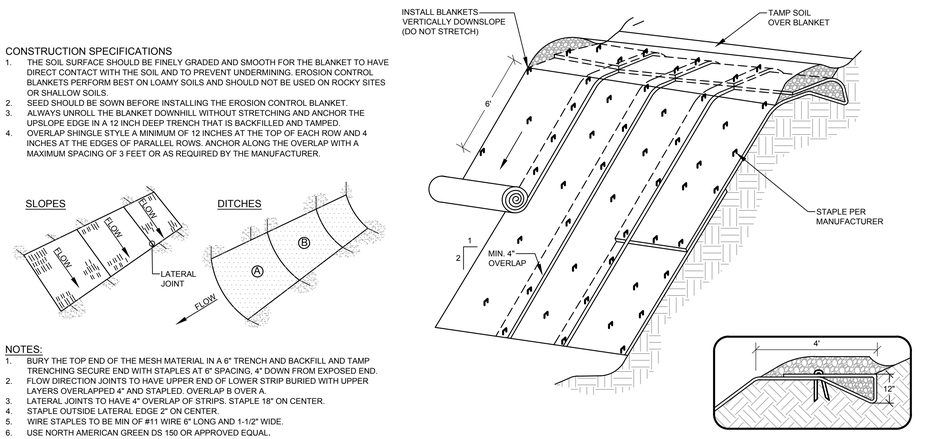
NOTES:

PRIOR TO FINAL GRADING AND PAVING OPERATIONS BEGIN A CATCH BASIN INSERT (SUCH AS A SILT SACK OR A DANDY BAG II) MUST BE INSTALLED IN EACH BASIN PER MANUFACTURES INSTRUCTIONS. HAY BALES SHOULD BE REMOVED ONCE INSERTS ARE INSTALLED.

CATCH BASIN PROTECTION DETAIL
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

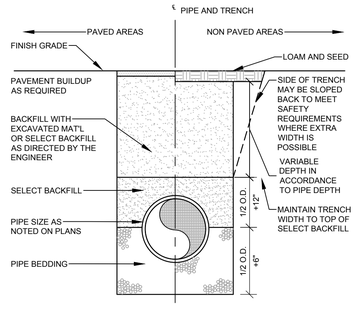
1. THE SOIL SURFACE SHOULD BE FINELY GRADED AND SMOOTH FOR THE BLANKET TO HAVE DIRECT CONTACT WITH THE SOIL AND TO PREVENT UNDERMINING. EROSION CONTROL BLANKETS PERFORM BEST ON LOAMY SOILS AND SHOULD NOT BE USED ON ROCKY SITES OR SHALLOW SOILS.
2. SEED SHOULD BE SOWN BEFORE INSTALLING THE EROSION CONTROL BLANKET.
3. ALWAYS UNROLL THE BLANKET DOWNHILL WITHOUT STRETCHING AND ANCHOR THE UPSLOPE EDGE IN A 12 INCH DEEP TRENCH THAT IS BACKFILLED AND TAMPED.
4. OVERLAP SHINGLE STYLE A MINIMUM OF 12 INCHES AT THE TOP OF EACH ROW AND 4 INCHES AT THE EDGES OF PARALLEL ROWS. ANCHOR ALONG THE OVERLAP WITH A MAXIMUM SPACING OF 3 FEET OR AS REQUIRED BY THE MANUFACTURER.



NOTES:

1. BURY THE TOP END OF THE MESH MATERIAL IN A 6" TRENCH AND BACKFILL AND TAMP. TRENCHING SECURE END WITH STAPLES AT 6" SPACING, 4" DOWN FROM EXPOSED END.
2. FLOW DIRECTION JOINTS TO HAVE UPPER END OF LOWER STRIP BURIED WITH UPPER LAYERS OVERLAPPED 4" AND STAPLED. OVERLAP B OVER A.
3. LATERAL JOINTS TO HAVE 4" OVERLAP OF STRIPS. STAPLE 18" ON CENTER.
4. STAPLE OUTSIDE LATERAL EDGE 2" ON CENTER.
5. WIRE STAPLES TO BE MIN OF #11 WIRE 6" LONG AND 1-1/2" WIDE.
6. USE NORTH AMERICAN GREEN DS 150 OR APPROVED EQUAL.

EROSION CONTROL BLANKET
NOT TO SCALE



TRENCH BACKFILL SCHEDULE		
PIPE TYPE	PIPE BEDDING MATERIAL	SELECT BACKFILL
CORRUGATED METAL DUCTILE IRON REINFORCED CONCRETE	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
SOLID PVC-SDR 35 HDPE	MDOT 703.13 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL, OR MDOT 703.13 3/4" CRUSHED STONE
PERFORATED PVC-SDR 35 HDPE	MDOT 703.13 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL, OR MDOT 703.13 3/4" CRUSHED STONE

NOTE:
ALL BRACING AND SHEETING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL MEET ALL STATE AND O.S.H.A. SAFETY STANDARDS.

TRENCH SECTION
NOT TO SCALE

AMY BELL SEGAL, RLA 2265

PAUL D. OSTROWSKI PE 11175

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS MADE HEREON BY OTHERS, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
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75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

EROSION CONTROL DETAILS

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

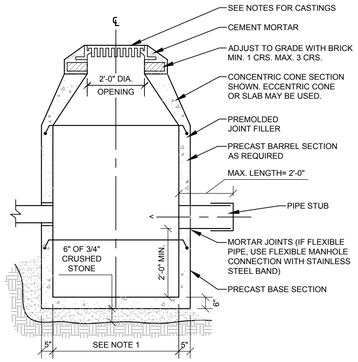
DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-501

NOT FOR CONSTRUCTION

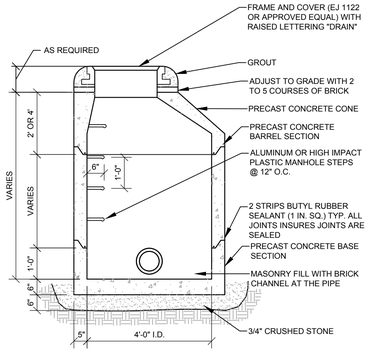
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19059 D.dwg - TAB:C-501 Details

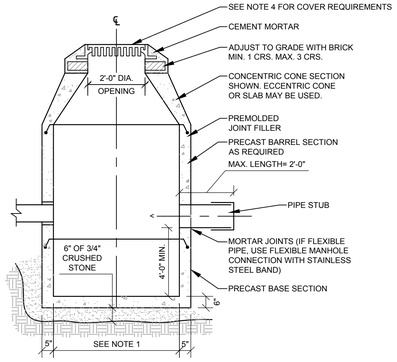


NOTES:
1. 4'-0" I.D. TYPICAL, SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON PLANS.
4. CATCH BASIN FRAME AND GRATE TO BE EJ 5520M5, OR APPROVED EQUAL.

CATCH BASIN
NOT TO SCALE

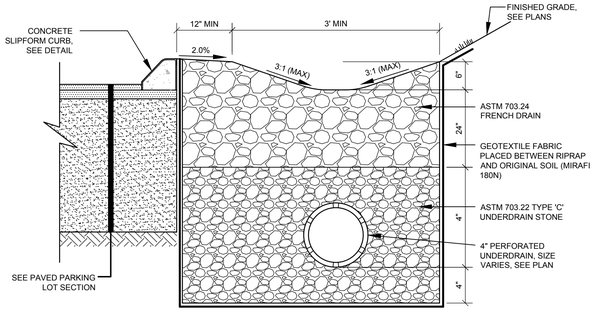


PRECAST MANHOLE
NOT TO SCALE

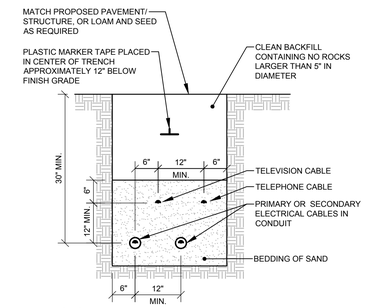


NOTES:
1. 4'-0" I.D. TYPICAL. SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON PLANS.
4. COVER FOR PRETREATMENT DRAINAGE STRUCTURES SHALL BE A SOLID MANHOLE COVER OR A CATCH BASIN GRATE AS SPECIFIED ON PLANS.
5. CATCH BASIN FRAME AND GRATE TO BE EJ 5520M5, OR APPROVED EQUAL.
6. DRAIN MANHOLE COVER TO BE EJ 1122 OR APPROVED EQUAL WITH RAISED LETTERING "DRAIN".

PRE-TREATMENT DRAINAGE STRUCTURE
NOT TO SCALE

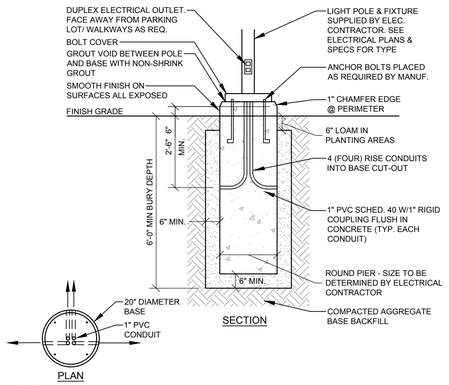


STONE DRIP EDGE
NOT TO SCALE



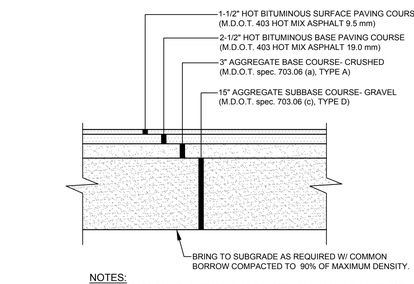
NOTES:
CABLES TO BE ENCASED IN SCHEDULE 40 PVC CONDUIT.

UNDERGROUND CABLE INSTALLATION
NOT TO SCALE



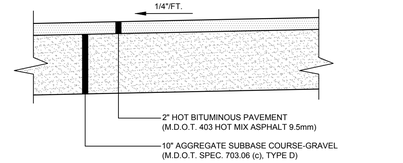
NOTES:
1. CONCRETE f'c=5000 psi. @ 28 DAYS WITH STEEL REINFORCEMENT
2. CONDUIT AND ANCHOR BOLTS PLACED AS REQUIRED PROVIDED BY ELECTRICAL CONTRACTOR
3. PROVIDE 2 COATS BITUMINOUS DAMPROOFING FOR ALL CONCRETE BELOW GRADE.
4. INSTALL BASE 3'-0" ABOVE FINISH GRADE IN LOCATIONS WHERE POLES ARE IN PARKING LOT PAVEMENT. MAINTAIN MINIMUM BURY DEPTH.
5. LIGHT POLE BASE AS MANUFACTURED BY SUPERIOR CONCRETE OR APPROVED EQUAL

24" ROUND LIGHT POLE BASE
NOT TO SCALE

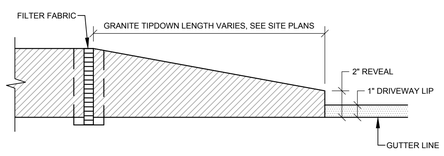


NOTES:
1. COMPACT GRAVEL SUBBASE, BASE COURSE TO 95% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. CONTRACTOR SHALL SET GRADE STAKES MARKING SUBBASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.

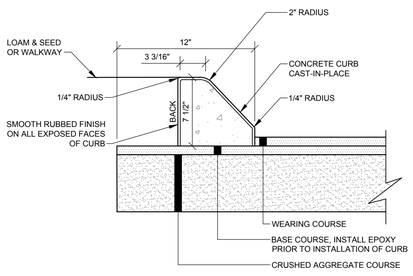
VEHICULAR PAVEMENT SECTION
NOT TO SCALE



PEDESTRIAN PAVEMENT SECTION
NOT TO SCALE

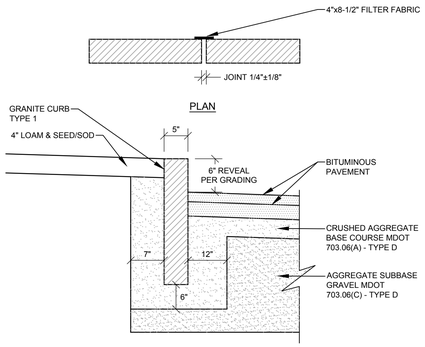


TIPDOWN CURB INSTALLATION
NOT TO SCALE



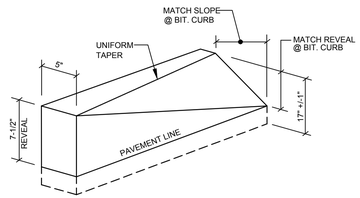
NOTES:
1. SEE TYPICAL ACCESS DRIVE SECTION FOR ROADWAY MATERIAL SPECIFICATIONS AND DEPTHS.
2. TIPDOWNS SHALL BE PROVIDED AS SHOWN ON PLANS.

SLIPFORM CURB SECTION - MOLD 1
NOT TO SCALE



NOTES:
1. EXCAVATION INCIDENTAL TO COST OF CURB
2. SUBBASE SHALL BE COMPACTED TO A FIRM EVEN SURFACE PRIOR TO SETTING OF CURB

VERTICAL GRANITE CURB
NOT TO SCALE



VERTICAL TO SLOPED CURB GRANITE TRANSITION STONES
NOT TO SCALE

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — REGISTERED PROFESSIONAL ENGINEER — 02/29/2024

SEBAGO TECHNICS
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SITE DETAILS
OF:
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1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
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CITY OF PORTLAND
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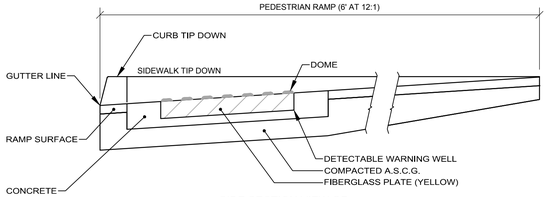
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DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-502

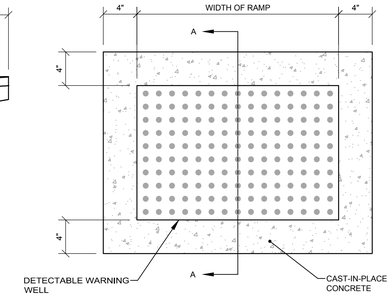
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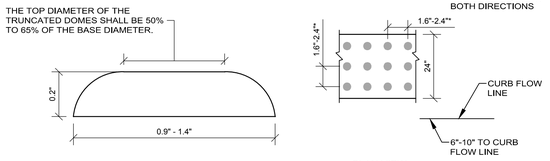
NOT FOR CONSTRUCTION



SIDE SECTION VIEW OF
DETECTABLE WARNING, WELL, CURB AND GUTTER

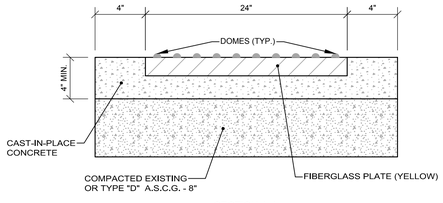


PLAN VIEW OF DETECTABLE WARNING AND WELL



ELEVATION VIEW PLAN VIEW

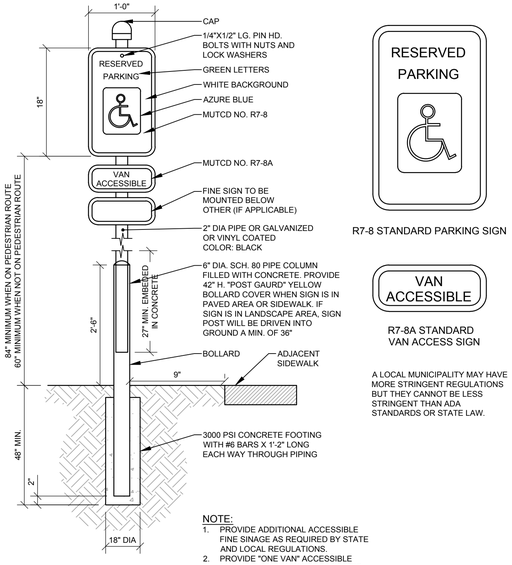
DOME AND DETECTABLE WARNING DETAILS



SECTION A-A

NOTE: ALL DETECTABLE WARNING AREAS SHALL START 6" - 10" FROM THE FLOW LINE OF THE CURB, BE 24" IN DEPTH, AND COVER THE COMPLETE WIDTH OF THE RAMP AREA ONLY.

TRUNCATED DOME PAVING
NOT TO SCALE



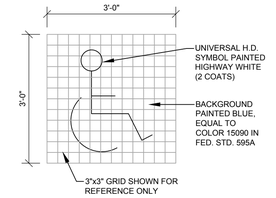
NOTE:
1. PROVIDE ADDITIONAL ACCESSIBLE FINE SINAGE AS REQUIRED BY STATE AND LOCAL REGULATIONS.
2. PROVIDE "ONE VAN" ACCESSIBLE SIGN PER 25 HC SPACES REQUIRED.
3. WHENEVER POSSIBLE SIGN SHALL BE MOUNTED CENTERED ON PARKING SPACE UNLESS SPECIFIED OTHERWISE.
4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PRIOR TO ORDERING MATERIALS.

RESERVED PARKING SIGN - BOLLARD (S-3)
NOT TO SCALE

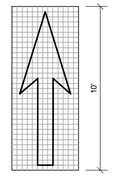
R7-8 STANDARD PARKING SIGN

R7-8A STANDARD
VAN ACCESS SIGN

A LOCAL MUNICIPALITY MAY HAVE MORE STRINGENT REGULATIONS BUT THEY CANNOT BE LESS STRINGENT THAN ADA STANDARDS OR STATE LAW.

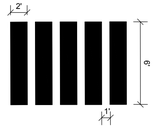


ADA RESERVED PARKING
NOT TO SCALE



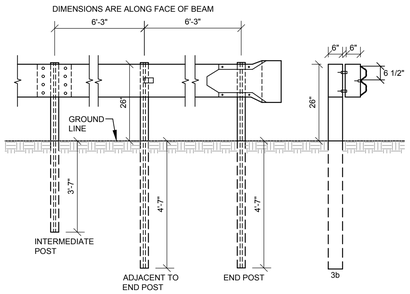
13 SQUARE FEET

PAVEMENT ARROW DETAIL
NOT TO SCALE



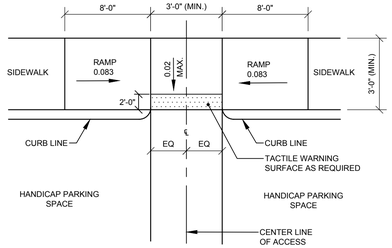
PAVEMENT MARKING NOTES
1. ALL PAVEMENT MARKINGS SHALL BE IN CONFORMANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, U.S. DOT, FHWA, LATEST EDITION.
2. ALL PAVEMENT MARKING LINES SHALL BE PAINT AND 4" WIDE, EXCEPT FOR:
   SWSL-12"
   SYCL-12"
   CROSSWALK BARS - 24"
3. PAVEMENT WORD AND SYMBOL MARKINGS SHALL BE WHITE PAINT.
4. SOLID WHITE STOP LINE SHALL BE A MINIMUM OF 4' BEHIND THE EDGE OF CROSSWALK.

CROSSWALK DETAIL
NOT TO SCALE

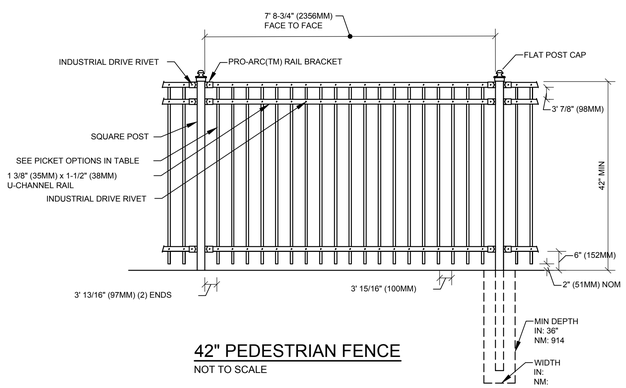


NOTES:
1. INTERMEDIATE POST SPACING SHALL BE 6'-3" UNLESS OTHERWISE SHOWN.
2. POSTS AND OFFSET BRACKETS FOR TYPE 3b GUARD RAIL SHALL BE W 6x9.
3. ALL HOLES IN BEAM TO BE SHOP-PUNCHED BEFORE GALVANIZING.

GUARDRAIL TYPE 3b
NOT TO SCALE



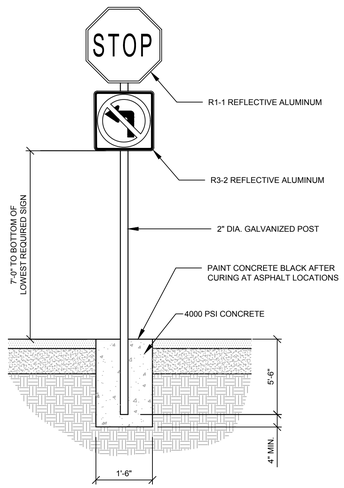
ADA ACCESSIBLE RAMP
NOT TO SCALE



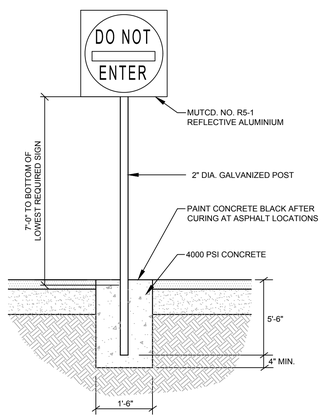
NOTES:
1. METRIC DIMENSIONS ARE NOMINAL EQUIVALENTS TO U.I.S. DIMENSIONS.
2. SPECIFICATIONS SHOWN CAN BE CHANGED BY MAST HALCO ONL.Y
3. FOOTING WIDTH TO BE (4)X POST WIDTH
4. FOR MATCHING GATE SEE DRAWING 6-5010M (SINGLE) OR 6-5015M (DOUBLE)
5. IMPERIAL "B" GUARDRAIL BY MASTER HALCO. Co. (1-800-229-5615)
6. ALL SURFACES SHALL BE BLACK POWDER COATED FINISH BY MANUFACTURER.

PICKET SIZE	GAUGE
3/4" [19MM]	14 GA

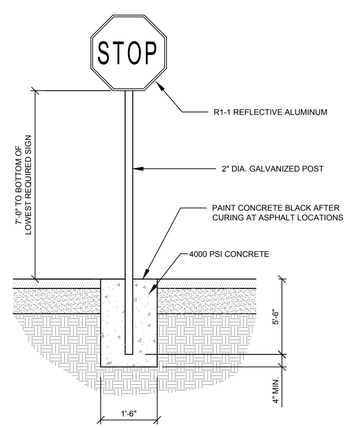
42" PEDESTRIAN FENCE
NOT TO SCALE



STOP & LEFT TURN PROHIBITION SIGN (S-4)



DO NOT ENTER SIGN (S-2)



STOP SIGN (S-1)

PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265
STATE OF MAINE PAUL D. OSTROWSKI No. 11175 REGISTERED PROFESSIONAL ENGINEER 02/29/2024

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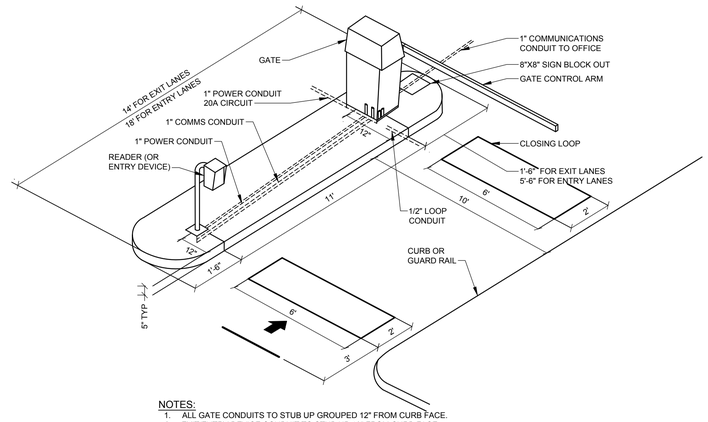
DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-503

19059 D.dwg, TAB:C-503 Details

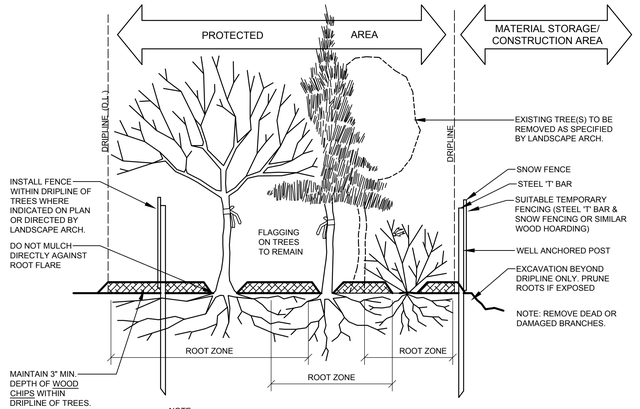
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NOT FOR CONSTRUCTION



NOTES:
1. ALL GATE CONDUITS TO STUB UP GROUPED 12" FROM CURB FACE.
2. EXIT/ENTRY DEVICE CONDUIT TO STUB UP 12" FROM CURB FACE.
3. DISTANCE BETWEEN GATE AND REVENUE DEVICE SHOULD BE 11' ON CENTER.
4. EACH LANE SHOULD HAVE ITS OWN 20A CIRCUIT.
5. CONTRACTOR TO VERIFY WITH PARKING GATE VENDOR THE DIMENSIONS AND PLACEMENT OF CONDUITS AND BLOCK OUTS PRIOR TO PLACING CONCRETE FOR THESE ISLANDS

PARKING ENTRY ISLAND
NOT TO SCALE

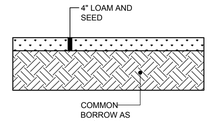


NOTE:
AS THE MAJOR PORTIONS OF THE ROOT SYSTEMS OF THE PLANT(S) TO BE PROTECTED ARE WITHIN THE DRIPLINE ZONE, THIS ENTIRE AREA SHOULD BE FENCED OFF (TO A MINIMUM HEIGHT OF 4') PRIOR TO CONSTRUCTION AND REMOVED THEREAFTER. FOR MAXIMUM PROTECTION, NO VEHICLE TRESPASS, EXCAVATION, FILL, WASTE DISCHARGE OR OR MATERIAL STORAGE SHOULD BE ALLOWED IN THIS ZONE.

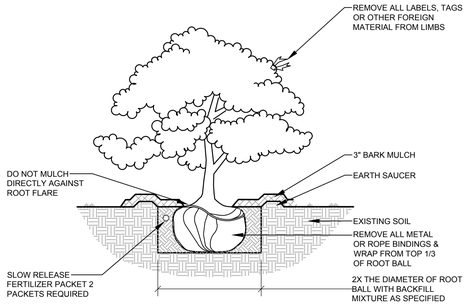
TREE PROTECTION DETAIL
NOT TO SCALE
CROSS-SECTION OF TYPICAL PLANT GROUPING

LANDSCAPE NOTES

1. PLANT QUANTITIES SHOWN ON PLANS ARE FOR CONVENIENCE TO THE CONTRACTOR ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ALL PLANT MATERIAL INSTALLATION AS SHOWN ON PLANS.
2. SIZE AND GRADING STANDARDS OF PLANT MATERIALS SHALL CONFORM TO THE LATEST EDITION OF "U.S.A. STANDARD FOR NURSERY STOCK," BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
3. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
4. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING, STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE BY THE OWNER.
5. PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR BY THE CONTRACTOR AND A PERIOD OF TWO YEARS THEREAFTER BY THE OWNER FROM DATE OF INSTALLATION. DURING THE ONE YEAR GUARANTEE PERIOD, DEAD PLANT MATERIAL SHALL BE REPLACED AT NO COST TO THE OWNER. AT THE END OF THE ONE YEAR PERIOD, THE CONTRACTOR SHALL OBTAIN FINAL ACCEPTANCE FROM THE OWNER.
6. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
7. EXISTING TREES TO BE PRESERVED WILL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
8. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF THE UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER.
9. ALL SHRUB BEDS SHALL BE MULCHED WITH 3" CLEAN SHREDDED DARK BROWN BARK MULCH.
10. THE CONTRACTOR SHALL PROVIDE 4" LOAM FOR ALL AREAS TO BE SODDED OR SEEDED. PLANTING AREAS SHALL RECEIVE 12" ROLLED THICKNESS OF LOAM. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
11. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT (AND MUNICIPAL AUTHORITY, IF APPLICABLE) PRIOR TO INSTALLATION ON SITE.
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR PERENNIAL AND ANNUAL FLOWER BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
13. DURING CLEANING OF SITE AND PRIOR TO TREE AND SHRUB INSTALLATION, CONTRACTOR SHALL REMOVE INVASIVE PLANTS. AREAS WHERE INVASIVE PLANTS ARE REMOVED AND NO OTHER PLANTING IS PROPOSED SHALL BE LOAMED AND SEEDED.



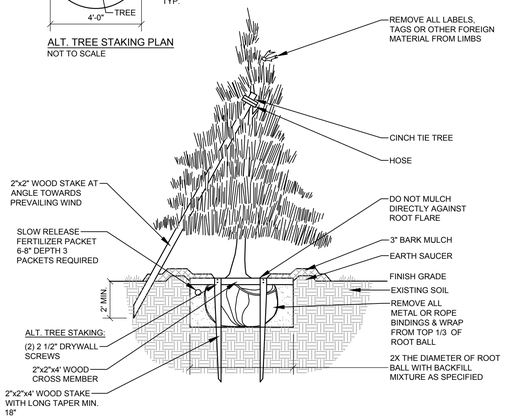
LOAM & SEED SECTION
NOT TO SCALE



DECIDUOUS & EVERGREEN SHRUB
NOT TO SCALE

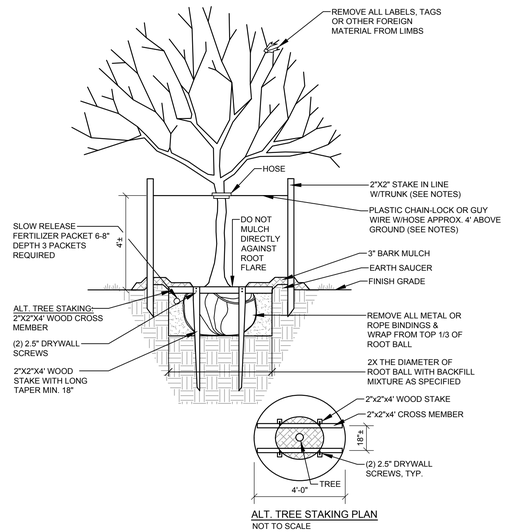


ALT. TREE STAKING PLAN
NOT TO SCALE



NOTES:
INSTALL STAKES AND GUYS TO TREES IF THE FOLLOWING APPLY:
1. THE TREE IS OF SUBSTANTIAL SIZE.
2. THE PLANTING LOCATION IS EXTREMELY WINDY, AS ON OPEN UNDEVELOPED SITES.
3. THE PLANTING LOCATION IS COMPRISED OF SAND OR OTHER LOOSE TEXTURED SOILS.
4. IF STAKES AND GUYS ARE REQUIRED, REMOVE AFTER ONE YEAR TIME.

EVERGREEN TREES
NOT TO SCALE



DECIDUOUS TREES
NOT TO SCALE

AMY BELL SEGAL, RLA 2265
LICENSED LANDSCAPE ARCHITECT — Amy Bell Segal — No. 2265 — STATE OF MAINE — 02/29/2024

PAUL D. OSTROWSKI, PE 11175
STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — REGISTERED PROFESSIONAL ENGINEER — 02/29/2024

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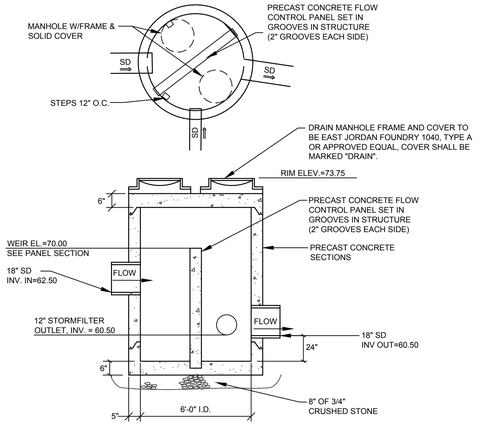
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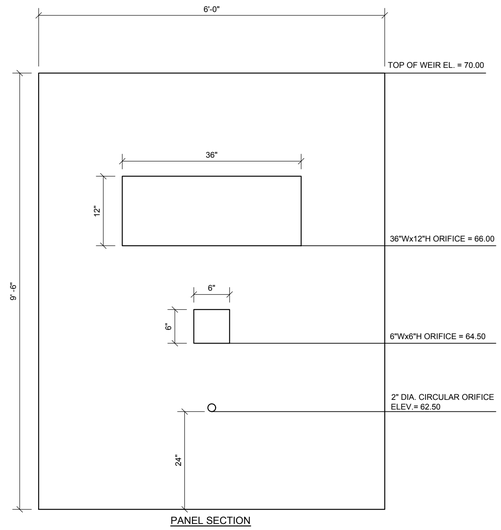
SHEET C-504

NOT FOR CONSTRUCTION

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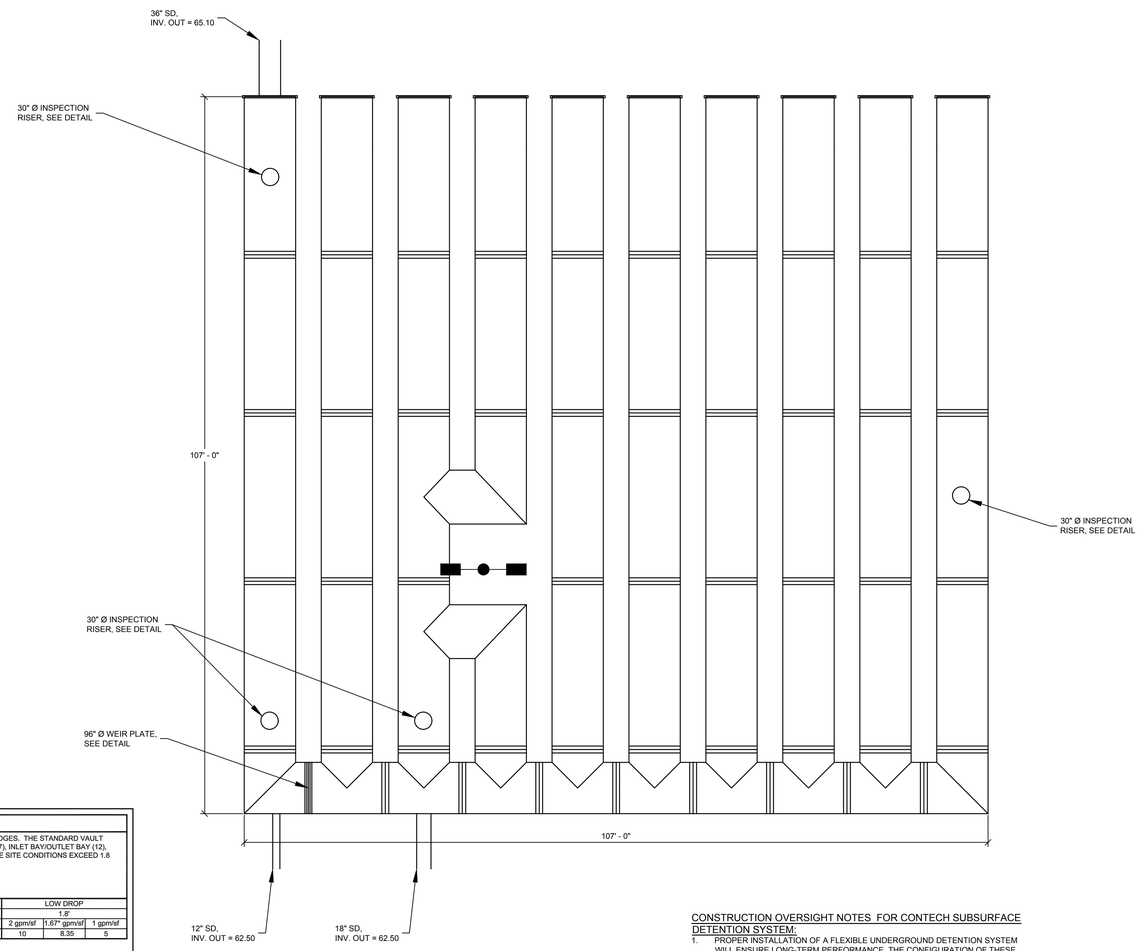
NOTES:
1. SUBMIT SHOP DRAWINGS FOR OWNER/ENGINEER APPROVAL.
2. STRUCTURE SHALL BE DESIGNED FOR H-20 LOADING.



PANEL SECTION

OUTLET CONTROL STRUCTURE (OCS-1)

NOT TO SCALE

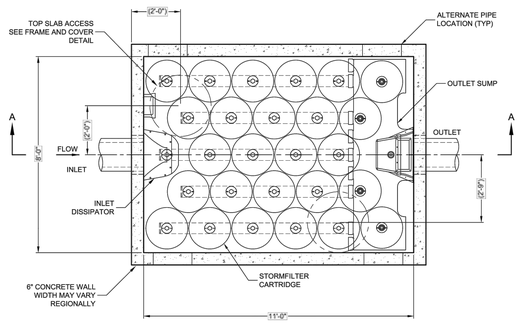


CONTECH SUBSURFACE DETENTION SYSTEM SF-1

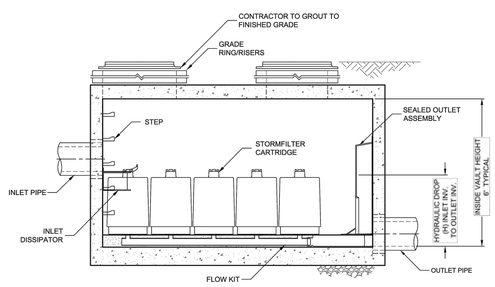
NOT TO SCALE

CONSTRUCTION OVERSIGHT NOTES FOR CONTECH SUBSURFACE DETENTION SYSTEM:

1. PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THE SUBMITTAL DRAWINGS, ARE APPROPRIATE FOR YOUR SITE.
2. INSPECTIONS BY A PROFESSIONAL ENGINEER SHALL CONSIST OF WEEKLY VISITS TO THE SITE TO INSPECT THE CONSTRUCTION AND STABILIZATION OF THE PROPOSED SUBSURFACE DETENTION SYSTEM TO BE BUILT ON THE SITE. INSPECTIONS SHALL CONSIST OF AN APPROPRIATE NUMBER OF VISITS TO THE SITE TO INSPECT THE INSTALLATION OF THE SUBSURFACE DETENTION SYSTEM CONSTRUCTION FROM INITIAL GROUND DISTURBANCE TO BACKFILL OVER THE SYSTEM.

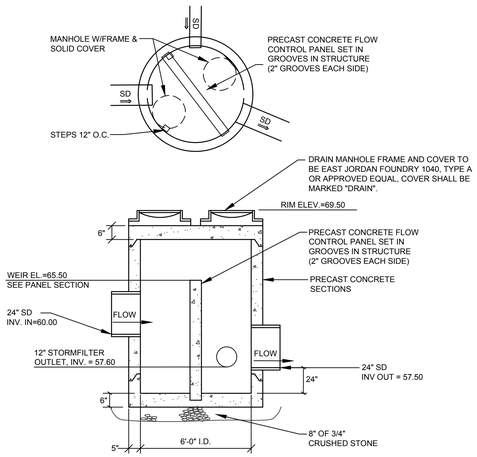


PLAN VIEW
VAULT STYLE: OUTLET SUMP (NIB)

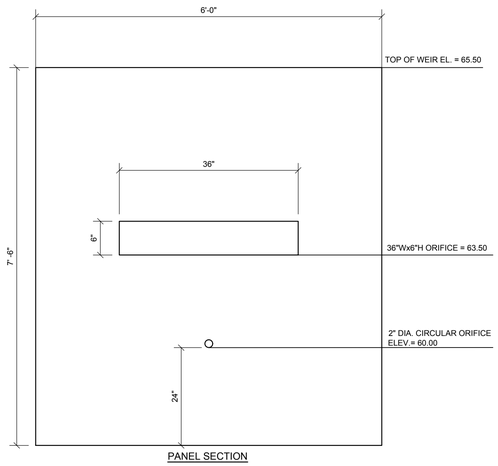


SECTION A-A

The Stormwater Management StormFilter®
U.S. PATENTS: 5,322,629; 5,624,562; 5,707,527; 5,865,982; 6,027,639; 6,511,595; 6,649,048; 6,802,968; 6,821,427; 6,511,595; 7,425,262; 7,470,366; 8,431,016; 8,470,169; 8,673,153; 8,858,791; 9,352,256; 9,764,272; 9,861,919; 10,343,093; 10,376,816; 10,413,844; 10,464,000; 10,556,196; 10,682,595; 10,744,435; 10,744,436; 10,744,437; 10,744,438; 10,744,439; 10,744,440; 10,744,441; 10,744,442; 10,744,443; 10,744,444; 10,744,445; 10,744,446; 10,744,447; 10,744,448; 10,744,449; 10,744,450; 10,744,451; 10,744,452; 10,744,453; 10,744,454; 10,744,455; 10,744,456; 10,744,457; 10,744,458; 10,744,459; 10,744,460; 10,744,461; 10,744,462; 10,744,463; 10,744,464; 10,744,465; 10,744,466; 10,744,467; 10,744,468; 10,744,469; 10,744,470; 10,744,471; 10,744,472; 10,744,473; 10,744,474; 10,744,475; 10,744,476; 10,744,477; 10,744,478; 10,744,479; 10,744,480; 10,744,481; 10,744,482; 10,744,483; 10,744,484; 10,744,485; 10,744,486; 10,744,487; 10,744,488; 10,744,489; 10,744,490; 10,744,491; 10,744,492; 10,744,493; 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NOTES:
1. SUBMIT SHOP DRAWINGS FOR OWNER/ENGINEER APPROVAL.
2. STRUCTURE SHALL BE DESIGNED FOR H-20 LOADING.



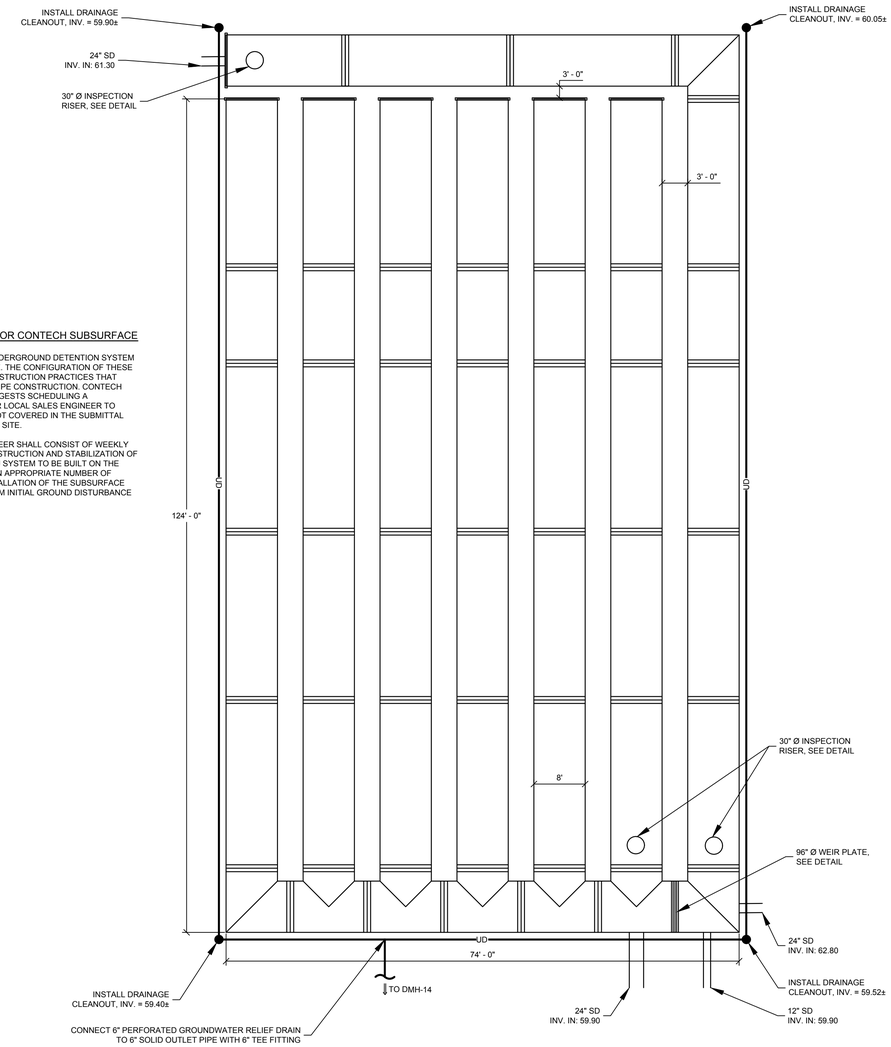
PANEL SECTION

OUTLET CONTROL STRUCTURE (OCS-2)

NOT TO SCALE

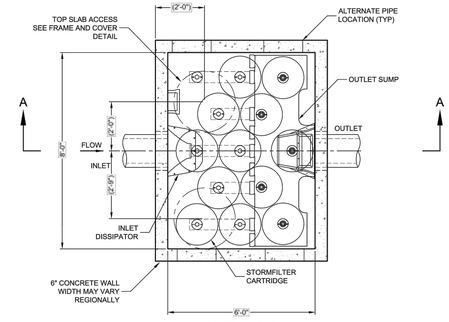
CONSTRUCTION OVERSIGHT NOTES FOR CONTECH SUBSURFACE DETENTION SYSTEM:

1. PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THE SUBMITTAL DRAWINGS, ARE APPROPRIATE FOR YOUR SITE.
2. INSPECTIONS BY A PROFESSIONAL ENGINEER SHALL CONSIST OF WEEKLY VISITS TO THE SITE TO INSPECT THE CONSTRUCTION AND STABILIZATION OF THE PROPOSED SUBSURFACE DETENTION SYSTEM TO BE BUILT ON THE SITE. INSPECTIONS SHALL CONSIST OF AN APPROPRIATE NUMBER OF VISITS TO THE SITE TO INSPECT THE INSTALLATION OF THE SUBSURFACE DETENTION SYSTEM CONSTRUCTION FROM INITIAL GROUND DISTURBANCE TO BACKFILL OVER THE SYSTEM.

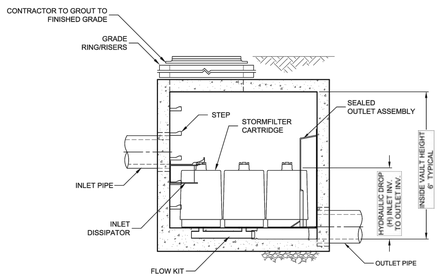


CONTECH SUBSURFACE DETENTION SYSTEM SF-2

NOT TO SCALE



SECTION B-B
VAULT STYLE: OUTLET SUMP (NIB)



SECTION A-A

The Stormwater Solution
StormFilter®
CONTECH'S STORMFILTER IS PROTECTED BY ONE OR MORE OF THE FOLLOWING: US PATENTS 5,322,629; 5,707,527; 5,759,415; 6,027,639; 6,350,374; 6,649,048; 6,991,114; 7,186,058; AND OTHER PATENTS PENDING. SEE WWW.CONTECHES.COM/IP FOR DETAILS REGARDING SPECIFIC PRODUCTS.

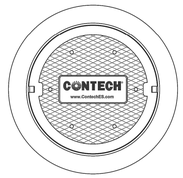
STORMFILTER DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD VAULT STYLE IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (12). VAULT STYLE OPTIONS INCLUDE OUTLET BAY (7), STORMFILTER 6X6 PEAK HYDRAULIC CAPACITY IS 1.8 CFS. IF THE SITE CONDITIONS EXCEED 1.8 CFS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			1.8'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	10	8.35	5

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
CARTRIDGE HEIGHT (27", 18", LOW DROP(LD))	*
NUMBER OF CARTRIDGES REQUIRED	*
CARTRIDGE FLOW RATE	*
MEDIA TYPE (PERLITE, ZPG, PSORB)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE #1	*	*	*
INLET PIPE #2	*	*	*
OUTLET PIPE	*	*	*

UPSTREAM RIM ELEVATION	*
DOWNSTREAM RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

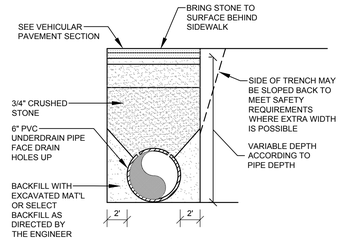
* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR SITE SPECIFIC DRAWINGS WITH DETAILED VAULT DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
7. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).
8. STORMFILTER STRUCTURE SHALL BE PRECAST CONFORMING TO ASTM C-857 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER VAULT (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL VAULT SECTIONS AND ASSEMBLE VAULT.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

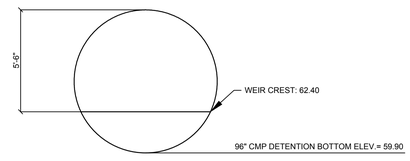
CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

SF806
STORMFILTER
STANDARD DETAIL



GROUNDWATER RELIEF DRAIN

NOT TO SCALE



96" Ø WEIR PLATE DETAIL

NOT TO SCALE

NOT FOR CONSTRUCTION

PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

STATE OF MAINE PAUL D. OSTROWSKI No. 11175 REGISTERED PROFESSIONAL ENGINEER 02/29/2024

REV.:	BY:	DATE:	STATUS:
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AS PROPOSED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

SITE DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

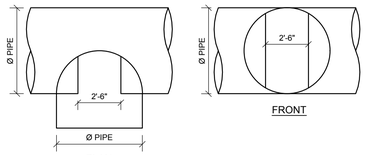
DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-506

19059 D.dwg, 1 TAB-C-506 Details

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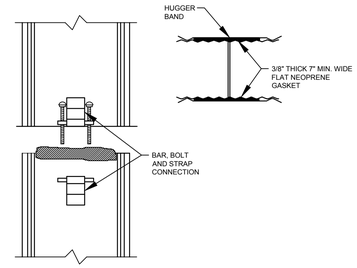
I:\STORMWATER\CCOMMOP\10 G STORMFILTER\48 STANDARD DRAWINGS\VAULT\OWG\SF0806.DTL SEALED OUTLET RISER.DWG 9/20/2021 2:09 PM



NOTE:
LADDERS ARE OPTIONAL AND ARE NOT REQUIRED FOR ALL SYSTEMS.

NOTE:
MANWAY DETAIL APPLICABLE FOR CMP SYSTEMS WITH DIAMETERS 48" AND LARGER. MANWAYS MAY BE REQUIRED ON SMALLER SYSTEMS DEPENDING ON ACTUAL SITE SPECIFIC CONDITIONS.

INSPECTION RISER DETAIL
NOT TO SCALE

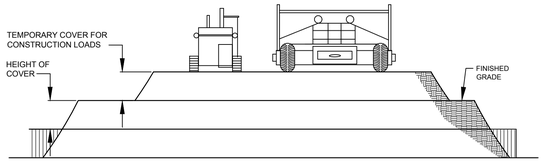


CONNECTION DETAIL SINGLE BOLT, BAR AND STRAP

NOTES

1. BANDS ARE NORMALLY FURNISHED AS FOLLOWS:
   12" THRU 48", 1-PIECE
   54" THRU 96", 2-PIECE
   102" THRU 144", 3-PIECES
2. BAND FASTENERS ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDS
3. REROLLED ANNULAR END CORRUGATIONS ARE NORMALLY 2 2/3" x 1/2". DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES

12" HUGGER BAND DETAIL
NOT TO SCALE



CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM
NOT TO SCALE

(1) MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT

FOUNDATION/BEDDING PREPARATION

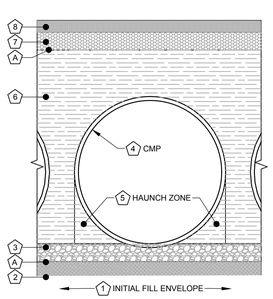
(2) PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION. THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER.

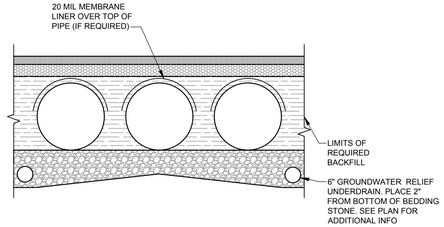
(3) HAUNCH ZONE MATERIAL SHALL BE PLACED AND UNIFORMLY COMPACTED WITHOUT SOFT SPOTS.

BACKFILL

WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO LIFT (16") DIFFERENTIAL BETWEEN ANY OF THE LENGTH OF THE DETENTION SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON THE PIPE.

OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS, AS APPROVED BY SITE ENGINEER.





DETENTION SYSTEMS - CMP DETENTION / CMP DRAINAGE

	MATERIAL LOCATION	DESCRIPTION	MATERIAL DESIGNATION	DESIGNATION
8	RIGID OR FLEXIBLE PAVEMENT (IF APPLICABLE)			
7	ROAD BASE (IF APPLICABLE)			
A	GEOTEXTILE LAYER	NON-WOVEN GEOTEXTILE	CONTECT C-40 OR C-45	ENGINEER DECISION FOR CONSIDERATION TO PREVENT SOIL MIGRATION INTO VARYING SOIL TYPES
6	BACKFILL	WELL GRADED GRANULAR MATERIAL WHICH MAY CONTAIN SMALL AMOUNTS OF SILT OR CLAY.	AASHTO M 145- A-1, A-2, A-3	PLACED IN 8" ± LOOSE LIFTS AND COMPACTED TO 90% STANDARD PROCTOR PER AASHTO T 99
3	BEDDING STONE	WELL GRADED GRANULAR BEDDING MATERIAL WITH MAXIMUM PARTICLE SIZE OF 3"	AASHTO M43- 3, 357, 4, 467, 5, 56, 57	ENGINEER TO DETERMINE IF BEDDING IS REQUIRED. PIPE MAY BE PLACED ON THE TRENCH BOTTOM OF A RELATIVELY LOOSE, NATIVE SUITABLE WELL GRADED AND GRANULAR MATERIAL. FOR ARCH PIPES IT IS RECOMMENDED TO BE SHAPED TO A RELATIVELY FLAT BOTTOM OR FINE-GRADE THE FOUNDATION TO A SLIGHT V-SHAPE. UNSUITABLE MATERIAL SHOULD BE OVER-EXCAVATED AND RE-PLACED WITH A 4"-6" LAYER OF WELL GRADED AND GRANULAR STONE PER THE MATERIAL DESIGNATION. SEE AASHTO 26.3.8.1/26.5.3 BEDDING INFO.
A	GEOTEXTILE LAYER	NON-WOVEN GEOTEXTILE	CONTECH C-40 OR C-45	ENGINEER DECISION FOR CONSIDERATION TO PREVENT SOIL MIGRATION INTO VARYING SOIL TYPES
	NOTE: BACKFILL USING CONTROLLED LOW-STRENGTH MATERIAL (CLSM, "FLASH FILL" OR "FLOWABLE FILL") WHEN THE SPACING BETWEEN THE PIPES WILL NOT ALLOW FOR PLACEMENT AND ADEQUATE COMPACTION OF THE BACKFILL.			

DETENTION SYSTEM
NOT TO SCALE

SPECIFICATION FOR CORRUGATED STEEL PIPE-ALUMINIZED TYPE 2 STEEL

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE CORRUGATED STEEL PIPE (CSP) DETAILED IN THE PROJECT PLANS.

MATERIAL
THE ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M274 OR ASTM A929.

PIPE
THE CSP SHALL BE MANUFACTURED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF AASHTO M36 OR ASTM A760. THE PIPE SIZES, GAGES AND CORRUGATIONS SHALL BE AS SHOWN ON THE PROJECT PLANS.

ALL FABRICATION OF THE PRODUCT SHALL OCCUR WITHIN THE UNITED STATES.

HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH RECOMMENDATIONS OF THE NATIONAL CORRUGATED STEEL PIPE ASSOCIATION (NCSPA)

INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II OR ASTM A798 AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

MATERIAL SPECIFICATION
NOT TO SCALE

PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — LICENSED PROFESSIONAL ENGINEER — 02/29/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS MADE HEREON BY OTHERS, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

SITE DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-507

NOT FOR CONSTRUCTION

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19059 D.dwg - TAB-C-507 Details



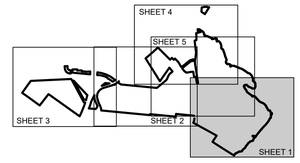
MONUMENT #	NORTHING	EASTING	DESCRIPTION
1	294607.0	2918656.4	5/8 REBAR BENT BASE
2	293077.4	2916874.8	5/8 REBAR FLUSH (9' SWLY OF LINE)
3	294785.1	2914796.2	REBAR 2317 FLUSH WITH PAVE
4	295127.0	2913819.7	5/8 REBAR
5	295179.4	2913257.8	5/8 REBAR BELOW GRADE
6	295235.4	2912660.7	5/8 REBAR BELOW GRADE
7	295262.5	2912377.2	5/8 REBAR BELOW GRADE
8	295357.1	2910852.3	2" PIPE
9	295359.4	2910829.0	5/8 REBAR PLS 1245
10	295365.5	2910763.7	5/8 REBAR
11	297030.2	2910591.5	3/4 REBAR
12	296924.0	2910751.3	IRON ROD WITH COPPER CAP
13	296885.9	2911158.5	5/8 REBAR BASE
14	296798.7	2912082.8	3/4 PIPE BASE
15	296742.0	2912678.0	5/8 REBAR
16	296734.1	2912757.3	5/8 REBAR FLAT ON GROUND
17	NONE	NONE	NONE
18	297073.1	2913169.6	5/8 REBAR PLS 2147
19	297140.0	2913250.7	3/4 REBAR
20	297253.6	2913337.6	3/4 REBAR PLS 2147
21	297406.7	2913406.4	3/4 REBAR PLS 2147
22	297551.5	2913520.1	MAGNAIL W/WASHER PLS 1205
23	297629.9	2913617.2	5/8 REBAR PLS 2317
24	297664.5	2913621.2	5/8 REBAR PLS 2147
25	297812.9	2913501.6	5/8 REBAR PLS 2117
26	297857.8	2913458.0	5/8 REBAR BASE
27	297397.9	2913136.8	5/8 REBAR BENT
28	297195.6	2912994.3	5/8 REBAR PLS 2147
29	297102.8	2912929.2	5/8 REBAR
30	297338.2	2912782.3	5/8 REBAR
31	298384.4	2912133.9	3/4 REBAR BELOW GRADE
32	298991.5	2912816.5	5/8 REBAR
33	298315.8	2913498.0	5/8 REBAR
34	298345.7	2913529.0	1 PIPE
35	298412.2	2913602.5	1 PIPE
36	298302.6	2913704.4	5/8 REBAR PLS 1038
37	298370.9	2913778.0	5/8 REBAR
38	298296.1	2913844.1	5/8 REBAR PLS 2038
39	298163.7	2913969.5	3/4 REBAR
40	297920.4	2914110.9	5/8 REBAR PLS 2147
41	297981.8	2914245.9	5/8 REBAR
42	298289.9	2914671.2	5/8 REBAR PLS 2147
43	298324.0	2914799.1	5/8 REBAR PLS 2147
44	298235.6	2914810.7	5/8 REBAR PLS 509
45	298011.8	2914394.7	5/8 REBAR PLS 2147
46	297834.5	2914168.8	5/8 REBAR (MISSING IN MAY 2015)
47	299405.4	2914970.0	GRANITE MONUMENT FOUND
48	299600.2	2914970.8	5/8 REBAR 2082
49	299646.9	2914968.1	5/8 REBAR 2082
50	299774.9	2914960.8	5/8 REBAR 2082
51	299817.0	2915065.2	1 1/2 PIPE
52	299850.5	2915186.1	1 PIPE
53	299870.8	2915228.8	CONC. MON-FLUSH
54	299913.3	2915266.2	1 PIPE
55	299944.7	2915216.5	3/4 REBAR 1280 INSIDE PIPE
56	300001.8	2915085.8	3/4 REBAR
57	295936.6	2909077.0	MTA-GRANITE
58	296386.8	2906704.0	3/4 REBAR PLS 2082
59	295750.3	2906211.4	1 PIPE
60	296168.2	2905641.9	3/4 REBAR PLS 2082
61	296459.5	2905230.3	GRANITE MONUMENT FOUND
62	296484.2	2905244.0	3/4 REBAR PLS 2082
63	296734.3	2905428.1	3/4 PIPE
64	297124.3	2905708.2	GRANITE MONUMENT FOUND
65	296326.0	2908871.6	MTA-GRANITE
66	297139.5	2908113.9	5/8 REBAR MTA
67	297555.3	2907807.7	5/8 REBAR MTA
68	297638.4	2907681.3	5/8 REBAR MTA
69	297770.5	2907622.4	5/8 REBAR MTA
70	297777.8	2908305.6	3/4 REBAR
71	297703.1	2908309.0	5/8 REBAR PLS 1118
72	297715.0	2908556.5	5/8 REBAR PLS 1118
73	297652.2	2909035.8	MTA-GRANITE
74	297492.0	2909027.9	MTA-GRANITE
75	297600.3	2907920.0	MTA-GRANITE
76	297603.7	2909438.3	5/8 REBAR MTA
77	297261.7	2910013.6	5/8 REBAR MTA
78	297310.0	2909984.4	MTA-GRANITE
79	297453.2	2909423.7	MTA-GRANITE
80	295554.5	2909336.2	3/4 REBAR 2282
81	295584.6	2908958.4	1" PIPE

NOTES

1. BOOK AND PAGE CITATIONS SHOWN HEREON REFER TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. NO MONUMENTS WERE SET AS OF THE DATE OF THIS PLAN.
3. A WRITTEN REPORT OF FINDINGS AND OPINIONS AS REQUIRED BY SECTION 10.A.3.D OF THE TECHNICAL STANDARDS OF PRACTICE OF THE STATE OF MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS WAS NOT PREPARED.
4. THE PURPOSE OF THIS SURVEY WAS TO DEFINE THE PERIMETER BOUNDARY OF THE PORTLAND INTERNATIONAL JETPORT PARCEL AND ACCESSORY PARCELS IN THE VICINITY OF THE JETPORT. INTERIOR PARCEL BOUNDARIES WERE NOT RESEARCHED OR DEFINED EXCEPT WHERE REQUIRED TO DEFINE THE PERIMETER BOUNDARY. EASEMENTS DEPICTED ON THIS PLAN WERE NOT COMPLETELY RESEARCHED OR LOCATED IN THE FIELD BUT SHOW THEIR GENERAL LOCATION RELATIVE TO THE PERIMETER BOUNDARY.
5. AERIAL PHOTOGRAPHY SHOWN WAS TAKEN IN 2015.
6. CURRENT OWNER: CITY OF PORTLAND
389 CONGRESS ST.
PORTLAND, MAINE 04101

LEGEND

- 1 — MONUMENT FOUND WITH REFERENCE NUMBER
- 79 — HIGHWAY MONUMENT FOUND WITH REFERENCE NUMBER
- 64 — STONE/GRANITE FOUND WITH REFERENCE NUMBER
- EASEMENT BOUNDARY
- PROPERTY LINE
- INTERIOR PARCEL BOUNDARY
- APPROXIMATE ABUTTER BOUNDARY
- E105 / 12 — PARCEL NUMBERING CORRESPONDS WITH DRAWING "PORTLAND INTERNATIONAL JETPORT EXHIBIT 'A'" DATED 7-9-2018, BY COFFMAN ASSOCIATES



SHEET INDEX

NOT TO SCALE



GRID NORTH

MAINE COORDINATE SYSTEM OF 1983 (2011)
WEST ZONE

SCALE: 1"= 200'

200' 0 200' 400' 600' 800'

SURVEY STANDARD

THIS PLAN WAS PREPARED FROM INFORMATION OBTAINED BY A SURVEY CONFORMING SUBSTANTIALLY TO THE REQUIREMENTS OF TECHNICAL STANDARDS CONTAINED IN CHAPTER 90, PART 2, OF THE RULES OF THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS, EFFECTIVE APRIL 1, 2001.

CLARK G. STAPLES, MAINE LICENSED PROFESSIONAL LAND SURVEYOR No. 2332

STATE OF MAINE — CLARK G. STAPLES — NO. 2332 — PROFESSIONAL LAND SURVEYOR

BOUNDARY SURVEY

OF LANDS OF

THE CITY OF PORTLAND

IN THE VICINITY OF

THE PORTLAND INTERNATIONAL JETPORT

-PORTLAND & SOUTH PORTLAND-

CUMBERLAND COUNTY, MAINE

FOR

Stantec

GOOD DEEDS
LAND SURVEYING • DEED RESEARCH
109 MAIN STREET
BELFAST, ME 04915
(207) 338-5743

DWG: 14078 MASTER PLAN 20220126.DWG

DATE: JANUARY 26, 2022

SCALE: 1"=200'

SHEET: 1 OF 5

MONUMENT #	NORTHING	EASTING	DESCRIPTION
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7	295262.5	2912377.2	5/8 REBAR BELOW GRADE
8	295357.1	2910852.3	2" PIPE
9	295359.4	2910829.0	5/8 REBAR PLS 1245
10	295365.5	2910763.7	5/8 REBAR
11	297030.2	2910591.5	3/4 REBAR
12	296924.0	2910751.3	IRON ROD WITH COPPER CAP
13	296885.9	2911158.5	5/8 REBAR BASE
14	296798.7	2912082.8	3/4 PIPE BASE
15	296742.0	2912678.0	5/8 REBAR
16	296734.1	2912757.3	5/8 REBAR FLAT ON GROUND
17	NONE	NONE	NONE
18	297073.1	2913169.6	5/8 REBAR PLS 2147
19	297140.0	2913250.7	3/4 REBAR
20	297253.6	2913337.6	3/4 REBAR PLS 2147
21	297406.7	2913406.4	3/4 REBAR PLS 2147
22	297551.5	2913520.1	MAGNAIL WWASHER PLS 1205
23	297629.9	2913617.2	5/8 REBAR PLS 2317
24	297664.5	2913621.2	5/8 REBAR PLS 2147
25	297812.9	2913501.6	5/8 REBAR PLS 2117
26	297857.8	2913458.0	5/8 REBAR BASE

MONUMENT #	NORTHING	EASTING	DESCRIPTION
27	297397.9	2913136.8	5/8 REBAR BENT
28	297195.6	2912994.3	5/8 REBAR PLS 2147
29	297102.8	2912929.2	5/8 REBAR
30	297338.2	2912782.3	5/8 REBAR
31	298384.4	2912133.9	3/4 REBAR BELOW GRADE
32	298991.5	2912816.5	5/8 REBAR
33	298315.8	2913488.0	5/8 REBAR
34	298345.7	2913529.0	1 PIPE
35	298412.2	2913602.5	1 PIPE
36	298302.6	2913704.4	5/8 REBAR PLS 1038
37	298370.9	2913778.0	5/8 REBAR
38	298296.1	2913844.1	5/8 REBAR PLS 2038
39	298163.7	2913969.5	3/4 REBAR
40	297920.4	2914110.9	5/8 REBAR PLS 2147
41	297981.8	2914245.9	5/8 REBAR
42	298289.9	2914671.2	5/8 REBAR PLS 2147
43	298324.0	2914799.1	5/8 REBAR PLS 2147
44	298235.6	2914810.7	5/8 REBAR PLS 509
45	298011.8	2914394.7	5/8 REBAR PLS 2147
46	297834.5	2914168.8	5/8 REBAR (MISSING IN MAY 2015)
47	299405.4	2914970.0	GRANITE MONUMENT FOUND
48	299600.2	2914970.8	5/8 REBAR 2082
49	299646.9	2914968.1	5/8 REBAR 2082
50	299774.9	2914960.8	5/8 REBAR 2082
51	299817.0	2915065.2	1 1/2 PIPE
52	299850.5	2915186.1	1 PIPE

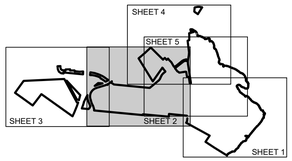
MONUMENT #	NORTHING	EASTING	DESCRIPTION
53	299870.8	2915228.8	CONC. MON-FLUSH
54	299913.3	2915266.2	1 PIPE
55	299944.7	2915216.5	3/4 REBAR 1280 INSIDE PIPE
56	300001.8	2915085.8	3/4 REBAR
57	295936.6	2909077.0	MT A GRANITE
58	296388.8	2906704.0	3/4 REBAR PLS 2082
59	295750.3	2906211.4	1 PIPE
60	296168.2	2905641.9	3/4 REBAR PLS 2082
61	296459.5	2905230.3	GRANITE MONUMENT FOUND
62	296484.2	2905244.0	3/4 REBAR PLS 2082
63	296734.3	2905428.1	3/4 PIPE
64	297124.3	2905708.2	GRANITE MONUMENT FOUND
65	296326.0	2908871.6	MT A GRANITE
66	297139.5	2908113.9	5/8 REBAR MT A
67	297555.3	2907807.7	5/8 REBAR MT A
68	297638.4	2907681.3	5/8 REBAR MT A
69	297770.5	2907622.4	5/8 REBAR MT A
70	297777.8	2908305.6	3/4 REBAR
71	297703.1	2908309.0	5/8 REBAR PLS 1118
72	297715.0	2908556.5	5/8 REBAR PLS 1118
73	297652.2	2909035.8	MT A GRANITE
74	297492.0	2909027.9	MT A GRANITE
75	297600.3	2907920.0	MT A GRANITE
76	297603.7	2909438.3	5/8 REBAR MT A
77	297261.7	2910013.6	5/8 REBAR MT A
78	297310.0	2909984.4	MT A GRANITE
79	297453.2	2909423.7	MT A GRANITE
80	295554.5	2909336.2	3/4 REBAR 2282
81	295584.6	2908958.4	1" PIPE

NOTES

1. BOOK AND PAGE CITATIONS SHOWN HEREON REFER TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. NO MONUMENTS WERE SET AS OF THE DATE OF THIS PLAN.
3. A WRITTEN REPORT OF FINDINGS AND OPINIONS AS REQUIRED BY SECTION 10.A.3.D OF THE TECHNICAL STANDARDS OF PRACTICE OF THE STATE OF MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS WAS NOT PREPARED.
4. THE PURPOSE OF THIS SURVEY WAS TO DEFINE THE PERIMETER BOUNDARY OF THE PORTLAND INTERNATIONAL JETPORT PARCEL AND ACCESSORY PARCELS IN THE VICINITY OF THE JETPORT. INTERIOR PARCEL BOUNDARIES WERE NOT RESEARCHED OR DEFINED EXCEPT WHERE REQUIRED TO DEFINE THE PERIMETER BOUNDARY. EASEMENTS DEPICTED ON THIS PLAN WERE NOT COMPLETELY RESEARCHED OR LOCATED IN THE FIELD BUT SHOW THEIR GENERAL LOCATION RELATIVE TO THE PERIMETER BOUNDARY.
5. AERIAL PHOTOGRAPHY SHOWN WAS TAKEN IN 2015.
6. CURRENT OWNER: CITY OF PORTLAND
   389 CONGRESS ST.
   PORTLAND, MAINE 04101

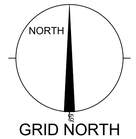
LEGEND

- MONUMENT FOUND WITH REFERENCE NUMBER
- HIGHWAY MONUMENT FOUND WITH REFERENCE NUMBER
- STONE/GRANITE FOUND WITH REFERENCE NUMBER
- EASEMENT BOUNDARY
- PROPERTY LINE
- INTERIOR PARCEL BOUNDARY
- APPROXIMATE ABUTTER BOUNDARY
- PARCEL NUMBERING CORRESPONDS WITH DRAWING "PORTLAND INTERNATIONAL JETPORT EXHIBIT 'A'" DATED 7-9-2018, BY COFFMAN ASSOCIATES



SHEET INDEX

NOT TO SCALE



GRID NORTH

MAINE COORDINATE SYSTEM OF 1983 (2011)
WEST ZONE

SCALE: 1"= 200'

200' 0 200' 400' 600' 800'

SURVEY STANDARD

THIS PLAN WAS PREPARED FROM INFORMATION OBTAINED BY A SURVEY CONFORMING SUBSTANTIALLY TO THE REQUIREMENTS OF TECHNICAL STANDARDS CONTAINED IN CHAPTER 90, PART 2, OF THE RULES OF THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS, EFFECTIVE APRIL 1, 2001.

CLARK G. STAPLES, MAINE LICENSED PROFESSIONAL LAND SURVEYOR No. 2332

STATE OF MAINE — CLARK G STAPLES — NO. 2332 — PROFESSIONAL LAND SURVEYOR

BOUNDARY SURVEY

OF LANDS OF

THE CITY OF PORTLAND

IN THE VICINITY OF

THE PORTLAND INTERNATIONAL JETPORT

-PORTLAND & SOUTH PORTLAND-

CUMBERLAND COUNTY, MAINE

FOR

Stantec

GOOD DEEDS
LAND SURVEYING • DEED RESEARCH
109 MAIN STREET
BELFAST, ME 04915
(207) 338-5743

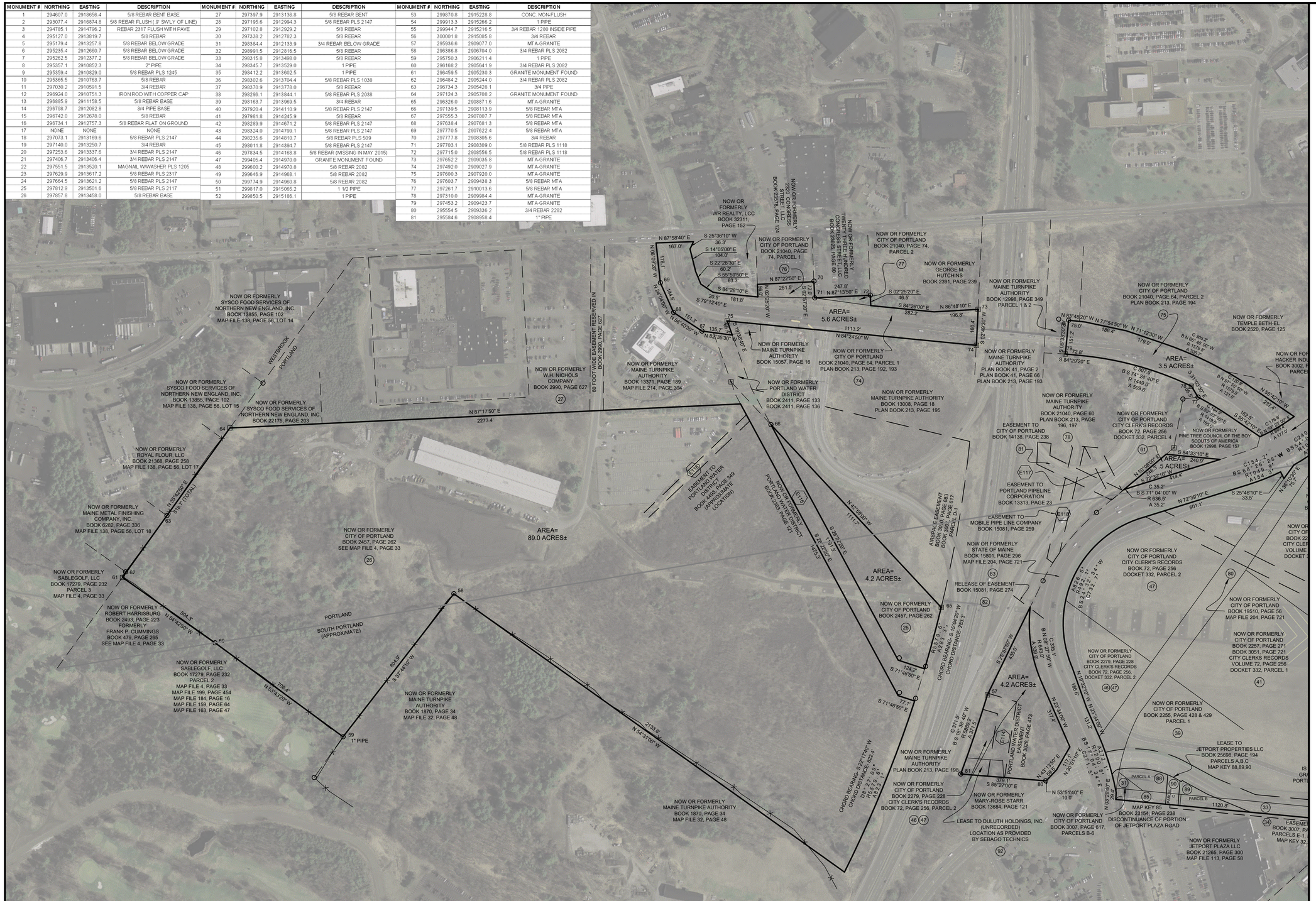
DWG: 14078 MASTER PLAN 20220126.DWG

DATE: JANUARY 26, 2022

SCALE: 1"=200'

SHEET: 2 OF 5

MONUMENT #	NORTHING	EASTING	DESCRIPTION
1	294607.0	2918656.4	5/8 REBAR BENT BASE
2	293077.4	2916874.8	5/8 REBAR FLUSH (9' SWLY OF LINE)
3	294785.1	2914796.2	REBAR 2317 FLUSH WITH PAVE
4	295127.0	2913819.7	5/8 REBAR
5	295179.4	2913257.8	5/8 REBAR BELOW GRADE
6	295235.4	2912660.7	5/8 REBAR BELOW GRADE
7	295262.5	2912377.2	5/8 REBAR BELOW GRADE
8	295357.1	2910852.3	2" PIPE
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80	295554.5	2909336.2	3/4 REBAR 2282
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NOW OR FORMERLY SYSCO FOOD SERVICES OF NORTHERN NEW ENGLAND, INC. BOOK 13655, PAGE 102 MAP FILE 138, PAGE 56, LOT 14
NOW OR FORMERLY SYSCO FOOD SERVICES OF NORTHERN NEW ENGLAND, INC. BOOK 13655, PAGE 102 MAP FILE 138, PAGE 56, LOT 15
NOW OR FORMERLY SYSCO FOOD SERVICES OF NORTHERN NEW ENGLAND, INC. BOOK 12175, PAGE 203
NOW OR FORMERLY ROYAL FLOUR, LLC BOOK 21368, PAGE 258 MAP FILE 138, PAGE 56, LOT 17
NOW OR FORMERLY MAINE METAL FINISHING COMPANY, INC. BOOK 6282, PAGE 336 MAP FILE 138, PAGE 56, LOT 18
NOW OR FORMERLY SABLEGOLF, LLC BOOK 17279, PAGE 232 PARCEL 3 MAP FILE 4, PAGE 33
NOW OR FORMERLY ROBERT HARRISBURG BOOK 2493, PAGE 223 FORMERLY FRANK P. CUMMINGS BOOK 479, PAGE 265 SEE MAP FILE 4, PAGE 33
NOW OR FORMERLY SABLEGOLF, LLC BOOK 17279, PAGE 232 PARCEL 2 MAP FILE 4, PAGE 33 MAP FILE 199, PAGE 454 MAP FILE 184, PAGE 16 MAP FILE 159, PAGE 64 MAP FILE 163, PAGE 47
NOW OR FORMERLY CITY OF PORTLAND BOOK 2457, PAGE 262 SEE MAP FILE 4, PAGE 33
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NOW OR FORMERLY MAINE TURNPIKE AUTHORITY BOOK 1870, PAGE 34 MAP FILE 32, PAGE 48
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NOW OR FORMERLY MAINE TURNPIKE AUTHORITY BOOK 13371, PAGE 189 MAP FILE 214, PAGE 304
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NOW OR FORMERLY CITY OF PORTLAND BOOK 21040, PAGE 74, PARCEL 2
NOW OR FORMERLY GEORGE M. HUTCHINS BOOK 2391, PAGE 239
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NOW OR FORMERLY MAINE TURNPIKE AUTHORITY BOOK 13008, PAGE 18 PLAN BOOK 213, PAGE 195
NOW OR FORMERLY MAINE TURNPIKE AUTHORITY BOOK 12998, PAGE 349 PARCEL 1 & 2
NOW OR FORMERLY MAINE TURNPIKE AUTHORITY PLAN BOOK 41, PAGE 66 PLAN BOOK 213, PAGE 193
NOW OR FORMERLY MAINE TURNPIKE AUTHORITY BOOK 21040, PAGE 60 PLAN BOOK 213, PAGE 196, 197
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NOW OR FORMERLY CITY OF PORTLAND BOOK 2257, PAGE 271 BOOK 3051, PAGE 721 CITY CLERKS RECORDS VOLUME 72, PAGE 256 DOCKET 332, PARCEL 1
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NOW OR FORMERLY STATE OF MAINE BOOK 15801, PAGE 296 MAP FILE 204, PAGE 721
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NOW OR FORMERLY MARY-ROSE STARR BOOK 13684, PAGE 121
NOW OR FORMERLY CITY OF PORTLAND BOOK 3007, PAGE 617, PARCELS B-6
NOW OR FORMERLY JETPORT PLAZA LLC BOOK 21265, PAGE 300 MAP FILE 113, PAGE 58
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EASEMENT TO PORTLAND PIPELINE CORPORATION BOOK 13313, PAGE 23
EASEMENT TO MOBILE PIPE LINE COMPANY BOOK 15081, PAGE 259
RELEASE OF EASEMENT BOOK 15081, PAGE 274
AIRSPACE EASEMENT BOOK 3007, PAGE 883 BOOK 3007, PAGE 617 PARCEL D-1
LEASE TO JETPORT PROPERTIES LLC BOOK 25698, PAGE 194 PARCELS A,B,C MAP KEY 88,89,90
MAP KEY 85 BOOK 23154, PAGE 238 DISCONTINUANCE OF PORTION OF JETPORT PLAZA ROAD
LEASE TO DULUTH HOLDINGS, INC. (UNRECORDED) LOCATION AS PROVIDED BY SEBAGO TECHNICS
PORTLAND
SOUTH PORTLAND (APPROXIMATE)
WESTBROOK
PORTLAND
AREA= 89.0 ACRES±
AREA= 4.2 ACRES±
AREA= 5.6 ACRES±
AREA= 4.2 ACRES±
AREA= 3.5 ACRES±
AREA= 240.9 ACRES±
N 87°17'50" E 2273.4'
N 87°58'40" E 167.0'
S 25°36'10" W 36.3'
S 14°05'00" E 104.0'
S 22°28'30" E 60.2'
S 55°59'50" E 83.3'
S 84°26'10" E 181.8'
N 87°22'50" E 251.5'
S 02°25'20" E 46.5'
S 84°26'00" E 282.2'
N 86°48'10" E 196.8'
S 02°45'20" E 160.4'
S 02°45'20" E 1113.2'
N 84°24'50" W
N 83°48'20" W 75.0'
N 77°54'50" W 188.4'
N 71°12'30" W 178.0'
S 84°29'20" E 172.8'
S 02°40'20" W 1449.6'
S 84°33'10" E 414.4'
S 25°46'10" E 33.0'
N 72°39'10" E 501.1'
S 72°39'10" W 501.1'
N 53°51'40" E 10.0'
S 85°27'00" E 379.1'
N 30°11'10" E 117.1'
N 45°13'50" E 58.3'
N 03°28'40" E 29.4'
N 54°43'00" W 2133.6'
S 37°44'10" W 804.9'
N 54°42'50" W 584.3'
N 53°43'20" W 706.4'
N 55°40'30" W 151.3'
N 83°35'30" W 135.7'
N 24°58'00" W 144.6'
N 05°32'20" W 178.1'
N 55°42'10" W 237.4'
N 25°05'33" W 151.5'
N 13°42'10" W 169.6'
N 30°34'00" W 117.4'
N 27°40'00" W 804.9'
N 62°35'00" W 1111.7'
S 37°22'20" E 1475.3'
S 25°52'50" W 405.6'
S 71°44'50" E 124.2'
S 71°46'50" E 77.1'
N 54°43'00" W 2133.6'
N 27°40'00" W 804.9'
N 54°42'50" W 584.3'
N 53°43'20" W 706.4'
N 25°45'50" E 618.7' (TOTAL)
N 87°58'40" E 167.0'
S 25°36'10" W 36.3'
S 14°05'00" E 104.0'
S 22°28'30" E 60.2'
S 55°59'50" E 83.3'
S 84°26'10" E 181.8'
N 87°22'50" E 251.5'
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N 54°43'00" W 2133.6'
S 37°44'10" W 804.9'
N 54°42'50" W 584.3'
N 53°43'20" W 706.4'
1" PIPE
POINT OF BEGINNING
C 371.5' Δ 38°40'40" R 550.2' A 371.5'
C 335.1' Δ 15°04'20" R 1273.0' A 335.9'
CHORD BEARING: S 27°17'40" W CHORD DISTANCE: 822.4'
CHORD BEARING: S 15°04'20" W CHORD DISTANCE: 283.3'
C 35.2' Δ 71° 04' 00" W R 636.5' A 35.2'
C 154.2' Δ 26° 28' 28" W R 1049.9' A 154.2'
C 176.6' Δ 09° 38' 40" W R 1049.9' A 177.0'
C 120.6' Δ 57° 50' 40" W R 1078.9' A 121.6'
C 240.4' Δ 13° 21' 40" W R 1049.9' A 244.7'
C 176.6' Δ 09° 38' 40" W R 1049.9' A 177.0'
C 120.6' Δ 57° 50' 40" W R 1078.9' A 121.6'
C 240.4' Δ 13° 21' 40" W R 1049.9' A 244.7'
C 154.2' Δ 26° 28' 28" W R 1049.9' A 154.2'
C 35.2' Δ 71° 04' 00" W R 636.5' A 35.2'
C 335.1' Δ 15°04'20" R 1273.0' A 335.9'
C 371.5' Δ 38°40'40" R 550.2' A 371.5'
AIRSPACE EASEMENT BOOK 3007, PAGE 883 BOOK 3007, PAGE 617 PARCEL D-1
EASEMENT TO PORTLAND WATER DISTRICT BOOK 4469, PAGE 349 (APPROXIMATE LOCATION)
PORTLAND WATER DISTRICT EASEMENT BOOK 3026, PAGE 473
NOW OR FORMERLY CITY OF PORTLAND BOOK 2457, PAGE 262 PLAN BOOK 213, PAGE 198
NOW OR FORMERLY CITY OF PORTLAND BOOK 2457, PAGE 262 PLAN BOOK 213, PAGE 198
NOW OR FORMERLY CITY OF PORTLAND BOOK 2457, PAGE 262 PLAN BOOK 213, PAGE 198
NOW OR FORMERLY 250 CONGRESS BOOK 23575, PAGE 124
NOW OR FORMERLY HUNDRED THIRTEEN CONGRESS STREET, LLC BOOK 23625, PAGE 89
NOW OR FORMERLY CITY OF PORTLAND BOOK 2457, PAGE 262 PLAN BOOK 213, PAGE 198

MONUMENT #	NORTHING	EASTING	DESCRIPTION
1	294607.0	2918656.4	5/8 REBAR BENT BASE
2	293077.4	2916874.8	5/8 REBAR FLUSH (9' SWLY OF LINE)
3	294785.1	2914796.2	REBAR 2317 FLUSH WITH PAVE
4	295127.0	2913819.7	5/8 REBAR
5	295179.4	2913257.8	5/8 REBAR BELOW GRADE
6	295235.4	2912660.7	5/8 REBAR BELOW GRADE
7	295262.5	2912377.2	5/8 REBAR BELOW GRADE
8	295357.1	2910852.3	2" PIPE
9	295359.4	2910829.0	5/8 REBAR PLS 1245
10	295365.5	2910763.7	5/8 REBAR
11	297030.2	2910591.5	3/4 REBAR
12	296924.0	2910751.3	IRON ROD WITH COPPER CAP
13	296885.9	2911158.5	5/8 REBAR BASE
14	296798.7	2912082.8	3/4 PIPE BASE
15	296742.0	2912678.0	5/8 REBAR
16	296734.1	2912757.3	5/8 REBAR FLAT ON GROUND
17	NONE	NONE	NONE
18	297073.1	2913169.6	5/8 REBAR PLS 2147
19	297140.0	2913250.7	3/4 REBAR
20	297253.6	2913337.6	3/4 REBAR PLS 2147
21	297406.7	2913406.4	3/4 REBAR PLS 2147
22	297555.5	2913520.1	MAGNAIL W/WASHER PLS 1205
23	297629.9	2913617.2	5/8 REBAR PLS 2317
24	297664.5	2913621.2	5/8 REBAR PLS 2147
25	297812.9	2913501.6	5/8 REBAR PLS 2117
26	297857.8	2913458.0	5/8 REBAR BASE
27	297397.9	2913136.8	5/8 REBAR BENT
28	297195.6	2912994.3	5/8 REBAR PLS 2147
29	297102.8	2912929.2	5/8 REBAR
30	297338.2	2912782.3	5/8 REBAR
31	298384.4	2912133.9	3/4 REBAR BELOW GRADE
32	298991.5	2912816.5	5/8 REBAR
33	298315.8	2913498.0	5/8 REBAR
34	298345.7	2913529.0	1 PIPE
35	298412.2	2913602.5	1 PIPE
36	298302.6	2913704.4	5/8 REBAR PLS 1038
37	298370.9	2913778.0	5/8 REBAR
38	298296.1	2913844.1	5/8 REBAR PLS 2038
39	298163.7	2913969.5	3/4 REBAR
40	297920.4	2914110.9	5/8 REBAR PLS 2147
41	297981.8	2914245.9	5/8 REBAR
42	298289.9	2914671.2	5/8 REBAR PLS 2147
43	298324.0	2914799.1	5/8 REBAR PLS 2147
44	298235.6	2914810.7	5/8 REBAR PLS 509
45	298011.8	2914394.7	5/8 REBAR PLS 2147
46	297834.5	2914168.8	5/8 REBAR (MISSING IN MAY 2015)
47	299405.4	2914970.0	GRANITE MONUMENT FOUND
48	299600.2	2914970.8	5/8 REBAR 2082
49	299646.9	2914968.1	5/8 REBAR 2082
50	299774.9	2914960.8	5/8 REBAR 2082
51	299817.0	2915065.2	1 1/2 PIPE
52	299850.5	2915186.1	1 PIPE
53	299870.8	2915228.8	CONC. MON-FLUSH
54	299913.3	2915266.2	1 PIPE
55	299944.7	2915216.5	3/4 REBAR 1280 INSIDE PIPE
56	3000018	2915085.8	3/4 REBAR
57	295936.6	2909077.0	MT A-GRANITE
58	296386.8	2906704.0	3/4 REBAR PLS 2082
59	295750.3	2906211.4	1 PIPE
60	296168.2	2905641.9	3/4 REBAR PLS 2082
61	296459.5	2905230.3	GRANITE MONUMENT FOUND
62	296484.2	2905244.0	3/4 REBAR PLS 2082
63	296734.3	2905428.1	3/4 PIPE
64	297124.3	2905708.2	GRANITE MONUMENT FOUND
65	296326.0	2908871.6	MT A-GRANITE
66	297139.5	2908113.9	5/8 REBAR MTA
67	297555.3	2907807.7	5/8 REBAR MTA
68	297638.4	2907681.3	5/8 REBAR MTA
69	297710.5	2907622.4	5/8 REBAR MTA
70	297777.8	2908305.6	3/4 REBAR
71	297703.1	2908309.0	5/8 REBAR PLS 1118
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76	297603.7	2909438.3	5/8 REBAR MTA
77	297261.7	2910013.6	5/8 REBAR MTA
78	297310.0	2909984.4	MT A-GRANITE
79	297453.2	2909423.7	MT A-GRANITE
80	295554.5	2909336.2	3/4 REBAR 2282
81	295584.6	2908958.4	1" PIPE

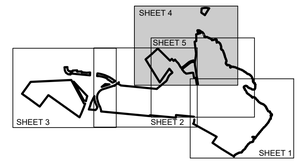


NOTES

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   PORTLAND, MAINE 04101

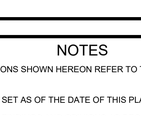
LEGEND

- 1 — MONUMENT FOUND WITH REFERENCE NUMBER
- 79 (H) — HIGHWAY MONUMENT FOUND WITH REFERENCE NUMBER
- 64 □ — STONE/GRANITE FOUND WITH REFERENCE NUMBER
- ——— EASEMENT BOUNDARY
- ——— PROPERTY LINE
- ——— INTERIOR PARCEL BOUNDARY
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- (E105) (12) — PARCEL NUMBERING CORRESPONDS WITH DRAWING "PORTLAND INTERNATIONAL JETPORT EXHIBIT "A" DATED 7-9-2018, BY COFFMAN ASSOCIATES



SHEET INDEX

NOT TO SCALE



GRID NORTH

MAINE COORDINATE SYSTEM OF 1983 (2011)
WEST ZONE

SCALE: 1"= 200'

200' 0 200' 400' 600' 800'

SURVEY STANDARD

THIS PLAN WAS PREPARED FROM INFORMATION OBTAINED BY A SURVEY CONFORMING SUBSTANTIALLY TO THE REQUIREMENTS OF TECHNICAL STANDARDS CONTAINED IN CHAPTER 90, PART 2, OF THE RULES OF THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS, EFFECTIVE APRIL 1, 2001.

CLARK G. STAPLES, MAINE LICENSED
PROFESSIONAL LAND SURVEYOR No. 2332

STATE OF MAINE
CLARK
G
STAPLES
NO. 2332
PROFESSIONAL
LAND SURVEYOR

BOUNDARY SURVEY

OF LANDS OF

THE CITY OF PORTLAND

IN THE VICINITY OF

THE PORTLAND INTERNATIONAL JETPORT

-PORTLAND & SOUTH PORTLAND-

CUMBERLAND COUNTY, MAINE

FOR

Stantec

GOOD DEEDS
LAND SURVEYING • DEED RESEARCH
109 MAIN STREET
BELFAST, ME 04915
(207) 338-5743

DWG: 14078 MASTER PLAN 20220126.DWG

DATE: JANUARY 26, 2022

SCALE: 1"=200'

SHEET: 4 OF 5

MONUMENT #	NORTHING	EASTING	DESCRIPTION
1	294607.0	2916656.4	5/8 REBAR BENT BASE
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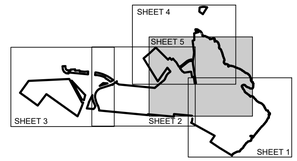
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PORTLAND, MAINE 04101

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SHEET INDEX

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CLARK G. STAPLES, MAINE LICENSED
PROFESSIONAL LAND SURVEYOR No. 2332

STATE OF MAINE — CLARK G STAPLES — NO. 2332 — REGISTERED PROFESSIONAL LAND SURVEYOR

BOUNDARY SURVEY

OF LANDS OF

THE CITY OF PORTLAND

IN THE VICINITY OF

THE PORTLAND INTERNATIONAL JETPORT

-PORTLAND & SOUTH PORTLAND-

CUMBERLAND COUNTY, MAINE

FOR

Stantec

GOOD DEEDS
LAND SURVEYING • DEED RESEARCH
109 MAIN STREET
BELFAST, ME 04915
(207) 338-5743

DWG: 14078 MASTER PLAN 20220126.DWG

DATE: JANUARY 26, 2022

SCALE: 1"=200'

SHEET: 5 OF 5

Att. A

March 15, 2024
19059

Mr. Matt Grooms
City of Portland
Office of Planning and Urban Development
Congress Street
Portland, ME 04101

Site Plan Application – Portland International Jetport Parking Expansion

Dear Matt:

On behalf of the City of Portland, Sebago Technics Inc. is pleased to submit the enclosed application for Site Plan review of a parking lot expansion at the Portland International Jetport. The proposed project is to be located within the Jetport campus near the intersection of Jetport Boulevard and International Parkway. The subject area is identified as City parcel number 210AA007, 210AA006001, and 210AA002001. The project area is comprised of previously developed and undeveloped land and is approximately 13 acres. The site is bounded by a hotel to the East, airport parking and facilities to the west and south, Jetport Blvd and vacant City owned land to the north. The project area is located within the City of Portland's Airport Business Zone.

The project will be comprised of an expansion of the existing Jetport parking areas with an approximately 240,000 s.f. long-term parking area. The project proposes the construction of two paved parking lots which will provide 684 long-term parking spaces. One of the proposed new lots will convert an existing cell phone lot and gravel valet lot for use as long term parking. This lot will be comprised of 248 standard and 8 ADA compliant parking spaces. The second lot is proposed to include 416 standard and 12 ADA compliant parking spaces. The project in total will provide a net increase of 282 new parking spaces. The proposed parking lots are to be accessed from the Terminal Loop Road that connects to Jetport Boulevard and International Parkway. All means of access and egress will be controlled with credit card kiosks. The project also includes the construction of a concrete pad for a proposed battery storage system to optimize energy usage through battery storage in off-peak times. Please see the information sheets included with this letter for information regarding the battery storage system.

The applicant is proposing to provide 56 Level 1 EV equipped parking spaces within the existing parking garage and will install the infrastructure for a future 141 Level 1 EV parking spaces in

the proposed surface lots. The applicant has requested a waiver from the City requirement of Level 2 or higher charging stations as the parking lots are to be utilized for long-term parking.

The project will result in the creation of a net increase of 4.58 acres of developed area and a net increase of 2.85 acres of new impervious. The overall stormwater management system for the project will consist of catch basins and two (2) subsurface drainage systems. The two (2) subsurface drainage systems will provide water quality treatment with upstream detention designated to the long-term parking lots. Since the Jetport discharges to the Fore River, the applicant will be pursuing a waiver of the Flooding Standard pursuant to MDEP Rules, Chapter 500(4)(F)(3)(b).

The proposed parking expansion will result in approximately 8,618 s.f. of wetland impacts. The project is undergoing Site Law and NRPA review by the Maine DEP.

Thank you for your time and attention to this project. We look forward to discussing the project further with staff and the Planning Board.

Sincerely,

SEBAGO TECHNICS, INC.



Owens McCullough, P.E., LEED-AP
Senior Vice President, Strategy & Client Development

cc: Paul Bradbury, P.E., Airport Director

Battery Storage System

Portland International Jetport ("PWM") plans to install a 1.9-megawatt ("MW") lithium-ion battery storage system ("BSS") on its property in Portland, Maine. The BSS will be financed, owned, and operated by PWM. The BSS project will help advance Maine's clean energy policies and ambitious grid decarbonization efforts. In June 2021, Governor Mills signed Public Law 2021 Chapter 298 (LD 528 - An Act To Advance Energy Storage in Maine). This bipartisan legislation directs multiple important steps to advance energy storage development throughout Maine and sets goals for 300 MW of installed energy storage capacity in the state by the end of 2025 and 400 MW of installed energy storage capacity in the state by the end of 2030. PWM's BSS project will support Maine's efforts to meet these goals.

PWM will charge the BSS from Central Maine Power Company's power grid during periods of high renewable generation in Maine's electricity supply mix and will discharge the BSS to reduce the terminal's grid demand during high-demand periods on CMP's local system. This operations strategy will help soak up widespread intermittent solar generation being developed throughout Maine, will help reduce stress on CMP's grid infrastructure during high-demand periods, and will help displace higher-emitting electric generation sources in the state's supply mix during high-demand periods.

In addition to helping reduce greenhouse gas emissions in Maine's electricity supply mix and reduce stress on CMP's distribution and transmission system during periods of high demand, the BSS will be configured to enable PWM to utilize the system as a backup power resource in the event of a grid outage. The BSS has a nameplate energy capacity of five megawatt-hours, meaning the system will be able to provide several hours of uninterrupted power to the terminal in the event of a grid outage. For normal operating conditions, the BSS is designed to be non-exporting. The electricity discharged by the BSS will only be used to reduce the terminal's onsite electric load and the system will have protective relaying schemes to ensure that no power discharged from the BSS can be sent to CMP's local grid.

Figures 1 and 2 below show the proposed location of the BSS on PWM's property at the intersection of International Parkway and Jetport Boulevard. The BSS will be located adjacent to the new surface lot being developed by PWM. Figure 3 presents the preliminary layout of the BSS components within the system's fence line. The BSS will have security fencing and lighting.

Ameresco, Inc. will be constructing and maintaining the BSS and will utilize battery modules manufactured by Tesla. The BSS will be maintained in accordance with industry leading practices for ongoing preventative checks and performance monitoring. The BSS' technical specifications and warranty guarantees are provided in the attached document titled 'Portland Jetport Tesla Megapack 2 XL Datasheet'. An overview of the BSS' safety features and design is provided in the attached document titled 'Portland Jetport Tesla Megapack 2 XL Safety Overview'. This safety documentation, along with the protective relaying scheme detailed in the attached electrical one-line diagram, demonstrates the project will satisfy all utility interconnection, permitting, and safety requirements.

The BSS is in the advanced stage of CMP's interconnection study process. CMP has determined that the BSS can interconnect and operate in parallel with its local distribution system without any grid upgrades. PWM is awaiting the final review results from ISO New England that will determine whether the project requires a transmission-level interconnection study. Following this decision, PWM will be engaging local permitting authorities within the City of Portland to begin educating key local stakeholders, including Portland Fire Department, on the BSS' design, safety features, fire protection, and protocols in the event

of an emergency. This engagement will be collaborative with the aim of supporting a local permitting process that meets the needs of all key stakeholders.

Figure 1. Location of Proposed Battery Storage System



Figure 2. Preliminary Layout of Battery Storage System & Associated Utilities

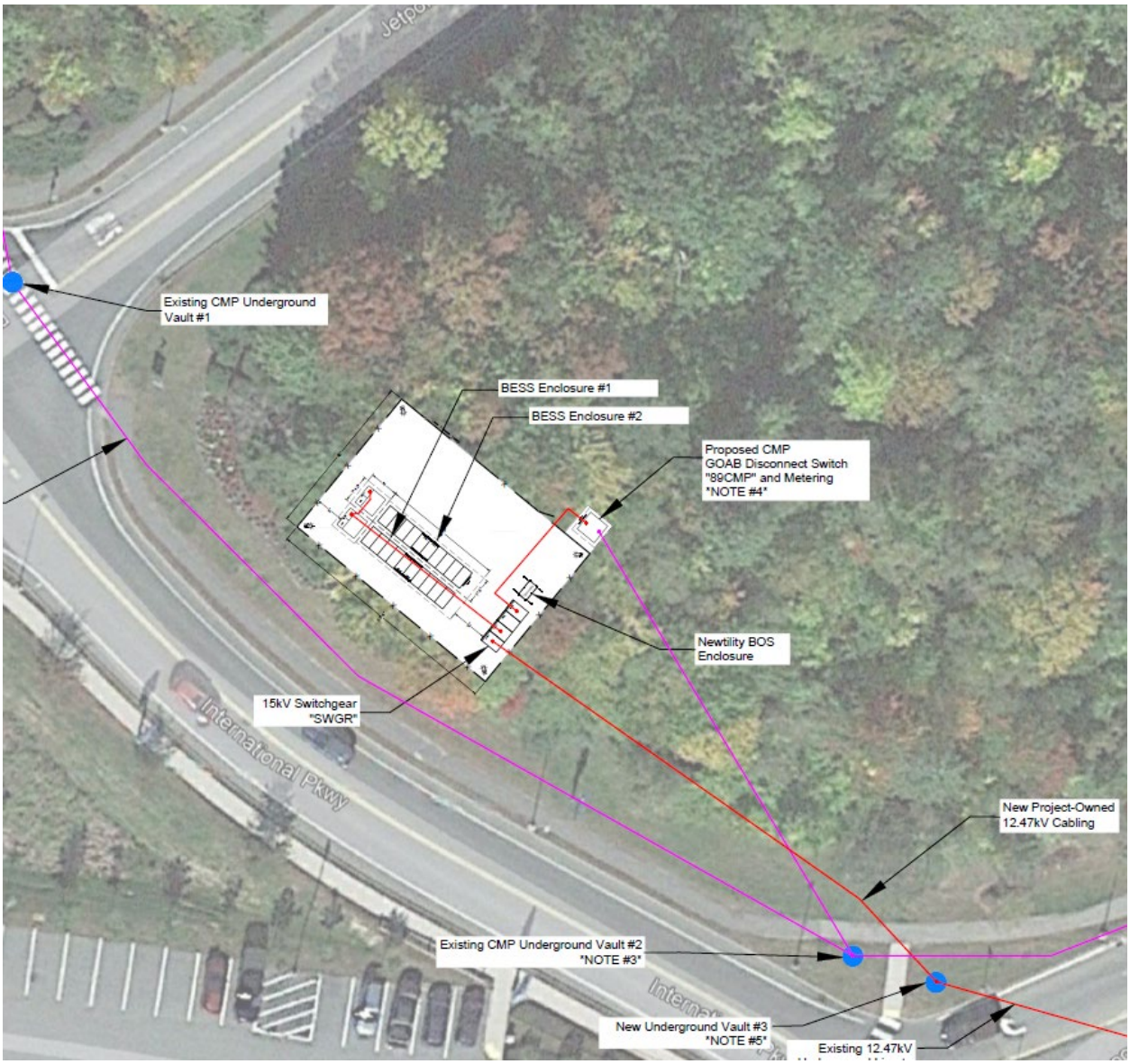
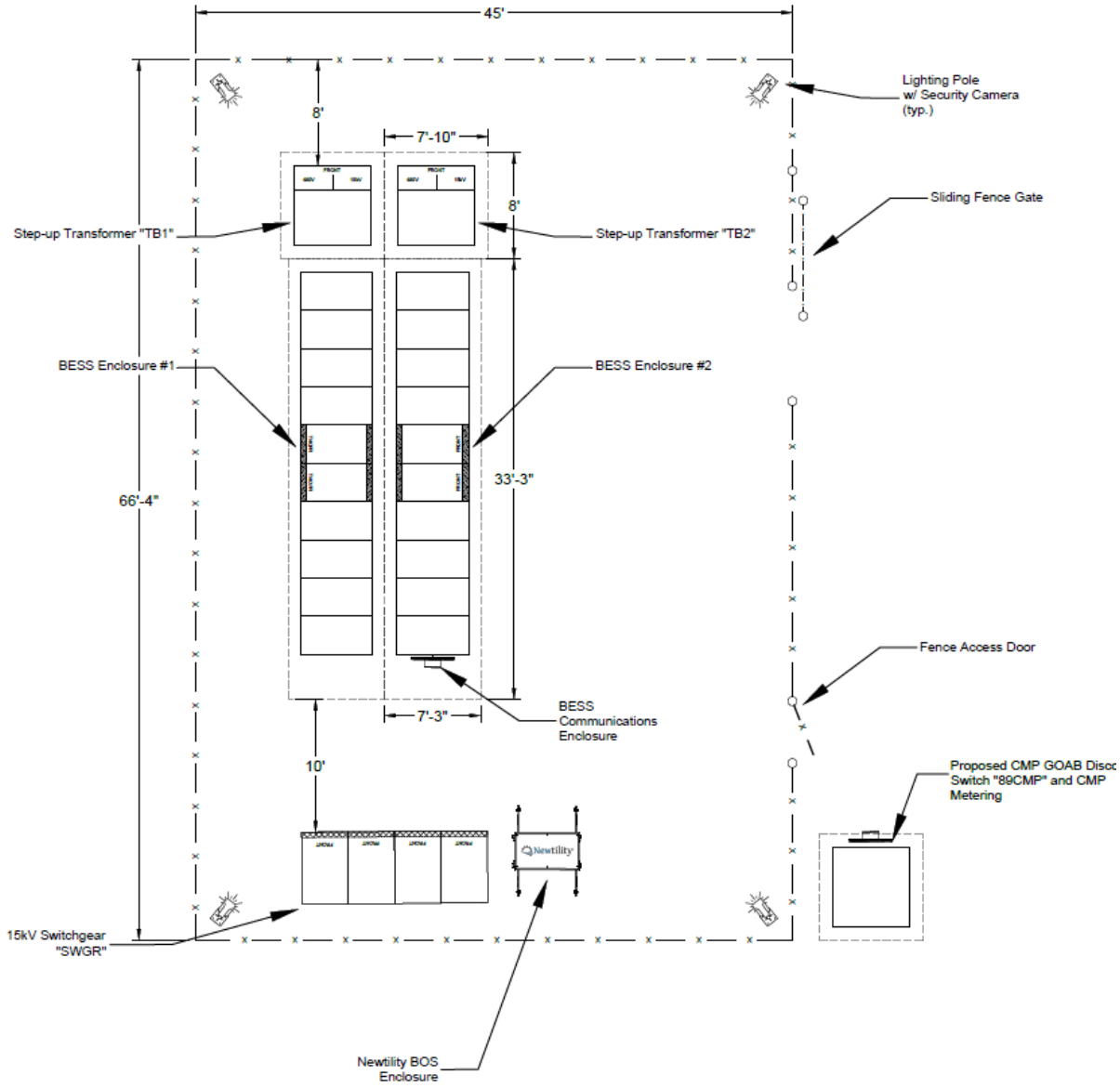
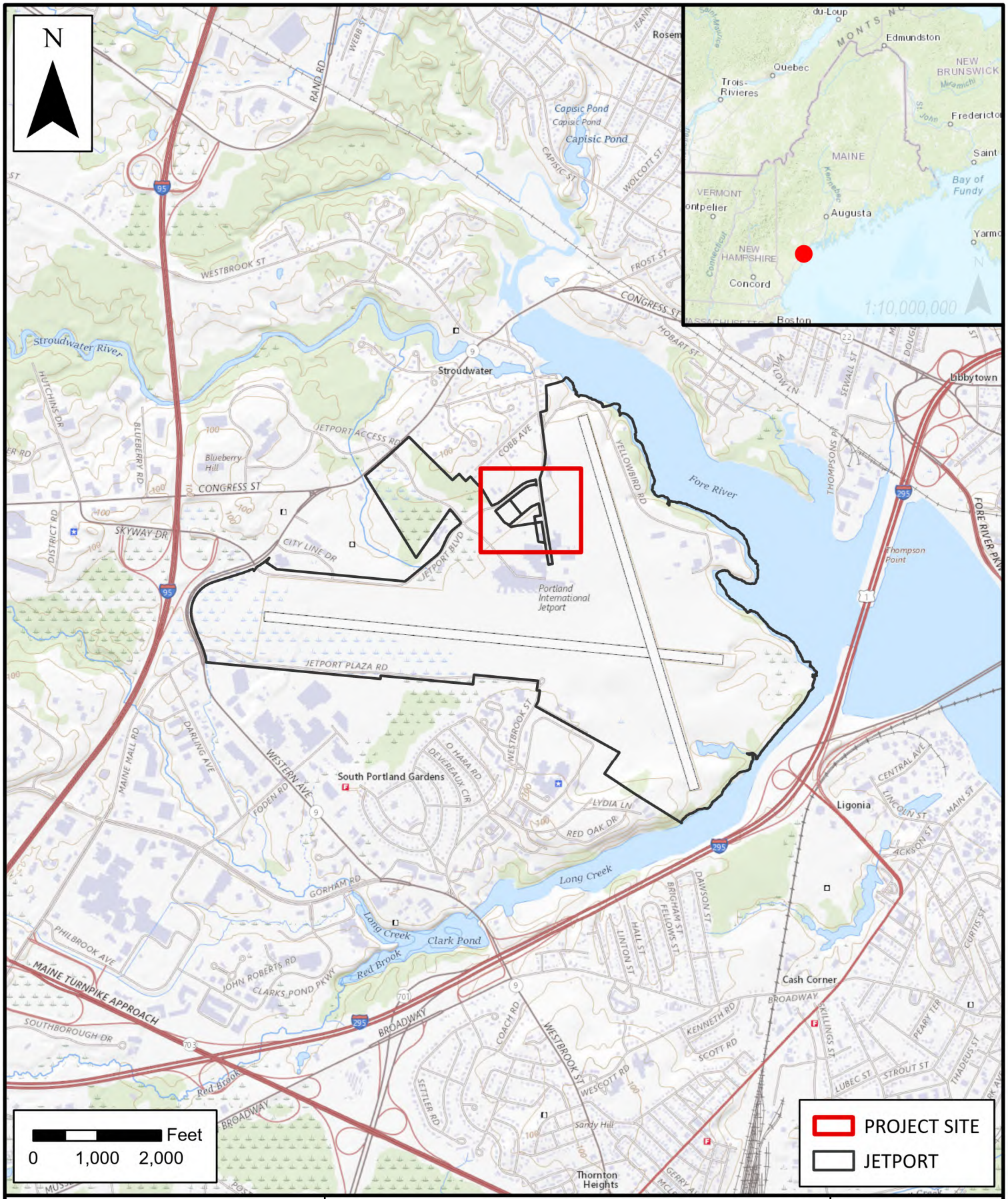


Figure 3. Preliminary Layout of Battery Storage System Components





SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM
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LOCATION MAP

JETPORT PARKING

SCALE: 1:24,000

DATE: 2/29/2024

LOCATION:
1001 WESTBROOK ST
PORTLAND, ME

INFORMATION:
MAINE GEOLIBRARY
USGS QUADRANGLE

SEBAGO TECHNICS

CIVIL ENGINEERING ▪ SURVEYING ▪ LANDSCAPE ARCHITECTURE

Memorandum

19059

To: City of Portland

Date: May 10, 2024

Subject: Response to Comments, Portland Jetport, Portland

The purpose of this memorandum is to provide a response to the comments received by the City of Portland, dated April 24, 2024. The comments are listed below in italics, with our associated responses:

Comments

1) *Update the application materials to provide a T-intersection entrance to the parking lot that meets the requirements of the Technical Manual.*

   Since the Jetport Access Road is one-way combined with this access serving ingress movements only, a conscious decision was made to design the entrance on a skew to reduce the speed differential between traffic slowing down to enter the parking lot and thru traffic. This, in turn, should improve the safety of motorists within this area. The second concern is regarding the crosswalk location and the safety of pedestrians crossing at this location. A clear line of sight has been provided at this location, along with a radius (centerline radius of approximately 60 feet at the crosswalk location) designed to slow traffic down after they exit the primary flow of traffic on the Jetport Access Road.

2) *Provide sight distance measurements for each of the ingress and egress points of the parking lot.*

   Sight distance was reviewed in the field on May 7, 2024, for the proposed exits to the parking lot. Measurements were conducted from a point ten (10) feet behind the edge of the travelway, considering a height of eye of 3.5 feet and a height of object of 4.25 feet as outlined in the Maine Department of Transportation's *Chapter 299, Highway Driveway and Entrances Rules* as referenced in the City of Portland *Technical Manual.* The minimum sight distance requirements are outlined in Table 1.

Table 1 – Minimum Sight Distance Requirements

Posted Speed (MPH)	*Required Sight Distance (feet)*
25	200’
30	250’
35	305’
40	360’
45	425’
50	495’
55	570’

Westbrook Street is posted at 25 MPH based on signage observed in the field. No signage was identified on Loop Road; therefore, it was assumed that it was also considered a 25 MPH roadway. Sight distance from the proposed exit-only parking lot access on Loop Road was measured to be 525 feet looking left. Loop Road is proposed to remain a one-way road, so no traffic would be expected coming from the right via International Parkway. Sight distance from the proposed secondary access on Westbrook Street was measured to be 430 feet until the authorized vehicles only section of Westbrook Street. The sight distance looking right was measured to be 625 feet.

As such, sight distance from both proposed egress locations exceeded sight distance requirements for a 25 MPH roadway.

3) *The Traffic Movement Permit issued for the Terminal Expansion noted the following. The applicant shall provide documentation that the current TMP is valid.*
   a. *As related to conditions of approval numbered 2, 3, and 4 associated with the Traffic Movement Permit, at such time as the Jetport reaches enplanements of 1.1 million for 2 out of 4 years the Jetport shall have used the capacity under the Traffic Movement Permit and shall be required to submit an updated Traffic Movement Permit Application to the City.*

Enplanements for the last four (4) years have been as follows:

2020: 397,242
2021: 857,312
2022: 999,130
2023: 1,109,037

Given that one (1) year out of the last four (4) years has exceeded 1.1 million enplanements, the Jetport has not exceeded the capacity of the current Traffic Movement Permit (TMP).

4) *Submit confirmation that all of the conditions for the 2008 Terminal expansion TMP were satisfied.*

Need responses from Paul Bradbury; email sent 5/10/24.

75 John Roberts Road – Suite 4A, South Portland, ME 04106-6963 • 207.200.2100 • Fax: 207.856.2206

We are hopeful that the responses and revised material included in this letter are satisfactory and have addressed your concerns. Upon your review of our responses, please contact us with questions or if additional information is required.

SEBAGO TECHNICS, INC.



Bradley Lyon, P.E., PTOE
Vice President of Transportation Engineering

CC: Griffin Steinman, EI

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August 28, 2024
19059

Mr. Zach Powell
City of Portland
Office of Planning and Urban Development
Congress Street
Portland, ME 04101

Site Plan Application – Portland International Jetport Parking Expansion

Dear Zach:

On behalf of the City of Portland, Sebago Technics Inc. has assembled the following comment response to the site plan review application for the parking lot expansion at the Portland International Jetport. The following provides the review comments in Italic and the responses in bold.

General Comments

• *Application materials include conflicting information on the proposed limits of project disturbance and scope of work. The site plan set only includes work south of Jetport Boulevard, while the submitted wetlands assessment & soil survey include a surface parking lot with 105 spaces on the northern side of Jetport Boulevard. The Applicant shall submit a response that:*

o Confirms whether the 105 spaces north of Jetport Boulevard are included as part of this phase of development

o Confirms whether any site preparation activities for the 105 spaces shown north of Jetport Boulevard are included as part of this phase of development

o Describes, if the 105 spaces north of Jetport Boulevard are not included as part of the proposed phase of development, whether the spaces were originally contemplated as part of this phase of development, what factors resulted in the spaces to be removed from this phase, and if there is a contemplated date/year where a separate application will be submitted for the 105 spaces.

Response: The project limits do not include the northern side of Jetport Boulevard and the scope of the project does not include an additional 105 parking spaces in that area. The wetlands investigation encompassed a larger review area. Previous design concepts included development on the northern side of Jetport Boulevard. The 105 parking spaces north of

Jetport Boulevard was removed from the project responsive to public comment and is no longer part of this project.

• Staff have provided comments on this application under the presumption that the 105 spaces north of Jetport Boulevard are not included as part of this application. If the 105 spaces north of Jetport Boulevard or site preparation activities for the lot are proposed to be included as part of this application, updated application materials will need to be submitted to reflect the limits of project disturbance and additional comments from City Staff & Third-Party Reviewers will be provided.

Response: The 105 spaces north of Jetport Boulevard are not included in this application.

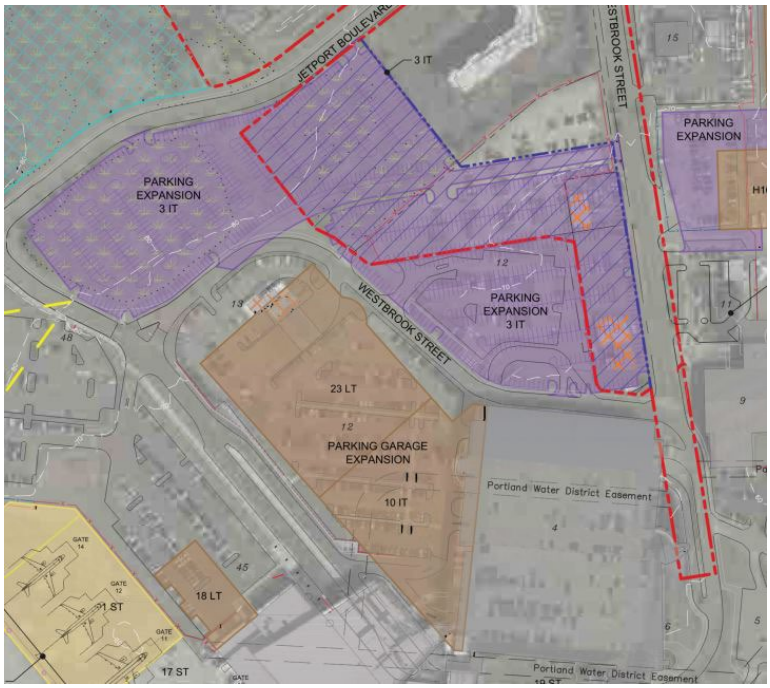
• As part of the Jetport's Sustainable Airport Master Plan, expansion of the existing structured garage is proposed over an existing surface parking area is identified as a future project. Given that the application has stated the Jetport's short- and long-term needs for additional on-site parking, submit an assessment prepared by a licensed engineer confirming that the design of the proposed surface lot permits for a future conversion to a structured parking facility.

Response: To better articulate the short- and long-term needs which includes an integrated approach to both surface parking and a future garage expansion, we have prepared the following narrative for consideration.

Overview:

The Jetports Sustainable Master Plan contemplates both surface parking and a future parking garage expansion. As shown on the excerpt below from the Sustainable Master Plan (Exhibit K – Terminal Area Plan), the location of the proposed surface parking is identified as surface parking on the Terminal Area Plan. The plan also contemplates a future parking garage expansion being an extension of the current parking garage next to the terminal building.

It is important to view the parking Master Plan as sequential process where the proposed surface parking is the initial phase that addresses near term needs in an economical manner and builds parking capacity that will accommodate the displacement of surface parking at a future time when needs and economics support a parking garage expansion adjacent the existing garage and terminal.



Excerpt from Sustainable Master Plan – Exhibit K -Terminal Area Plan

<u>Sustainable Master Plan Parking Garage Next to Terminal and Existing Garage:</u>

The existing parking garage and foreseeable parking garage expansion are integrally planned to provide proximate parking for ease of access to the terminal including an enclosed access bridge that currently exists at level three of the parking garage. The current and planned parking garage expansion as shown in the Sustainable Master Plan exhibits also accommodates rental car ready/return operations. The existing roadway network and travel patterns are well-suited to accommodate the future parking garage expansion adjacent to the terminal. The expanded parking garage shown on the Master Plan is purposely intended to build upon the existing parking garage and will collectively utilize existing vertical transportation components for efficiency, convenience, and proximity to the terminal building.

The surface parking lot proposed as part of this application is planned and located in the area depicted on the Ultimate Facilities Plan and more detailed in the Terminal Area Plan provided in Exhibit K of the Sustainable Airport Master Plan. The proposed surface parking meets the current parking deficiency, is more economical than a parking garage, and is needed logistically to accommodate construction of the future parking garage. Sequentially, the surface parking lot is the initial step in the longer-term parking at the Jetport to meet current needs and plan for the future when economics and parking needs are sufficient to warrant the capital investment of the parking garage in Phase 3 and 4.

As contemplated in the Master Plan, the future parking garage expansion is logically positioned and would be constructed in (2) phases due to cost and expected parking

needs. The Master Plan garage expansion will be a multi-story parking garage expansion of similar floors and height to the existing parking garage with interconnectivity between the existing and future garage. The future parking garage expansion (identified as 10 IT on the Master Plan) is the third phase of the parking garage (two prior phases previously constructed). Should the future beyond the initial parking garage expansion be needed, a Phase (4) identified as 23 LT is provided for on the Master Plan.

Proposed Surface Lot & Future Parking Garage Expansion – Phase 3 & 4 of the Sustainable Master Plan:

At the time the Phase 3 and 4 parking garage expansion becomes a reality, the surface parking lot proposed in this application must be constructed and operational to supplant the spaces that will be impacted during the 2-year-long construction process for a new garage next to the terminal. From a design and construction standpoint, the Phase 3 parking garage expansion shown on the Master Plan, will occupy a portion of the existing long-term parking lot and will require a sequenced construction approach to maintain ingress/egress to the existing parking garage and exit portal. The logistics of the parking garage expansion will fully develop at the time the parking garage expansion becomes necessary. Regardless, the proposed surface lot is critical to accommodate displaced parking at the time the next (2) phases of the parking garage become needed.

While it is possible that over time (once both phases of the Master Plan parking garage expansion are constructed), another phase of the parking garage could encompass the surface parking shown in this application, the timing of this is undefined and likely many years away and would be evaluated as part a future Master Plan update. It is simply not possible to predict when this might become a real need. For the interim time, the surface parking proposed is an economical approach to meet current needs and is logistically needed to accommodate the Garage expansion identified in the Sustainable Master Plan. It is also important to note that the surface parking lot address stormwater management/water quality deficiencies that currently exist on the Park N Fly lot.

Proposed Surface Lot Construction:

Similar to the surface parking lot constructed next to the existing parking garage, a surface parking lot offers an economical approach to parking with a parking garage being constructed in its place as demand warrants over time. This approach is what the Sustainable Master Plan contemplates for the existing surface parking next to the present-day parking garage. As previously stated, the proposed surface parking lot builds capacity meeting interim parking needs, is economical, and builds capacity to alleviate the parking that will be displaced when a parking garage expansion occurs as identified in the Sustainable Master Plan.

Regarding constructing a parking garage to replace the proposed surface parking lot, the timing for this is undefined and could be in the distant future especially given the Phase 3 and 4 parking garage expansion identified in the Sustainable Master Plan. From a construction standpoint, it is important to understand a parking garage is a structure with a different type of construction, and therefore, the surface parking lot would be replaced with a garage structure. A parking garage is essentially a multi-story building to house vehicles and requires foundations responsive to the soil conditions, structural floor structure support systems, ventilation, elevators, egress stairways, helix, or other floor-to-floor vehicle ingress/egress. While both a surface lot and parking garage accommodate parking, a surface lot by convention is constructed differently than a parking garage, is more economical and in the case of the Jetport a planned approach to address current needs and build capacity for future garage construction. It is equally important to note that the surrounding roadway infrastructure will be in place as part of this project to accommodate parking garage construction.

The surface parking lot proposed in this application has been designed with a two-phased construction approach. One phase is located northwesterly between the terminal access road, Jetport Boulevard, and the Jetport egress road. The second phase is located in the existing cell phone lot and gravel valet parking (gravel lot). Should the time come when these lots need to be developed as parking garages, the development of additional parking garage space would likely be completed in similar phases to the surface lot construction and based on cost and need.

<u>Summary:</u>

The proposed surface lots are a critical first step to meet the parking needs at the Jetport. The surface lots will provide capacity to meet the current parking needs and provide capacity for displaced parking that would occur at the time the Master Planned parking garage is initiated next to the terminal building. Additionally, the reconstruction of the existing Park N Jet gravel lot will address current stormwater management and water quality deficiencies. The Park N Jet gravel lot also does not currently adequately address lighting, landscaping, and pedestrian circulation which will be provided for as part of this surface lot parking project.

Should the distant future warrant the conversion of the proposed surface lots to a structured parking garage, the lots are well suited to accommodate the conversion. The surface lots are physically separated from the existing parking garage allowing for the conversion of these surface lots in a phased approach with no appreciable impact to the current parking garage or Jetport ingress/egress and terminal area.

As requested, this narrative was prepared by Owens McCullough, P.E of Sebago Technics, Inc. in collaboration with Paul H. Bradbury, P.E., Airport Director.

• The proposed project will result in the relocation of two sculptures from the public art piece Glimpse. As part of the review of the site plan application, coordination with the Public Art Committee, the artist, and City staff is required to determine how the sculptures will be uninstalled, stored during construction, and where & how they will be reinstalled. Coordinate with Sean King (sking@portlandmaine.gov) to determine next steps on the relocation process.

Response: Understood. Paul Bradbury has coordinated with Sean King regarding the relocation and temporary storage of the public art.

Transportation Standards (Section 14.6.1)

Impact on Surrounding Street Systems
• Update the application materials to provide a T-intersection entrance to the parking lot that meets the requirements of the Technical Manual
• Provide sight distance measurements for each of the ingress and egress points of the parking lot.
• Submit confirmation that all of the conditions for the 2008 Terminal expansion TMP were satisfied.

Response: Please see the attached memorandum prepared by Sebago Technics' Traffic Engineer, dated May 10, 2024. As noted in the traffic memorandum, the conditions of the 2008 Terminal Expansion TMP were satisfied. Sebago has also provided sight distance measurements for the ingress and egress points. In regard to the T-intersection entrance, we prefer to keep the separated lane for reasons explained in the traffic memorandum.

Access and Circulation
• Update application materials to include a ≥6-foot wide internal sidewalk that connects to the sidewalk along the frontage of the site.
• Update application materials of provide ≥8-foot wide sidewalks along the frontage of the site.
• Update application materials to include a sidewalk along Jetport Boulevard or submit a waiver request.

Response: The project design provides for perimeter sidewalks on the terminal side of the parking lots to collect and convey passengers to the terminal building. Passengers within the parking lots tend to take the shortest path to their destination, regardless of the designated walkway. This behavior makes internal sidewalks less effective. Considering the natural behaviors of passengers, the design provides for sidewalks at the perimeter of the parking lot to intercept passengers leaving the parking lots and provides them with convenient and safe routes to and from the terminal building.

We have included two strategically located internal sidewalks in the easterly long-term parking lot. These two locations are along the westerly side of the north-easterly lot and the westerly side of the south-easterly lot. The locations are immediately next to the parking lot and provide a direct route to the perimeter sidewalk leading to the terminal building.

The Jetport does not recommend installing wider sidewalks than what is currently proposed due to practical experience of the Jetport and for the following reasons:

- **Departure and arrival aircraft times vary, creating dispersed times of relatively limited amounts of pedestrian traffic throughout the day.**
- **Most of the accumulated sidewalk pedestrian traffic is located at the terminal building where passengers are dropped off and picked up by family/friends, buses, taxis, and rideshare and passengers tend to congregate and not in the long-term parking areas.**
- **Those passengers who tend to access the long-term parking lots via sidewalks away from the terminal are intermittent given the longer duration stays. Parking data maintained by Standard Parking shows that nearly 50% of the long-term parking users are staying 4 or more days. As a result, there is a low rate of turnover in the long-term parking lots creating smaller pedestrian usage that is dispersed over a long duration.**

The sidewalk proposed along Loop Road meets the 6' wide requirement which is expected to be sufficient to meet the anticipated pedestrian traffic for the reasons described above. The sidewalk will also connect to the existing 6' sidewalks on Westbrook Street and International Boulevard which has consistently met the pedestrian movement needs at the Jetport.

The applicant intends to seek a waiver for a sidewalk along the frontage on the southern side of Jetport Boulevard because there is an existing sidewalk on the northern side of the road and for elevation differences. The grades within the proposed parking lot are 3 to 8 feet below the road grade of Jetport Boulevard; a connection to a sidewalk along the southern side of Jetport Boulevard would not be feasible without retaining walls, would require additional tree removal, and would limit the available area to re-establish a landscape buffer. From a practical standpoint, the passengers using the long-term parking lot will walk in the opposite direction of Jetport Boulevard since the passengers tend to choose the shortest and most direct path to the terminal.

Parking
• Submit an EV parking demand study that meets the requirements of §1.14 of the Technical Manual

Response: Please see the attached waiver request from an EV parking demand study.

Environmental Quality Standards (Sec. 14.6.2)

Preservation of Significant Natural Features
• Update the application to either not impact significant natural resources on the site or submit a waiver request and supporting justification that meets the standards of §14.6.2.(A)(3) of the Land Use Code.

Response: The proposed project does not impact any:

a. **Populations of trees and plants listed on the Official List of Endangered and Threatened Plants in Maine. Please see the attached letter from the Maine Natural Areas Program.**
b. **Habitat for species appearing on the official state or federal list of endangered or threatened animal species. Please see the attached letter from the Maine Department of Inland Fisheries and Wildlife and the endangered species review letter from the US Fish and Wildlife Service.**
c. **High and moderate value waterfowl and wading bird habitat including nesting and feeding areas, as defined by the Department of Inland Fisheries and Wildlife. The proposed project area is within an existing airport and does not provide high or moderate value nesting or feeding areas for waterfowl and wading birds. Please see the attached letter from the Maine Department of Inland Fisheries and Wildlife.**
d. **Aquifers on islands in Casco Bay, as identified in the City of Portland Island Groundwater Management Study and/or by the Maine Geological survey. Not applicable. The proposed project is not located on an island in Casco Bay.**
e. **Waterbodies including wetlands, watercourses, significant vernal pools and floodplains. The proposed project area does not include watercourses, significant vernal pools, or floodplains. The project includes the alteration of small, pocketed forested wetlands within the project area of low function and value. Please see the NRPA Permit application that contains a Functions & Values Assessment, dated February 5, 2024, as well as the updated Wetland Delineation Map and Wetland Delineation Report, dated July 10, 2024. Please note that the proposed wetland alteration are not identified by the Department of Inland Fisheries and Wildlife or identified by Maine Natural Areas Program to contain significant wildlife habitat.**
f. **As requested, we have reviewed the site layout, grading, and the location of development areas and were able to increase the preservation of existing trees. The proposed layout has been revised to reduce impacts to the westernmost wetland on the site. This has been accomplished by reducing the amount of parking in the area and relocating the proposed battery storage area south.**

Landscape Preservation
• Submit supporting materials, including, but not limited to a narrative & alternative parking layout considered, that demonstrate how the proposed layout minimizes disturbance & removal of existing trees to the greatest extent practicable.
• Update application materials to demonstrate protection measures for existing trees and shrubs along Westbrook Street proposed to be retained.

Response: Please see responses to each bullet below:

a. **The proposed location is the most viable location for additional long-term parking within the land owned by PWM within the AB zone and has been targeted as a parking area in the FAA-approved Master Plan since (2008). Each alternative parking lot layout reviewed during the design phase incorporated the existing cell phone lot, gravel valet parking lot areas and the wooded area bound by Jetport Boulevard, International Parkway and the Loop Road. The intent of the design has been to maximize capacity**

for the proposed parking lot in order to provide additional long-term parking within walking distance of the terminal (versus remote lots requiring shuttles) and significantly reduce the number of vehicles that circle the current airport parking lots before being forced to drive to the existing Pink Lot or other remote parking areas. Please see the attached Master Plan from 2008.

b. **Based on comments received from the Planning Board, the parking lot layout has been modified to preserve an additional fifteen (15) 10" trees along International Parkway by relocating the battery storage and removing eight (8) parking spaces. This change will preserve 9,500 SF more of the landscape buffer between the proposed project and the International Parkway. The battery storage will be screened with fencing and landscaping.**
c. **Protection measures for the existing trees along Westbrook Street are outlined in the Tree Preservation Detail on C-504.**
d. **Approximately (21) Ash trees were identified, primarily planted as street trees along Jetport Boulevard, during a site walk with the City Arborist. While the majority are proposed to be removed due to site grading, we had also proposed to remove the remaining Ash trees, which are at different stages of Emerald Ash Borer infestation, and replant with a different street tree species.**

Site Landscaping and Buffers

• Update the landscape plan to:

o Show property boundaries for the entirety of the project area

o Include a legend that uses distinct symbology for shrubs and perennials to assess compliance with §14.6.2(C)(3) of the Land Use Code

o Provides size & notes for shrubs and perennials & grasses to confirm compliance with §4.7.6 of the Technical Manual

o Document the existing trees & shrubs along Westbrook Street proposed to be retained, protection measures for the landscaping during construction, and whether any of the trees are proposed to be counted towards meeting street tree requirements.

Response: Please see responses to each bullet below:

a. **Acknowledged, the boundary lines are shown on the landscape sheets.**
b. **The proposed plant schedule includes shrub and perennial quantities on L-102, L-103, and L-104; page 59 of the site plan application demonstrates how the landscape plan complies with §14.6.2(C)(3).**
c. **Acknowledged, sizes are provided on the proposed plant schedule.**
d. **The existing trees adjacent to Westbrook Street have been located in the field; protection measures are outlined in the Tree Preservation Detail on C-504.**

Water Quality, Stormwater Management, and Erosion Control

• Update the application to address comments raised by Lauren Swett in Attachment 2.

• Submit a waiver request for directly discharging treated stormwater into Casco Bay as part of meeting the City's stormwater standards.

Response: Please see below for our response to Lauren Swett and the revised Stormwater Management Plan.

Public Infrastructure and Community Safety Standards (Sec. 14.6.3)

Consistency with Master Plans
• Submit a copy of Sustainability Action Evaluation Tool in Excel format
• Submit a copy of the completed Sustainability Action Evaluation Tool for the subject project, including any corresponding life cycle cost analyses for sustainability alternatives.

Response: Please see the attached Sustainability Action Evaluation Tool for the proposed parking and battery storage project.

Public Safety and Fire Prevention
• Submit a pedestrian signage plan/wayfinding program that shows a proposed pedestrian circulation route and signage from the proposed parking lot to the terminal.

Response: Please see the attached Pedestrian Wayfinding Exhibit; see sheet C-503 for the pedestrian wayfinding signage detail.

Public Utilities
• Update the site plan set to show the proposed electrical lines to be installed for lighting, entrance & exit gates, and the battery storage area.

Response: The plan set has been updated. Please see sheets C-300 to C-303 for updated utility plans including the preliminary electrical layout.

Site Design Standards (Sec. 14.6.4)

Snow and Ice Loading
• Update narrative to describe how snow storage is currently handled for the Jetport and whether snow would be removed to an alternate location within the Jetport/at an off-site location in addition to the two proposed snow storage areas.

Response: SP Plus Corporation is currently responsible for snow removal at the Jetport and exports all snow to the City of Portland Snow Disposal Area. Any excess snow in the proposed parking lot will similarly be removed and taken off the premises to the City Snow Disposal site. There will be no permanent or temporary snow storage areas proposed in the new parking lot.

Exterior Lighting
• Update application materials to meet the standards of §12.3 of the Technical Manual
• Submit information on each proposed fixture to meet the standards of §12.6 of the Technical Manual.

Response: The updated photometrics plan complies with the standards of §12.3 of the Technical Manual.

Signage and Wayfinding
As mentioned under Public Safety and Fire Prevention, City staff has requested a signage plan that directs pedestrians to use safe & direct pedestrian facilities to the terminal.
Sign permits will be required to be submitted to confirm compliance with Article 20 of the Land Use Code.

Response: Please see the attached Pedestrian Wayfinding Exhibit; see sheet C-503 for the pedestrian wayfinding signage detail.

Lauren Swett - Woodard and Curran Comments

- *The proposed project is required to comply with MaineDEP Chapter 500 and City of Portland Technical Manual Section 5 standards for stormwater management. I have the following comments on the proposed stormwater management systems.*
    - *It is my understanding that the proposed improvements will be part of a site that currently has an existing Site Location of Development permit that would be modified by the proposed project. This existing permit has previously been reviewed by the MaineDEP, so I would anticipate that the MaineDEP would continue to review amendments and ultimately grant approval of the amendments.*
    - *Basic Standards – The project is generally providing for erosion and sedimentation control in accordance with the Basic Standards.*
        - *Erosion control measures are shown on the grading plans. The Applicant has also provided a Construction Phasing plan. I would suggest using this plan to incorporate erosion control systems relative to the proposed phasing. This could impact sediment barrier locations as well as potentially create the need for multiple construction entrances.*

Erosion Control measures and systems will be implemented relative to the proposed phasing. This will be shown on the Construction Phasing Plan.

    - *General Standards – The project is proposing to utilize Contech Stormfilters with associated below-grade storage to provide for stormwater treatment. This system is an approved proprietary stormwater BMP.*
        - *I've reviewed the provided calculations for stormwater management areas, and while I believe the system is meeting the standard for the amount of treatment required, I would ask the Applicant to clarify some of their calculations. There is no discussion of redevelopment to account for the reconstruction of existing paved and gravel areas into new paved areas; instead it appears that the entire treated area is accounted for considering these areas as new impervious and new landscaped. There are existing impervious areas noted as "to remain" that are not receiving*

treatment, and it appears that these areas are all outside of the project area, and will not be impacted by the proposed work. Can the Applicant please confirm that this interpretation of the calculations is correct?

The Redevelopment Standard was not used to calculate treatment requirements for the redevelopment/reconstruction of paved and gravel areas into new paved areas. The totality of the development footprint was considered to be "newly developed" from a treatment perspective. Sebago used the General Standard for the total disturbed area to provide a greater water quality treatment for gravel parking and paved cellphone lot. The paved impervious that is noted "to remain" and not receiving treatment is outside of the project limits and will not be impacted by the proposed work.

- *The Applicant has included a written plan to cover construction and post-construction stormwater maintenance. The proposed Stormfilter systems have been included as part of the post-construction plan, but the subsurface detention systems should also be added with reference to the use of the inspection risers that have been proposed. A stormwater maintenance agreement will be required to include both the Stormfilters and the subsurface detention systems.*

Acknowledged. The subsurface detention systems have been included in the Inspection, Maintenance & Housekeeping Plan, with reference to use the provided access & inspection risers.

- *Flooding Standards – The project discharges to the Fore River, which would qualify the project for a waiver of the Flooding Standard.*
  - *MaineDEP will review this SLOD amendment, and is anticipated to grant the waiver through that approval. It is noted that the proposed project has been modeled and will not increase stormwater flows.*

- *I would recommend that some additional information be included relative to the proposed below-grade storage system to ensure accurate evaluation of the systems for conflicts and to assist with construction.*
  - *The below-grade storage should be shown on the grading plan – there is a proposed change in grade across each section of parking lot, and this should be accounted for in how the storage piping will need to be installed with a slope and/or with variations in cover.*

Acknowledged. Please see Sheets C-200 and C-201 for updating grading plans showing the proposed outline of the subsurface detention systems. Furthermore, the proposed subsurface detention system #2 was lowered 1-foot to increase the proposed minimum cover from 1.5-feet (minimum required by manufacturer) to 2.5'. This allows the system envelope to be installed beneath the pavement subbase.

- *In the details provided for the below-grade storage, it was not clear how the proposed inlet and outlet pipes will be connected, specifically, how their inverts*

compare to the inverts of the storage pipes themselves. I also didn't see inverts or depth of cover for the proposed storage pipes. This is needed for construction and to ensure that there are no conflicts (see later comment on lighting infrastructure).

Acknowledged. Please see sheet C-507 for section details of the proposed subsurface detention systems, detailing the proposed surface elevations above the systems as well as the proposed elevations of the systems. For pipe connections, typically the manufacturer welds a CMP stub at the connection point at the elevation specified, and the proposed piping is then connected to the stub using a gasket/boot. The mating procedures of the proposed pipes to the stub connections will be coordinated with the manufacturer during construction. Elevations of the proposed connections can be seen on the Contech Subsurface Detention System Details on Sheets C-505 & C-506.

- *Additional information should be provided on the plan view plans for the proposed stone drip edge. The location of the system is provided on the utility plan with the proposed piping, but I do not see the system shown on the grading, landscaping, or site plan to show the extent of the proposed stone. The detail includes standard minimum dimensions, but I'd suggest showing the extent of the stone on the plans to ensure it does not conflict with proposed landscaping.*

Acknowledged. Please see Sheets C-202 and C-203 for the proposed riprap extents of the drip edge.

- *Some areas of landscaping are shown in areas with relatively steep proposed and existing slopes. The Applicant should confirm that the proposed plantings are appropriate for the sloped areas and note how it will interact with proposed erosion control blanket shown on the grading plans in these areas.*

Acknowledged. The application proposes ground cover plantings that are appropriate for the sloped area between Jetport Boulevard and the proposed parking lot. The erosion control blanket shown on the grading plans will be installed prior to the installation of plantings to provide protection during the non-stabilized condition, and during the installation of plantings, the blanket will be modified to install the plants per plan.

- *The utility plans do not show any proposed underground utility lines connecting to the proposed battery storage area. The schematic location plan included in the project description shows the existing CMP-owned circuit connecting to the battery area. The concrete pad is surrounded by fairly extensive proposed plantings. Any utility connection work required in the area should be shown to help avoid conflicts.*

Acknowledged. Please see the updated Utility plans and battery storage plans showing a preliminary electrical layout. The electrical layout will be refined during the generation of construction drawings to provide necessary services to the equipment, including conduit type, size, wiring, and the number of conduits. During the production of Construction

Drawings, an electrical engineer contracted by the owner will review and design the electrical layout accordingly to avoid conflicts with plantings and utilities presented as part of this application.

- *The utility plans also do not show proposed electric utility lines associated with lighting or electric and communications lines associated with the parking lot entrances. Light poles are proposed within stormwater treatment system areas. I'd recommend showing conduit to ensure that there will not be conflict with any of the other below-grade systems. As noted earlier, more detail is needed to confirm the depths of the proposed stormwater storage systems to ensure there is not a conflict with the installation.*

Acknowledged. Please see previous responses. As stated previously, the electrical layout will be refined during the production of Construction Drawings as necessary to avoid conflicts.

- *The vertical granite curb detail included in the plans includes aggregate base course embedment. The City's Technical Manual now includes a requirement for concrete embedment. This should be provided for any curbing within City streets.*

Acknowledged. Please see updated Vertical Granite Curb Detail on Sheet C-502.

- *The Applicant has noted that they have submitted a NRPA permit to the MaineDEP for the proposed wetland impacts. The Applicant has provided a copy of their wetland study, which includes a note "the cumulative extent of previous approved wetland impacts is relevant to determining the applicable Tier of NRPA permitting." Can the Applicant clarify if there are cumulative wetland impacts that have been considered on this site?*

Yes, the prior impacts were accounted for to determine the applicable tier of NRPA permitting. An NRPA Tier 3 was submitted to the Maine DEP to account for the cumulative wetland impacts.

Tom Errico Traffic Review Comments

- *The proposed project is proposing three driveway curb cuts and if the abutting streets are classified as public streets, a waiver for the number of driveways may be required.*

Acknowledged. The project does not propose to increase curb cuts along Westbrook Street or the Loop Road.

- *The Traffic Movement Permit issued for the Terminal Expansion noted the following. The applicant shall provide documentation that the current TMP is valid.*
    - *As related to conditions of approval numbered 2, 3, and 4 associated with the Traffic Movement Permit, at such time as the Jetport reaches enplanements of 1.1 million for 2 out of 4 years the Jetport shall have used the capacity under the Traffic Movement Permit and shall be required to submit an updated Traffic Movement Permit Application to the City.*

Response: Please see the attached traffic memo outlining the number of enplanements from 2020-2023.

- *The applicant shall confirm that all requirements of the TMP were met.*

Response: Please see the attached memorandum prepared by Sebago Technics' Traffic Engineer, dated May 10, 2024. As noted, the remaining conditions of the TMP have been met by PWM. Conditions 2-4 aren't applicable until 1.1. million enplanements are reached.

- *I concur with comments from DPW regarding pedestrian facility issues.*

Response: Please see the response to the above comment regarding pedestrian facility issues in this comment response.

- *Sight distance measurements shall be provided at proposed driveway locations.*

Response: Please see the attached traffic memo regarding sight distance measurements at the proposed exits.

Janine Ba DPW Development Review Comments

DPW Transportation

- *The applicant shall provide internal pedestrian circulation (walkways for the users) throughout the parking lots and connect to the existing route to the airport terminal. The parking lot internal sidewalk width shall be a minimum of 6 feet and the external sidewalk width shall be 8 feet.*

The current parking configurations at the Jetport have been studied for pedestrian circulation. In the long-term parking lot west of the parking garage, the provided sidewalks are in between the parking bays. In many cases, these sidewalks are inaccessible due to vehicles being parked within the sidewalk limits. In the winter, these sidewalks are difficult to maintain given the amount of vehicles impeding the sidewalks, and the travel-ways are more accessible, therefore a majority of passengers walk between the vehicular travel-way and parked vehicles. In the proposed lot, the sidewalks are provided to pick up pedestrians that walk between the vehicles and the travel-ways without vehicles blocking the sidewalks to direct them to the terminal and provide safe crossings at the Loop Road and International Parkway.

- *The applicant shall provide a pedestrian circulation route and signage plan from parking to the airport terminal.*

Please see the updated site plans for circulation and signage from parking to the terminal.

- *The entrance to the parking lot off of Jetport Access Road shall be designed as a T intersection with a commercial driveway to provide a safer crossing for pedestrians.*

Please see the provided traffic memorandum detailing the design for the proposed parking lot entrance.

DPW Water Resources

- *No comments at this time.*

Thank you for your time and attention to this project. We look forward to discussing the project further with staff and the Planning Board.

Sincerely,

SEBAGO TECHNICS, INC.



Owens McCullough, P.E., LEED-AP
Senior Vice President, Strategy & Client Development

cc: Paul Bradbury, P.E., Airport Director

JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
353 WATER STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041

JUDITH CAMUSO
COMMISSIONER

November 17, 2023

Rebecca Gabryszewski
Sebago Technics
75 John Roberts Road, Suite 4A
South Portland, ME 04106

RE: Information Request – Portland Jetport Environmental Assessment Project (ERID 3138)

Dear Rebecca:

Per your request received on August 18, 2023, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and inland fisheries habitat concerns within the vicinity of the *Portland Jetport Environmental Assessment* project.

Our Department has not mapped any Essential Habitats that would be directly affected by your project. Essential Habitats are areas formally designated as essential to the conservation of a State Endangered or Threatened species and are protected pursuant to the Maine Endangered Species Act (MESA, 12 M.R.S, §12804.2). Currently, Essential Habitats are only designated for three State Endangered coastal breeding bird species.

Endangered, Threatened, and Special Concern Species

Bat Species – Of the eight species of bats that occur in Maine, four species are afforded protection under Maine's Endangered Species Act (MESA, 12 M.R.S §12801 et. seq.): little brown bat (State Endangered), northern long-eared bat (State Endangered), eastern small-footed bat (State Threatened), and tri-colored bat (State Threatened). The four remaining bat species are designated as Species of Special Concern (Rare): big brown bat, red bat, hoary bat, and silver-haired bat. While a comprehensive statewide inventory for bats has not been completed, based on historical evidence, it is likely that several of these species occur within the project area during spring/fall migration, the summer breeding season, and/or for overwintering. However, our Agency does not anticipate significant impacts to any of the bat species as a result of this project.

Significant Wildlife Habitat

Significant Vernal Pools – Significant Vernal Pools (SVPs) are Significant Wildlife Habitats under Maine's Natural Resources Protection Act. MDIFW's resource maps do not currently document SVPs on the project parcel. However, a comprehensive statewide inventory for SVPs has not been completed. SVPs are not included on MDIFW maps until project areas have been surveyed using approved methods and the survey results confirmed. Thus, their absence from resource maps is not necessarily indicative of an absence on the ground. MDIFW recommends that surveys for vernal pools be conducted within the project boundary by qualified wetland scientists prior to final project design to determine whether there are SVPs present in the area. These surveys should extend up to 250 feet beyond the anticipated project footprint because of potential performance standard requirements for off-site SVPs, assuming such pools

are located on land owned or controlled by the applicant. Once surveys are completed, survey forms should be submitted to our Agency for review well before the submission of any necessary permits. Our Department will need to review and verify any vernal pool data prior to final determination of significance.

Aquatic Resources

Fish Habitat - We generally recommend maintaining 100-foot undisturbed vegetated buffers from the upland edge of all intermittent and perennial streams and any contiguous wetlands. Maintaining and enhancing buffers along these resources is critical to the protection of water temperatures, water quality, natural inputs of coarse woody debris, and various forms of aquatic life necessary to support fish and other aquatic species. Riparian buffers also provide critical habitat and important travel corridors for a variety of wildlife species. Stream crossings should be avoided, but if a stream crossing is necessary, or an existing crossing needs to be modified, it should be designed to provide for full aquatic passage. Small streams, including intermittent streams, can provide crucial rearing habitat, cold water for thermal refugia, and abundant food for juvenile salmonids on a seasonal basis. Undersized crossings may inhibit these functions and become a frequent maintenance problem that causes reoccurring damage to the resource. Generally, MDIFW recommends that all new, modified, and replacement stream crossings be sized to span at least 1.2 times the bankfull width of the stream. In addition, we generally recommend that stream crossings be open bottomed (i.e., natural bottom), although embedded structures which are backfilled with representative streambed material have been shown to be effective in providing habitat connectivity for fish and other aquatic organisms. Construction Best Management Practices should be closely followed to avoid erosion, sedimentation, alteration of stream flow, and other impacts as eroding soils can travel significant distances as well as transport other pollutants resulting in direct impacts to fish, other aquatic life, and their habitats. In addition, we recommend that any necessary instream work occur between July 15 and October 1.

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance, we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

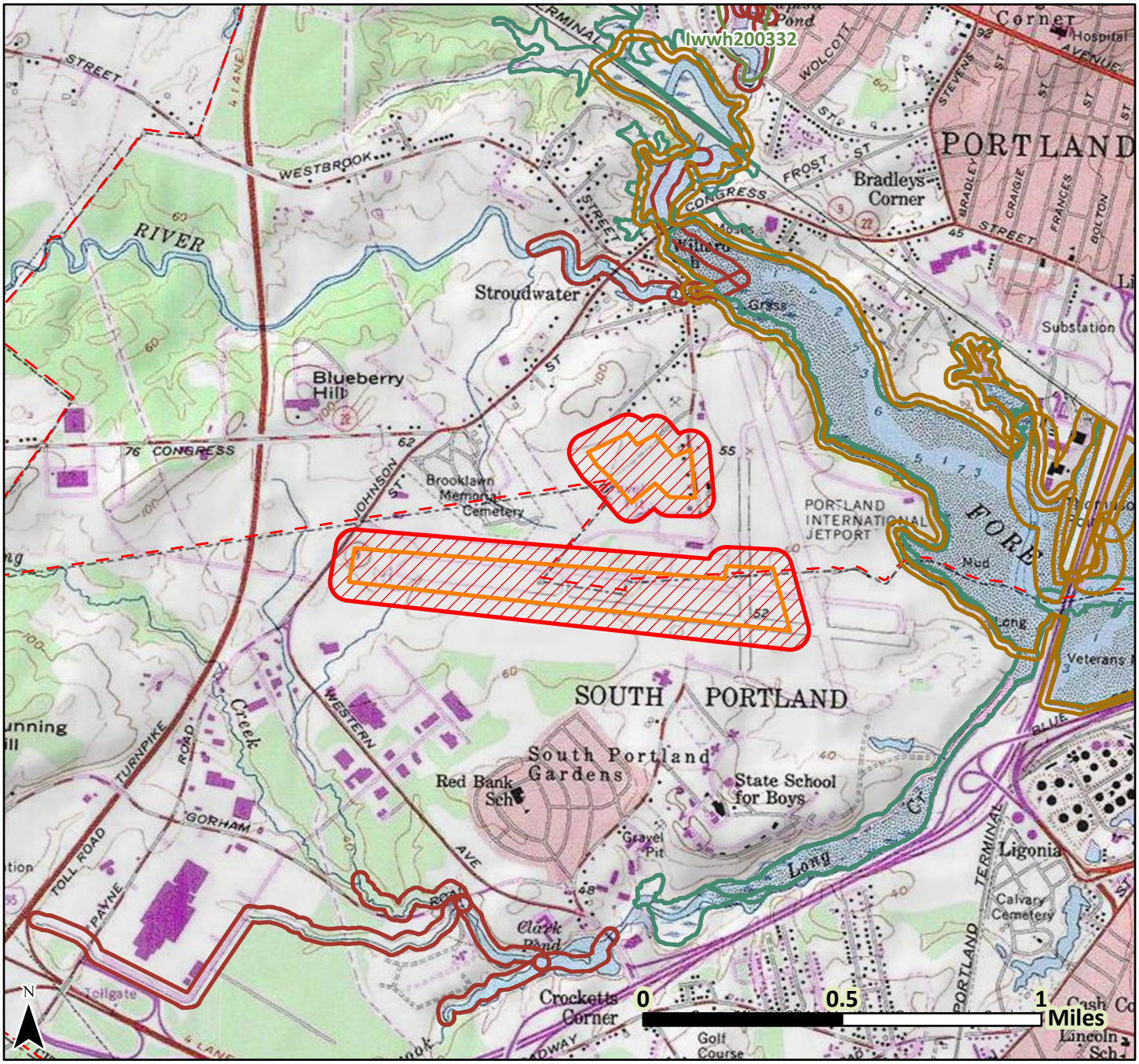
Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

Emily Robinson

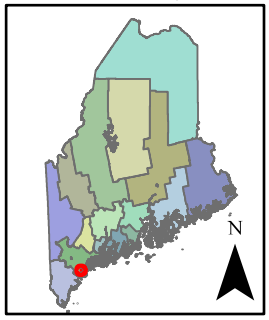
Emily Robinson
Resource Biologist

Maine Department of Inland Fisheries and Wildlife
Environmental Review of Fish and Wildlife Observations and Priority Habitats
Portland Jetport Environmental Assessment



County Boundary
Township Boundary
Project Footprint
Search Area
Inland Waterfowl/Wading Bird
Shorebird Area
Special Concern Fish
Tidal Waterfowl/Wading Bird

Date: 8/29/2023
Projection:
UTM Zone 19N, NAD83



Legend only lists resources visible in the map; see response letter for all resources that were evaluated.

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

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

August 18, 2023

Rebecca Gabryszewski
Sebago Technics
75 John Roberts Road, Suite 4A
South Portland, ME 04106

Via email: rgabryszewski@sebagotechnics.net

Re: Rare and exemplary botanical features in proximity to: #19059, Portland International Airport, Parking Lot Expansion and Runway Improvements, Portland and South Portland, Maine

Dear Rebecca Gabryszewski:

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received August 17, 2023 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Portland and South Portland, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

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

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

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

The Maine Natural Areas Program (MNAP) is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. MNAP welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by MNAP are to be published in any form, the Program should be informed at the outset and credited as the source.

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

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

The Maine Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $150.00 for two hours of our services.

Thank you for using MNAP in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Lisa St. Hilaire

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

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: February 28, 2024
Project Code: 2024-0055545
Project Name: Parking Expansion at Portland International Jetport

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 IPaC 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 Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service (fws.gov).

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 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

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: 2024-0055545
Project Name: Parking Expansion at Portland International Jetport
Project Type: Airport - Maintenance/Modification
Project Description: The proposed project involves the creation of additional surface parking at the Portland International Airport

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.65007515,-70.31203215287977,14z



Counties: Cumberland County, Maine

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 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

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.

IPAC USER CONTACT INFORMATION

Agency: Portland city
Name: Rebecca Gabryszewski
Address: 75 John Roberts Road, Suite 4A
City: South Portland
State: ME
Zip: 04005
Email rgabryszewski@sebagotechnics.com
Phone: 2072002065

Att. A3

SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Memorandum

19059

To: City of Portland

Date: November 11th, 2024

Subject: Response to TMP Conditions of Approval, Portland Jetport, Portland

The purpose of this memorandum is to respond to comments that were received to confirm whether the Conditions of Approval numbered 2, 3 and 4 were completed as outlined in the Traffic Movement Permit (TMP) for the Portland Jetport's Terminal Expansion.

These conditions are listed below in italics, with our associated responses:

Condition 2. International Parkway/Jetport Boulevard Intersection

A. The applicant shall install traffic improvement signs and pavement markings at the intersection within six months from the date of Planning Board approval. The improvements shall be subject to the approval of the Department of Public Services.

This has been completed.

B. A feasibility study shall be conducted that reviews options to address the anticipated capacity issues of the intersection within a year from the date of Planning Board approval. The potential mitigation options reviewed shall include: a full traffic signal warrant study conducted according to the MUCTD and MaineDOT requirements and coordinated with the Department of Public Services, construction of a roundabout, construction of a realigned intersection, maintaining a two-way STOP sign control and adding intersection capacity to attain acceptable levels of service.

This has been completed.

C. Prior to issuance of a Certificate of Occupancy permit, the applicant shall implement all recommendations from the feasibility study.

Recommendations from the feasibility study were implemented and a Certificate of Occupancy was issued to the Portland Jetport.

Condition 3. Congress Street/Westbrook Street Intersection

A. The applicant shall contribute $10,600 towards the installation of street improvements identified by the Department of Public Services. Specific improvements as represented by the applicant shall include:
i. Pedestrian countdown device;

Six (6) total pedestrian signal heads with countdown displays were provided for all three (3) crosswalks as shown below:



Congress Street SW Corner


Congress Street SE Corner

75 John Roberts Road – Suite 4A, South Portland, ME 04106-6963 • 207.200.2100 • Fax: 207.856.2206



Congress Street NW Corner

75 John Roberts Road – Suite 4A, South Portland, ME 04106-6963 • 207.200.2100 • Fax: 207.856.2206



Congress Street NE Corner

75 John Roberts Road – Suite 4A, South Portland, ME 04106-6963 • 207.200.2100 • Fax: 207.856.2206



Westbrook Street SW Corner



Westbrook Street NE Corner

ii. A crosswalk with colored stamping, as approved by the Historic Preservation Department; and

A crosswalk at the northerly side of the intersection was added across Congress Street but has since been restriped and is no longer colored. See below for the "before" and "after" conditions.

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"Before" conditions without a crosswalk at the northerly side of the intersection.



"After" conditions with a crosswalk at the northerly side of the intersection.

iii. Install a sidewalk between the Westbrook St. and Waldo St. with a crosswalk if the right-of-way is owned by the city.

75 John Roberts Road – Suite 4A, South Portland, ME 04106-6963 • 207.200.2100 • Fax: 207.856.2206

A sidewalk was installed on the southerly side of Congress Street between Westbrook Street and Waldo Street. A crosswalk was not provided. See below:



Sidewalk along Congress Street between Westbrook Street and Waldo Street looking West.



Sidewalk along Congress Street between Westbrook Street and Waldo Street looking East.

B. The applicant shall install video detection equipment or contribute $9,400 for such installation in accordance with the Department of Public Services.

Video detection was provided for all approaches. See below:

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Congress Street looking West. Video detection shown on mast arms for all approaches.

C. Prior to the Certificate of Occupancy the applicant shall ensure that all identified traffic mitigation measures are fully funded and implemented by this project through a financial contribution no less than $20,000.

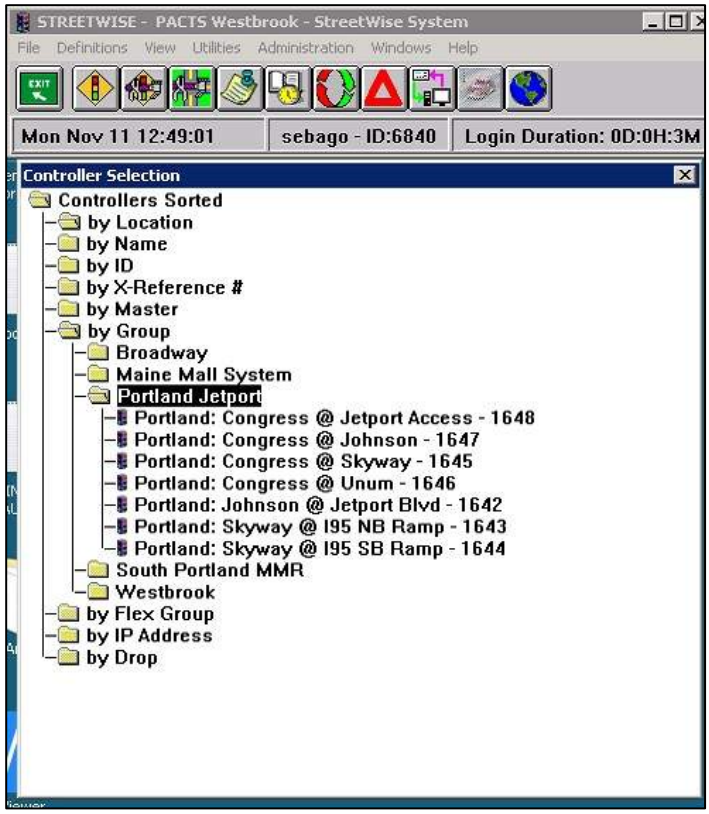
All mitigation was implemented as shown above.

Condition 4. Johnson Road/Turnpike Connector/Turnpike Northbound Ramps

A. Prior to issuance of a Certificate of Occupancy the applicant shall be responsible for interconnecting traffic signals at the Johnson Road/Jetport Boulevard/Turnpike Connector, Turnpike Connector/Turnpike NB Ramps, Turnpike Connector/SB Ramps, and Congress Street/Turnpike Connector/Hutchins Drive intersections. Work shall include installing necessary equipment, conducting traffic counts, and developing and inputting timing plans to allow for coordination, and field adjusting once all work has been completed.

All referenced intersections were interconnected with communications established at the South Portland Fire Station located on Western Avenue. Coordination plans were developed and implemented with these signals connected to the legacy *Streetwise* server which is maintained and operated by the PACTS RTMS. A screenshot has been provided from the Streetwise system showing the connection of these intersections below:

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Signals shown on Streetwise

B. Prior to issuance of a Certificate of Occupancy the applicant shall be responsible for constructing an eastbound right tum lane on the connector for right turning vehicles onto 1-95 NB ramp. The length shall be the maximum allowable without requiring widening of the 1-95 overpass.

A right turn lane was constructed for the EB direction at the intersection of Skyway Drive @ the I-95 NB Connector as shown below:

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Skyway Drive @ I-95 NB Connector “Before” Conditions (No Right Turn Lane) in EB Direction

75 John Roberts Road – Suite 4A, South Portland, ME 04106-6963 • 207.200.2100 • Fax: 207.856.2206



Skyway Drive @ I-95 NB Connector “After” Conditions (Right Turn Lane Constructed) in EB Direction

SEBAGO TECHNICS, INC.

Bradley Lyon, P.E., PTOE
Vice President of Transportation Engineering

75 John Roberts Road – Suite 4A, South Portland, ME 04106-6963 • 207.200.2100 • Fax: 207.856.2206

November 15, 2024
19059

Mr. Zach Powell
City of Portland
Office of Planning and Urban Development
Congress Street
Portland, ME 04101

Site Plan Application – Portland International Jetport Parking Expansion

Dear Zach:

On behalf of the City of Portland, Sebago Technics Inc. has assembled the following comment response to the site plan review application for the parking lot expansion at the Portland International Jetport. The following provides the review comments in Italic and the responses in bold.

General Comments

• *The submitted site plan set shows work to straighten the exit driveway from the existing long-term surface and structured parking across from the site. Inclusion of this area as part of the site plan application would require review/compliance of the existing long-term parking site. City Staff recommend that the site plan set be updated to clarify that the proposed realignment of the driveway is to be completed as part of a separate project/building permit.*
Response: Acknowledged. Please see the updated site plan.

• *The proposed fencing along Loop Road has raised concerns about the visibility of the Glimpse pieces proposed to be relocated. City Staff request a note be added to the site plan set stating that the final location of the pieces is to be reviewed by the Public Art Committee and is subject to change, to allow for these concerns to be addressed without necessitating a future site plan amendment.*
Response: Acknowledged. Grading will be adjusted to ensure the sight lines are appropriate at the time of installation.

Site Plan Review Standards
Transportation Standards (Sec. 14.6.1)

Impact on Surrounding Street Systems
• *Submit confirmation that all of the conditions for the 2008 Terminal expansion TMP were satisfied.*

Response: All conditions for the 2008 Terminal expansion TMP have been satisfied. Please see the attached memo.

Access and Circulation

• Update application materials to include a >= 6-foot wide internal sidewalk that connects to the sidewalk along the frontage of the site or submit a waiver request.

Response: Please see the updated plan set showing the addition of internal sidewalks coordinated with city staff. It is also important to note that as long-term parking, the turnover is infrequent with low volume pedestrian movements. Therefore, the applicant is proposing 5-ft wide sidewalks and requesting a waiver for the 6-ft or greater requirement.

• Update application materials to include a sidewalk along Jetport Boulevard or submit a waiver request.

Response: Please refer to updated waiver request table.

Environmental Quality Standards (Sec. 14.6.2)

Preservation of Significant Natural Features

• Update the supporting waiver justification to discuss steps taken to minimize impacts to the wetland on the site, along with any steps taken as part of the Maine DEP review to comply with State & Federal regulations.

Response: The waiver justification has been updated with the following narrative for consideration. Steps taken to minimize wetland impacts included removing the cell phone lot development area originally planned for the westerly side of Jetport Boulevard responsive to public input. During the city review process, the Jetport further modified the parking lot design to reduce wetland impacts along Jetport Boulevard and retain a vegetated buffer by shifting the location of the proposed battery storage project and parking lot as now shown on the site plans. During the MDEP permitting process, a site walk was held at the Jetport to field review the wetlands and project area. The area of wetland alteration is pocketed and isolated (no connection to surface drainage) and was determined to not contain essential functions or values. This was confirmed through the MDEP and USACE review and permitting process. The USACE has issued their permit approving the wetland alternative for the project. We understand the MDEP is working on the permit which the Jetport will provide to the city upon issuance.

In support of this response please see the updated waiver table, the Avoidance & Minimization Statement/Alternatives Analysis that was provided as part of the Maine DEP submittal, and the approved Master Plan of the Jetport.

• Update the waiver table to include a waiver from 14.6.2 (A)(1)

Response: Please see the updated waiver table.

Landscape Preservation

• Submit an updated waiver table documenting the steps taken to minimize the removal of existing trees on site and how new plantings are being used to meet the landscape preservation replacement waiver requirement of 14.6.2 (B)(4) of the Land Use Code.

Response: Please see the updated waiver table and the plan set.

Site Landscaping and Buffers

• Update the site plan set to specify the type of fencing proposed for the battery storage corral.

Response: Please see the plan set for updated information regarding the fencing around the battery storage corral to be a 6' tall opaque fence

• Update the site plan set to meet the parking lot landscaping standards for 14.6.2 ©(3)(a) & landscape island width standard of 4.5.5 of the Technical Manual, or seek waivers from these standards through submission of an updated waiver table & supporting justification for the waiver(s) demonstrating that the site prevents the implementation of these standards. The supporting justification can, but does not have to, speak to how the intent of the standard is similarly achieved through trees & shrubs in the proposed landscaped peninsulas.

Response: Please see the updated Landscape Plans. The vegetation removal required for the parking lot is within the area designated in the approved Master Plan for parking lot expansion. The plan has been revised to preserve vegetation near the intersection of International Parkway and Jetport Blvd. The intent of the Landscape Plan is to achieve the overall number of required plantings by planting along the perimeter buffer, the main pedestrian sidewalk, and within the peninsulas near the entrances and exits. The landscape preservation replacement waiver requirement will be met by planting 162 trees, 473 shrubs and 239 perennials to compensate for the 153 trees (10" or greater) to be removed. (Note 19 of the trees to be removed are Ash trees likely infected with Emerald Ash Borer and reviewed with City Arborist). The current site plan shows a reduction from 674 to 667 parking spaces (-7 spaces) and the number of trees within the parking lots has decreased from 25 to 24 with the addition of internal sidewalks. The number of trees and plantings shown along the frontage exceeds the minimum requirement to compensate for the reduced number within the parking lot islands.

• Update the landscape plan to note that plantings in the parking lot should be excavated to a depth of at least 2 feet and backfill with several yards of high-quality planting mix.

Response: Please see the updated landscaping notes regarding the planting plan.

Water Quality, Stormwater Management, and Erosion Control

• Update the construction phasing plan to show ESC measures.

Response: Please see the updated construction plan for the ESC measures.

• Submit an updated waiver table with a request for directly discharging treated stormwater into Casco Bay as part of meeting the City's stormwater standards.

Response: Please see the updated waiver table.

• *Submit copies of NRPA and SLODA approvals when available.*
Response: The NRPA and SLODA approvals will be forwarded upon receipt. The USACE permit has been received and is attached.

Public Infrastructure and Community Safety Standards (Sec. 14.6.3)
Consistency with Master Plans
• *Submit a copy of Sustainability Action Evaluation Tool in Excel format*
Response: A copy of the Sustainability Action Evaluation Tool has been submitted with this response.

• *Submit a copy of the completed Sustainability Action Evaluation Tool for the subject project, including any corresponding life cycle cost analyses for sustainability alternatives.*
Response: A copy of the Sustainability Action Evaluation Tool has been submitted with this response.

Public Safety and Fire Prevention
• *Update the site plan set to provide internal sidewalks that reflect the design used in the image above, prioritizing a design where internal sidewalks follow desire lines.*
Response: The proposed design has been revised incorporating agreed upon modifications with the City during a November 5th coordination meeting.. Please see the plan set.

Site Design Standards (Sec. 14.6.4)

Exterior Lighting
• *Update application materials to meet the standards of §12.3 of the Technical Manual or submit a narrative demonstrating how photometric plan meets the standards of 12.3(11) of the Technical Manual*
Response: Updated lighting information has been included with this response.

• *Submit information on the hours each proposed fixture will be operated & the timing devices used to set the hours of operation.*
Response: The proposed lighting will be utilized during dusk to dawn. The airport operates 24 hours a day, therefore lighting must be made available in the parking areas during the night-time hours for safety and security reasons.

• *Confirm that the listed lumen levels on the photometric plan match the levels listed on the specification sheet for the on-site lighting.*
Response: Confirmed. The listed lumen levels have been revised and conform to the city lighting standards. Please see the photometric plan and lighting specification information.

Signage and Wayfinding
• *As mentioned under Public Safety and Fire Prevention, DPW has requested changes to the internal sidewalks for the parking lot that may necessitate the relocation/addition of wayfinding signage. Sign permits will be required to be submitted to confirm compliance with Article 20 of the Land Use Code.*

Response: The site plan has been revised to accommodate internal sidewalks as discussed in the City meeting on November 5th. The applicant acknowledges that the relocation/addition of any wayfinding signage will need to be permitted and conform with Article 20 of the Land Use Code. Please see the attached Way Finding Exhibit.

Lauren Swett - Woodard and Curran Comments

• The Applicant should provide copies when received of MaineDEP approvals for NRPA and Site Location of Development Permits.

Response: Understood. Copies of the State permits will be forwarded upon receipt.

•The Applicant has noted that erosion control implementation will be shown on the Construction Phasing Plan. The currently submitted plan does not show these measures. This can be reviewed when submitted.

Response: Understood.

Tom Errico Traffic Review Comments

- *The proposed project is proposing three driveway curb cuts and if the abutting streets are classified as public streets, a waiver for the number of driveways may be required.*

Status: The applicant shall provide documentation for a waiver for the provision of three driveways to the site.

Response: The project does not propose to increase curb cuts along Westbrook Street or the Loop Road and is all internal to the Jetport Campus.

- *The Traffic Movement Permit issued for the Terminal Expansion noted the following. The applicant shall provide documentation that the current TMP is valid.*
    - *As related to conditions of approval numbered 2, 3, and 4 associated with the Traffic Movement Permit, at such time as the Jetport reaches enplanements of 1.1 million for 2 out of 4 years the Jetport shall have used the capacity under the Traffic Movement Permit and shall be required to submit an updated Traffic Movement Permit Application to the City.*

Status: Based upon enplanement data provided by the applicant the above noted threshold has not been met and accordingly an updated Traffic Movement Permit is not required. Based upon the information, year 2024 enplanements appear to be on track to meet the 1.1 million threshold and an updated TMP may be required. It is suggested that the applicant report final enplanement data at the conclusion of 2024 and update the TMP is required.

Response: Understood. The TMP will be updated should the enplanement data meet the established threshold.

- *The applicant shall confirm that all requirements of the TMP were met.*

Status: To clarify, the applicant shall note if all mitigation requirements of the TMP were implemented.

Response: All requirements of the TMP have been met. Please see the attached traffic memo.

- *I concur with comments from DPW regarding pedestrian facility issues.*

Status: Refer to DPW comments.

Response: Please see our response to the Department of Public Works.

Additional Comment

- *The applicant shall perform a sidewalk waiver analysis for all property frontages that do not include an existing or proposed sidewalk. The waiver analysis shall comply with the city ordinance requirements.*

Response: See waiver table.

Kristoffer DeVolder DPW Development Review Comments

DPW Transportation

- *The DPW still has concerns regarding internal pedestrian circulation and believes that it is insufficient.*

Response: Understood. Please see the plan set for the revisions that were discussed at the November 5th meeting with the city.

Mark Reiland, City Arborist

- *Plan approved by the Parks Dept with following recommendation:*
  In the median/island plantings within the parking areas it would greatly improve establishment and long term viability if the planting islands were excavated to a depth of at least 24 inches and backfilled with several yards of high quality planting mix.

Response: See note on updated landscape plan to include the requested 24 inches minimum depth of high-quality planting mix.

Thank you for your time and attention to this project. We look forward to discussing the project further with staff and the Planning Board.

Sincerely,

SEBAGO TECHNICS, INC.



Owens McCullough, P.E., LEED-AP
Senior Vice President, Strategy & Client Development

cc: Paul Bradbury, P.E., Airport Director

Noise and Vibration 14-14.6.4 (G)

Not applicable. The proposed project involves the construction of two parking lots and the site design does not include heating, ventilation, and air conditioning equipment. The parking lots are to be located within the existing airport campus and any noise generated will be consistent with allowable amounts for the area. Any proposed noise levels at the property line will be consistent with the allowed amounts noted in the City of Portland ordinance.

Att. B

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

Signage and Wayfinding 14-14.6.4 (H)

1. Signage location and scale will be in compliance with the City Ordinance and consistent with existing signage at the Jetport. Wayfinding signs will be utilized to direct vehicular traffic to the parking lot entrance and as needed of internal circulation within the lots.

2. All on-site directional traffic signage will be sited in such a way as to not adversely affect visibility at intersections or offsite.

Please see the plan set for signage placement and proportions.

Att. C

MAINE REAL ESTATE TAX-Paid

DLN: 1002140172253

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL BY THESE PRESENTS THAT **TOYE AIRPORT PARK, LLC**, a Maine limited liability company with a place of business in the City of South Portland, County of Cumberland, State of Maine, for consideration paid, grants to the **CITY OF PORTLAND**, a Maine municipal corporation with a principal office at 389 Congress Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any improvements thereon, located 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 AIRPORT PARK, LLC has caused this instrument to be signed and sealed this 16th day of November, 2021.

WITNESS:

TOYE AIRPORT PARK, LLC

By _____
Thomas A. Toye, III
Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

November 16, 2021

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.

_____
Attorney at Law/~~Notary Public~~
Drew A. Anderson
Printed Name

EXHIBIT A
TO
TOYE AIRPORT PARK, LLC DEED

City of Portland Assessor's reference as Map 208, Block A, Lots 5, 6 & 7 and Map 210A, Block A, Lot 2, which properties are located in the City of Portland, County of Cumberland and State of Maine and are more particularly bounded and described as follows:

PARCEL ONE (Tax Map 208, Block A, Lot 6):

A certain lot or parcel of land with the buildings thereon, situated in Portland, on the westerly side of Westbrook Street, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a stake on the west side of said Westbrook Street North four and one-half degrees East (N 4 ½° E) eight hundred six (806) feet from Abner Gould's corner; thence South seventy-four and one-half degrees West (S 74 ½° W) along the line of land now or formerly of Nellie R. Johnson one hundred six and fifty-seven hundredths (106.57) feet to a point; thence from said point North four and one-half degrees East (N 4 ½° E) and parallel with said Westbrook Street eighty-six (86) feet to a point; thence from said last mentioned point in an easterly direction and at right angles to the last described bound one hundred (100) feet to a point on the westerly side of Westbrook Street; thence from said point on the Westerly side of Westbrook Street South four and one-half degrees West (S 4 ½° W) along the side of said Westbrook Street fifty (50) feet to the point of beginning.

TOGETHER with that property conveyed by the City of Portland to Toye Airport Park, LLC, dated November 16, 2001 and recorded in said Registry of Deeds in Book 16971, Page 193 described as Parcel 2 and further bounded and described as follows:

A certain lot or parcel of land on the westerly side of Westbrook Street, in the City of Portland, County of Cumberland, State of Maine, being shown as "Area to be Conveyed to Thomas Toye, III" on a plan of land titled "Survey Plot Plan of Land to be Conveyed" for Dufresne-Henry, Inc. dated 11-15-01 by Sebago Technics, Inc., said parcel being more particularly bounded and described as follows:

Beginning at a 5/8-inch capped iron rebar at the southeasterly corner of land now or formerly of Thomas A. Toye, III by deed recorded at the Cumberland County Registry of

Deeds in Book 10097, Page 17;

Thence S 08°-54'-54" E, by and along said Westbrook Street, a distance of 11.71 feet to a point;

Thence S 55°-13'-45" W, passing through land of the Grantor, a distance of 21.88 feet to a point;

Thence N 83°-28'-06" W, passing through land of the Grantor, a distance of 22.38 feet to a point on the southerly line of said land of Toye, said point being the easterly corner of "Area A to be Conveyed";

Thence N 60°-44'-36" E, by and along said Toye, a distance of 44.00 feet to the point of beginning.

Meaning and intending to describe a certain lot or parcel of land containing 403 square feet, more or less, and being shown as "Land to be Conveyed to Thomas Toye III" on a plan of land titled "Survey Plot Plan of Land to be Conveyed" for Dufresne-Henry, Inc., dated through 11-15-01 by Sebago Technics, Inc.

EXCEPTED from the above property is that property conveyed by Toye Airport Park, LLC to the City of Portland by Warranty Deed, dated November 16, 2001 and recorded in the Cumberland County Registry of Deeds in Book 16971, Page 184 described as Parcel 1.

NOTE: The first course in the first described parcel of land has been incorrectly described as running North seventy-four and one-half degrees West (N 74 ½° W) dating back to at least 1909.

PARCEL TWO (Tax Map 208, Block A, Lot 7):

A certain lot or parcel of land, situated on the westerly side of Westbrook Street, in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows: Beginning on the westerly sideline of Westbrook Street at the northeasterly corner of land conveyed by Sarah D. Rich to Raymond L. Cousins, by deed dated August 28, 1922, and recorded in the Cumberland County Registry of Deeds in Book 1115, Page 5; thence northerly by the westerly sideline of Westbrook Street one hundred (100) feet to the southeasterly corner of land conveyed by Sarah D. Rich to Catherine M. Lindell, by deed dated September 28, 1929, and recorded in said Registry of Deeds in Book 1333, Page 260; thence westerly at right angles with Westbrook Street and by said Lindell land one hundred (100) feet to land conveyed by Sarah D. Rich to Isaac H. Fairweather; thence

southerly parallel with Westbrook Street and by said Fairweather land one hundred (100) feet to the northwesterly corner of said Cousins land; thence easterly by said Cousins land and at right angles with Westbrook Street one hundred (100) feet to the point of beginning, containing 10,000 square feet, or less.

PARCEL THREE (Tax Map 208, Block A, Lot 5):

A certain lot or parcel of land, with the buildings thereon, situated on the westerly side of Westbrook Street, in Portland, in the County of Cumberland and State of Maine, and bounded and described as follows:

Beginning at a point on said westerly side of Westbrook Street, distant northerly one hundred (100) feet from the point of intersection of said westerly side of Westbrook Street with the northerly sideline of a certain lot or parcel of land conveyed to Raymond L. Cousins by deed dated August 28, 1922, and recorded in said Registry of Deeds in Book 1115, Page 5; thence running northerly along said westerly side of Westbrook Street a distance of one hundred fifty (150) feet to a point; thence running westerly and along a line at right angles to said westerly side of Westbrook Street a distance of one hundred (100) feet to a point; thence running southerly and along a line parallel to said westerly sideline of said street a distance of one hundred fifty (150) feet to a point; thence running easterly and on a line again at right angles to said westerly side of said street a distance of one hundred (100) feet to a point of beginning.

TOGETHER with that property conveyed by the City of Portland to Toye Airport Park, LLC, dated November 16, 2001 and recorded in said Registry of Deeds in Book 16971, Page 193 described as Parcel 1 and further bounded and described as follows:

A certain lot or parcel of land situated on the westerly side of, but not adjacent to, Westbrook Street, in the City of Portland, County of Cumberland, State of Maine, and being depicted as "Area to be Conveyed to Thomas Toye III" on a plan of land titled "Survey Plot Plan of Land to be Conveyed" for Dufresne-Henry, Inc., dated through November 15, 2001 by Sebago Technics, Inc. (the "Plan"), said parcel being more particularly bounded and described as follows:

Beginning at the northwesterly corner of land now or formerly of Toye Airport Park, LLC, by deed recorded in the Cumberland County Registry of Deeds in Book 15957, Page 160, at land of the Grantor;

Thence S 08°-54'-54" E, by and along said land of Toye Airport Park, LLC, a distance of 17.43 feet to a point;

Thence N 78°-54'-06" W, passing through land of the Grantor, a distance of 50.84 feet to a point in the southerly line of other land of Thomas A. Toye III recorded in said Registry of Deeds in Book 6290, Page 27;

Thence N 81°-02'-37" E, by and along said other lands of Toye, a distance of 47.77 feet to the point of beginning.

Meaning and intending to describe a certain triangular parcel of land containing 416 square feet, more or less, and depicted as "Area to be Conveyed to Thomas Toye III" on a plan of land titled "Survey Plot Plan of Land to be Conveyed" for Dufresne-Henry, Inc., dated through 11-15-01, by Sebago Technics, Inc.

PARCEL FOUR (Tax Map 210A, Block A, Lot 2):

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

Beginning at a point on the westerly side of Westbrook Street, said point being distant northerly along said westerly side of said Westbrook Street 774.36 feet from the northerly terminus of the discontinuance of said Street by the County Commissioners as defined in Docket 1175 and dated January, 1957, on file in the office of said County Commissioners, Portland, Maine, said point being the northerly corner of land of the Norman Realty Holding Corporation; thence North eighty-two degrees forty-four minutes West (N 82° 44' W) by land of said Norman Realty Holding Corporation and at right angles to the said westerly sideline of said Westbrook Street a distance of 100.00 feet to a point; thence South seven degrees sixteen minutes West (S 7° 16' W) on a line parallel to and distant 100.00 feet westerly of the said westerly sideline of said Westbrook Street and at right angles to the last described course a distance of 100.00 feet to a point; thence North eighty-two degrees forty-four minutes West (N 82° 44' W) by land conveyed by Bertram J. Fairweather to the City of Portland by Warranty Deed dated August 30, 1967 and recorded in the Cumberland County Registry of Deeds in Book 3009, Page 666 and at right angles to the last-described course a distance of Four Hundred Seventy (470) Feet, more or less, to land as conveyed to John A. and Lorena A. Knight by deed dated May 26, 1955 and recorded in said Registry of Deeds in Book 2231, Page 116; thence North sixty-six degrees thirty-five and one-half minutes East (N 66° 35½' E) by land now or formerly of said Knight a distance of Five Hundred Twelve and One-Half (512½) Feet to a point; thence North eighty-one degrees fifty-two and one-half minutes East (N 81° 52½' E) by land of said Knight a distance of one hundred thirty-four (134) feet, more or less, to the westerly sideline of said Westbrook Street; thence South seven degrees sixteen minutes West (S 7° 16' W) by the westerly sideline of said Westbrook Street a distance of One Hundred Ninety-Seven (197) Feet, more or less, to said land of said Norman Realty

Holding Corporation and the point of beginning, containing 1.78 acres, more or less.

Together with a right-of-way fifteen (15) feet in width lying to the west of a line distant 100.00 feet westerly and parallel to the said westerly sideline of said Westbrook Street and to extend Two Hundred Twenty-Five (225) Feet to the south from the most southerly boundary line of the parcel above described and conveyed to the Grantee, within which a septic tank effluent drain may be maintained, repaired and replaced so long as said drain may be needed to serve the premises herein described and conveyed to the Grantee.

Also the Grantor herein conveys and assigns to the Grantee any rights it may have as a result of the provision in the deed from Bertram J. Fairweather to the City of Portland, dated August 30, 1967 and recorded in said Registry of Deeds in Book 3009, Page 666, whereby the City of Portland agreed that should there be constructed within a period of not more than ten (10) years from the date of said deed, a public airport access road, crossing the land therein conveyed to the City to a point on Congress Street; said City will convey to the assigns of the Grantor a right-of-way twenty (20) feet in width extending from the land herein above conveyed to this Grantee in a location lying to the South of the division line between the land now or formerly of John A. and Lorena A. Knight and extending in a westerly direction by said division line to the easterly sideline of said future airport access road, it being understood and agreed that such a right-of-way when granted shall be for the purpose of travel only and for no other purpose and that no building, structure or other encumbrance of any nature shall be placed, erected or maintained therein.

The above-described premises together with the rights of way are all and the same as reserved and covenanted by said Fairweather and City of Portland in the aforesaid 1967 deed between said parties.

EXCEPTED from the above property is that property conveyed by Toye Airport Park, LLC to the City of Portland by Warranty Deed, dated November 16, 2001 and recorded in the Cumberland County Registry of Deeds in Book 16971, Page 184 described as Parcel Two.

Meaning and intending to convey and hereby conveying the remaining premises as described in the Quitclaim Deed Without Covenant from Thomas A. Toye to Toye Airport Park, LLC, dated January 8, 2001 and recorded in said Registry of Deeds in Book 15957, Page 160 and the same premises as described in the Quitclaim Deed from the City of Portland to Toye Airport Park, LLC, dated November 16, 2001 and recorded in said Registry of Deeds in Book 16971, Page 193.

MAINE REAL ESTATE TAX-Paid

DLN: 1002140172279

QUITCLAIM DEED WITH COVENANT

Maine Statutory Short Form

KNOW ALL BY THESE PRESENTS THAT **TOYE REALTY HOLDINGS III, LLC**, a Maine limited liability company with a place of business in the City of South Portland, County of Cumberland, State of Maine, for consideration paid, grants to the **CITY OF PORTLAND**, a Maine municipal corporation with a principal office at 389 Congress Street, Portland, Maine 04101, with **QUITCLAIM COVENANT**, the land, together with any improvements thereon, located 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 III, LLC has caused this instrument to be signed and sealed this 16th day of November, 2021.

WITNESS:

TOYE REALTY HOLDINGS III, LLC

By _____
Thomas A. Toye, III
Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

November 16, 2021

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.

_____
Attorney at Law/~~Notary Public~~

Drew A. Anderson
Printed Name

EXHIBIT A
TO
TOYE REALTY HOLDINGS III, LLC DEED

The property known as 0 Jetport Boulevard, together with any improvements thereon, situated in the City of Portland, Cumberland County and State of Maine, and currently identified by the City of Portland Assessor's reference as Map 210A, Block A, Lot 6, more particularly bounded and described as follows:

A certain lot or parcel of land situated on the southeasterly side of a strip of land now or formerly owned by the City of Portland, said strip running southwesterly from the westerly sideline of Westbrook Street, so called, in the City of Portland, County of Cumberland, State of Maine as shown on Standard Boundary Survey of Thomas A. Toye Property, Westbrook Street, Portland, Maine for Toye Realty Holdings LLC, dated November 27, 2000 and recorded in the Cumberland County Registry of Deeds in Plan Book 201, Page 22, being more particularly bounded and described as follows:

Beginning at a 5/8 inch capped iron rebar set on the northwesterly sideline of land now or formerly owned by the City of Portland by a deed dated August 30, 1967 and recorded in said Registry of Deeds in Book 3009, Page 666, said rebar being located N 50°-10'-25" E, a distance of 25.51 feet from a found 1¼ inch iron pipe found 12 inches high;

Thence N 38°-04'-35" W, by and along land now or formerly owned by the City of Portland by a deed dated February 4, 1991 and recorded in said Registry of Deeds in Book 9492, Page 231, a distance of 307.77 feet to a 5/8 inch capped iron rebar set on the southeasterly sideline of land now or formerly owned by the City of Portland by a deed recorded in said Registry of Deeds in Book 13434, Page 266;

Thence N 51°-55'-25" E, by and along said land of the City of Portland, a distance of 287.17 feet to a 5/8 inch capped iron rebar set at the northwesterly corner of land now or formerly owned by Portland Jetport Title Corp. by a deed dated June 10, 1991 and recorded in said Registry of Deeds in Book 9684, Page 257;

Thence S 38°-04'-35" E, by and along said land of Portland Jetport Title Corp., a distance of 299.0 feet to a 5/8 inch capped iron rebar set on the northwesterly sideline of land now or formerly owned by Thomas A. Toye III by a deed dated November 1, 1982 and recorded in said Registry of Deeds in Book 6290, Page 27;

Thence S 50°-10'-25" W, by and along said land of Thomas Toye and land of the City of Portland, a total distance of 287.30 feet to the point of beginning.

This property is subject to any easements of record.

EXCEPTED from the above property is that property conveyed by Toye Realty Holdings III, LLC to the City of Portland, dated November 16, 2001 and recorded in said Registry of Deeds in Book 16971, Page 190.

Meaning and intending to convey and hereby conveying the remaining property described in the Release 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.

TOYT110/1608103

EASEMENTS ON AIRPORT PROPERTY

MAP KEY	GRANTOR	GRANTEE	BOOK/PAGE PLAN NO.	INSTRUMENT	DATE	AREA	REMARKS
E100	STATE OF MAINE	PORTLAND PIPE LINE CORPORATION	3052/765	INDENTURE	08/14/68		
E101	CITY OF PORTLAND	PORTLAND GAS AND LIGHT COMPANY	2462/254	QUIT CLAIM	03/24/59		
E103	CITY OF PORTLAND	PORTLAND WATER DISTRICT	8333/36	EASEMENT	07/09/88		
E104	CITY OF PORTLAND	PORTLAND WATER DISTRICT	2318/11	EASEMENT	10/05/56		
E105	CITY OF PORTLAND	CHAPLIN CORPORATION	2392/289	QUIT CLAIM	01/17/58		DRAINAGE
E106	CITY OF PORTLAND	PORTLAND PIPE LINE COMPANY	1655/221	EASEMENT	10/09/41		
E107	BURTON DENSMORE & GERTRUDE L. DENSMORE	PORTLAND PIPE LINE COMPANY	1646/6	EASEMENT	07/14/41		SEE KEY MAP NO. 36
E108	WALTER C. & ELEANOR JOHNSON NIELSEN, NELLIE R. JOHNSON	PORTLAND PIPE LINE COMPANY	1646/198	EASEMENT	10/03/41		SEE KEY MAP NO. 3
E109	ISSAC FAIRWEATHER	PORTLAND PIPE LINE COMPANY	1646/4	EASEMENT	07/14/41		SEE KEY MAP NO. 18
E110	CITY OF PORTLAND	PORTLAND PIPE LINE CORPORATION	2889/575	EASEMENT	04/20/65		SEE KEY MAP NO. 61, 47, 40, 38 & 45
E111	WILFRED A. HAY, TRUSTEE OF CLINTON C. PHINNEY	SOCONY-VACUUM OIL COMPANY, INC.	1916/392	EASEMENT	07/03/48		SEE KEY MAP NO. 39
E112	FRANK P. CUMMINGS, TRUSTEE OF LEON F. CUMMINGS	SOCONY-VACUUM OIL COMPANY, INC.	1891/137	EASEMENT	12/19/47		SEE MAP KEY NO. 47 (20 FOOT WIDTH)
E113	FRNCIS B. EVANS	SOCONY-VACUUM OIL COMPANY, INC.	1943/446	EASEMENT	01/31/49		SEE KEY MAP NO. 41
E114	CITY OF PORTLAND	PORTLAND WATER DISTRICT	3028/473	INDENTURE	01/31/68		SEE KEY MAP NO. 46
E115	EDWARD S. FINKS AND DOROTHY L. FINKS	PORTLAND WATER DISTRICT	2383/121	WAR. DEED	11/12/57		SEE KEY MAP NO. 25 & 26
E116	CITY OF PORTLAND	PORTLAND WATER DISTRICT	4493/349	EASEMENT	09/14/79		SEE KEY MAP NO. 26 & 27
E117	CITY OF PORTLAND	PORTLAND PIPE LINE CORPORATION	13331/23	EASEMENT	09/10/97		SEE KEY MAP NO. 78
E118	CITY OF PORTLAND	MOBIL PIPE LINE COMPANY	15081/259	INDENTURE	10/01/99		SEE KEY MAP NO. 78
E119	CITY OF PORTLAND	PORTLAND WATER DISTRICT	12451/119	EASEMENT	04/16/96		
E120	CITY OF PORTLAND	CENTRAL MAINE POWER	28512/44	EASEMENT	09/08/10		
E121	CITY OF PORTLAND	CENTRAL MAINE POWER	28512/43	EASEMENT	09/08/10		

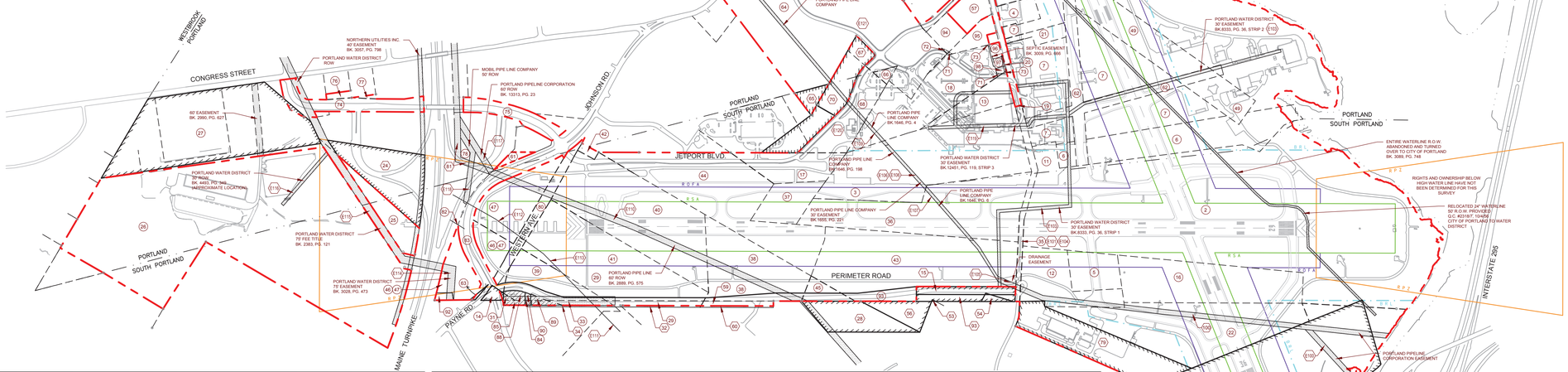
NORTH

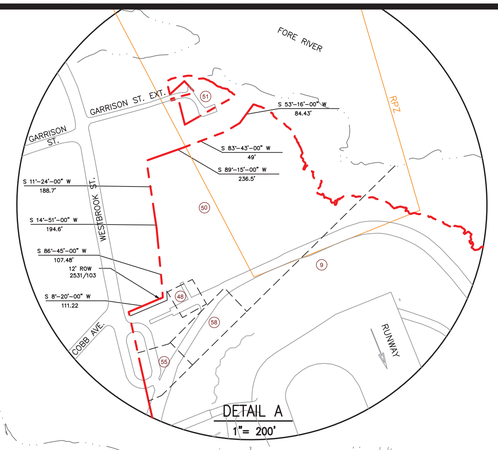
Magnetic Variance
18° 34' West (February 2006)
Annual Rate of Change
00° 6' East (February 2006)

S 14°-51'-00" W

LEGEND

EXISTING	FUTURE	ITEM
		RUNWAY PROTECTION ZONE
		EASEMENT (AVIGATIONAL)
		AIRPORT PROPERTY LINE
		CITY LINE
		BUILDING RESTRICTION LINE (BRL)
		RUNWAY OBSTACLE FREE AREA (ROFA)
		RUNWAY SAFETY AREA (RSA)
		LOT LINES
		RIGHT OF WAY EASEMENTS-UTILITIES
		MEMORANDUM OF AGREEMENT (MOA) FOR ACCESS
XX		PROPERTY PARCEL
XX		EASEMENT PARCEL / MOA AREA





GRAPHIC SCALE
600 0 300 600 1200
1 inch = 600 feet

NOTES:
1. THIS IS AN EXHIBIT A PROPERTY MAP, PART OF THE AIRPORT IMPROVEMENT PROGRAM FEDERAL GRANT APPLICATION. IT IS NOT A BOUNDARY SURVEY. THE PRIMARY INTENT IS TO IDENTIFY ALL LAND WHICH IS DESIGNATED AIRPORT PROPERTY AND TO PROVIDE AN INVENTORY OF ALL PARCELS WHICH MAKE UP THE AIRPORT. PHYSICAL SURVEY OF BOUNDARIES IS GENERALLY NOT REQUIRED. REFER TO AC 150/5100-17. THE BASE PROPERTY LINE INFORMATION FOR THIS EXHIBIT 'A' WAS SOURCED FROM THE BOUNDARY SURVEY FOR THE PORTLAND INTERNATIONAL JETPORT LAST UPDATED JANUARY 26, 2022.
2. THE DESCRIPTION OF PARCEL NO. 10 INCLUDES OTHER AVIGATIONAL EASEMENTS WHICH WERE LATER EXTINGUISHED WHEN THE PARCELS WERE ACQUIRED BY THE CITY OF PORTLAND.
3. PARCEL NO. 49 INCLUDES PORTIONS OF PARCEL NO. 62 WHICH HAD BEEN PREVIOUSLY CONVEYED.
4. "●" INDICATES PARCELS THAT COMPRISE LIMITS OF AP-4 AFFECTED LAND (C.A.A. DOCKET NO. S-904-17-19).
5. FOR PARCELS ACQUIRED UNDER CITY COUNCIL ORDER, DATED JUNE 20, 1955, RECORDED IN THE PORTLAND CITY CLERKS RECORDS IN VOLUME 72, PAGE 256, SEE AFFIDAVIT OF ELIZABETH L. BOYNTON, DATED AUGUST 4, 1997, RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 13265, PAGE 102.
6. REFERENCE IS MADE TO THE EXHIBIT "A" DOCUMENT FOR THE PORTLAND INTERNATIONAL JETPORT ON FILE IN THE TERMINAL AT THE AIRPORT MANAGER'S OFFICE, 1001 WESTBROOK STREET, PORTLAND.

INVENTORY OF PARCELS

MAP KEY	GRANTOR	GRANTEE	INST.	BOOK	PAGE	DATE	Ac.	REMARKS
1 ●	HAROLD SEIDERS	CITY OF PORTLAND	WAR. DEED	1548	80	4/23/38	1.15	PART OF 1 ALSO TAKEN BY CONDEMN. 1532/305
2 ●	HERBERT JACKSON	CITY OF PORTLAND	CONDEMNATION	1634	492	5/2/41	124.4	PARCEL 1 IN 1634/492
3 ●	FAIRWEATHER, NEILSON & LARRABEE	CITY OF PORTLAND	CONDEMNATION	1634	492	5/2/41	28.1	PARCEL 2 IN 1634/492
4 ●	GEORGE W. MILLS	CITY OF PORTLAND	WAR. DEED	1639	63	5/6/41	2.29	PART OF 4 ALSO TAKEN BY CONDEMN. 1532/305
5 ●	STATE OF MAINE	CITY OF PORTLAND	Q.C. DEED	1647	460	7/30/41	4.59	
6 ●	CLIFFORD STRANGE	CITY OF PORTLAND	WAR. DEED	1543	276	3/1/38	15.3	
6 ●	CLIFFORD STRANGE	CITY OF PORTLAND	CONDEMNATION	1532	305	6/30/37	-	
7 ●	PORTLAND CITY AIRPORT	CITY OF PORTLAND	WAR. DEED	1543	277	3/1/38	139.2	
7 ●	PORTLAND CITY AIRPORT	CITY OF PORTLAND	CONDEMNATION	1532	305	6/30/37	-	
8 ●	FLOELLA A. MAXWELL	CITY OF PORTLAND	WAR. DEED	1504	410	9/23/36	2.06	ROAD R.O.W. B 1504 P 409, POLE LINE R.O.W. B 1507, P275
9 ●	MILLIKEN HEIRS & CUMMINGS ESTATE	CITY OF PORTLAND	CONDEMNATION	1634	492	5/2/41	24.05	PARCEL 3 IN 1634/492
10 ●	ROBERT D. JACKSON	CITY OF PORTLAND	EASEMENT	1532	301	6/30/37	-	CONDEMNATION OF AIR RIGHTS
11	CLIFFORD STRANGE	CITY OF PORTLAND	WAR. DEED	1897	140	9/25/47	1.6	FEDERAL PROJECT NO. 9-17-001-702
11	CLIFFORD STRANGE	CITY OF PORTLAND	CONDEMNATION	1880	157	8/5/47	1.6	FEDERAL PROJECT NO. 9-17-001-702
12	STATE OF MAINE	CITY OF PORTLAND	WAR. DEED	2238	63	7/22/55	8.61	FEDERAL PROJECT NO. 9-17-001-508
13	ELEANOR J. NIELSON	CITY OF PORTLAND	WAR. DEED	2361	436	7/9/57	9.60	FEDERAL PROJECT NO. 9-17-001-5811
14	EDNA MAXFIELD	CITY OF PORTLAND	EASEMENT	72	256	6/17/55	-	CONDEMNATION OF AIR RIGHTS, 9-17-001-508
15	MERLE P. CHAPLIN	CITY OF PORTLAND	EASEMENT	72	256	6/17/55	-	CONDEMNATION OF AIR RIGHTS, 9-17-001-508
16	STATE OF MAINE	CITY OF PORTLAND	Q.C. DEED	3028	471	1/24/68	16.5	FEDERAL PROJECT NO. 9-17-001-C916
17	BROOKLAWN MEM. PARK	CITY OF PORTLAND	CONDEMNATION	3007	617	6/19/67	6.3	PARCEL B-3 IN 3007/617, 9-17-001-C916
18	BERTRAM J. FAIRWEATHER	CITY OF PORTLAND	WAR. DEED	3009	666	8/30/67	12.6	FEDERAL PROJECT NO. 9-17-001-C916
18	BERTRAM J. FAIRWEATHER	CITY OF PORTLAND	CONDEMNATION	3007	617	6/19/67	-	SEE PARCEL B-4 IN 3007/617, 9-17-001-C916
19	CUMBERLAND COUNTY COMMISSIONERS	CITY OF PORTLAND	DISCONTINUED	DOCKET	1175	JAN.1957	1.18	CUMBERLAND CO. COMM. RECORDS, 9-17-001-508
20	LLEWELLYN PRESSLEY	CITY OF PORTLAND	EASEMENT	2365	139	7/18/57	792SF	GROWTH RESTRICTION, 9-17-001-5811
21 ●	PORTLAND CITY AIRPORT	CITY OF PORTLAND	Q.C. DEED	1503	216	7/13/36	1.30	
22	STATE OF MAINE	CITY OF PORTLAND	Q.C. DEED	3028	471	1/24/68	24.5	FEDERAL PROJECT NO. 9-17-001-C916
23	STATE OF MAINE	CITY OF PORTLAND	EASEMENT	3028	469	1/24/68	96	EASEMENT FOR UNOBSTRUCTED AIR SPACE 9-17-001-C916
24	HARRY HARMON & GEORGE HUTCHINS	CITY OF PORTLAND	EASEMENT	3010	683	8/31/67	9.2	EASEMENT FOR UNOBSTRUCTED AIR SPACE 9-17-001-C916
24	HARRY HARMON & GEORGE HUTCHINS	CITY OF PORTLAND	EASEMENT	3007	617	6/19/67	2	PARCEL D-1 IN 3007/617, 9-17-001-C916
25	EDWARD S. & DOROTHY L. FINKS	CITY OF PORTLAND	WAR. DEED	2457	262	2/13/59	4.30	FEDERAL PROJECT NO. 9-17-001-5912
26	EDWARD S. & DOROTHY L. FINKS	CITY OF PORTLAND	WAR. DEED	2457	262	2/13/59	86.09	FEDERAL PROJECT NO. 9-17-001-5912
27	CITY OF PORTLAND	W.H. NICHOLS CO.	WAR. DEED	2996	627	4/4/67	28.77	PARCEL SOLD-FAA RELEASE 2/27/67 AVIG. ESMT. RETAINED
28	BERGEN ASSOCIATES INC.	CITY OF PORTLAND	EASEMENT	3007	617	6/19/67	5.62	PARCEL D-1 IN 3007/617, 9-17-001-C916
29	ADC BUILDING FUND INC. et. als.	CITY OF PORTLAND	CONDEMNATION	3007	617	6/19/67	1.01	PARCEL B-2 IN 3007/617, 9-17-001-C916
30	OTIS J. & DOROTHY J. AUGUST	CITY OF PORTLAND	WAR. DEED	3909	306	9/17/76	2.25	6-23-0038-10
31	ADC BUILDING FUND INC.	CITY OF PORTLAND	CONDEMNATION	3007	617	6/19/67	0.11	PARCEL B-6 IN 3007/617, 9-17-001-C916
32	ADC BUILDING FUND INC.	CITY OF PORTLAND	EASEMENT	3007	617	6/17/67	0.28	PARCEL E-2 IN 3007/617, 9-17-001-C916
33	ADC BUILDING FUND INC.	CITY OF PORTLAND	CONDEMNATION	3007	617	6/17/67	1.31	PARCEL B-1 IN 3007/617, 9-17-001-C916
34	ADC BUILDING FUND INC.	CITY OF PORTLAND	EASEMENT	3007	617	6/17/67	0.32	PARCEL E-1 IN 3007/617, 9-17-001-C916
35	CUMBERLAND COUNTY COMMISSIONERS	CITY OF PORTLAND	DISCONTINUED	21	226	1955	2.30	FEDERAL PROJECT NO. 9-17-001-508
36	BURTON DENSMORE	CITY OF PORTLAND	WAR. DEED	2236	399	7/12/55	20	FEDERAL PROJECT NO. 9-17-001-508
36	BURTON DENSMORE	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
37	BROOKLAWN MEM. PARK	CITY OF PORTLAND	WAR. DEED	2257	189	9/13/55	5.22	FEDERAL PROJECT NO. 9-17-001-508
37	BROOKLAWN MEM. PARK	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
38	CLINTON C. PHINNEY & ROBERT D. SCHWARTZ	CITY OF PORTLAND	Q.C. DEED	2255	428/9	11/28/55	15.2	FEDERAL PROJECT NO. 9-17-001-508
38	CLINTON C. PHINNEY & ROBERT D. SCHWARTZ	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
39	CLINTON C. PHINNEY & ROBERT D. SCHWARTZ	CITY OF PORTLAND	Q.C. DEED	2255	428/9	11/28/55	8.03	FEDERAL PROJECT NO. 9-17-001-508
39	CLINTON C. PHINNEY & ROBERT D. SCHWARTZ	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
40	JOHN M. DENSMORE	CITY OF PORTLAND	WAR. DEED	2257	271	10/27/55	49	FEDERAL PROJECT NO. 9-17-001-508
40	JOHN M. DENSMORE	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
41	JOHN M. DENSMORE	CITY OF PORTLAND	WAR. DEED	2257	271	10/27/55	49	FEDERAL PROJECT NO. 9-17-001-508
41	MOBIL PIPE LINE CO.	CITY OF PORTLAND	Q.C. DEED	3051	721	8/1/68	21.8	
41	FRANCIS B. EVANS	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
42	JOHN E. DENSMORE	CITY OF PORTLAND	WAR. DEED	2241	473	8/8/55	0.50	FEDERAL PROJECT NO. 9-17-001-508
42	JOHN E. DENSMORE	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	0.50	FEDERAL PROJECT NO. 9-17-001-508
43	MERLE P. CHAPLIN	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	24.1	FEDERAL PROJECT NO. 9-17-001-508
44	CHRISTIAN KRAGELUND	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	22.9	FEDERAL PROJECT NO. 9-17-001-508

INVENTORY OF PARCELS

MAP KEY	GRANTOR	GRANTEE	INST.	BOOK	PAGE	DATE	Ac.	REMARKS
45	SOUTH PORTLAND GARDENS	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	1.72	FEDERAL PROJECT NO. 9-17-001-508
46	WALTER & STELLA KORZENIEWSKI	CITY OF PORTLAND	WAR. DEED	2279	228	3/5/55	6.80	FEDERAL PROJECT NO. 9-17-001-508
46	WALTER & STELLA KORZENIEWSKI	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
47	FRANK P. CUMMINGS ESTATE	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	10.0	FEDERAL PROJECT NO. 9-17-001-508
48	THOMAS J. JR. & PAT A. FOLEY	CITY OF PORTLAND	WAR. DEED	4040	177	6/22/77	0.23	SEE ACTUAL DESCRIPTION IN 2531/103, 6-23-0038-11
49 ●	PORTLAND CITY AIRPORT	CITY OF PORTLAND	Q.C. DEED	1503	217	10/24/35	19.62	
50	JAMES C. MORRIS (TRUSTEE)	CITY OF PORTLAND	WAR. DEED	3420	256	6/18/73	4.65	
51	KENNETH I. PARKER (PER REP)	CITY OF PORTLAND	WAR. DEED	7715	172	4/7/87	0.5	3-23-0038-19
52	ROBERT D. SCHWARTZ et. al.(TRUSTEE)	CITY OF PORTLAND	EASEMENT	2453	324	1/15/59	-	RIGHT TO ENTER 10' STRIP
53	EDWARD F. GALLAGHER	CITY OF PORTLAND	EASEMENT	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
54	CHAPLIN CORP	CITY OF PORTLAND	EASEMENT	72	256	6/17/55	-	FEDERAL PROJECT NO. 9-17-001-508
55	RAY L. LITTLEFIELD III	CITY OF PORTLAND	WAR. DEED	3894	331	3/14/77	1.0	6-23-0038-11
56	DIAMOND GARDNER CORP	CITY OF PORTLAND	EASEMENT	3007	617	6/19/67	2.6	PARCEL D-18 -3007/617 9-17-001-C916
57	NEVER OWNED BY CITY, PARCEL B-4 IN CONDEMNATION DEED 3007/617 IN ERROR SEE AFFIDAVIT 3458/116							
58	RAY L. & JOLAN L. LITTLEFIELD	CITY OF PORTLAND	WAR. DEED	3550	07	5/24/74	0.60	
59	AIRPORT REALITY CORP.	CITY OF PORTLAND	CONDEMNATION	3007	617	6/19/67	0.82	PARCEL B-8 IN 3007/617, 9-17-001-C916
60	AIRPORT REALITY CORP.	CITY OF PORTLAND	EASEMENT	3007	617	6/19/67	0.25	PARCEL E-3 IN 3007/617, 9-17-001-C916
61	FRANK P. CUMMINGS ESTATE	CITY OF PORTLAND	CONDEMNATION	72	256	6/17/55	3.79	FEDERAL PROJECT NO. 9-17-001-508
62 ●	PORTLAND CITY AIRPORT	CITY OF PORTLAND	WAR. DEED	1465	141	1/23/35	12.8	
63	CITY OF PORTLAND	STATE OF MAINE	CONDEMNATION	11456	276	5/31/94	0.13	
64	BCD AIRPORT PARTNERS	CITY OF PORTLAND	CONDEMNATION	9492	231	3/4/91	45.5	
65	APEX INC.	CITY OF PORTLAND	QUITCLAIM	10203	192	7/8/92	1.06	
65	CITY OF PORTLAND	BROOKLAWN MEM. PARK	Q.C. W/COVEN	13400	006	10/23/97	1.06	PART OF 64
65	BROOKLAWN MEMORIAL PARK	CITY OF PORTLAND	AVIG. ESMT	13395	309	10/24/97	1.06	
66	APEX INC.	CITY OF PORTLAND	QUITCLAIM	10203	192	7/8/92	0.32	
67	CITY OF PORTLAND	BROOKLAWN MEM. PARK	Q.C. W/COVEN	13400	006	10/23/97	0.94	PART OF 64
67	BROOKLAWN MEMORIAL PARK	CITY OF PORTLAND	AVIG. ESMT.	13395	309	10/16/97	0.94	
68	BROOKLAWN MEMORIAL PARK	CITY OF PORTLAND	Q.C. W/COVEN	13395	305	10/16/97	7.48	3-23-0038-36 SUBJ. TO DRAINAGE ESMT BK. 8272, PG. 208
69	THOMAS A. TOYE, III	CITY OF PORTLAND	Q.C. W/COVEN	13434	266	10/16/97	1.28	
70	BROOKLAWN MEMORIAL PARK	CITY OF PORTLAND	AVIG. ESMT.	13395	309	10/24/97	6.23	
71	TOYE AIRPORT PARK LLC	CITY OF PORTLAND	WAR. DEED	16971	184	11/19/01	0.06	
72	TOYE REALTY HOLDINGS LLC	CITY OF PORTLAND	Q.C. W/COVEN	16971	190	11/19/01	0.03	
73	CITY OF PORTLAND	TOYE AIRPORT PARK LLC	QUITCLAIM	16971	193	11/19/01	0.02	
74	MAINE TURNPIKE AUTHORITY	CITY OF PORTLAND	Q.C. W/COVEN	21040	64	3/31/04	5.14	SUBJECT TO ALL EASEMENTS OF RECORD
75	MAINE TURNPIKE AUTHORITY	CITY OF PORTLAND	Q.C. W/COVEN	21040	64	3/31/04	3.47	SUBJECT TO ALL EASEMENTS OF RECORD
76	MAINE TURNPIKE AUTHORITY	CITY OF PORTLAND	Q.C. W/COVEN	21040	74	3/31/04	0.37	
77	MAINE TURNPIKE AUTHORITY	CITY OF PORTLAND	Q.C. W/COVEN	21040	74	3/31/04	0.13	
78	CITY OF PORTLAND	MAINE TURNPIKE AUTHORITY	Q.C. W/COVEN	21040	60	3/31/04	4.95	ACQUIRED UNDER FAAP 508, FAA APPROVED RELEASE ON 3-26-02
79	STATE OF MAINE	CITY OF PORTLAND	RELEASE DEED	17126	328	12/28/01	70.4	ACQUIRED AIP 3-23-0038-54
79	STATE OF MAINE	CITY OF PORTLAND	AVIG. ESMT.	17126	332	12/26/01		ACQUIRED AIP 3-23-0038-54
80	STATE OF MAINE	CITY OF PORTLAND	VACATION	19510	56	6/06/03	-	VACATION OF JOHNSON ROAD/WESTERN AVENUE, LAND SWAP
81	PORTLAND PIPE LINE CORPORATION	CITY OF PORTLAND	RELEASE	14138	238	9/10/98		RELEASE OF EASEMENT WITH COVENANT
82	MOBIL PIPE LINE COMPANY	CITY OF PORTLAND	RELEASE	15081	274	10/01/99		RELEASE OF EASEMENT WITH COVENANT
83	CITY OF PORTLAND	STATE OF MAINE	CONDEMNATION	15801	296	10/24/00	5.91	JOHNSON ROAD/WESTERN AVENUE RELOCATION, LAND SWAP
84	CITY OF SOUTH PORTLAND	CITY OF PORTLAND	RELEASE	23141	42	8/01/05	2.32	ORIGINAL DEED 4940/8, FAA RELEASE 4-23-82 BK 4947 PG.32
85	CITY OF SOUTH PORTLAND		CITY COUNCIL ORDER	23154	238	9/15/05		DISCONTINUANCE OF A PORTION OF JETPORT PLAZA ROAD (290')
86	CITY OF PORTLAND	STATE OF MAINE	CONDEMNATION	24337	300	9/05/06	1.44	LAND SWAP RUNWAY 36 APPROACH / FAA APPROVAL 3-1-07
87	STATE OF MAINE	CITY OF PORTLAND	CONDEMNATION	24337	303	9/05/06	1.44	LAND SWAP RUNWAY 36 APPROACH
88	JETPORT PROPERTIES, LLC	CITY OF PORTLAND	LEASE.	25698	194	12/07/07	0.77	LEASE / FAA APPROVAL 6-11-08
89	JETPORT PROPERTIES, LLC	CITY OF PORTLAND	LEASE	25698	194	12/07/07	0.40	LEASE / FAA APPROVAL 6-11-08
90	CITY OF PORTLAND	CITY OF PORTLAND	EASEMENT	25698	194	12/07/07	0.16	RIGHT-OF-WAY
91	STATE OF MAINE	CITY OF PORTLAND	MOA	-	-	7/01/11	0.44	OBSTRUCTION REMOVAL MEMORANDUM OF AGREEMENT FOR ACCESS
92	CITY OF PORTLAND	DULUTH HOLDINGS, INC.	LEASE (15 YEAR)	-	-	7/16/18	0.30	FAA APPROVAL BY LETTER DATED 2-23-18 FOR LAND USE CHANGE FROM AERONAUTICAL TO NON-AERONAUTICAL USE
93	CITY OF PORTLAND	CITY OF SOUTH PORTLAND	EASEMENT	23141	44	12/12/05	8.70	SUBJECT TO ALL EASEMENTS OF RECORD
94	CITY OF PORTLAND	TOYE REALTY HOLDINGS III, LLC	Q.C. W/COVEN	38899	127	11/16/21	2.00	TM 210A, BLK A, LOT 6
95	CITY OF PORTLAND	TOYE AIRPORT PARK, LLC	Q.C. W/COVEN	38899	51	11/16/21	1.78	PARCEL FOUR (TM 210A, BLK A, LOT 2)
96	CITY OF PORTLAND	TOYE AIRPORT PARK, LLC	Q.C. W/COVEN	38899	52	11/16/21	0.34	PARCEL THREE (TM 208, BLK A, LOT 5)
97	CITY OF PORTLAND	TOYE AIRPORT PARK, LLC	Q.C. W/COVEN	38899	53	11/16/21	0.23	PARCEL TWO (TM 208, BLK A, LOT 7)
98	CITY OF PORTLAND	TOYE AIRPORT PARK, LLC	Q.C. W/COVEN	38899	50	11/16/21	0.16	PARCEL ONE (TM 208, BLK A, LOT 6)

REV	DESCRIPTION	DATE	BY	APP'D
8	ADDED MAP KEY PARCELS 94 THRU 98 AND ADJUSTED OIL PIPELINE EASEMENT	03.11.22	LA	DDA
7	MAP KEY PARCEL # 92 ADDED 2-23-18 FAA APPROVAL DATE FOR NON AERONAUTICAL USE	04.17.19	LA	DDA
6	ADDED ILS CRITICAL AREAS TO ALP AND RE-POSTED WITH EXHIBIT A TO FAA OEAAA	09.27.18	LA	DDA
5	SUBMITTED TO CITY WITH FINAL MASTER PLAN DOCUMENT	07.09.18	LA	DDA
4	POSTED ALP SET TO FAA OEAAA STUDY #2018-ANE-22-NRA	01.12.18	LA	DDA
3	SUBMITTED TO FAA FOR APPROVAL	11.29.17	LA	DDA
2	ISSUED DRAFT ALP TO CITY AND FAA	11.17.16	LA	DDA
1	SUBMITTED TO CLIENT FOR REVIEW	07.26.16	LA	DDA

REVISIONS

THE CONTENTS OF THIS PLAN DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS DOCUMENT BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

APPROVAL BLOCK
City of Portland, Maine

Paul Bradbury 03/11/2022

PORTLAND INTERNATIONAL JETPORT

EXHIBIT 'A'

PORTLAND, MAINE

Stantec Consulting Services Inc.
482 Payne Road
Scarborough, ME
Tel. 207.883.3355
WWW.STANTEC.COM

PLANNED BY: Dwight Anderson / Amie Gray / Steve Benson
DETAILED BY: Lori Anthony
APPROVED BY: Dwight Anderson
FILE NAME: STANTEC-EXHIBIT_A

March 2022 SHEET EXHIBIT 'A'

Coffman Associates
Airport Consultants

\\US0261-PPFSS01\workgroup\1953\inactive\fstr\Jetport\MASTER FILES\PROPERTY EXHIBIT\stantec-exhibit_a.dwg lranthony 3/11/2022 12:06 PM

Zone Related Design Standards 14-14.6.4 (I)

Not applicable.

The proposed project has been designed in accordance with the City Technical Manual and the airport master plan.

Please see the plan set.

Evidence of State or Federal Approvals

The proposed project will require permits from the Maine Department of Environmental Protection and the Army Corps of Engineers. Applications were submitted to the Maine Department of Environmental Protection and the Army Corps of Engineers for review on February 29, 2024. Proof of approvals will be forwarded upon receipt.

Att. D1

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW ENGLAND DISTRICT
NEW ENGLAND DISTRICT OFFICE
696 VIRGINIA ROAD
CONCORD MASSACHUSETTS 01742-2751

August 14, 2024

Regulatory Division
Maine Section
File No. NAE-2008-00053

Paul Bradbury
City of Portland
1001 Westbrook Street
Portland, ME 04102
Via Email: phb@portlandmaine.gov

Dear Mr. Bradbury:

This letter is in response to the application you submitted to the New England District on February 28, 2024 for a Department of the Army general permit verification. This project has been assigned the file number NAE-2008-00053. This file number should be referenced in all correspondence with this office.

A review of the information provided indicates the proposed work to discharge 11,151 square feet (SF) (0.256 acre) of fill into freshwater wetlands in association with improvements to existing parking areas in addition to the construction of the Portland International Jetport surface parking expansion. The project is located in unnamed wetlands; at Jetport Blvd and International Pkwy, at Latitude 43.644120º and Longitude -70.303260º; in Portland, Cumberland County, Maine. The work is shown on the enclosed plans titled “PWM Parking Expansion”, on 2 sheets, and dated 2/29/2024.

Based on the information you have provided; we verify that the activity is authorized under General Permit #08 of the 2020-2025, Federal Permit known as the Maine General Permits (GPs). If the extent of the project area and/or nature of the authorized impacts to waters are modified, a revised application must be submitted to this office for written approval before work is initiated. A copy of these permits can be found at: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/

Any deviation from the terms and conditions of the permit, or your submitted plans, may subject the permittee to the enforcement provisions of our regulations. Therefore, in the event changes to this project are contemplated, it is recommended you coordinate with this office prior to proceeding with the work. This office must approve any changes before you undertake them. You must perform this work in compliance with the terms and conditions of the GPs listed above, as well as:

1. The permittee shall complete and return the enclosed Work-Start Notification Form to this office at least two weeks prior to the anticipated construction start date.

2. The permittee shall complete and return the enclosed Completion Certification Form to this office at least one month following the completion of the authorized work.

3. You must maintain the activity herein in good condition and in conformance with the terms and conditions of this authorization. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with a General Condition of this GPs. Should you wish to cease to maintain the authorized activities, or should you desire to abandon it without a good faith transfer, you must obtain a modification of this authorization from this office, which may require restoration of the area.

You must also perform the work in compliance with the following special conditions:

Project-specific Special Conditions:

1. Compensatory mitigation shall consist of purchasing 0.26 In-Lieu-Fee (ILF) credits from the Maine Natural Resource Conservation Fund. The current cost to purchase these credits can be found at the following Maine DEP web page: https://www.maine.gov/dep/land/nrpa/ILF_and_NRCP/ILF/fs-in-lieu-fee.pdf. The in-lieu fee amount is subject to change yearly and the exact cost is dependent on the date of purchase. The permittee must send a cashier's check or bank draft for the credit amount, as calculated on the enclosed "In Lieu Fee (ILF) Project Impact Worksheet" to: ME DEP, Attn: ILF Program Administrator, State House Station 17, Augusta, ME 04333. The check must include the Corps file number "NAE-2008-00053" and the statement: "For ILF account only". **No impacts authorized by this permit shall begin until ILF credits are purchased**, and the Corps receives a copy of the letter from the Maine Department of Environmental Protection (ME DEP) to the permittee stating that the ME DEP has received the check and accepts responsibility for mitigation.

This authorization expires on October 14, 2025. You must commence or have under contract to commence the work authorized herein by October 14, 2025, and complete the work by October 14, 2026. If not, you must contact this office to determine the need for further authorization and we recommend you contact us before the work authorized herein expires. Please contact us immediately if you change the plans or construction methods for work within our jurisdiction as we must approve any changes before you undertake them. Performing work within our jurisdiction that is not specifically authorized by this determination or failing to comply with the special condition(s)

provided above or all of the terms and conditions of the GPs may subject you to the enforcement provisions of our regulations.

This general permit verification and any associated authorizations does not preclude the necessity to obtain any other Federal, State, or local permits, licenses, and/or certifications, which may be required.

If you have any questions related to this verification or have issues accessing documents referenced in this letter, please contact Zachary Normile, Project Manager at 978-318-8916, or by email at zachary.normile@usace.army.mil. This agency continually strives to improve our customer service. In order to better serve you, please complete the Customer Service Survey located at: https://regulatory.ops.usace.army.mil/customer-service-survey/.

Sincerely,



Ryan Malterud
Deputy Chief
Regulatory Division

Enclosures

Cc (w/enclosures):
Owen McCullough, Sebago Technics, Inc. (via omccullough@sebagotechnics.com)
Dawn Hallowell, ME DEP (via Dawn.Hallowell@maine.gov)
Mary York, ME DEP (via marylisa.york@maine.gov)
Mike Marsh, US EPA (via Marsh.mike@epa.gov)

Work-Start Notification Form

File Number: NAE-2008-00053 State: Maine County: Cumberland

Permittee: City of Portland, Paul Bradbury
Date Verification Issued: 8/14/2024
Project Manager: Zachary Normile

At least two weeks prior to commencing the activity authorized by this permit, sign this certification and return it to the following address:

US ARMY CORPS OF ENGINEERS
New England District
Attn: Zachary Normile
442 Civic Center Dr Suite 350
Augusta, Maine 04330
or
zachary.normile@usace.army.mil
978-318-8916

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers (USACE) representative. Failure to comply with any terms or conditions of this authorization may result in the USACE suspending, modifying or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.

The people (e.g. contractor) listed below will do the work, and they understand the permit's conditions and limitations.

Contractor Name/Contractor Firm: _____
Business Address: _____
_____
Contractor Phone and Email: _____

Proposed Construction Dates: Start: _____ Finish: _____

_____ _____
Signature of Permittee Date

Compliance Certification Form

File Number: NAE-2008-00053 State: Maine County: Cumberland

Permittee: City of Portland, Paul Bradbury
Date Verification Issued: 8/14/2024
Project Manager: Zachary Normile

Within one month of completion of the activity authorized by this permit and any mitigation required by the permit (you must submit this form after mitigation is complete, but not the mitigation monitoring, which requires separate submittals), sign this certification and return it to the following address:

US ARMY CORPS OF ENGINEERS
New England District
Attn: Zachary Normile
442 Civic Center Dr Suite 350
Augusta, Maine 04330
or
zachary.normile@usace.army.mil

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers (USACE) representative. Failure to comply with any terms or conditions of this authorization may result in the USACE suspending, modifying, or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.

I hereby certify that the work, and mitigation (if applicable), authorized by the above referenced permit has been completed in accordance with the terms and conditions of the said permit including any general or specific conditions.

Date Authorized Work Started: _____ Completed: _____

Describe any deviations from permit (attach drawing(s) depicting the deviations):

_____

_____

***Note: The description of any deviations on this form does not constitute approval by the USACE.**

_____ _____

Signature of Permittee **Date**

MAINE IN-LIEU-FEE (ILF)
PROJECT IMPACT WORKSHEET

DEP Invoice #: *Filled in by ILF Administrator in Augusta*

Project Name: Portland Jetport – Parking

Permittee(s): City of Portland

DEP Permit #: Issued Date: *Attach a copy of DEP Permit*

Corp Permit #: NAE-2008-00053 Issued Date: *Attach a copy of Corp Permit*

DEP/Corps Project Managers: Corps-Zachary Normile

Project Address: Jetport Blvd and International Pkwy, Portland, Maine

Biophysical Region – Section: Southern Maine

Biophysical Region – Subsection: Gulf of Maine Coastal Lowlands

ILF Credits (credits to be purchased): 0.26

Credit Calculations (see examples below): $261,795.60 (1 ac ILF Cumberland Co) * 0.26 wetland credit = $68,066.86

Check Date: Check Amount:

Resource Types (list all that apply, separate line for each resource)	**Types of Impacts** (list all that apply, by resource type)	**SF Impacted** (by resource type)	**Multiplier or Reduction** (if none, use 1 or N/A)	**Credit Required** (including multipliers & reductions)	**Linear FT of Streams Impacted** (for Corps use)
PFO	Fill	11,151	1	0.26	0
	Total SF Impacts:		**Total Credits:**		

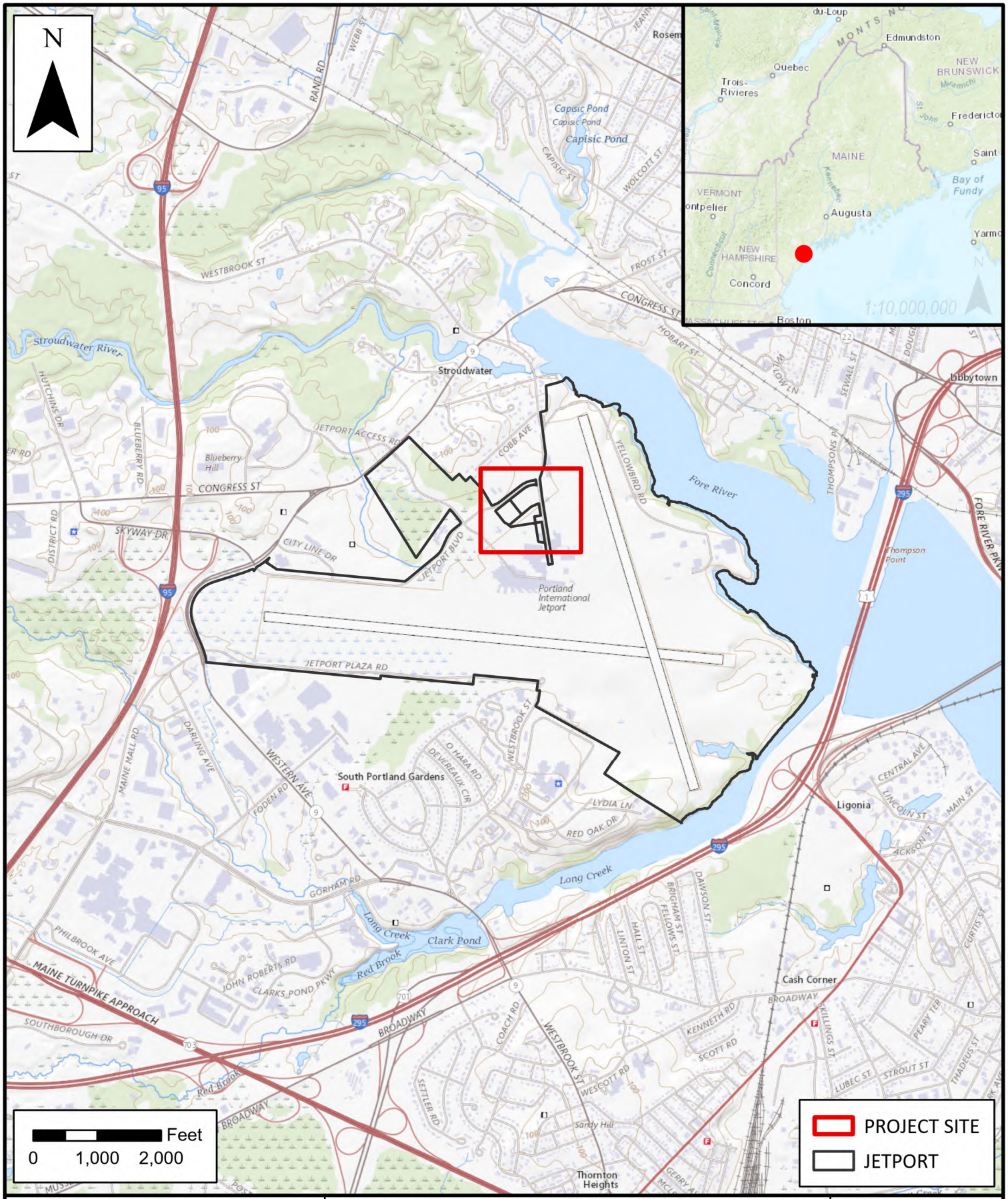
Resource Types: Wetlands by NWI Type (PEM, PFO, PSS, PUB, M1, M2, E1, E2, M1AB3*, etc.), significant vernal pool depression (SVP), significant vernal pool critical terrestrial habitat (VPCTH), shorebird feeding & staging habitat (shorebird), inland waterfowl & wading bird habitat (IWWH), Tidal waterfowl & wading bird habitat (TWWH), lake or pond (L1, L2), river/stream/brook (RSB)

Types of Impacts: May include filling, dredging, vegetation conversion (e.g. forested to shrub/scrub), excavation with associated discharge, etc.

Credit Calculation examples: 1 credit = 1 acre (43,560 sq ft)

- For US Army Corps permit use Current ILF Fact Sheet effective at the time of payment. (See example below)
- If no US Army Corps permit is required and DEP specified a ILF amount in the permit, pay that amount.
- IF both US Army Corps permit and DEP permit are required, pay the higher of the two fees (the one specified in DEP permit or the one calculated according to the steps below based on the number of credits to be purchased).

Example 1: mitigation requirement for a project in Kennebec County = 0.5 credits
Step 1: 1 acre ILF in Kennebec County = $228,690.00
Step 2: Multiply credit requirement per acre cost
228690 x 0.5 = $114,345.00
Example 2: Mitigation requirement for a project in Cumberland County = 0.154 credits
Step 1: 1 acre ILF in Cumberland County = $261,795.60
Step 2: Multiply credit requirement per acre cost
261795.60 x 0.154 = $40,316.52



SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. - Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

LOCATION MAP

JETPORT PARKING

SCALE: 1:24,000

DATE: 2/29/2024

LOCATION:
1001 WESTBROOK ST
PORTLAND, ME

INFORMATION:
MAINE GEOLIBRARY
USGS QUADRANGLE

PROPOSED WETLAND IMPACT: 5,812 SF

PROPOSED WETLAND IMPACT: 2,806 SF

PROPOSED WETLAND IMPACT: 791 SF
(PREVIOUSLY PERMITTED BUT NOT IMPACTED WETLAND, L-26841-TC-A-N)

PREVIOUSLY PERMITTED AND IMPACTED WETLAND
(L-26841-TC-A-N)

PROPOSED WETLAND IMPACT: 1,742 SF

JETPORT BLVD.

INTERNATIONAL PKWY.

AVIS RENTAL

EMBASSY SUITES

LONG TERM PARKING

JETPORT ACCESS ROAD

PARKING GARAGE

PARK 'N JET

PWM PARK AND SHINE

WEST BOOTH ST.

TP 1 TP 2 TP 3 TP 4 TP 5 TP 6 TP 7 TP 8 TP 9 TP 10 TP 11 TP 12 TP 13 TP 14 TP 15 TP 16 TP 17 TP 18 TP 19 TP 20 TP 21 TP 22 TP 23 TP 24 TP 25 TP 29 TP 31

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

PAUL D. OSTROWSKI PE 11175

AMY BELL SEGAL, RLA 2265

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
07/08/2024

REV.	BY	DATE:	STATUS
C	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B	PDO	03/19/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS AUTHORIZED BY OTHERS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

OVERALL GRADING PLAN

OF:

PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:

PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET C-200

F:\Projects\19000\19059\DWG\Design\19059 G.dwg, 7/8/2024 4:02 PM, TANNER F. GODDINE

19059 G.dwg, TAB:C-200 Overall Grading

Att. DD

SEBAGO TECHNICS

Neighborhood Meeting Sign-In Sheet

April 11, 2024

Proposed Parking Expansion at the Portland Jetport
Major Site Plan Review

Applicant and Design Team in Attendance

Name	E-mail
1. Owens McCullough, Sebago Technics	omccullough@sebagotechnics.com
2. Tanner F. Goodine, EI – Sebago Technics	tgoodine@sebagotechnics.com
3. Cole Peters	cpeters@sebagotechnics.com
4. Paul Bradbury - Portland Int'l Jetport (PWM)	phb@portlandmaine.gov
5. Amy Bell Segal - Sebago Technics	absegal@sebagotechnics.com
6.	
7.	

Members of the Public in Attendance

NAME	Address	E-mail
JIM IOVINE	30 PORTLAND	PORTLANDNATIVE@MAINE
FRED FALLER	1443 Westbrook St.	FFaller@Verizon.net
Ellen Faller	1443 Westbrook St	efaller@verizon.net
Jen Stenberg	25 Stroudwater Rd	jensten.88@gmail.com
LORETTA EDES	127 FENWAY ST	LORETTA.ALLEN.EDES@GMAIL.COM
WILLIAM EDES	"	N/A
Angela Wheaton	30 Partridge	AngelaJWheaton@yahoo.com
Brewster Harding	1168 Westbrook St	brewsterharding@gmail.com
Barry Pano	37 Tide Mill	barryf@pano.com
Dolores Testa	50 Cobb Ave	doloalladee@gmail.com
Martha Cleary	37 Cobb Ave	marthacleary207@gmail.com
Woody Howard	28 Roundabout Lane	g.bwoodye aol.com

NAME	Address	E-mail
Karen Sabasteanski	1221 Westbrook	KS histrat@gmail.com
Anne Taintor	1258 Westbrook St	annemtaintor@gmail.com
Nathan Janoff	1256 Westbrook St	njanoff45@gmail.com
Harmony Renna	96 Cobb Ave	harmonynella@hotmail.com
Tom Ainsworth	12 Garrison St	Tainsworth207@gmail.com
Amanda Scrivani	22 Trailhead Way	a.scrivani@gmail.com
David Roberts	22 Trailhead Way	David.Roberts.maine@gmail.com
MARIS OKRENT	17 GARRISON ST	MOKRENT@BTOL.EDU
CHARLOTTE WITT	17 GARRISON ST.	CHARLOTTE.WITT@UNH.EDU
Katherine Moncure	1169 Westbrook St.	kpmoncure@gmail.com
Eugenie de Rham	1810 Congress St	epderham@gmail.com
William de Rham	1810 Congress St	ederham@maine.rr.com
JIM WILBERG	44 TIDE MILL RD	jwwilberg@gmail.com
Nancy Dano	35 Tide Mill Rd	nancy@dano.com

NAME	Address	E-mail

Portland, Maine Yes. Life's good here.

Planning & Urban Development Department

ZONING ANALYSIS Relevant Zone(s) AB Airport

All Projects:

	Required	Proposed
Lot Size	20,000 sf	n/a
Area Per Dwelling Unit	---	n/a
Minimum Street Frontage	50 ft	n/a
Front Yard Minimum	---	n/a
Front Yard Maximum	---	n/a
Rear Yard	---	n/a
Yard Right	---	n/a
Yard Left	---	n/a
Side Street Setback	---	n/a
Step Back	---	n/a
Maximum Lot Coverage	---	n/a
Minimum Lot Coverage	---	n/a
Maximum Height	75ft/45ft	n/a
Open Space	---	n/a
Maximum Impervious Area	70%	48%
Pavement Setback	---	n/a
Floor Area Ratio	na	none
Off Street Parking Spaces	---	282 net increase
Loading Bays	na	none
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):			

Att. EE

PWM Public Informational Meeting Proposed Parking Expansion

April 11, 2024 at 6:00 pm



PWM Portland International Jetport | Maine's Home Airport.

Agenda

- Welcome – Paul Bradbury
- Air Service Trends at PWM – Paul Bradbury
- Proposed Parking Project Review – Paul Bradbury & Owens McCollough, Sebago Technics
- Questions & Answers
- Close





AT A GLANCE

American Airlines

Breeze

DELTA AIR LINES

jetBlue AIRWAYS

FRONTIER AIRLINES

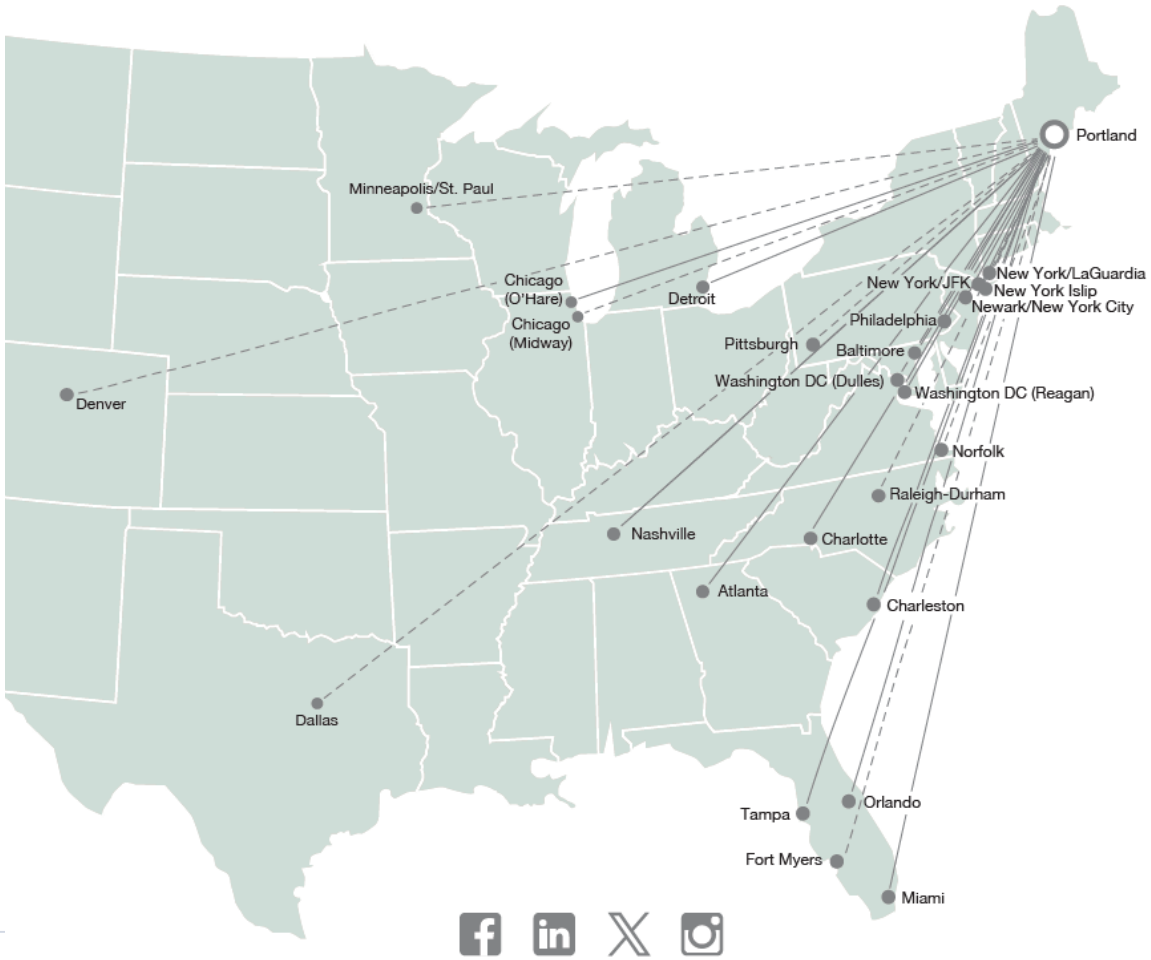
Southwest

sun country airlines

UNITED

FedEx

NON-STOP DESTINATIONS



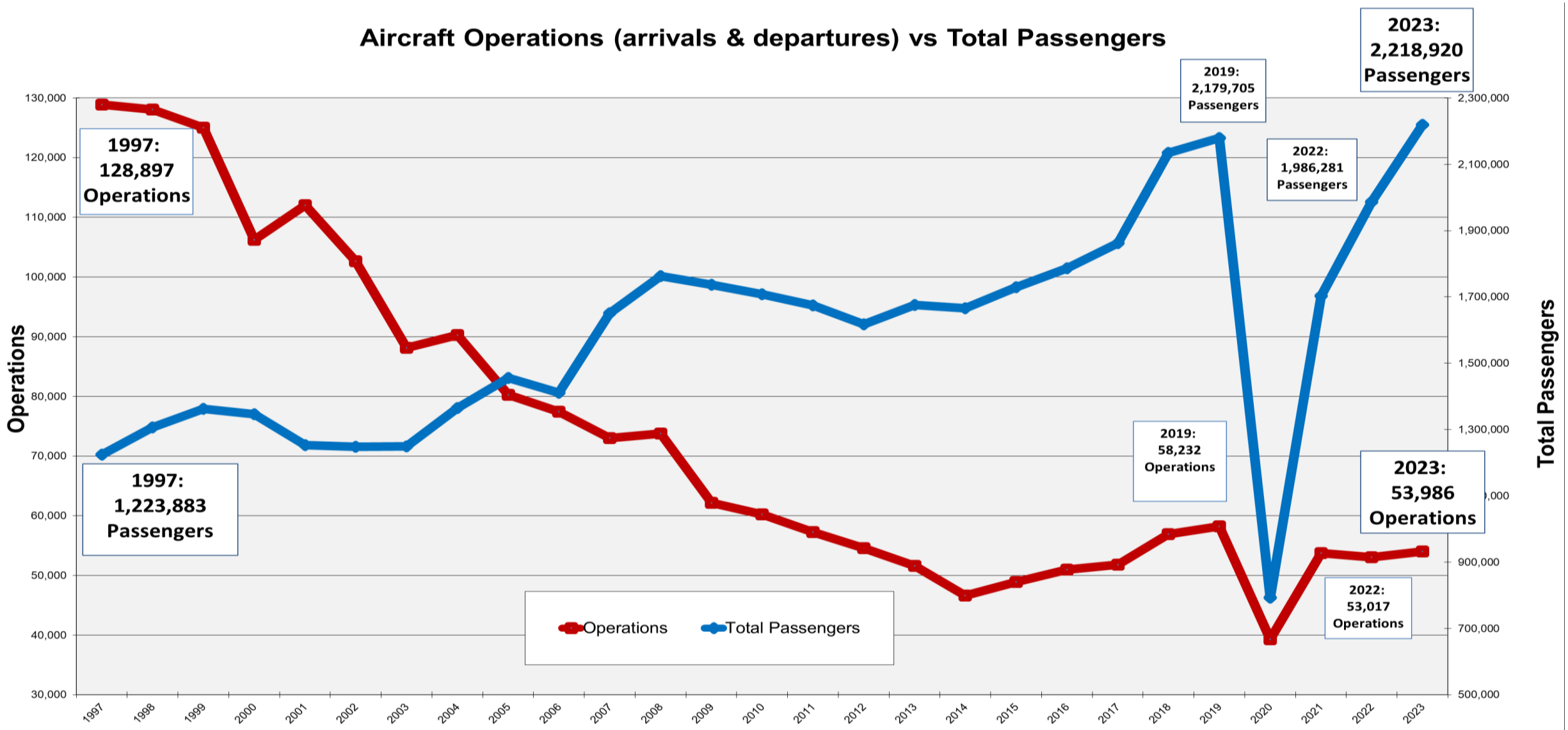
Seasonal Flights

NON-STOP SERVICE

*Seasonal Service

Atlanta	DELTA
Baltimore/Washington	Southwest
Charleston	Breeze
Charlotte	American Airlines
Chicago Midway	*Southwest
Chicago O'Hare	American Airlines, UNITED
Dallas	*American Airlines
Denver	*UNITED
Detroit	DELTA
Fort Myers	*Breeze
Miami	*American Airlines
Minneapolis/St. Paul	*DELTA, *suncountry airlines
Nashville	Southwest
Newark/New York City	UNITED
New York Islip	*Breeze
New York/JFK	*jetBlue, DELTA
New York/LaGuardia	American Airlines, DELTA
Norfolk	*Breeze
Orlando	FRONTIER, Breeze
Philadelphia	American Airlines
Pittsburgh	*Breeze
Raleigh-Durham	*FRONTIER
Tampa	Breeze
Washington Dulles	UNITED
Washington Reagan	American Airlines

PWM Air Service Trends



From 1997 to 2019 operations are down 54.8% and total passengers are up 78.1%.

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- ERJ 140: 44 seats
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Average seats per flight:
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What Changed?

2023 Aircraft:

- E-145: 50 seats
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- A320: 150 seats
- A320neo: 186 seats
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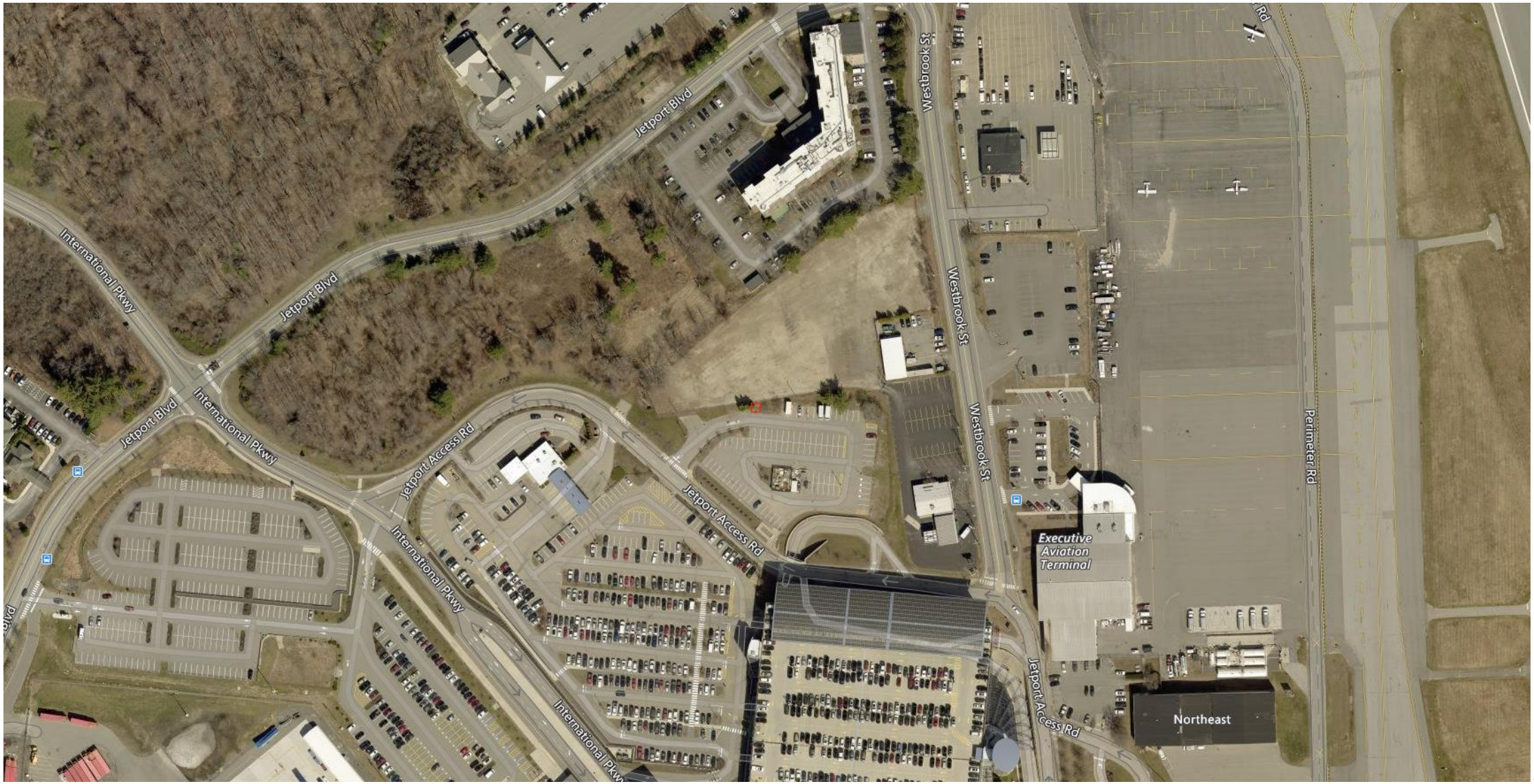
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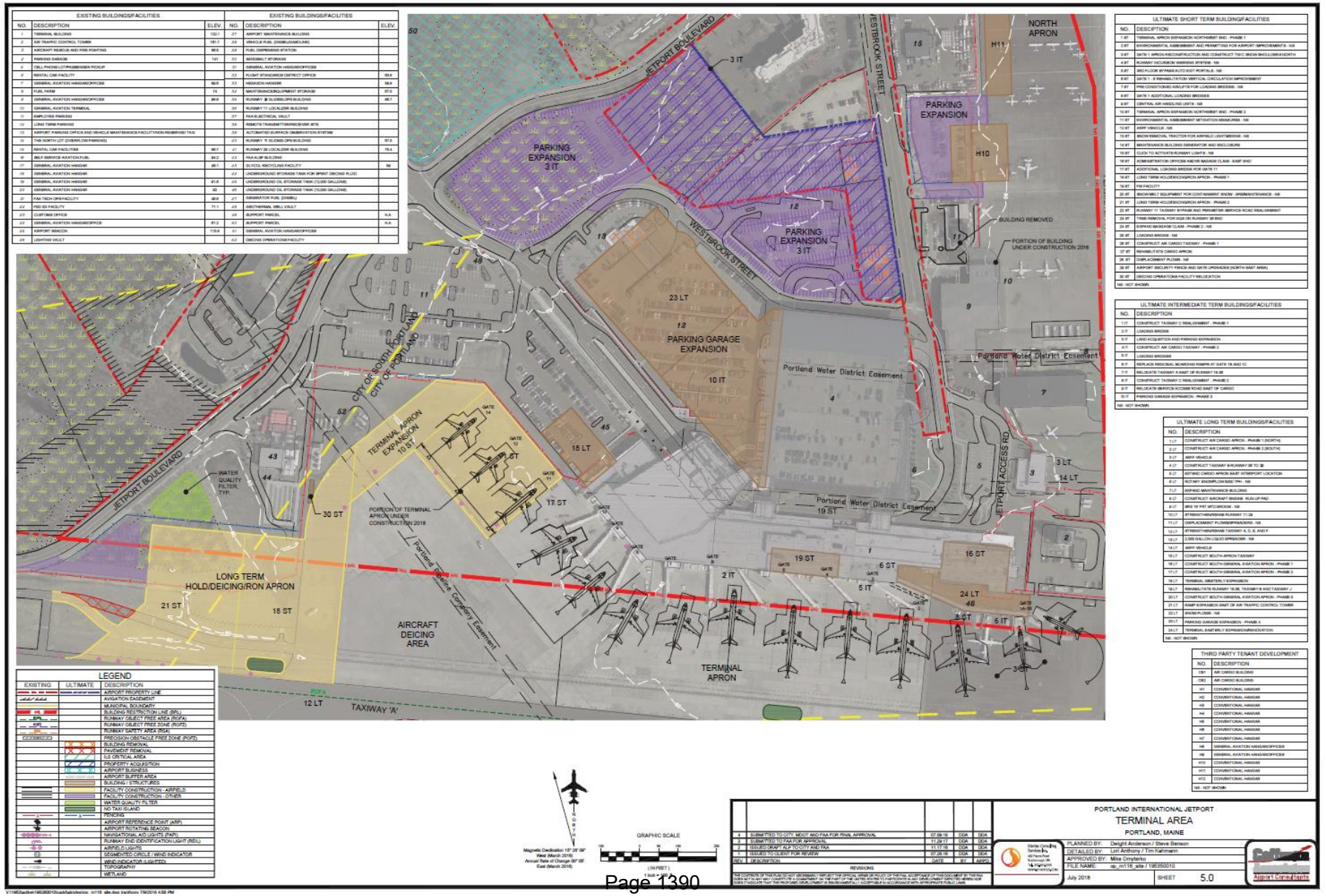




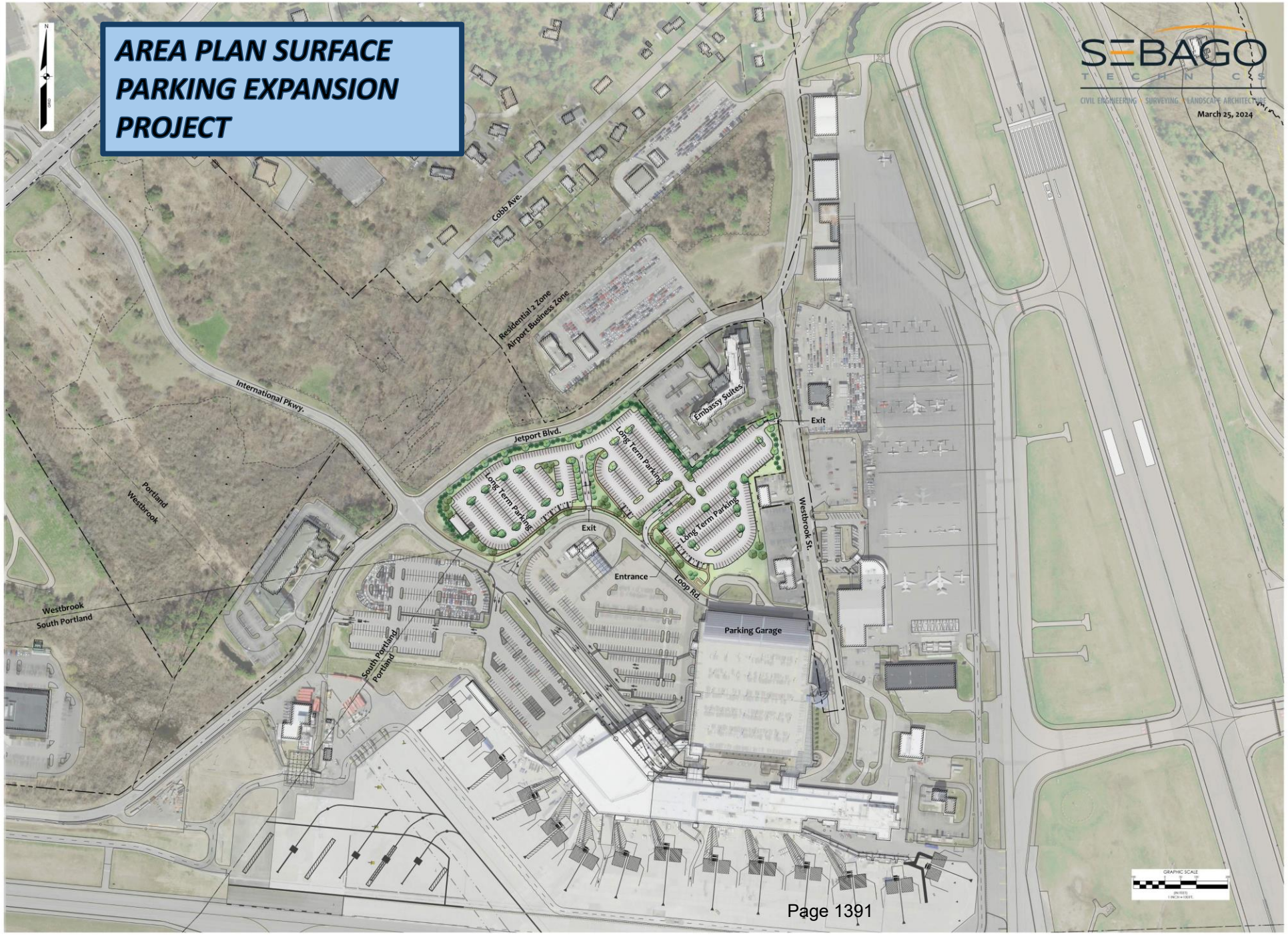
Proposed Parking Project



Proposed Parking Project



AREA PLAN SURFACE PARKING EXPANSION PROJECT



Portland International Jetport | Maine's Home Airport.

- *Two-Paved Parking Lots*
- *Reconfigures Existing Parking Lots and New Parking Lot Construction*
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- *Current Total Long -Term Parking: 3,223*
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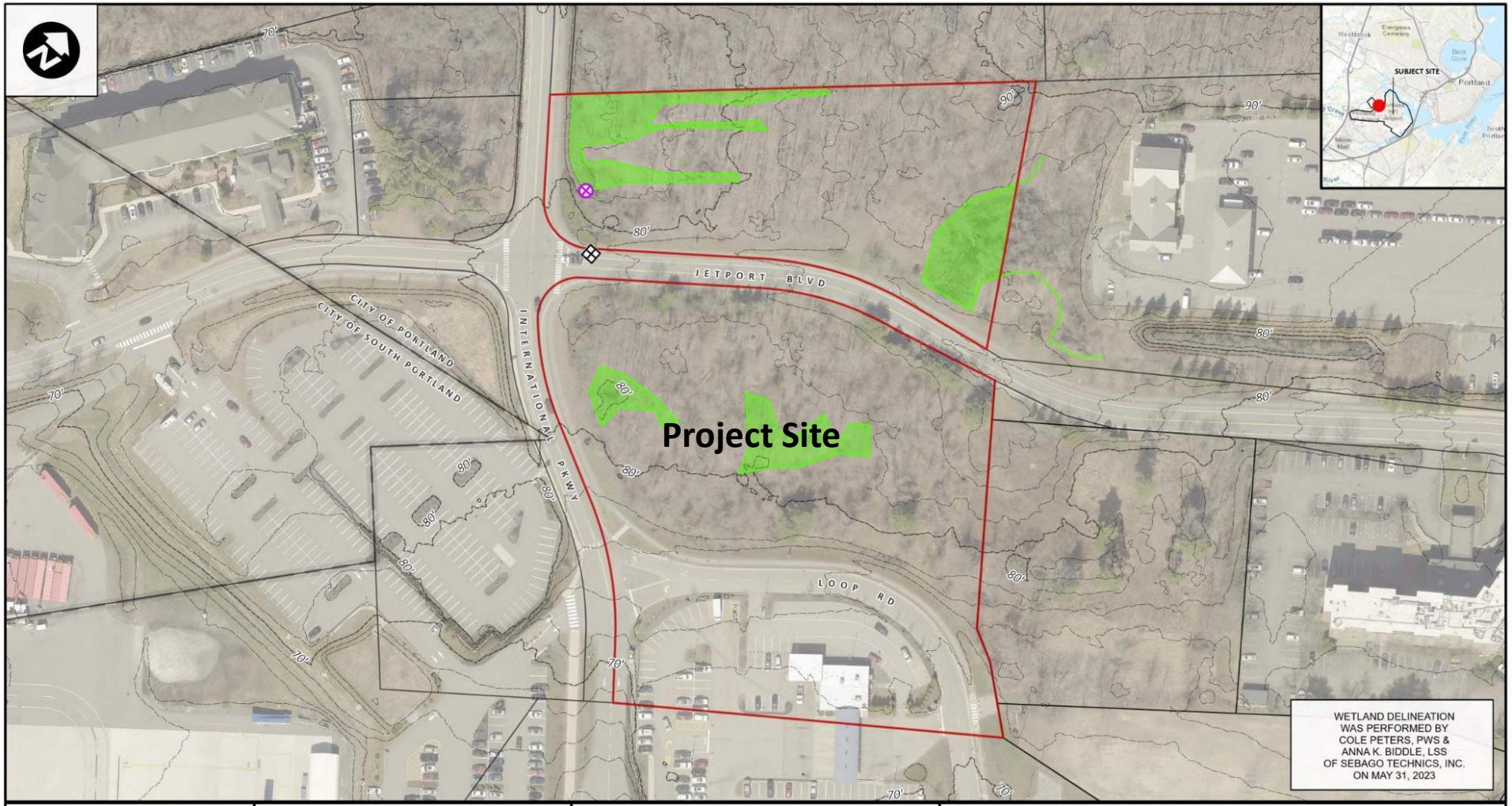


PWM Portland International Jetport | Maine's Home Airport.

SURFACE PARKING EXPANSION PROJECT

- PARKING PLAN

Wetland Mapping



SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd. - Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

0 100 200 300
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INFORMATION: MAINE GEOLIBRARY
2020 USGS LIDAR TOPOGRAPHY
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FIGURE 1: NATURAL RESOURCES MAP

TAX MAP 210A, LOTS B-1 & A-7

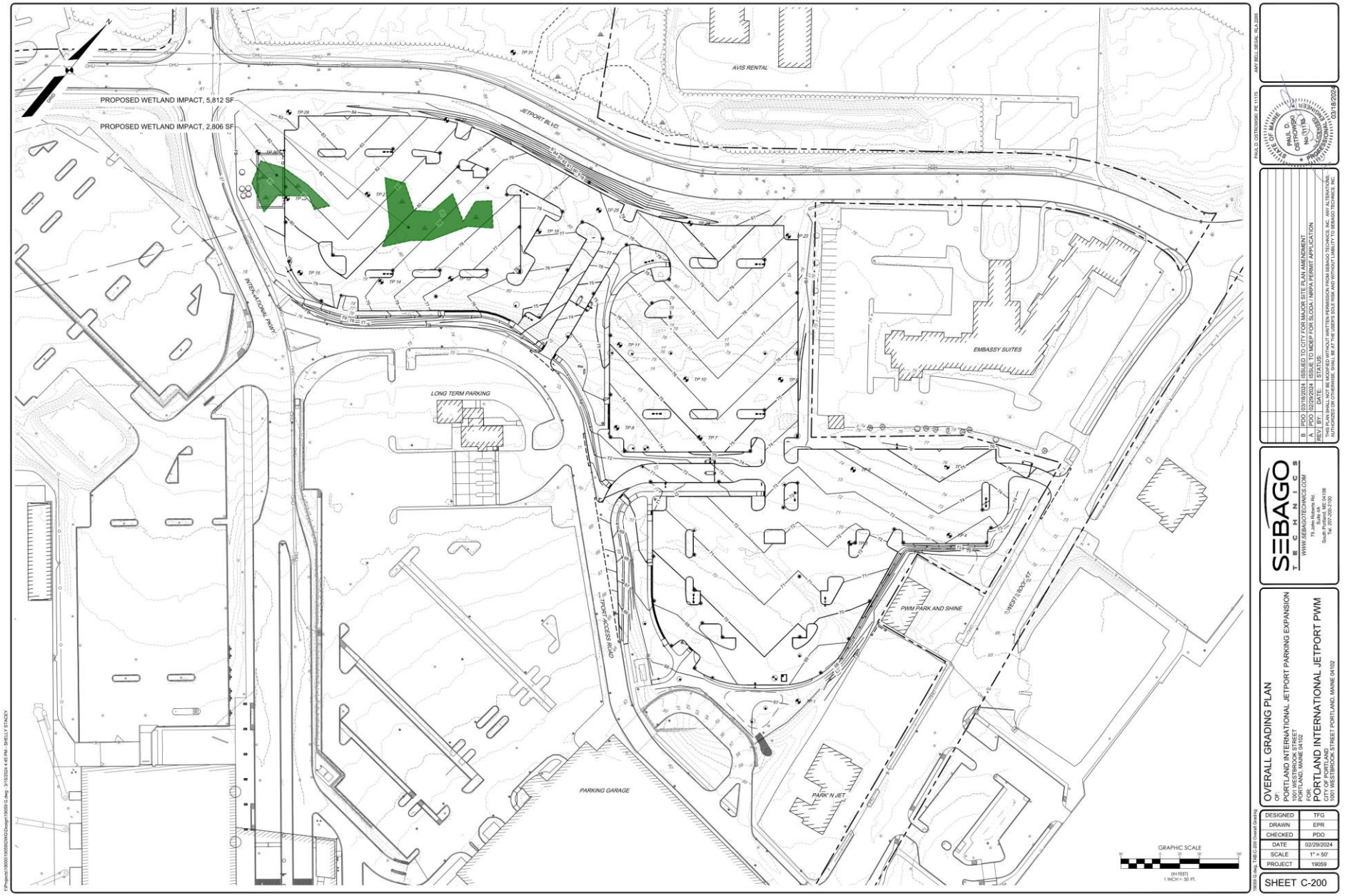
LOCATION: JETPORT BOULEVARD
PORTLAND, ME

DATE: 7/10/2023
PROJECT NUMBER: 19059

19059.aprx

AREA OF INTEREST (AOI)
TOWN BOUNDARY
CATCH BASIN
CULVERT OUTLET - 24" RCP
DELINEATED WETLAND BOUNDARY
WETLANDS WITHIN AOI
2' CONTOUR
10' CONTOUR

Map Projection : NAD 1983 StatePlane Maine West FIPS 1802 Feet



Portland International Jetport | Maine's Home Airport.

Wetland Mapping

8,618 S.F. of Wetland Alteration.

Questions?

Site Plan Standards Assessment

The Proposed project has been designed to be in compliance with the site plan standards as outlined in 14.6 of the land use code. Please see the submittal materials for how each of the specific standards are met.

Att. FF

PUBLIC INFORMATIONAL MEETING NOTES

PORTLAND JETPORT SURFACE PARKING EXPANSION PROJECT

APRIL 11, 2024, 6:00 P.M.

Meeting Location: Portland Jetport Terminal Lower Level.

Presentation and Project Overview:

A PowerPoint presentation and presentation boards on easels were utilized for the meeting presentation.

Paul Bradbury introduced the project and air trends. He noted the long-term trend toward larger aircraft by the airlines, an industry trend called up-gauging. Jetport operations (takeoffs and landings) peaked in 1997 at nearly 129,000 annually. Annual operations in 2023 were just under 54,000, less than half the 1997 peak. Despite the dramatic reduction in operations, total passenger volumes increased from 1.224 million in 1997 to 2.219 million in 2023 as the average seats per commercial flight at the Jetport increased from 57.5 to 110.7 over this period. This up-gauging has allowed the Jetport to meet record passenger volumes with fewer flights on larger, quieter, and more fuel-efficient aircraft.

The project area was described as the existing cell phone lot accessed from the loop road and the existing gravel park-n-fly valet lot along with the acquired land from ParkNJet that was previously impacted and a wooded area adjacent to Jetport Boulevard. The project area is north of the internal loop road and access road to the terminal and south of Jetport Boulevard. The location is adjacent to the existing long-term access. The Jetport Sustainable Masterplan also included the project area as a "Parking Expansion".

The originally proposed replacement for the "Cellphone Lot" north of Jetport Boulevard was removed after discussions with Stroudwater residents. The Cellphone Lot is used as a temporary parking location for vehicles waiting to pick up passengers. When passengers arrive and are on the baggage claim curb waiting for pick-up they can call or text the person waiting in the cell phone lot that they are ready. Additionally, the lot is a geofence check-in location for any Transportation Network Companies (TNCs), Uber & Lyft that are seeking to pick up rideshare requests.

The project includes two proposed paved parking lots with a net increase of 282 parking spaces over what currently exists. The Jetport currently has approximately 3,223 long-term parking spaces comprised of the parking garage, existing surface parking, and the "Pink Lot" (Shuttle Parking at District Road). The parking lot construction will include the reconstruction of the gravel Valet Parking Lot (former ParkNJet lot) and the Cellphone Lot which accommodates approximately 402 parking spaces. The total amount of parking to be constructed will be 684 parking spaces which includes the 402 existing parking spaces in the existing gravel Valet Parking Lot and the cellphone Parking Lot. The parking project will create a net increase of 282 parking spaces. Project work also includes the construction of two subsurface stormwater collection and treatment systems designed to collect and treat stormwater runoff from the development area. Presently, no stormwater treatment exists for the gravel Valet Parking and Cellphone Lot. The project will also include a landscaping plan around the perimeter of the parking lot.

As required by city ordinance, 20% of the new net parking spaces will include level 1 EV charging and 50% of the new net parking spaces will be EV-ready. The Jetport is proposing to create 56 (20%) Level 1 EV charging parking spaces in the existing parking garage and will install conduit to the 141 (50%) Level 1 EV charging parking spaces in the new surface parking lot.

A wetlands and vernal pool study was conducted on the Jetport property. Two wetland areas were identified in the wooded area that will be developed as parking totaling 8,618 s.f. A wetland permit application was filed with the MDEP for the wetland alteration in addition to the Maine DEP Site Location of Development Application.

Public Discussion:

- A question was asked about the use of the General Aviation Apron for Long-term parking. During the peak February and Spring break this year, the Jetport obtained temporary approvals to park vehicles on the general aviation apron next to Northeast Air. This area could only be used temporarily for parking since the area is dedicated to aviation use and the FAA restricts the use of space for non-aeronautical purposes. At it's peak this season the temporary apron provided 264 spaces.
- Discussion was held regarding the sustainable masterplan prepared by the Jetport and whether the parking was included in this plan. Included in the masterplan was a graphic prepared by Stantec and Coffman Associates showing the project area as "Parking Expansion."
- Comments were made asking about the use of additional lots even when the parking is not full. The parking lots are full during peak travel times and morning push. The parking garages are managed to prepare for the morning push and the peak times to avoid pushing early morning passengers to farther out lots. Typically, vehicles are pushed out to the remote lots beginning around 9 a.m. during peak travel times.
- A Question was asked about the new hotel being proposed at the Jetport. The hotel is not a Jetport project and will not be located on Jetport property.
- Comments were made regarding the wetland alterations. Wetland alteration is a term used to describe impacts to wetlands. All wetland alterations/impacts will need to be approved by the Maine DEP and the US Army Corps of Engineers. In addition to the Site Location Application, a separate Natural Resources Protection Act Permit application will also be filed with the Maine DEP.
- A question was asked about the eventual construction of a parking garage. At some undetermined point in the future and based upon need, a parking garage expansion may occur and would include at least 1,000 parking spaces. The existing parking garage and adjacent parking will remain operational during the proposed parking lot construction. After construction, all other existing parking lots will remain operational and are needed to accommodate peak parking demands. Additionally, the surface parking proposed under this project will assist in the parking garage development by covering some of the displaced parking during garage construction.
- The Airport Director noted that the project also includes a 1.9 MW/5MWhr battery storage project. The location is adjacent to the parking lot and is located to optimize access to the electrical feed to the terminal. The battery storage will allow the Jetport to store energy to use during peak demand periods reducing impacts on the electrical grid during the peak times. The

battery storage will charge during non-peak times. This project provides resiliency and will load shed reducing demand on the electrical grid during peak times.

- A question was asked about the parking numbers and price in the original allocation. The Airport Director explained that the Jetport is looking for a net increase of 250-375 parking spaces as described in his original memo to the city council. The proposed project will provide a net increase of 282 spaces and will improve drainage from the existing gravel Valet Lot by treating stormwater to meet the Maine DEP stormwater standards. The 282 net spaces would have been closer to the 375 if the Cellphone lot had been retained but was eliminated based upon public comment. The parking lot numbers include the park-n-fly lot.
- Comments were made about building the parking garage now. Constructing the parking garage now would remove surface spaces and significantly disrupt the existing surface parking and the cost is much higher. Since the Jetport is short on parking now, the disruption of the surface parking for a parking garage would only worsen the situation. The airport is severely land-constrained and this project is part of the Jetport development masterplan.
- A question was asked about the Portland 2030 goals and completing developments in an environmentally sustainable way and whether the project will have impacts on wetlands. The Airport Director explained that the project area is needed for growth at the Jetport and that is important to construct parking close to the multimodal nodes. Surface parking is needed and part of the development sequence. When the next increase in demand occurs, the need for a parking garage additional would be reassessed.
- A question was asked about the environmental impacts of the project. As part of the permitting process, the wetland areas that will be impacted are evaluated for their functions and values. The project area wetlands were delineated by Cole Peters of Sebago Technics, Inc. No critical or endangered habitats were identified including vernal pools. The total amount of wetland alteration will be 8,618 s.f. and includes two isolated wetlands in the wooded area. Drainage from the development areas will be collected and treated in two subsurface systems to MDEP standards.
- A question was asked about the percent of impervious surface on the upper former ParkNJet parcel the jetport acquired. This information is included in the stormwater analysis.
- A question was asked about parking lot revenues. The Airport Director noted that parking is a large part of the revenue in addition to rental cars and airline revenues.
- A comment was made that parking garages tend to last 50 years. The Airport Director noted that if they are maintained, that is achievable and that the Jetport invests approximately $800k in maintenance annually.
- A question was about the age of the parking garage. The Airport Director noted the garage was constructed in 2001 and 2008. Further conversation was held about expansion and if Jetport owns land toward Congress Street. The Airport Director responded yes, but the land along the International Parkway toward Congress Street is not zoned correctly and is part of Jetport wetland conservation areas.
- Comments were made about the use of shuttles and transit and EV infrastructure.
- A question was asked about eliminating the Cellphone Lot and where Uber/Lyft stage. The Jetport is evaluating options that could include accommodating this need within the long-term parking or elsewhere.
- A question was asked if the meeting was recorded. The meeting was not recorded.

- Comments were made about the former ParkNJet property relating to the prior wetland impacts on the property and the status of the permits.
- Comments were made about the build-out of the Jetport and concern for development in a patchwork fashion.
- Comments were made regarding the construction of the parking garage now and reducing demand through regional buses and electric shuttles.
- Comments were expressed regarding forward thinking and the need for parking including a parking garage and the need to be more creative.
- Reviewed the layout of the parking lot noting that the project doesn't preclude future development and that the parking lot grade will be lower than Jetport Boulevard including landscaping with more plantings than being removed. The design team Landscape Architect noted that the plantings will be native species for better survivability. Cole Peters noted that ash trees are present, some of which are impacted by the Emerald Ash Bore, and that the understory is mainly invasive species.
- A question was asked about how people will get to the terminal from the parking lot. Sidewalks will be installed at the perimeter of the new parking lot that will connect to existing sidewalks providing pedestrian routes to the terminal.

End of Notes:

Note: The purpose of the meeting notes are intended to provide a general summary of the public meeting conversation. The meeting minutes are not intended to capture every detail or nuances of the meeting and are limited to a general summary of the conversation as recorded by Sebago Technics, Inc.

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April 11, 2024 at 6:00 pm



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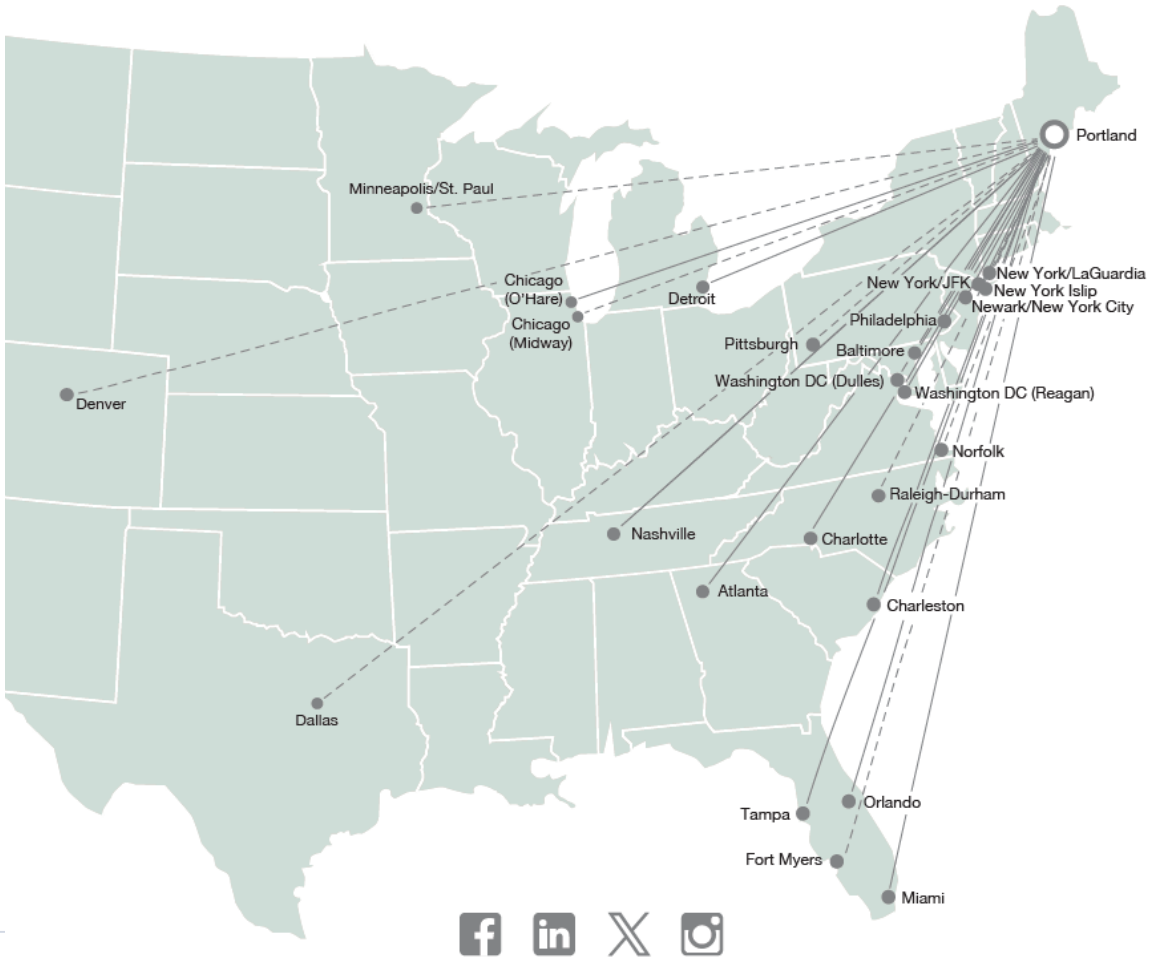




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NON-STOP DESTINATIONS



Seasonal Flights

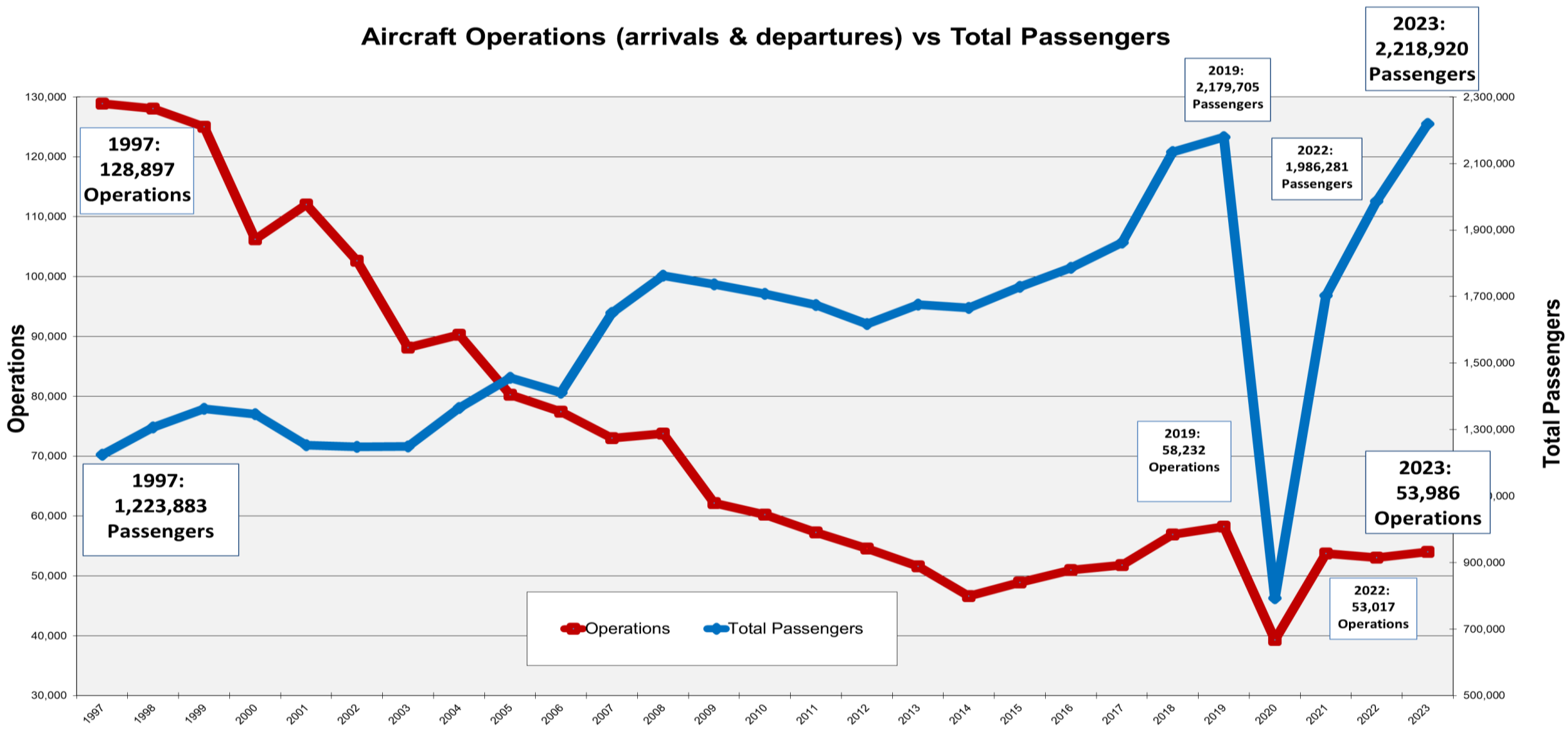
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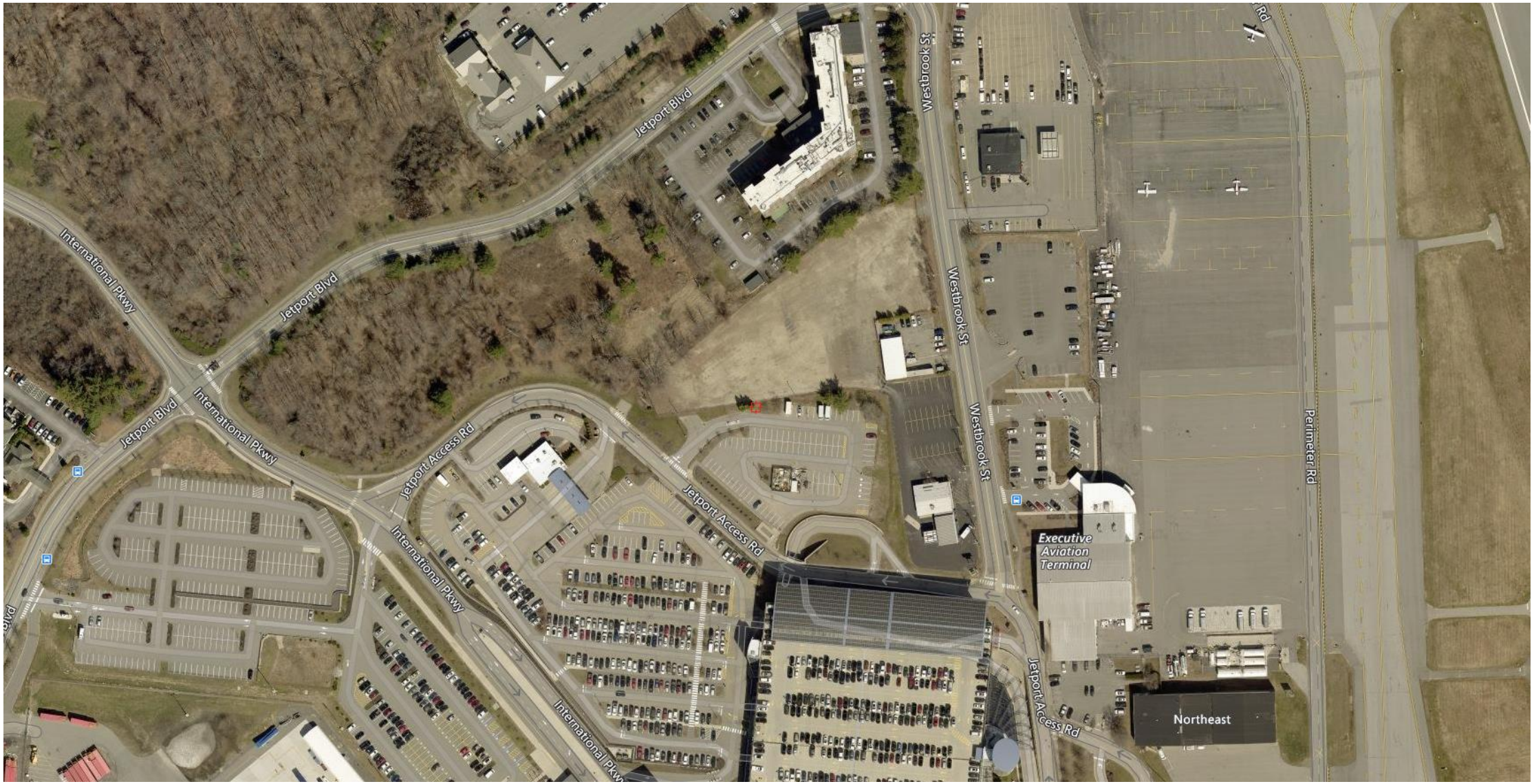
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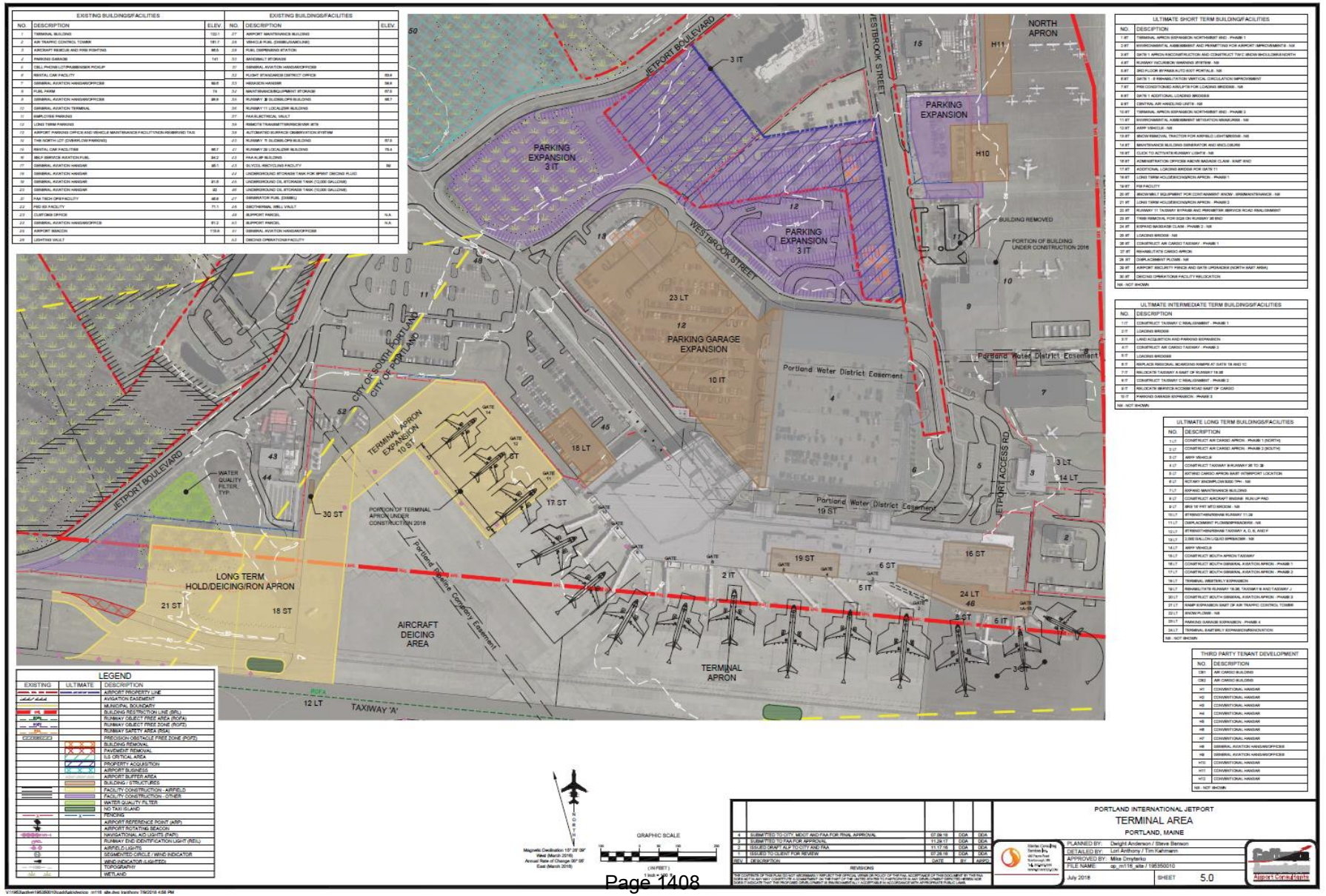




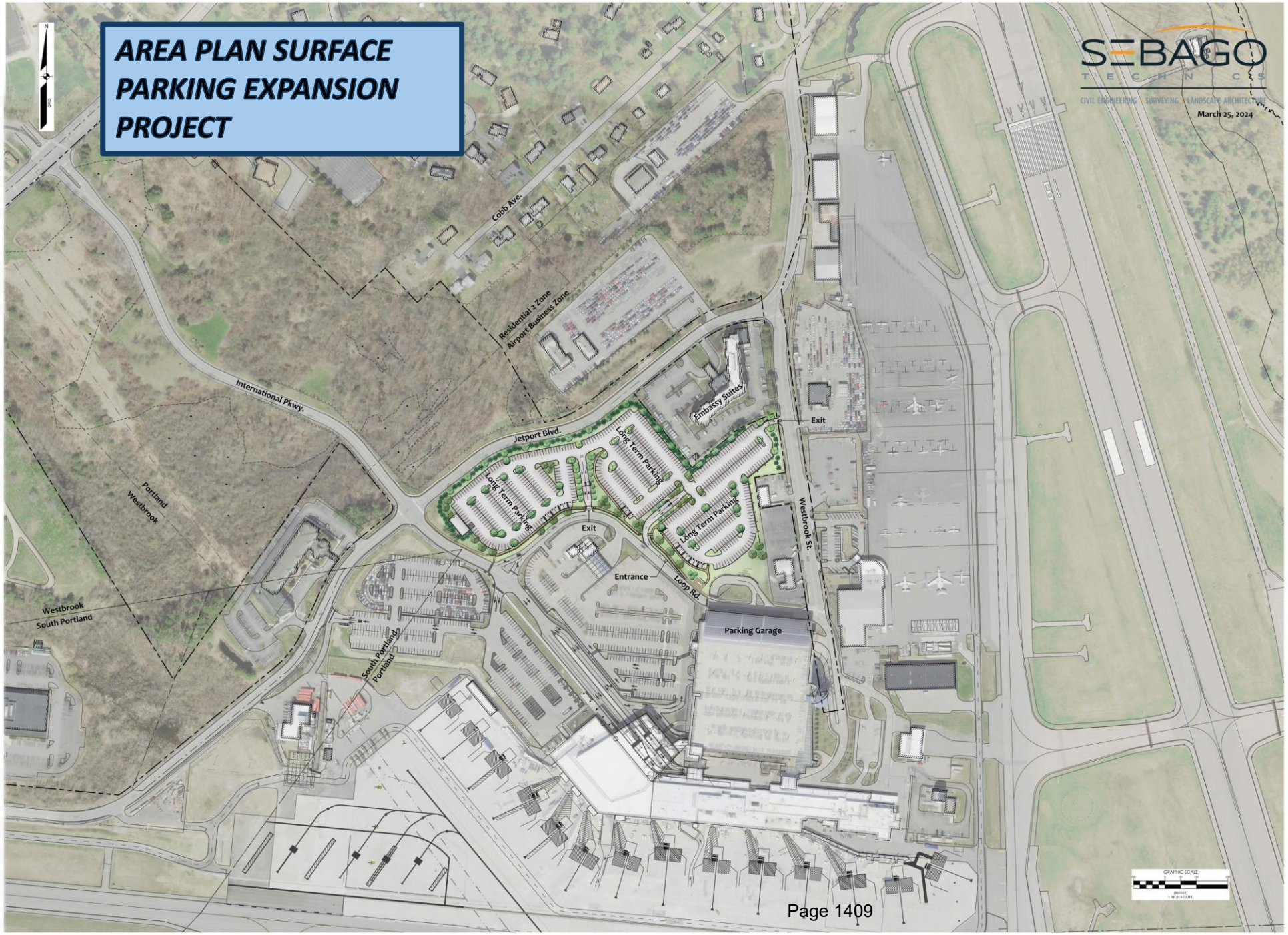
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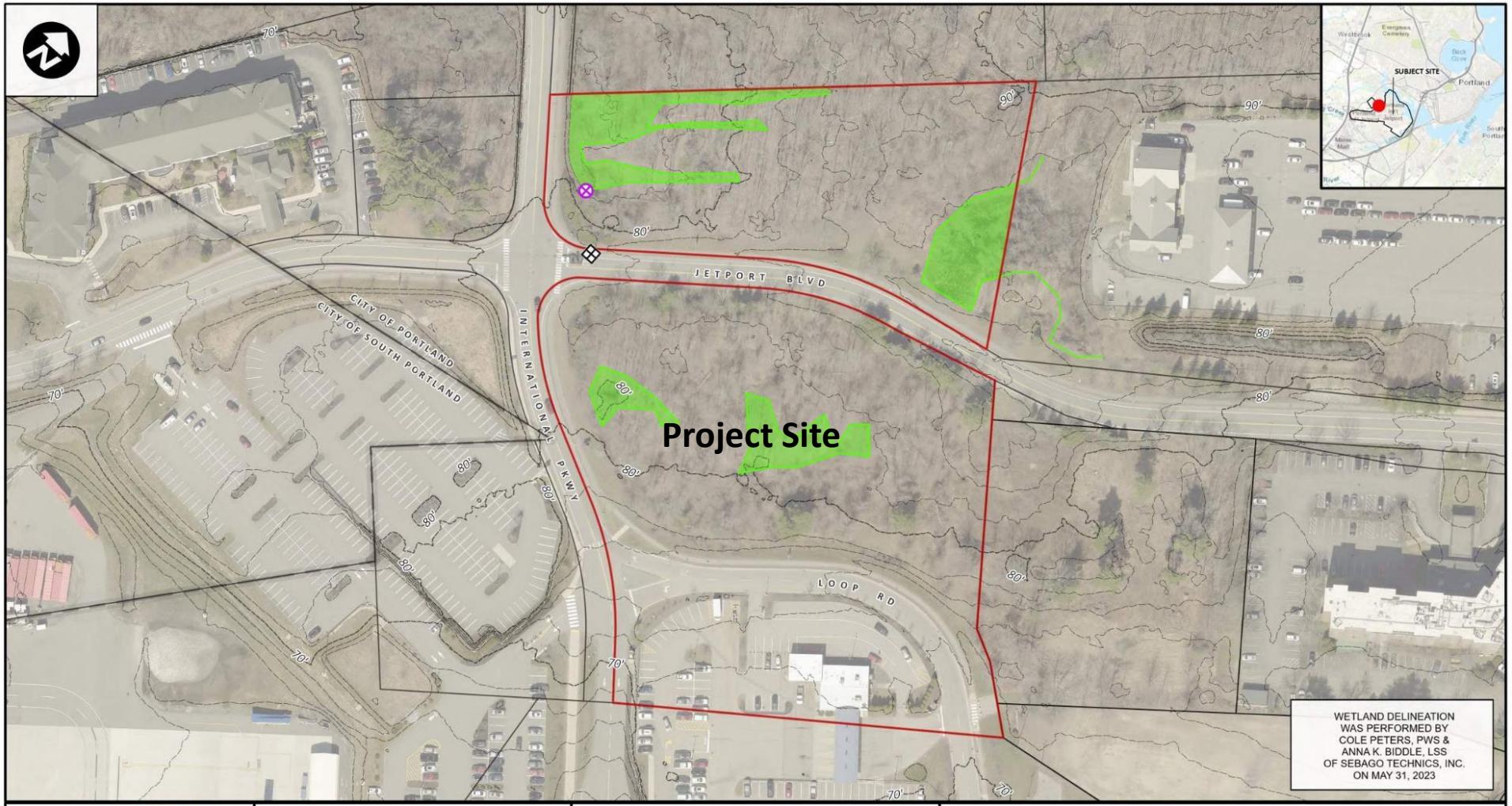


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FIGURE 1: NATURAL RESOURCES MAP

TAX MAP 210A, LOTS B-1 & A-7

LOCATION: JETPORT BOULEVARD PORTLAND, ME

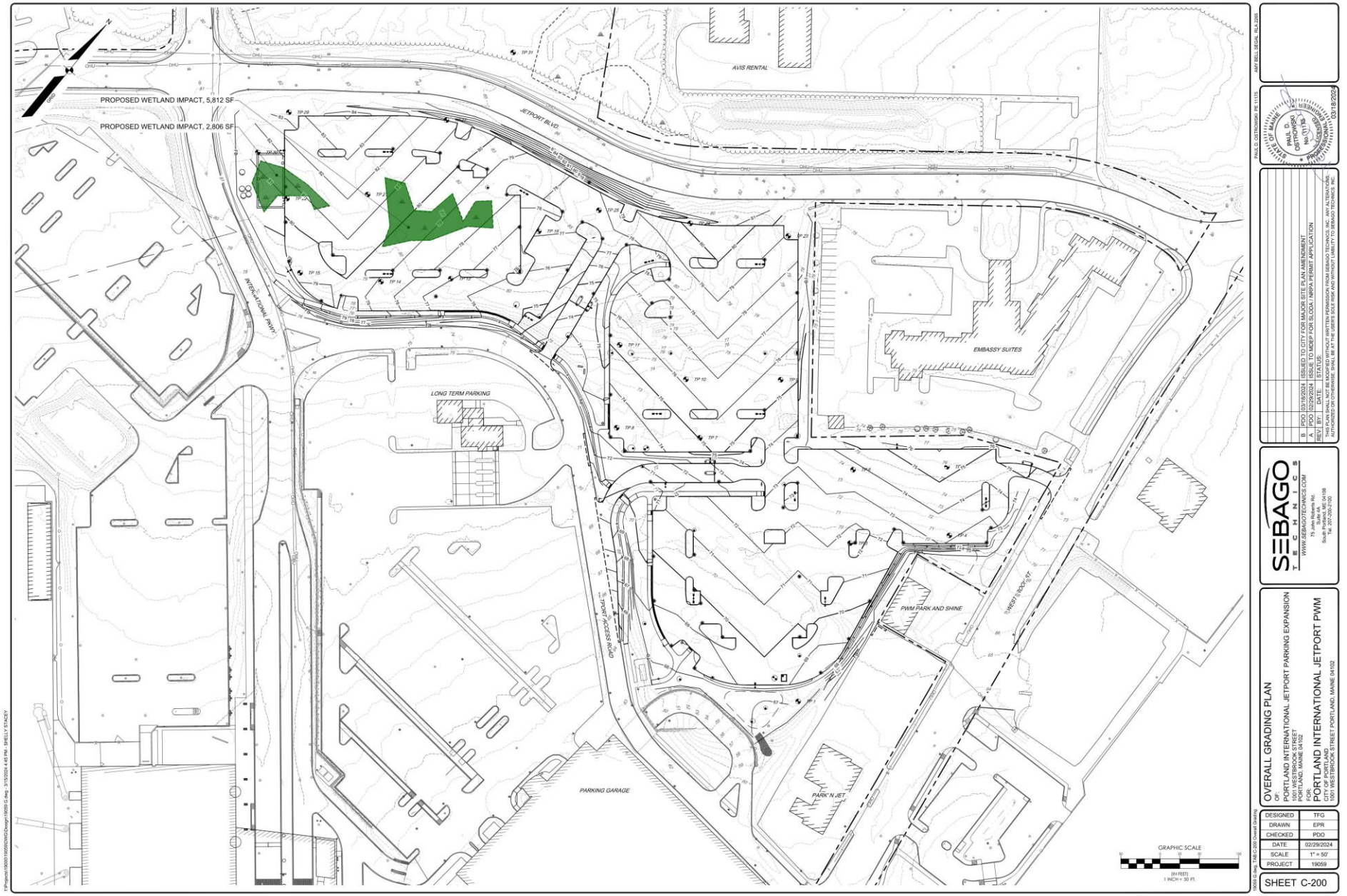
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8,618 S.F. of Wetland Alteration.

Questions?

Portland International Jetport
Sustainability Action Dashboard

vhb | SPOT
Sustainability Planning Optimization Tool

	Actions Aggregated	Greenhouse Gas Emissions	Energy	Waste Management and Recycling	Ground Access and Transportation	Social Responsibility	Governance	Noise	Water Quality
Total Feasible Actions	57	8	12	7	9	10	4	4	3
Completed Actions	0	0	0	0	0	0	0	0	0
Actions In-Progress	4	2	0	2	0	0	0	0	0
Actions Not Started	52	6	12	5	8	10	4	4	3
Actions Flagged	0	0	0	0	0	0	0	0	0
Short-term Actions	0	0	0	0	0	0	0	0	0
Mid-term Actions	2	0	0	0	1	0	0	1	0
Long-term Actions	1	0	0	0	0	0	0	1	0

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Portland International Jetport Sustainability Action Plan

Action ID	Action	Action Description	Primary Sustainability Category	Stakeholder Involvement	Timeframe	Feasibility: Airport Jurisdiction	Feasibility: Regulatory Alignment	Feasibility: Funding	Feasibility: Airline	Feasibility: Implementation Readiness	Goal Applicability: Noise/Acoustic Barriers	Goal Applicability: Energy	Goal Applicability: Waste Management and Recycling	Goal Applicability: Ground Access and Transportation	Goal Applicability: Social Responsibility	Goal Applicability: Wastewater	Goal Score	Asset: Management	Asset: Replacement Value	Estimated Costs: Capital	Estimated Costs: Implementation Maintenance	Estimated Costs: Funding	Estimated Costs: Impact Payback	Estimated Costs: Talent	Estimated Effects: Energy Consumption and Emissions	Estimated Effects: Air Quality and Human Health	Estimated Effects: Biodiversity and Ecosystem Restoration	Estimated Effects: Water Conservation	Estimated Effects: Waste Management and Recycling	Estimated Effects: Sustainable Materials	Estimated Effects: Regional Economic Benefit	Estimated Effects: Natural Resources	Estimated Effects: Climate Adaptation
A	Airport-wide Energy Audit and Efficiency Upgrade Program	Conduct a comprehensive energy audit of all airport facilities, including terminals, hangars, and support buildings, to identify opportunities for efficiency improvements. Develop and implement a phased upgrade program for lighting, HVAC systems, and building envelopes.	Energy	Airport Authority, Local Utility Companies, Energy Consultants	Immediate (0–6 months)	Feasible	Feasible	Feasible	Feasible	Feasible	Feasible	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	3.8	Airport Authority	$ 1,200,000	Annual Maintenance: $ 45,000	$ 1,200,000 (Airport Capital Budget)	3 years	350,000 kWh / year	2.8	Reduces energy consumption by more than 30% in upgraded facilities.	Minimizes indirect air quality impacts by reducing fossil fuel consumption.	Reduces overall electricity demand, lowering indirect impacts on ecosystems.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
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AD	Airport Environmental Management System (EMS) Implementation	Establish and implement a comprehensive Environmental Management System (EMS) to systematically manage and reduce the airport's environmental impacts. The EMS will include policies, procedures, and regular audits to ensure compliance with regulations and continuous improvement.	Energy	Airport Authority, Environmental Consultants, Regulatory Agencies	Immediate (0–6 months)	Feasible	Feasible	Feasible	Feasible	Feasible	Feasible	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	3.8	Airport Authority	$ 1,200,000	Annual Maintenance: $ 45,000	$ 1,200,000 (Airport Capital Budget)	3 years	350,000 kWh / year	2.8	Reduces energy consumption by more than 30% in upgraded facilities.	Minimizes indirect air quality impacts by reducing fossil fuel consumption.	Reduces overall electricity demand, lowering indirect impacts on ecosystems.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
AE	Airport Environmental Management System (EMS) Implementation	Establish and implement a comprehensive Environmental Management System (EMS) to systematically manage and reduce the airport's environmental impacts. The EMS will include policies, procedures, and regular audits to ensure compliance with regulations and continuous improvement.	Energy	Airport Authority, Environmental Consultants, Regulatory Agencies	Immediate (0–6 months)	Feasible	Feasible	Feasible	Feasible	Feasible	Feasible	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	3.8	Airport Authority	$ 1,200,000	Annual Maintenance: $ 45,000	$ 1,200,000 (Airport Capital Budget)	3 years	350,000 kWh / year	2.8	Reduces energy consumption by more than 30% in upgraded facilities.	Minimizes indirect air quality impacts by reducing fossil fuel consumption.	Reduces overall electricity demand, lowering indirect impacts on ecosystems.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
AF	Airport Environmental Management System (EMS) Implementation	Establish and implement a comprehensive Environmental Management System (EMS) to systematically manage and reduce the airport's environmental impacts. The EMS will include policies, procedures, and regular audits to ensure compliance with regulations and continuous improvement.	Energy	Airport Authority, Environmental Consultants, Regulatory Agencies	Immediate (0–6 months)	Feasible	Feasible	Feasible	Feasible	Feasible	Feasible	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	3.8	Airport Authority	$ 1,200,000	Annual Maintenance: $ 45,000	$ 1,200,000 (Airport Capital Budget)	3 years	350,000 kWh / year	2.8	Reduces energy consumption by more than 30% in upgraded facilities.	Minimizes indirect air quality impacts by reducing fossil fuel consumption.	Reduces overall electricity demand, lowering indirect impacts on ecosystems.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
AG	Airport Environmental Management System (EMS) Implementation	Establish and implement a comprehensive Environmental Management System (EMS) to systematically manage and reduce the airport's environmental impacts. The EMS will include policies, procedures, and regular audits to ensure compliance with regulations and continuous improvement.	Energy	Airport Authority, Environmental Consultants, Regulatory Agencies	Immediate (0–6 months)	Feasible	Feasible	Feasible	Feasible	Feasible	Feasible	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	3.8	Airport Authority	$ 1,200,000	Annual Maintenance: $ 45,000	$ 1,200,000 (Airport Capital Budget)	3 years	350,000 kWh / year	2.8	Reduces energy consumption by more than 30% in upgraded facilities.	Minimizes indirect air quality impacts by reducing fossil fuel consumption.	Reduces overall electricity demand, lowering indirect impacts on ecosystems.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
AH	Airport Environmental Management System (EMS) Implementation	Establish and implement a comprehensive Environmental Management System (EMS) to systematically manage and reduce the airport's environmental impacts. The EMS will include policies, procedures, and regular audits to ensure compliance with regulations and continuous improvement.	Energy	Airport Authority, Environmental Consultants, Regulatory Agencies	Immediate (0–6 months)	Feasible	Feasible	Feasible	Feasible	Feasible	Feasible	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	3.8	Airport Authority	$ 1,200,000	Annual Maintenance: $ 45,000	$ 1,200,000 (Airport Capital Budget)	3 years	350,000 kWh / year	2.8	Reduces energy consumption by more than 30% in upgraded facilities.	Minimizes indirect air quality impacts by reducing fossil fuel consumption.	Reduces overall electricity demand, lowering indirect impacts on ecosystems.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
AI	Airport Environmental Management System (EMS) Implementation	Establish and implement a comprehensive Environmental Management System (EMS) to systematically manage and reduce the airport's environmental impacts. The EMS will include policies, procedures, and regular audits to ensure compliance with regulations and continuous improvement.	Energy	Airport Authority, Environmental Consultants, Regulatory Agencies	Immediate (0–6 months)	Feasible	Feasible	Feasible	Feasible	Feasible	Feasible	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	3.8	Airport Authority	$ 1,200,000	Annual Maintenance: $ 45,000	$ 1,200,000 (Airport Capital Budget)	3 years	350,000 kWh / year	2.8	Reduces energy consumption by more than 30% in upgraded facilities.	Minimizes indirect air quality impacts by reducing fossil fuel consumption.	Reduces overall electricity demand, lowering indirect impacts on ecosystems.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
AJ	Airport Environmental Management System (EMS) Implementation	Establish and implement a comprehensive Environmental Management System (EMS) to systematically manage and reduce the airport's environmental impacts. The EMS will include policies, procedures, and regular audits to ensure compliance with regulations and continuous improvement.	Energy	Airport Authority, Environmental Consultants, Regulatory Agencies	Immediate (0–6 months)	Feasible	Feasible	Feasible	Feasible	Feasible	Feasible	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	3.8	Airport Authority	$ 1,200,000	Annual Maintenance: $ 45,000	$ 1,200,000 (Airport Capital Budget)	3 years	350,000 kWh / year	2.8	Reduces energy consumption by more than 30% in upgraded facilities.	Minimizes indirect air quality impacts by reducing fossil fuel consumption.	Reduces overall electricity demand, lowering indirect impacts on ecosystems.	Not Applicable	Not Applicable	Not Applicable

Customer Satisfaction	Employee Satisfaction	Safety	Estimated Effects Score	Total Score	Total Weighted Score	Additional Information							
						Under Stress	Risk Taker	Cost Cutter	Workhorse	Philanthropist	Logical Thinker / Organizational Genius	Strategy Big Picture	Annotations	References
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	8.5	68.8	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	8.8	69.9	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Accident	4 Accident	4 Accident	1.6	8.8	70.1	Neutral								
4 Accident	4 Accident	4 Accident	1.6	12.1	97.1	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	10.0	80.3	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Accident	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	9.4	75.3	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	9.5	75.8	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	9.6	76.8	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	9.7	77.7	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	9.8	78.4	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	9.9	79.2	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	10.0	80.3	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	10.1	81.0	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	10.2	81.6	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	10.3	82.4	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	10.4	83.2	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	10.5	84.0	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	10.6	84.7	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	10.7	85.6	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	10.8	86.4	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	10.9	87.2	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	10.7	85.6	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	9.0	72.2	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Accident	4 Accident	4 Accident	1.6	7.1	56.2	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Accident	4 Accident	4 Accident	1.6	8.5	66.5	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	9.1	71.4	Neutral							Strategy Implementation - Successful implementation of strategy ranges from the development of a new strategy to the continuation of an existing strategy. Implementation can be a challenge for many companies. Successful implementation requires a well-communicated plan and the participation of employees in the process. Many companies have difficulty implementing strategy. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. Implementation is the process of putting a chosen strategy into action. Organizational structure, allocation of resources, training, and changes in culture and values may be necessary for successful implementation. https://www.strategy-business.com/article/00134?gko=1ae1d	https://hbr.org/2008/01/the-balanced-scorecard-measures-that-drive-performance-2
4 Accident	4 Accident	4 Accident	1.6	9.2	72.6	Neutral								
4 Accident	4 Accident	4 Accident	1.6	9.3	73.3	Neutral								
4 Accident	4 Accident	4 Accident	1.6	9.4	74.1	Neutral								
4 Accident	4 Accident	4 Accident	1.6	9.5	74.8	Neutral								
4 Accident	4 Accident	4 Accident	1.6	9.6	75.6	Neutral								
4 Accident	4 Accident	4 Accident	1.6	9.7	76.3	Neutral								
4 Accident	4 Accident	4 Accident	1.6	9.8	77.1	Neutral								
4 Accident	4 Accident	4 Accident	1.6	9.9	77.8	Neutral								
4 Accident	4 Accident	4 Accident	1.6	10.0	78.6	Neutral								
4 Accident	4 Accident	4 Accident	1.6	10.1	79.3	Neutral								
4 Accident	4 Accident	4 Accident	1.6	10.2	80.1	Neutral								
4 Accident	4 Accident	4 Accident	1.6	10.3	80.8	Neutral								
4 Accident	4 Accident	4 Accident	1.6	10.4	81.6	Neutral								
4 Accident	4 Accident	4 Accident	1.6	10.5	82.3	Neutral								
4 Accident	4 Accident	4 Accident	1.6	10.6	83.1	Neutral								
4 Accident	4 Accident	4 Accident	1.6	10.7	83.8	Neutral								
4 Accident	4 Accident	4 Accident	1.6	10.8	84.6	Neutral								
4 Accident	4 Accident	4 Accident	1.6	10.9	85.3	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	11.0	86.1	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	11.1	86.8	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	11.2	87.6	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	11.3	88.3	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	11.4	89.1	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	11.5	89.8	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	11.6	90.6	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	11.7	91.3	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	11.8	92.1	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	11.9	92.8	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	12.0	93.6	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	12.1	94.3	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	12.2	95.1	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	12.3	95.8	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	12.4	96.6	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	12.5	97.3	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	12.6	98.1	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	12.7	98.8	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	12.8	99.6	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	12.9	100.3	Neutral								
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4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	13.2	102.6	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	13.3	103.3	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	13.4	104.1	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	13.5	104.8	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	13.6	105.6	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	13.7	106.3	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	13.8	107.1	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	13.9	107.8	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	14.0	108.6	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	14.1	109.3	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	14.2	110.1	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	14.3	110.8	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	14.4	111.6	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	14.5	112.3	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	14.6	113.1	Neutral								
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4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	14.9	115.3	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	15.0	116.1	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	15.1	116.8	Neutral								
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4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	15.4	119.1	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	15.5	119.8	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	15.6	120.6	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	15.7	121.3	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	15.8	122.1	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	15.9	122.8	Neutral								
4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Short Mid-Level Jobholder Struggle to Succeed in Intermediary	4 Accident	1.6	16.0	123.6	Neutral								
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Portland International Jetport
Sustainability Action

Action ID	Action	Action Description	Primary Sustainability Category	Timeframe	Implementation Status	Last Status Update	Start Date	Expected Completion Date	Completion Date	Actions Leader			Implementation												Supporting Information	State		Costs			
										Name	Email	Phone Number	Task 1		Task 2		Task 3		Task 4		Task 5				Data to be Collected	Data Location	Estimated Capital	Annual Capital ($)	Annual Ground Operations and Maintenance	Annual Ground Operations and Maintenance	Estimated Staffing
													Description	Leader	Description	Leader	Description	Leader	Description	Leader	Description	Leader									
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Actual Staffing (Hours/Month)	Estimated Simple Payback (Years)	Annual Simple Payback (Years)	Potential Funding Sources	Behavioral Benefits	Realized Benefits	Lessons Learned	Notes
	Worksheet not yet						
	Worksheet not yet						
	Worksheet not yet						
	Worksheet not yet						
	Worksheet not yet						
	Work not yet						
	Work not yet						
	Study not yet						
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	Work not yet						
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	Study not yet						
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	Measurement Nr 99 under						
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	Worksheet not yet						
	Work not yet						
	Work not yet						
	Measurement Nr 99 under						Workload has increased because of project team; hiring more consultants to cover all projects
	Worksheet not yet						
	Worksheet not yet						
	Study not yet						
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	Worksheet not yet						
	Worksheet not yet						
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	Study not yet						
	Work not yet						
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	Work not yet						

Sustainability Action Implementation Plan

Action ID:	1	**Action:**	Determine the feasibility of replacing outdated HVAC equipment in the Old Terminal with more efficient alternatives
Category	Energy		

Action Description: Replacing outdated HVAC equipment with more efficient alternatives would lead to improved energy and fuel consumption efficiency at the Jetport.

Action Leader:		**Phone:**		**Email:**	
Status:	Not Started	**Started:**		**Completed:**	
Data Needs:				**File Location:**	
Expected Capital:	Marginal Cost: <$50,000	**Expected O&M:**	Neutral/Positive	**Expected Staff Hrs.:**	Low: <40 hours per month
Capital To-Date:		**O&M To-Date:**		**Staff Hrs. To-Date:**	

Implementation Steps:

TASK	TASK DESCRIPTION	TASK LEADER
1		
2		
3		
4		
5		

Supporting Information:

Realized Benefits:

Lessons Learned:

Last Revised:



Portla
Sustai

Primary Sustainability Category	Stakeholder Impact
Greenhouse Gas Emissions	Internal Stakeholders (Jetport Staff Only)
Energy	Internal Stakeholders (Select Jetport Tenants
Waste Management and Recycling	Internal Stakeholders (Combination of Jetport and Tenant Employees)
Ground Access and Transportation	External Stakeholders
Social Responsibility	Internal and External Stakeholders
Governance	
Noise	
Water Quality	
None	

Action ID
1
2
3

nd International Jetport nability Tools Control Area

Timeframe	Status
Short-term (Less than 1 year)	Not Started
Mid-term (1 - 5 years)	In Progress
Long-term (More than 5 years)	Completed
	Flagged

Feasibility	Goal Applicability	Asset Management
Feasible	0 - Contradicts	0 - Requires the construction of new facilities and/or the acquisition of new equipment
Not Feasible	1 - Not Related	1 - Will not impact the Jetport's existing facilities or equipment
	2 - Peripherally Related	2 - Will maintain existing facilities or equipment
	3 - Directly Related	3 - Will enhance existing facilities or equipment

Estimated Costs			
Capital	**Operations and Maintenance**	**Staffing**	**Simple Payback**
0 - Very Expensive: >$200,000	0 - Very Expensive: >$50,000	0 - High: >80 hours per month	0 - Long: >10 years
1 - Moderately Expensive: $100,000 to $200,000	1 - Moderately Expensive: $25,000 to $50,000	1 - Moderate: 40 to 80 hours per month	1 - Moderate: 5 to 10 years
2 - Low Cost: $50,000 to $100,000	2 - Low Cost: <$25,000	2 - Low: <40 hours per month	2 - Short: 1 to 5 years
3 - Marginal Cost: <$50,000	3 - Neutral/Positive	3 - Neutral/Positive	3 - Immediate: <1 year

Energy Consumption and Generation	Air Quality and Human Health	Greenhouse Gas Emissions Reduction	Water Conservation
0 - Increases energy consumption	0 - Impairs local air quality and/or indoor air quality	0 - Increases GHG emissions	0 - Increases water consumption
1 - Has no effect on energy consumption or generation	1 - Has no effect on regional or indoor air quality	1 - Has no effect on GHG emissions	1 - Has no effect on water consumption
2 - Decreases energy consumption by less than 5% below baseline levels	2 - Moderately improves regional air quality and/or indoor air quality	2 - Reduces GHG emissions by less than 5% below baseline levels	2 - Moderately reduces potable water consumption
3 - Decreases energy consumption by more than 5% below baseline levels and/or generates renewable energy	3 - Significantly improves regional air quality and/or indoor air quality	3 - Reduces GHG emissions by more than 5% below baseline levels	3 - Significantly reduces potable water consumption and/or uses reclaimed water

Estimated Effects

Waste Management and Recycling	Sustainable Materials	Regional Economic Benefit	Natural Resources
0 - Increases waste generation or portion going to regional landfills	0 - Contains less than 5 percent sustainable content or sustainable content is unknown	0 - Decreases regional employment	0 - Impairs local natural resources
1 - Has no effect on waste generation or diversion	1 - Is not applicable	1 - Has no effect on the regional economy	1 - Has no effect on impact local natural resources
2 - Decreases waste generation and/or increases the recycling rate by less than 5% from baseline	2 - Contains between 5 and 40 percent sustainable content	2 - Improves the regional economy by encouraging external workforce training	2 - Contributes to the protection of local natural resources
3 - Decreases waste generation and/or increases the recycling rate by more than 5% from baseline	3 - Contains 40 percent or more sustainable content	3 - Improves the regional economy by generating new employment and/or economic activity	3 - Enhances local natural resources

			Ad
Climate Adaptation	**Customer/Employee Satisfaction**	**Safety**	**Action Source**
0 - Increases the Jetport's vulnerability to climate change	0 - Negative	0 - Impedes safety	Internal
1 - Has no impact on the Jetport's resilience to climate change	1 - No Effect	1 - No effect	External
2 - Improves the Jetport's resilience to climate change through related education or planning efforts	2 - Indirect (Improves satisfaction through the provision of information)	2 - Improves safety through infrastructure improvements	Research
3 - Improves the Jetport's resilience to climate change through critical infrastructure improvements	3 - Direct (Improves satisfaction through active participation)	3 - Improves safety through operational adjustments	

ditional Information

Division	Recognition Status
Facilities and Engineering	Contacted
Finance	Not Contacted
Marketing	Contact Information Not Available
Operations	Not Applicable
Security	
Not Applicable	

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.
Land Use Code14.6.2 (A) (1) Environmental Quality Standards A. Preservation of significant natural features	All development shall preserve and protect significant natural features by incorporating them into site design.	The applicant seeks a waiver to allow for impacts to two small wetlands located within the project area.	Steps taken to minimize wetland impacts included removing the cell phone lot development area originally planned for the westerly side of Jetport Boulevard responsive to public input. During the city review process, the Jetport further modified the parking lot
Land Use Code 14.6.2 (B)(4) Landscape Preservation 4. Waiver	Where the applicant can demonstrate that preservation of existing vegetation would compromise development [...].	The applicant seeks a waiver for removal of vegetation within the parking lot area.	The vegetation removal required for the parking lot is within the area designated in the approved Master Plan for parking lot expansion. The plan has been revised to preserve vegetation near the intersection of International Parkway and

Attachment 5 Avoidance & Minimization/Alternatives Analysis

Avoidance & Minimization:

The proposed project involves the construction of a much-needed expanded parking area on the Jetport campus. The proposed project area is located within a planned area of airport facility growth as outlined in the approved airport masterplan. In siting the parking expansion, the location of existing surface lots, feasibility of use in respect to the airport layout, and proximity to abutting properties was considered. Every effort was made to avoid or minimize impacts on the natural resources located on the subject parcel. A previously developed lot is being repurposed to provide additional long-term parking. The proposed development has a robust landscaping plan to provide buffering to abutting properties and to replace diseased trees that are to be removed.

Alternatives Analysis:

The proposed project is part of the Jetports long term Sustainable Airport Master Plan. This plan was created to best meet the needs of those utilizing the airport while being compatible with the surrounding environment. For the purposes of this project three proposed action alternatives were reviewed: No Action Alternative; Alternate Location Alternative; Proposed Alternative.

No Action Alternative

The Portland Jetport is currently facing a parking crisis. There has been no substantial increase in available parking since 2012. There is insufficient parking for the number of people using the airport. This lack of parking results in people driving around the airport loop road multiple times in search of a parking space. The no action alternative is not practical. As a transportation facility serving a large demographic parking requirements for the airport must be responsive to customer needs.

Alternate Location Alternative

The applicant reviewed other potential areas on the airport campus, as well as the expansion of the airport parking garage. A parking garage expansion is not a financially practical option at this time. The number of enplanements currently and projected for the near future do not justify the cost of a parking garage expansion. Other available open space on the campus would either impact more wetlands or be sited closer to abutting residential properties. The Alternate locations alternative is not practical.

Proposed Alternative

The proposed alternative provides for parking consistent with the Jetport Parking Masterplan (attached) and is located next to the existing surface parking lot. This approach provides for an efficient means of adding surface parking to the Jetport. The parking lot will be accessed from existing roadway infrastructure and will integrate with existing surface parking and pedestrian pathways to the terminal.

The proposed alternative includes converting an existing developed area, an undeveloped area, a paved cell phone lot and a gravel valet lot, into one of the new long term parking areas.

By developing the two lots in this configuration it allows for the increased parking near the terminal building and provides for an efficient continuation of existing parking avoid fragmentation of parking while fitting appropriately within the Jetport campus.

Att. GG

No Development Allowed
(Existing Public Works Facility
& Snow Storage; Significant Vernal Pool)

SIGNIFICANT VERNAL POOL

District Road Public Works Facility

Pink Lot

Constrained Areas
(IM - Industrial Moderate Impact Zone)
Significant Natural Resources

LONG CREEK

No Development Allowed
(Deeded Conservation Area)

Constrained Area
(Residential Zone)

Eligible Land
Airport Business
(AB) Zone

R1 - RESIDENTIAL

R2 - RESIDENTIAL

AB - AIRPORT BUSINESS

Parking Garage

Terminal

Portland Pipeline Easement

JETPORT PROPERTY

EXTENTS OF SECURED AIRFIELD

SECURED AIRFIELD

AB - AIRPORT BUSINESS

CITY OF PORTLAND
CITY OF SOUTH PORTLAND

FORE RIVER

NO DEVELOPMENT ALLOWED
CONSTRAINED AREAS
ELIGIBLE LAND - AIRPORT BUSINESS ZONE

OVERALL JETPORT COMPLEX
SECURED AIRFIELD
DISTRICT ROAD LOT
UTILITY EASEMENT
PORTLAND PARCELS
TOWN BOUNDARY
LIMIT OF SHORELAND ZONE
PORTLAND ZONING (PRIOR TO NOV. 2024)
AB - AIRPORT BUSINESS
R1 - RESIDENTIAL 1
R2 - RESIDENTIAL 2
NATIONAL WETLAND INVENTORY
LAKE, FRESHWATER POND, & RIVERINE WETLANDS
WETLANDS
STANTEC 2018
SVP 250' CRITICAL TERRESTRIAL HABITAT
SIGNIFICANT VERNAL POOL
FEMA FLOOD HAZARD AREAS

0 300 600 900 1,200 1,500 Feet

GIS PLAN

NOT FOR CONSTRUCTION

Plan Notes:

EXTERNAL DATA SOURCES:
Maine GeoLibrary
2017 orthoRegional Imagery
City of Portland -
Parcels & Zoning (deprecated)
2021 Spring orthoImagery

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REV.:	BY:	DATE:	STATUS:

SEBAGO TECHNICS
75 John Roberts Road, Suite 4A
South Portland, ME 04106
(207) 200-2100
South Portland, Bridgton, Sanford and Bath

OPPORTUNITIES & CONSTRAINTS EXHIBIT
FOR: PWM LAND HOLDINGS
OF: PORTLAND JETPORT PARKING EXPANSION

DESIGNED	
DRAWN	MTM
CHECKED	
DATE	1/8/2025
SCALE	1" = 300'
PROJECT	19059

SHEET 1 OF 1

I:\P_Build_19059 BD JETPORT.aprx

Financial Capability

The proposed project is being funded through the Jetport unrestricted fund balance. Please see the attached letter regarding the unrestricted cash fund balance.

Portland International Jetport

Maine's Home Airport.

PAUL H. BRADBURY, P.E.
AIRPORT DIRECTOR
ZACHARY R. SUNDQUIST, A.A.E.
ASSISTANT AIRPORT DIRECTOR

February 27, 2024

Mr. Owens McCullough, PE
Senior Vice President
Sebago Technics, Inc.
75 John Roberts Road, Suite 4A
South Portland, ME 04106

Subject: Portland International Jetport Surface Parking Expansion Project Funding

Dear Mr. McCullough:

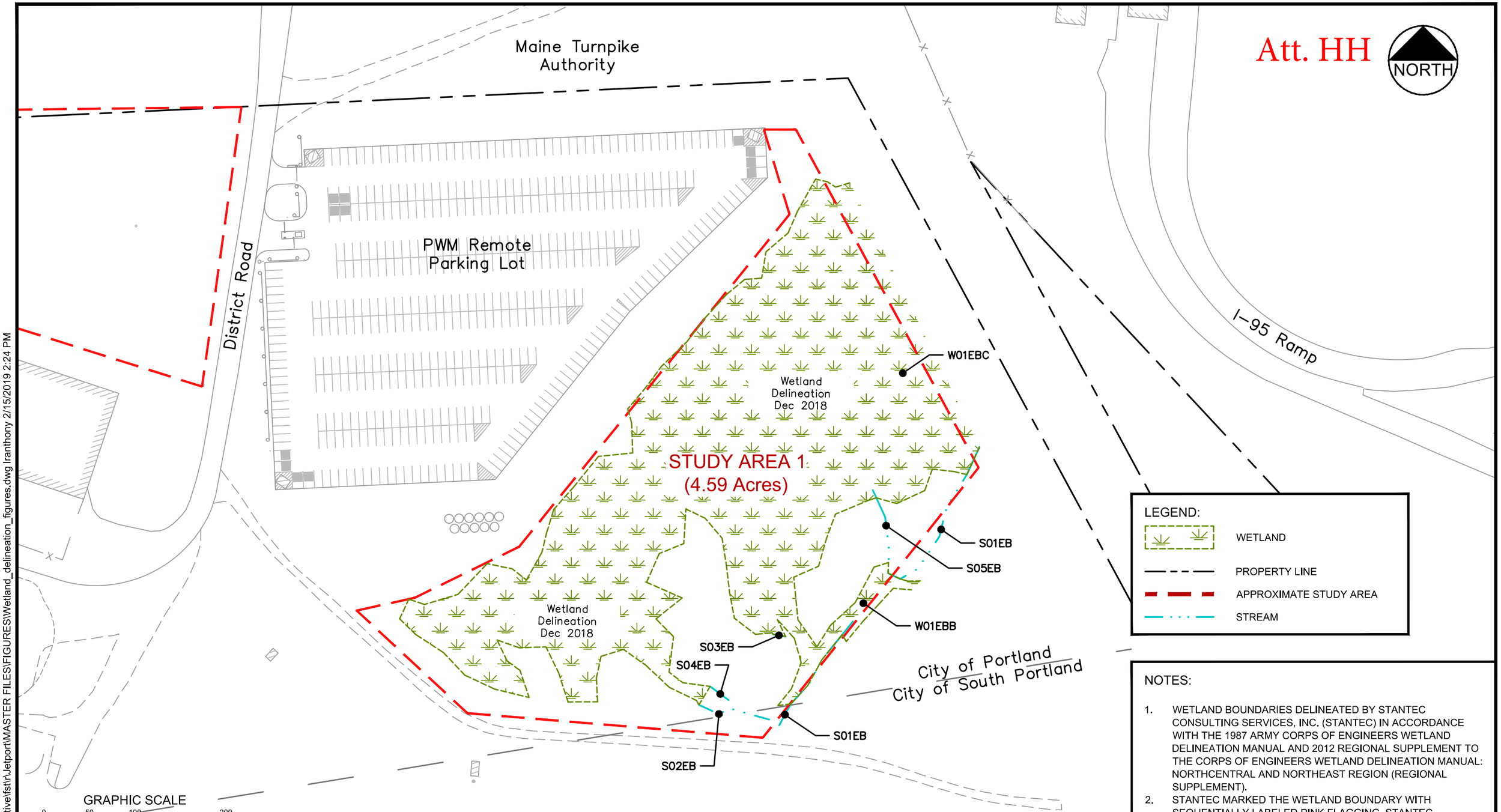
The Portland International Jetport's unrestricted cash fund balance as of June 30, 2023 (the close of its prior fiscal year) was $39.1 million. Based on the current engineering estimate of $8 million for the surface parking lot expansion the Jetport intends to fully fund this project out of its unrestricted cash reserves.

Please feel free to contact me if you have any questions or require any additional information.

Best regards,

Paul H. Bradbury, P.E.
Airport Director
Portland International Jetport

Att. HH



NOTES:

1. WETLAND BOUNDARIES DELINEATED BY STANTEC CONSULTING SERVICES, INC. (STANTEC) IN ACCORDANCE WITH THE 1987 ARMY CORPS OF ENGINEERS WETLAND DELINEATION MANUAL AND 2012 REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION (REGIONAL SUPPLEMENT).
2. STANTEC MARKED THE WETLAND BOUNDARY WITH SEQUENTIALLY LABELED PINK FLAGGING. STANTEC LOCATED THE WETLAND BOUNDARY FLAGS WITH A TRIMBLE MAPPING GRADE GLOBAL POSITIONING SYSTEM (GPS) UNIT, CAPABLE OF SUBMETER ACCURACY.

V:\1953\inactive\fst\rJetport\MASTER FILES\FIGURES\Wetland_delineation_figures.dwg lranthony 2/15/2019 2:24 PM

Stantec
482 Payne Road Scarborough Court
Scarborough, Maine 04074-8929
Tel. 207.883.3355
www.stantec.com

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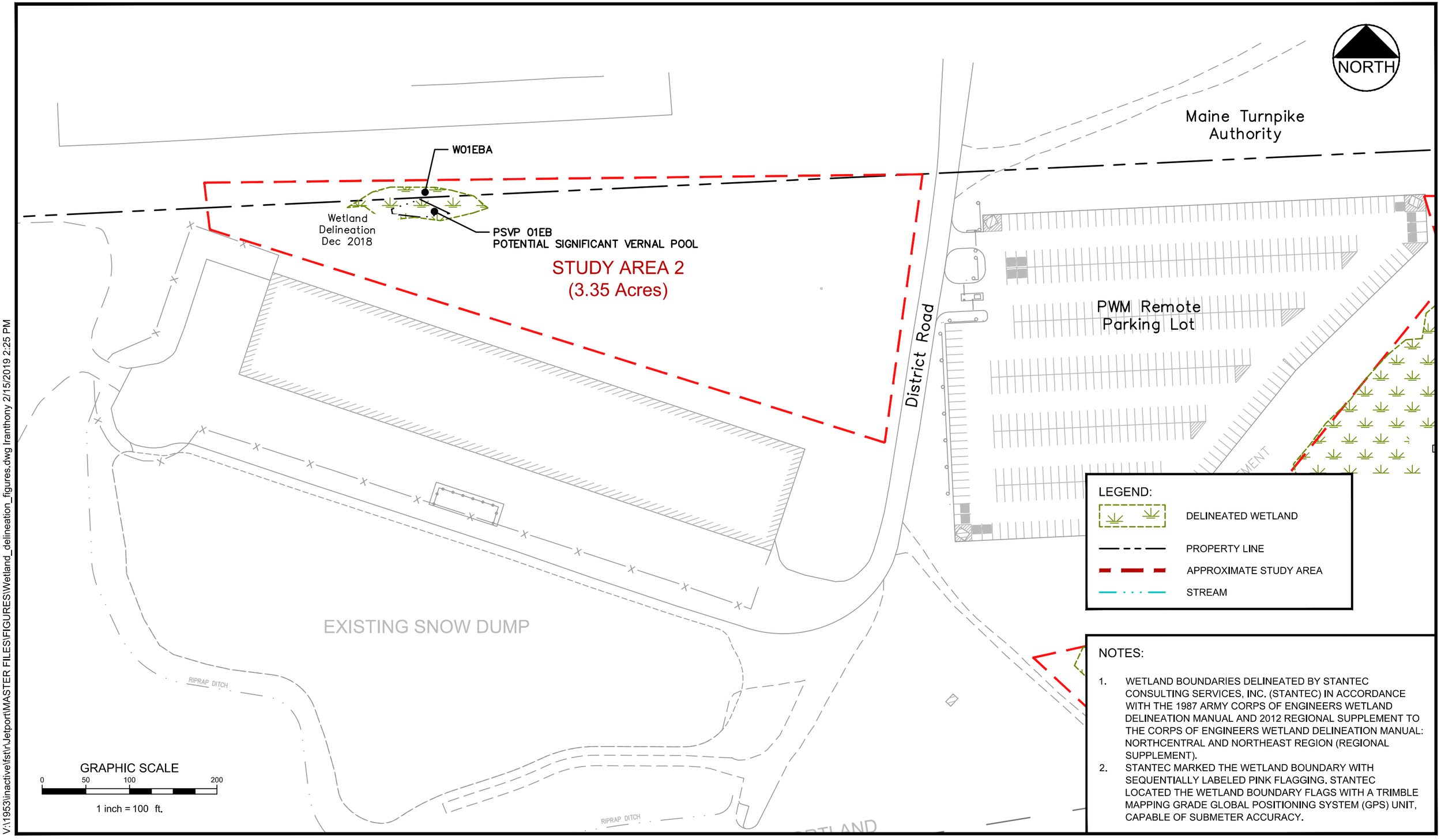
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Client/Project
PORTLAND INTERNATIONAL JETPORT
2018 DELINEATED WETLAND AREAS

File Name: wetland_delineation_figures	LA	DDA	DDA	2019.02.15
	DWN.	CHKD.	DSGN.	DATE

Title
STUDY AREA 1
DELINEATED WETLAND AREA

Figure No.
1



NOTES:

1. WETLAND BOUNDARIES DELINEATED BY STANTEC CONSULTING SERVICES, INC. (STANTEC) IN ACCORDANCE WITH THE 1987 ARMY CORPS OF ENGINEERS WETLAND DELINEATION MANUAL AND 2012 REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION (REGIONAL SUPPLEMENT).
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V:\1953\inactive\fstr\Jetport\MASTER FILES\FIGURES\Wetland_delineation_figures.dwg lranthony 2/15/2019 2:25 PM

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Client/Project
PORTLAND INTERNATIONAL JETPORT
2018 DELINEATED WETLAND AREAS

File Name: wetland_delineation_figures	LA	DDA	DDA	2019.02.15
	DWN.	CHKD.	DSGN.	DATE

Title
STUDY AREA 2 - DELINEATED WETLAND AREA AND POTENTIAL VERNAL POOL

Figure No.
2

Technical Capability

The Jetport has contracted with Sebago Technics Inc. for design and permitting services.

Sebago Technics, Inc. (STI) is a multi-disciplinary engineering firm that offers a wide range of services specializing in land development, planning, permitting, and engineering design services. We maintain a staff of multi-disciplinary professionals to provide services in the areas of general civil engineering, road and utility infrastructure design, construction management, permitting, landscape architecture, soil science, wetlands science, land surveying, and environmental services. Over the years, we have found our depth of service to be a key element in meeting the customer's needs with timely and responsive services.

AMY BELL SEGAL, RLA

Senior Project Manager/Senior Landscape Architect



In the course of her 30 year career, Amy has worked on a great variety of projects in the public and private sectors across Maine and New England. Her work has included site planning, permitting and construction management for residential, commercial, institutional, and industrial properties as well as recreation, trail, and community planning. She has earned a wonderful reputation through great work, relationships and communication.

EXPERIENCE

- **Portland Tree Canopy Project, Portland, ME**: Working with Parks and Forestry Staff to plan and implement tree planting strategies to increase the canopy within Bayside and Downtown neighborhoods.
- Working with Left Turn Enterprises to develop **Lakeside Norway,** a 6-acre four season event and recreation center and new brewery for Norway Brewing Company on Lake Pennesseewassee within the Downtown Gateway Area.
- **Arthur P. Girard Columbarium Garden,Westbrook, ME:** Conceptual design through construction documentation for a 400 niche columbarium garden in Woodlawn Cemetery. The Garden includes public and veterans sections, extensive landscaping, and a pergola for outdoor funeral services.
- **Red Cross Park Renovation, Greenville, ME:** Master Plan for renovation of 6-acre park on Moosehead Lake that provides swimming and boating access. Plan includes shoreland stabilization, improved parking, accessibility, playspace, trails, and a pump track. Park applying for funding through the Land & Water Conservation Fund Grant program.
- **Evergreen Cemetery Expasion, Rangeley, ME:** Master Plan for a multi generation expansion for Town-owned cemetery. Highlights of initial phases include a 500 in ground plots, 250 cremains plots, columbarium niche walls and a gathering space that overlooks Rangeley Lake and the western mountains.

Prior to her employment with Sebago Technics, Amy's experience includes:

- **Scarborough Municipal Campus Master Plan:** Developed in collaboration with Town Staff, the Master Plan provides short, medium and long-term planning strategies for balancing future development and recreational open space needs with environmental limitations.
- **Waterfront Zoning Study, Portland, ME:** Worked with Portland Planning Dept. to develop 3D Modeling analysis, height massing study, and evaluate viewshed impacts of proposed zoning changes within the WPDZ.
- **Portland Observatory Zoning Study, Greater Portland Landmarks:** Developed 3D Modeling analysis and height massing study of potential development surrounding historic structure.
- **Tannery Site Concept Master Plan, Camden, ME:** Concept Plan to guide the redevelopment of a brownfield site into a community park with space for a farmer's market, festivals, concerts, and an adventure playground along the Riverwalk Trail and Megunticook River.
- **Bonney Park, Androscoggin Riverwalk, Riverpark, Moulton Park Rail Trail, and Little Andy Park, Auburn, ME:** A series of linked open spaces along the Androscoggin River. Design, permitting, and construction management.

EDUCATION

BSLA, Cornell University
Denmark International Study Program, 1992

REGISTRATIONS

Maine Licensed Landscape Architect #2265
CLARB Certified
Maine DOT LPA Certified 2019 - 2023

SPECIAL TRAINING

MeDEP Low Impact Development Stormwater BMP training
Courses in ADA standards, Complete Streets, Sustainable Sites (ASLA LEED equiv)

PROFESSIONAL EMPLOYMENT

2020 - Present: Sebago Technics, Inc.
South Portland, ME

1992 - 2020: TJD&A
Landscape Architects & Planners
Yarmouth, ME

1988 - 1992: Bell & Spina Architects
Camillus,NY

SEBAGO TECHNICS

OWENS A. MCCULLOUGH, PE, LEED-AP

Senior Vice President of Strategy & Client Development



Mr. McCullough joined Sebago Technics in August of 1987 and is the Senior Vice President of Strategy and Client Development. He is responsible for the overall coordination and management of engineering, quality control, budgeting, planning and providing technical assistance to project managers and technical staff. His experience includes a broad range of civil engineering projects for both public and private clients including the related disciplines of surveying and landscape architecture. Mr. McCullough oversees the project's progress and monitors budgets, schedules, and client satisfaction.

In addition to his management responsibilities, Mr. McCullough is a Senior Project Manager. He works with municipal clients on public works projects, which include engineering review services, inspections, land planning, site and civil design, solid waste transfer and disposal, street reconstruction, utility system designs, airport engineering, SLODA/NRPA Permitting, site plan reviews, design-build projects, stormwater management/erosion control, construction specifications and regulatory agency applications.

Mr. McCullough also provides technical design and project management on private sector projects to include small and large-scale retail, municipal, commercial and industrial projects. These projects involve grading/drainage and utility design, public presentations and regulatory permitting. The extent and diversity of projects that Mr. McCullough has been involved with has provided him with a well-balanced technical and working knowledge within the municipal and private sectors.

EXPERIENCE

- **Managed Three General Services Contracts** (1993–1996, 2000–2004 and 2014–current) along with project specific general consulting - City of Portland, ME.
- **Managed a General Services Contract** (1996 through 2007 and 2014 - current) - Portland International Jetport.
- **Lead Design Team & Environmental Investigations** for Baxter Boulevard North Storage Conduit Storage Project (2012-2013), a 2 Million Gallon CSO Storage Project.
- **Roadway Engineering and General Consulting** - Gorham, Casco, Portland and Raymond, ME.
- **Landfill Closings** for the Town of Raymond, Fryeburg, Gorham, Naples, Winterport and City of Portland, ME.
- **Site Feasibility Assessment, Land Planning and Regulatory Permitting** for a new marine ramp on Cliff Island in Casco Bay.
- **Lewiston Auburn Water Pollution Control Authority:** Served as owner's techincal advisor and consultant for the strategic planning and preparation of Design-Build RFP for a new 2.1 Million Gallon CSO Storage Factility.
- Led the planning, design, bidding, and construction for a new **Municipal Services Facility in the City of South Portland.**
- **City of Biddeford LAP Sidewalk Project** - Owens provided design and construction administration, and inspection services of this 0.5 ± mile sidewalk in Biddeford, ME.
- Led the planning, design, bidding, and construction for a new **Municipal Services Facility in the City of Westbrook.**
- **Led Project Team** for Investigations and regulatory coordination to secure a VRAP at the former Plan-it recycling facility in Gorham, ME.
- **Facilities Planning** - Led Team and provided consultation for evaluations of the South Portland Police Station, Hamlin School, Cash Corner Fire Station, & O'Neil Street site redevelopment.
- **Maine Turnpike Authority York Toll Plaza** (2017-2018). Led the environmental investigation and secured the Maine NRPA and USACOE Individual Permits.
- Served as an expert witness for **Portland Air Freight** during litigation and subsequently prepared corrective design plan with construction administration for a Freight Terminal Facility.
- **Back Cove South Storage CSO Facility** - Project Manager for alternative planning and preparation of a Business Case Evaluation.

CERTIFICATIONS

Maine DOT Local Project Administration Recertification, 2023

LEED Accredited Professional

EDUCATION

University of Colorado, Denver, CO
B.S., Civil Engineering, 1987

REGISTRATIONS

Professional Engineer: Maine #7122

LEED Accredited Professional

MEMBERSHIPS

ACEC Maine – Board of Directors
President (2016-2017)
National Director 2018-2019

Rotary International

American Society of Civil Engineers

Former – Town of Gorham, Maine, Appeals Board, Member and Chairman

Former - Town of Limington, Maine, Planning Board, Member and Chairman

MEREDA Public Policy Committee

RECOGNITION

2013 ACEC Engineering Excellence Award, Baxter Boulevard South Storage Conduit

SEBAGO TECHNICS

TANNER F. GOODINE, EI

Civil Engineer



Mr. Goodine joined Sebago Technics, Inc., (STI) in March of 2021. Tanner graduated from the University of Maine with a degree in Civil Engineering. He has experience in construction with the Lane Corporation and in project design and inspection with Walsh Associates. He has served as a Resident Project Representative, permitted and designed projects and performed surveys using GPS. While at Sebago Technics, Tanner has served as a full-time construction inspector, performed erosion control inspections in both Maine and New Hampshire, and helped with design while not in the field.

EXPERIENCE

Bowdoin College Athletic Fields – Brunswick, ME – The project, situated in the Mare Brook Watershed in Brunswick—an Urban Impaired Watershed—involved three artificial turf fields and two natural grass fields. As the lead engineer on the project, Tanner oversaw site grading beyond the field boundaries, as well as stormwater design, and federal, state, and local permitting. This resulted in the three turf fields serving as self-treating BMPs, along with a 33,000 sq ft. subsurface stormwater detention and treatment system. The stormwater design met the Urban Impaired Stream Standard set by Maine DEP, and it even generated an excess of credits, signifying that the project not only met but exceeded expectations, further enhancing the quality of life in the watershed.

Portland Transportation Center Parking Lot Reconstruction & Stormwater Improvements – Full-time resident inspections and construction administration for the construction of a 3-acre parking lot and 17,000 square foot subsurface sand filter stormwater system along Thompson's Point in Portland, ME.

Boothbay Harbor Route 27 Sidewalk – Full-time resident inspections on a Locally Administered Project (LAP) of the construction of approximately 0.25 miles of paved sidewalk extension on Route 27 in Boothbay Harbor, ME.

Somerset Street & Kennebec Street Redesign, Portland, ME – Provided full-time resident inspections and construction administration for both the Somerset Street & Kennebec Street redevelopment projects for the City of Portland, ME.

3rd Party Inspections & Town Engineer Reviews for Wells, Cape Elizabeth, and Rye, NH – Performed weekly construction inspections as a third-party reviewer for Maine DEP to inspect stormwater and erosion control measures as well as performed engineering peer reviews for the Towns of Wells and Cape Elizabeth, ME, and Rye, NH.

Clifford Park, Boothbay, ME – Designed and provided construction administration for the redevelopment of a municipal park and three sports fields in Boothbay, ME. The project provided the area with an updated little league field, two multi-purpose recreational fields, stormwater and municipal utility improvements.

Shawnee Peak Parking Development – Provided engineering design and construction administration for the construction of a 2-acre parking lot and two underdrained soil filters in a critical watershed in Bridgton, ME.

EDUCATION

University of Maine - Orono, ME
B.S., Civil Engineering
2020

CERTIFICATIONS

Erosion and Sediment Control Certification Program

Local Project Administration (LPA)

OSHA-10

SEBAGO TECHNICS

Att. II

Wetlands (typ.) proposed to be altered

TOTAL PARKING SPACES

STANDARD PARKING SPACES	= 647
ADA PARKING SPACES	= 20
TOTAL PARKING SPACES	= 667

G SUMMARY: LOT A

	402 (***102 cell phone + 300 valet***)
	251
ng Spaces:	- 151
pacts:	0 square feet (SF)

Parking Lot A

Proposed Spaces:	251
Proposed Wetland Impact:	0 SF

Shuttle Stop

JETPORT BLVD.

JETPORT ACCESS ROAD

LONG TERM PARKING

PARKING GARAGE

EMBASSY SUITES

PWM PARK AND SHINE

PARK 'N JET

WESTBROOK ST.

PROPOSED PARKING LOT EXHIBIT (A)

1 OF 3

GRAPHIC SCALE

(IN FEET)
1 INCH = 50 FT.

REV	BY	DATE	STATUS
F.	OAM	11/15/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/19/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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OWEN'S A. MCCULLOUGH PE 7122

AMY BELL SEGAL, RLA 2265

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET

19059 S dwg, T48 C-100 Overall Site

Target Surface Parking Need
250 - 375 Surface Parking Spaces

TOTAL PARKING SPACES

STANDARD PARKING SPACES	= 647
ADA PARKING SPACES	= 20
TOTAL PARKING SPACES	= 667

Portion of wetlands to be preserved

Wetlands (typ.) proposed to be altered

Parking Lot B
Proposed Spaces: 196
Proposed Wetland Impact: 2,533 SF

Shuttle Stop

COMBINED PARKING SUMMARY: LOT A + LOT B

Existing Spaces:	402 (***102 cell phone + 300 valet***)
Proposed Spaces:	447
Net Increase in Parking Spaces:	+ 45
Proposed Wetland Impacts:	2,533 SF

Shuttle Stop

Parking Lot A
Proposed Spaces: 251
Proposed Wetland Impact: 0 SF

JETPORT BLVD.
INTERNATIONAL PKWY.
LONG TERM PARKING
EMBASSY SUITES
JETPORT ACCESS ROAD
PWM PARK AND SHINE
WESTBROOK ST.
PARKING GARAGE
PARK 'N JET
TERMINAL
OHU
GRND

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

AMY BELL SEGAL, RLA 2295

OWENS A. MCCULLOUGH, PE 7122

REV	BY	DATE	STATUS
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WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

PROPOSED PARKING LOT EXHIBIT (A+B)
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

19059 S dwg, TAB C-100 Overall Site

SHEET 2 OF 3

Target Surface Parking Need
250 - 375 Surface Parking Spaces

TOTAL PARKING SPACES

STANDARD PARKING SPACES	= 647
ADA PARKING SPACES	= 20
TOTAL PARKING SPACES	= 667

Portion of wetlands to be preserved

Shuttle Stop

Wetlands (typ.) proposed to be altered

Parking Lot B
Proposed Spaces: 196
Proposed Wetland Impact: 2,533 SF

Shuttle Stop

Parking Lot C
Proposed Spaces: 220
Proposed Wetland Impact: 8,618 SF

COMBINED PARKING SUMMARY: LOT A + LOT B + LOT C

Existing Spaces:	402 (***102 cell phone + 300 valet***)
Proposed Spaces:	667
Net Increase in Parking Spaces:	+ 265
Proposed Wetland Impacts:	11,151 SF

Shuttle Stop

Parking Lot A
Proposed Spaces: 251
Proposed Wetland Impact: 0 SF

JETPORT BLVD.
INTERNATIONAL PKWY.
LONG TERM PARKING
EMBASSY SUITES
JETPORT ACCESS ROAD
PWM PARK AND SHINE
WESTBROOK ST.
PARK' N JET
PARKING GARAGE
TERMINAL
GRAPHIC SCALE
(IN FEET)
1 INCH = 50 FT.

OWENS A. MCCULLOUGH PE 7122
AMY BELL SEGAL RLA 2295

REV	BY	DATE	STATUS
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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

PROPOSED PARKING LOT EXHIBIT (A+B+C)
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

19059 S.dwg, TAB:C-100 Overall Site

SHEET 3 OF 3

Impact on Surrounding Street Systems 14-14.6.1 (A)

The proposed project will not create or aggravate any significant hazard to safety on the surrounding street network nor will it substantially increase congestion on any street which is already at a level of service below Level “D”. In designing the proposed layout of the project considerable attention has been placed on vehicular circulation and possible impacts to the surrounding area.

The proposed project involves the construction of 240,000 s.f. of additional parking within the Jetport campus to better serve the current customers.

Att. JJ

CURRENT TREE LEGEND

Landscape islands	26
Entry/exit	31
Perimeter	53
Property buffer	57
Combined Proposed Total	**167****
Preserved (≥10")	25

CURRENT LANDSCAPE PLAN

Combined Parking Summary:

Proposed parking spaces	667
Net increase in parking spaces	**+265***

(*This total is within the 250 surface parking space target)

Tree Summary:

Required number of landscape island trees (***1 tree + 5 shrubs for every 5 parking spaces***)	134 ***(667 / 5)***
Current number of landscape island trees	26
Total number of proposed trees	**167****

(**Includes landscape islands, entry/exit, perimeter, property buffer)

Shuttle Stop

Subsurface stormwater

Shuttle Stop

Subsurface stormwater

Shuttle Stop

JETPORT BLVD.

INTERNATIONAL PKWY.

JETPORT ACCESS ROAD

WESTBROOK ST.

EMBASSY SUITES

TERMINAL

PARKING GARAGE

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

AMY BELL SEGAL RLA 2295

OWENS A. MCCULLOUGH PE 7122

REV	BY	DATE	STATUS
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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

CURRENT LANDSCAPE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

19059 LS.dwg, TAB L-100 Overall Landscape

SHEET 1 OF 2

ALTERNATE TREE LEGEND

	Landscape islands	115
	Perimeter	29
	Property buffer	47
	Combined Proposed Total	**191****
	Preserved (≥10")	25

ALTERNATE LANDSCAPE PLAN

Combined Parking Summary:

Proposed parking spaces	574
Reduction with conforming landscape islands plantings	-93
Net increase in parking spaces	**+172***

(*This total is 78 spaces under the 250 surface parking space target)

Tree Summary:

Required number of landscape island trees (1 tree + 5 shrubs for every 5 parking spaces)	115 ***(574/ 5)***
Current number of landscape island trees	115
Total number of proposed trees	**191****

(**Includes landscape islands, perimeter, property buffer)

Alternate Landscape Note: The perimeter trees in this plan were reduced to the minimum requirement; the entry/exit trees were also removed because they are not considered landscape island trees.

Shuttle Stop

Subsurface stormwater

Shuttle Stop

Subsurface stormwater

Shuttle Stop

JETPORT BLVD.

INTERNATIONAL PKWY.

JETPORT ACCESS ROAD

WESTBROOK ST.

EMBASSY SUITES

TERMINAL

PARKING GARAGE

GRAPHIC SCALE

(IN FEET)
1 INCH = 50 FT.

AMY BELL SEGAL RLA 2295

OWENS A. MCCULLOUGH PE 7122

REV	BY	DATE	STATUS
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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

ALTERNATE LANDSCAPE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET 2 OF 2

19059 RENDERING L5.dwg, TAB:L-100 Overall Landscape

Access and Circulation 14-14.6.1 (B)

1. *In general*

    a. The proposed project involves the development of a new surface parking lot to service the existing users of the Portland Jetport. The additional parking area has been designed to work within the existing internal vehicular circulation of the Jetport campus.

    b. The proposed development site is partially comprised of an undeveloped area, an existing paved lot, and an existing gravel lot located in the Jetport campus. The proposed project will result in improvements to campus parking and has been designed to have sidewalks that connect to existing sidewalks to allow for better pedestrian circulation to and from the main terminal building.

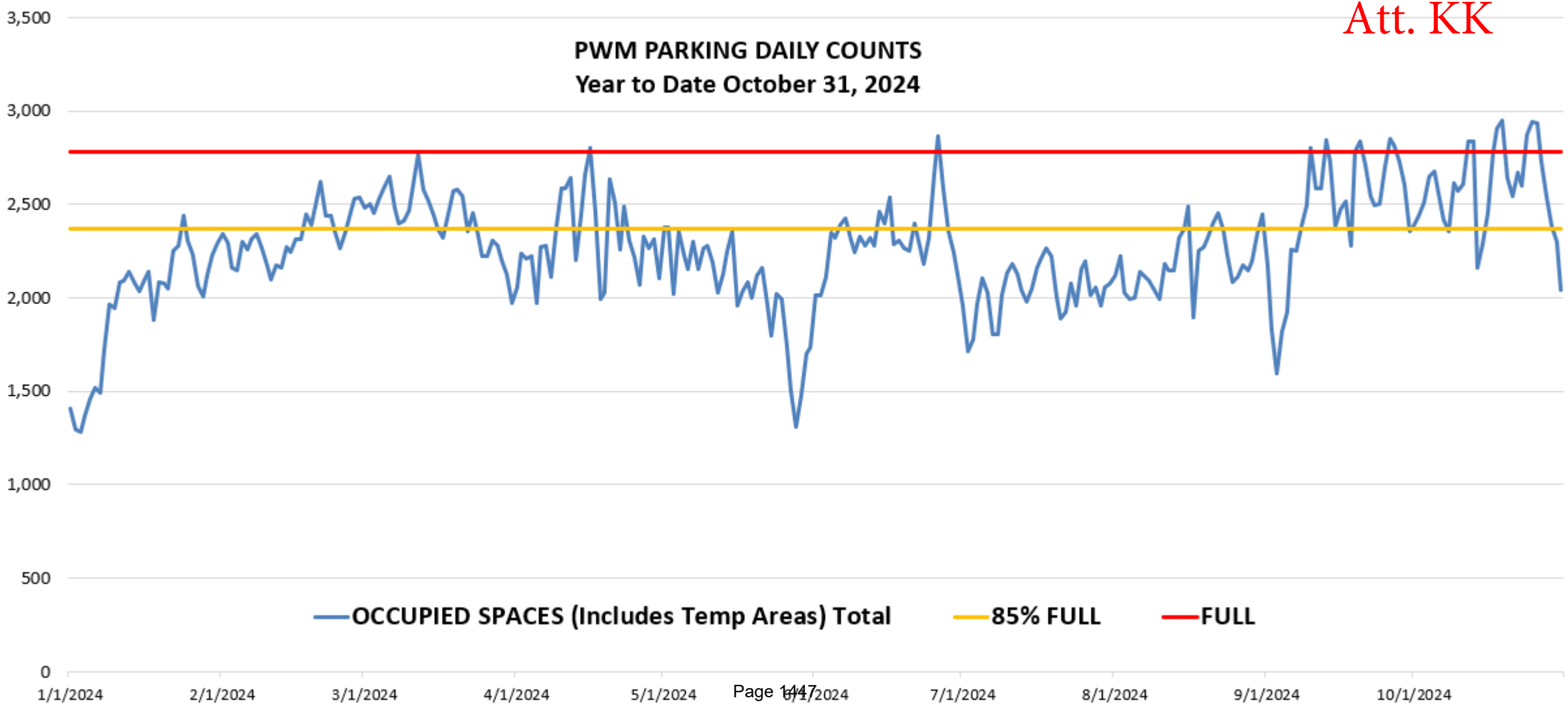
    c. All points of access and egress to the parking lot have been located to avoid conflicts with existing turning movements and traffic flows.

2. *Loading and servicing*
   Not applicable. The proposed project involves the construction of a surface parking lot.

3. *Curb and sidewalks*
   The proposed project site has been designed to include sidewalks. All proposed improvements will be designed based to the standards of the City Technical Manual.

   Please see the plan set for more detailed information regarding vehicular and pedestrian circulation.

Att. KK


PWM PARKING DAILY COUNTS
Year to Date October 31, 2024
3,500
3,000
2,500
2,000
1,500
1,000
500
0
OCCUPIED SPACES (Includes Temp Areas) Total
85% FULL
FULL
1/1/2024
2/1/2024
3/1/2024
4/1/2024
5/1/2024
6/1/2024
7/1/2024
8/1/2024
9/1/2024
10/1/2024

Public Transit 14-14.6.1(C)

1. A transit shelter is not required.

   The proposed surface lot is to be located within the existing Portland Jetport campus which has a bus stop located at the Ground Transportation Booth near the airport baggage claim. The proposed surface lot will be utilized by Jetport customers who arrive at the site via car. The lot will not be utilized by mass transit users; therefore an additional transit shelter is not being proposed.

2. Not applicable

Attachment 8

https://taf.faa.gov/Home/RunReport

APO TERMINAL AREA FORECAST DETAIL REPORT
Forecast Issued January 2024

PWM

	Enplanements			AIRCRAFT OPERATIONS									
				Itinerant Operations					Local Operations				
Fiscal Year	Air Carrier	Commuter	Total	Air Carrier	Air Taxi & Commuter	GA	Military	Total	Civil	Military	Total	Total Ops	Total Tracon Ops	Based Aircraft
REGION:ANE **STATE:**ME **LOCID:**PWM														
CITY:PORTLAND **AIRPORT:**PORTLAND INTL JETPORT														
2025*	750,576	451,206	1,201,782	23,361	9,313	18,608	758	52,040	4,866	96	4,962	57,002	104,619	44
2026*	765,832	460,370	1,226,202	24,355	8,928	18,645	758	52,686	4,869	96	4,965	57,651	104,903	45
2027*	782,614	470,460	1,253,074	24,916	8,946	18,682	758	53,302	4,873	96	4,969	58,271	105,773	46
2028*	799,814	480,872	1,280,686	25,403	9,043	18,719	758	53,923	4,876	96	4,972	58,895	106,768	47
2029*	816,171	490,758	1,306,929	25,862	9,141	18,756	758	54,517	4,880	96	4,976	59,493	107,728	48

Forecast indicates a 2.032% to 2.203% increase in enplanements at PWM between 2025 and 2029.

Off-Street Parking 14-14.6.1 (D)

1. *Vehicular Parking:* The proposed project involves the construction of a surface parking lot which will provide 684 parking spaces. All parking will be designed in accordance with the requirements outlined in the city code. Please refer to the plan set for parking layout information.

Existing Surface Parking (Provided by Standard Parking)

Parking Garage Long Term	1,993 spaces
Pink Lot	483 spaces
Surface Long Term	345 Spaces
Sub-total	**2,821 spaces**
Valet Parking	300 spaces
Cell Phone Lot	102
Total w/ Valet Parking	**3,223 with Vallet Parking**

New Built Condition Parking Summary

Parking Garage Long Term	1,993 spaces
Pink Lot	483 spaces
Surface Long Term	345 Spaces
Sub-total	**2,821 spaces**
New Long-Term Parking including displaced Valet Parking	684 spaces
Total	**3,505**
Net Increase	**282 Spaces**

2. *Bicycle Parking:* No additional bicycle racks are proposed with these improvements. The Jetport has a designated area for bicycle parking located on the north and south ends of the terminal.

3. *Snow Storage:* The proposed project is located on the Portland Jetport campus which has an existing snow removal plan. Snow storage areas have been provided on the plans. Sidewalks will be cleared of snow in accordance with the Jetport maintenance plan.

4. *Electric Vehicle charging:* The applicant proposes to provide EV charging stations within the existing airport parking garage and to construct the new surface lot to be EV ready along the perimeter parking spaces of the two lots.

EV parking requirements for the site:

20% EV = 56 spaces

50% capable = 141 spaces

The applicant has requested a waiver for the Level 2 requirement as outlined in the Technical Manual, as the lots are to be utilized for long-term parking therefore making a Level 1 charging station more appropriate.

Waiver Request

The applicant requests a waiver from the Portland Technical Manual *Transportation Systems, 1.14 Electric Vehicle Infrastructure* standard:

> *New structured and surface parking lots of five or more spaces shall include energized electrical outlets or installed chargers capable of providing Level 2 EV charging or higher to 20% of parking spaces (rounded down to the nearest whole number). An additional 50% of spaces must be made EV-ready, meaning that they are served by sufficient conduit and electrical service to allow for future installation of electric vehicle supply equipment at every space.*
>
> *An applicant may request a reduction in the number of required EV-installed or EV ready parking spaces if Level 3 EV charging is proposed. In this case, spaces served by Level 3 charging may be substituted for Level 2 at a ratio to be determined in consultation with the Department of Public Works.*
>
> *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 applicant is proposing to meet the number of EV ready and capable sites as outlined in the Technical Manual but is requesting a waiver of the charger level (Level 1 chargers instead of Level 2). The proposed project involves the construction of a surface lot for long-term parking; therefore, Level 1 charging capability is more appropriate for the use.

Charging Levels

EV charging stations fall into three level categories: Level 1, 2, and 3.

Level 3 Charging: Level 3 stations will charge a vehicle from empty in a short period of time. The charge time typically ranges from 20-40 mins with some variability depending on the charger and vehicle manufacturer. This level of charger is often found at shopping centers, rest stations, and privately owned pay-to-park parking lots. These are more costly charging stations to install and supply power to.

Level 2 Charging: Level 2 chargers will charge a vehicle from empty in approximately 10-12 hours (depending on charger and vehicle manufacturer). This level of charger is often utilized by private residences and train or bus stations, where people might leave their car for the day.

Level 1 Charging: Level 1 chargers will charge a vehicle from empty in approximately 24-50 hours (depending on charger and vehicle manufacturer). This level of charger is utilized for residential use and in situations where there is more time available for vehicle charging.

Level 1 charging is well suited to the business and vacation travel patterns that exist at an airport. Given the nature of how parking is utilized at the airport (primarily multi-day stays*), level 2 and 3 chargers are not as practical. The level 1 charger will serve the needs of the airport users as well as provide a cost-effective means for the airport to provide greater coverage of this amenity.

**For example, the average duration of parking stay at the airport in September 2023 was 4.25 days (per Michael Collins of SP Plus parking)*

EV Charger Availability Regionally

The Portland International Jetport is committed to sustainable practices and providing environmentally friendly services to airport customers. Understanding how EV chargers are best utilized and being able to provide this service without causing an unnecessary financial burden on the taxpayers of the City of Portland was an important part of the design process of the proposed parking expansion. The incorporation of EV chargers in developments is relatively new. Research of the subject found no suitable studies that discuss EV charger availability and use at airports; therefore, STI conducted a review of similarly sized airports within the surrounding region to provide a frame of reference of existing industry standards. A review of eight airports was completed: Bangor International Airport; Manchester-Boston Regional Airport; Portsmouth International Airport (at Pease); Bradley International Airport; Rhode Island T.F. Green International Airport; Patrick Leahy Burlington International Airport; and Cape Cod Gateway Airport.

Review of these airports found that the majority had very few EV charging stations (0-2) and these stations were located primarily in hourly parking areas or in cell phone lots (see Table 1). There were two airports that had between 15 – 17 charging stations: Rhode Island (17) and Burlington (15). One of these (Rhode Island) relied on a third-party parking provider located abutting the airport for all but one of these stations. The number of EV chargers and EV ready stations that are proposed for this project far exceeds what is provided at any of the similarly sized airports in the northeast. The proposed project will position the Jetport well ahead of area airports as being prepared for any future increase in EV use by the public.

Table 1. EV Availability

Airport	EV Stations**
Portland International Jetport	Existing: 12 (4 Level 2 in short term, 8 level 1 in long term) Proposed: 56 chargers/141 EV ready
Bangor International	0
Manchester-Boston Regional	2 (short term/hourly parking)
Portsmouth International	0
Bradley International	0 (long term/short term) 2 stations in cell phone lot (must stay with car)
Rhode Island T.F. Green International	17 (16 in privately owned parking garage next to airport utilized for overflow/1 in short term parking)
Patrick Leahy Burlington International	15 (in garage long term/short term parking – stations may have penalty for long term use)
Cape Cod Gateway	0 (In the process of obtaining funding)

***A review of each airport website for parking information was completed and confirmation via phone was completed.*

EV Charging Nationally

The U.S. Department of Energy – Efficiency and Renewable Energy maintains a national database of Electric and Plug-in Hybrids Nationally State by State. The most recent data (2022 from USDOE) identifies Maine as having 0.4% of all registered vehicles being electric and 0.5% of all registered vehicles comprised of Plug in Hybrids. The aggregated total is 0.9% of all registered vehicles. On a percentage basis the Jetport is proposing to provide 20% EV Level 1 and 50% EV ready, vastly exceeding the current volumes providing capacity to accommodate growth over time.

Parking Use

The yearly increase in enplanements at the Jetport speaks to the need for an increase in parking availability. Review of the average duration of these trips shows how parking is utilized and reinforces Level 1 chargers as being the more suitable choice. Over the last 6 years, even with the impacts to travel as a result of covid, the number of enplanements has increased (see Table 2)

Table 2. Enplanements

Year	Total Enplanements
2018	1,073,567
2019	1,094,038
2020	397,242
2021	857,312
2022	999,130
2023	1,109,037
2024(Jan-June)	472,137 (extrapolating using July-December 2023 1,150,096)

Review of past years by SP Plus parking found that there has also been an increase in the duration of stays for those using the Jetport parking areas. In September of 2019 the average stay was 3 days 22 hours. In September of 2023 the duration had increased 8 hours to an average 4 days 6 hours.

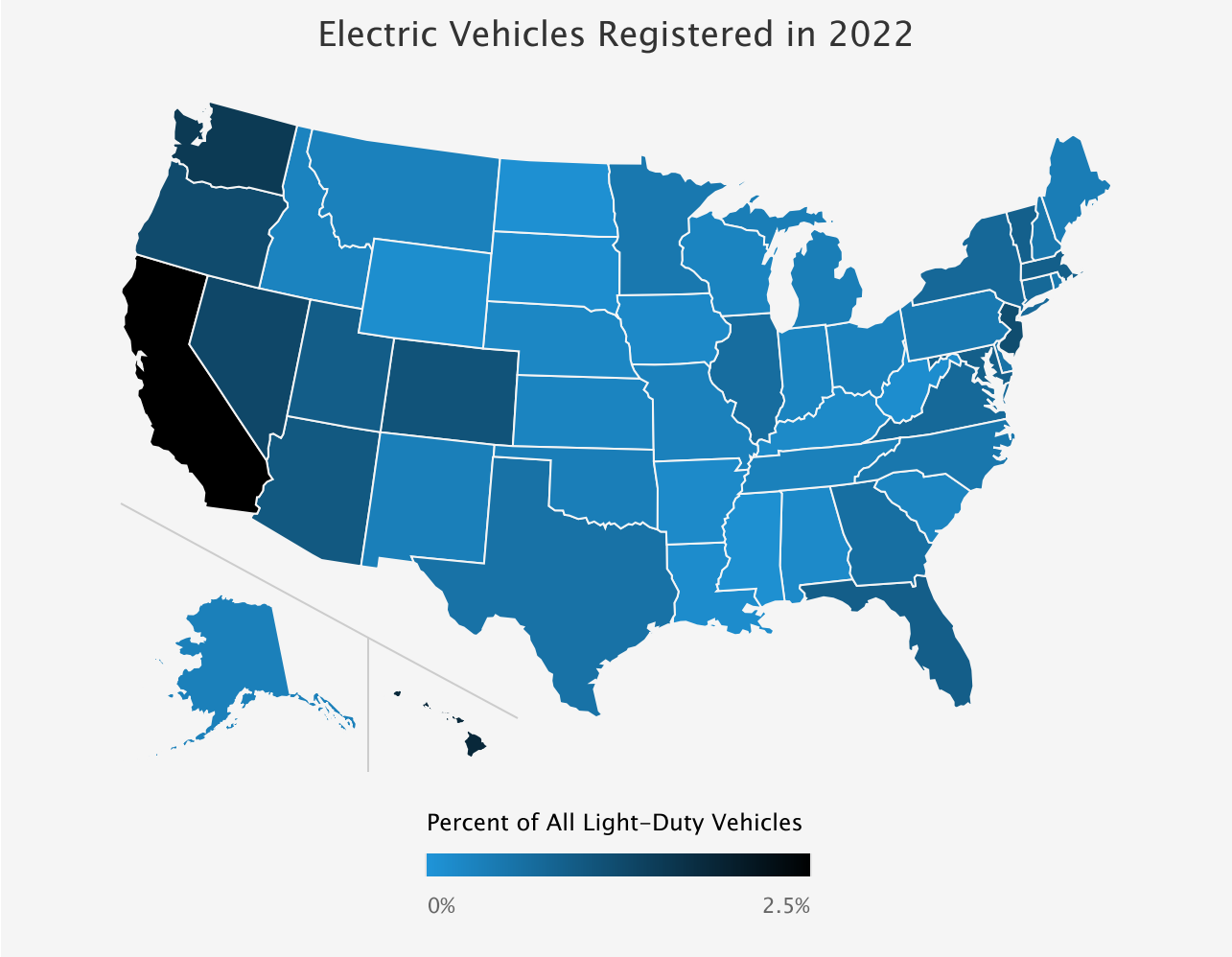
In support of the waiver, the Jetports Parking Manager (SP Parking) tracks parking data at the Jetport. Attached is a spreadsheet provided SP Parking that includes data on the length of stays the Jetport based on transaction. The length of stay longer than 24 hours is 93.23% of the parking transactions. Given that more than 90% are staying 24 hours or longer, the data reinforces the approach of installing Level 1 charges given the length of stay.

TransAtlas

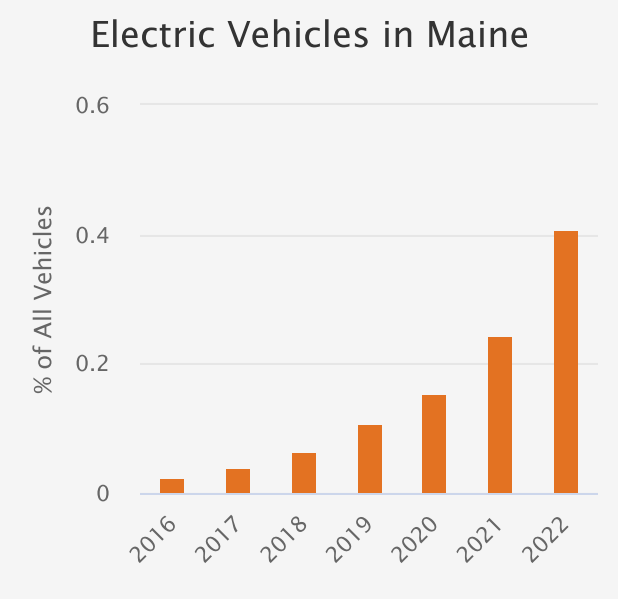
This map shows the density of light-duty vehicles per state based on registration counts derived by the National Renewable Energy Laboratory with data from Experian Information Solutions. Counts are rounded to the closest 100 vehicles and reflect the total number of light-duty registered vehicles through the selected year. Fuel types are based on vehicle identification numbers (VINs), which do not reflect aftermarket conversions to use different fuels or power sources.

For a table of this data comparing state counts by fuel type, see Vehicle Registration Counts by State (/vehicle-registration). For related fueling infrastructure, see the Alternative Fueling Station Locator (/stations/) and the Station Counts by State (/stations/states) page.

2022 | Electric Vehicles



Maine



○ Vehicle Count ◉ Market Share ○ Population

(mailto:technicalresponse@icf.com) **Need project assistance?**
Email the Technical Response Service (mailto:technicalresponse@icf.com) or call 800-254-6735 (tel:800-254-6735)

The AFDC is a resource of the U.S. Department of Energy's Vehicle Technologies Office (https://energy.gov/eere/vehicles/technology-integration).

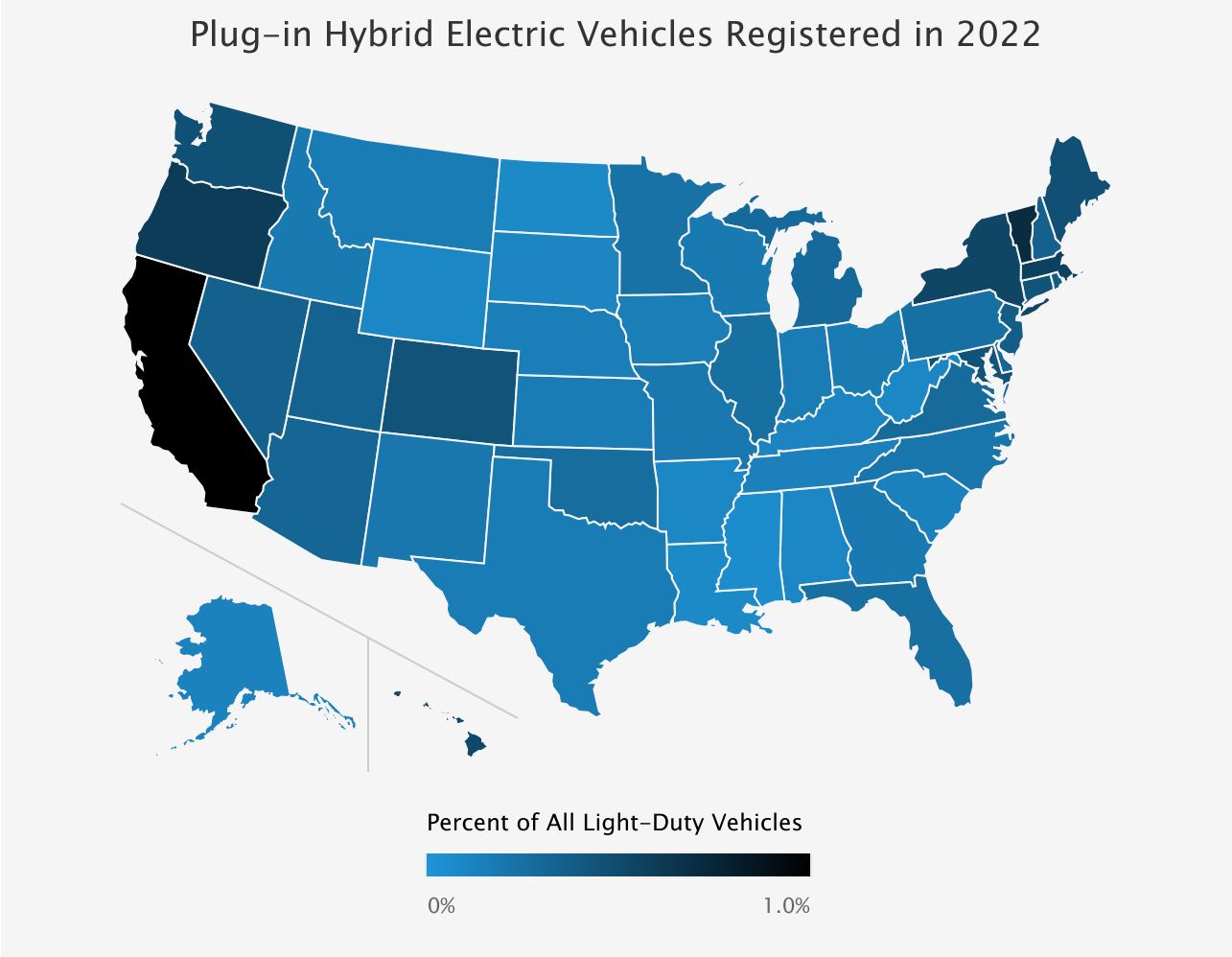
Contacts (/contacts.html) | Web Site Policies (https://energy.gov/about-us/web-policies) | U.S. Department of Energy (https://energy.gov) | USA.gov (https://www.usa.gov)

TransAtlas

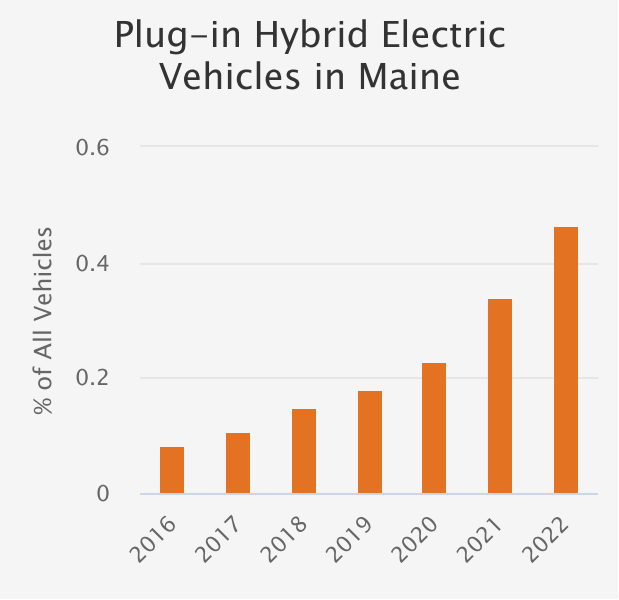
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For a table of this data comparing state counts by fuel type, see Vehicle Registration Counts by State (/vehicle-registration). For related fueling infrastructure, see the Alternative Fueling Station Locator (/stations/) and the Station Counts by State (/stations/states) page.

2022 | Plug-in Hybrid Electric Vehicles



Maine



○ Vehicle Count ◉ Market Share ○ Population

(mailto:technicalresponse@icf.com) **Need project assistance?**
Email the Technical Response Service (mailto:technicalresponse@icf.com) or call 800-254-6735 (tel:800-254-6735)

The AFDC is a resource of the U.S. Department of Energy's Vehicle Technologies Office (https://energy.gov/eere/vehicles/technology-integration).

DURATION OF STAY REPORT

Facilities: (DEFAULT)
Fee Computers, Auto Pay Stations, Opus Express Parc

From: 01/01/2024 00:01
To: 06/30/2024 23:59

Rate = '4'
or Rate = '5'

Printed on 08/21/2024 13:49

TRANSIENT ACTIVITY

Time Categories								
From	To	Transactions	% of Total Transactions	Total Net Amount	% of Total Amount	Average Net Ticket Value	Test Ticket Amount	Projected Ticket Total
0 hr -	0 hr 30 mn	7	0.01%	$0.00	0.00%	$0.00	$0.00	$0.00
0 hr 30 mn -	1 hr	4	0.01%	$0.00	0.00%	$0.00	$0.00	$0.00
1 hr -	1 hr 30 mn	260	0.33%	$723.00	0.01%	$2.78	$0.00	$0.00
1 hr 30 mn -	2 hr	246	0.31%	$926.00	0.02%	$3.76	$0.00	$0.00
2 hr -	2 hr 30 mn	209	0.26%	$960.00	0.02%	$4.59	$0.00	$0.00
2 hr 30 mn -	3 hr	169	0.21%	$976.00	0.02%	$5.78	$0.00	$0.00
3 hr -	4 hr	305	0.39%	$2,171.00	0.04%	$7.12	$0.00	$0.00
4 hr -	5 hr	245	0.31%	$2,240.00	0.04%	$9.14	$0.00	$0.00
5 hr -	6 hr	247	0.31%	$2,758.00	0.05%	$11.17	$0.00	$0.00
6 hr -	7 hr	223	0.28%	$2,957.00	0.05%	$13.26	$0.00	$0.00
7 hr -	8 hr	258	0.33%	$3,552.00	0.07%	$13.77	$0.00	$0.00
8 hr -	9 hr	212	0.27%	$2,845.00	0.05%	$13.42	$0.00	$0.00
9 hr -	10 hr	202	0.26%	$2,737.00	0.05%	$13.55	$0.00	$0.00
10 hr -	11 hr	162	0.20%	$2,143.00	0.04%	$13.23	$0.00	$0.00
11 hr -	12 hr	202	0.26%	$2,848.00	0.05%	$14.10	$0.00	$0.00
12 hr -	13 hr	260	0.33%	$3,667.00	0.07%	$14.10	$0.00	$0.00
13 hr -	14 hr	247	0.31%	$3,469.00	0.06%	$14.04	$0.00	$0.00
14 hr -	15 hr	186	0.24%	$2,621.00	0.05%	$14.09	$0.00	$0.00
15 hr -	16 hr	157	0.20%	$2,224.00	0.04%	$14.17	$0.00	$0.00
16 hr -	24 hr	1,554	1.96%	$21,916.00	0.40%	$14.10	$0.00	$0.00
24 hr -	36 hr	3,338	4.22%	$87,145.00	1.61%	$26.11	$0.00	$0.00
36 hr -	48 hr	4,010	5.07%	$112,956.00	2.08%	$28.17	$0.00	$0.00
48 hr -	60 hr	6,971	8.81%	$274,845.00	5.07%	$39.43	$0.00	$0.00
60 hr -	72 hr	6,424	8.12%	$271,140.00	5.00%	$42.21	$0.00	$0.00
72 hr -	84 hr	8,842	11.17%	$469,213.00	8.65%	$53.07	$0.00	$0.00
84 hr -	96 hr	7,055	8.91%	$396,704.00	7.31%	$56.23	$0.00	$0.00
96 hr -	108 hr	6,964	8.80%	$467,308.00	8.61%	$67.10	$0.00	$0.00
108 hr -	120 hr	5,436	6.87%	$382,055.00	7.04%	$70.28	$0.00	$0.00
120 hr -	132 hr	3,735	4.72%	$304,057.00	5.60%	$81.41	$0.00	$0.00
132 hr -	144 hr	3,225	4.07%	$271,734.00	5.01%	$84.26	$0.00	$0.00
144 hr -	156 hr	2,188	2.76%	$208,981.00	3.85%	$95.51	$0.00	$0.00
156 hr -	168 hr	2,099	2.65%	$206,444.00	3.81%	$98.35	$0.00	$0.00
168 hr -	180 hr	2,743	3.47%	$295,789.00	5.45%	$107.83	$0.00	$0.00
180 hr -	192 hr	2,708	3.42%	$304,042.00	5.60%	$112.28	$0.00	$0.00
192 hr -	999 hr	8,049	10.17%	$1,310,616.00	24.16%	$162.83	$0.00	$0.00
	Totals	**79,142**	**100.00%**	**$5,424,762.00**	**100.00%**	**$68.54**		**$0.00**

DURATION OF STAY REPORT

Facilities: (DEFAULT)

From: 01/01/2024 00:01
To: 06/30/2024 23:59

Printed on 08/21/2024 13:49

CONTRACT ACTIVITY

Time Categories			
From	**To**	**Transactions**	**% of Total Transactions**
0 hr -	0 hr 30 mn	17,813	18.44%
0 hr 30 mn -	1 hr	5,831	6.04%
1 hr -	1 hr 30 mn	4,077	4.22%
1 hr 30 mn -	2 hr	3,056	3.16%
2 hr -	2 hr 30 mn	3,038	3.15%
2 hr 30 mn -	3 hr	2,745	2.84%
3 hr -	4 hr	5,700	5.90%
4 hr -	5 hr	6,388	6.61%
5 hr -	6 hr	5,327	5.51%
6 hr -	7 hr	4,702	4.87%
7 hr -	8 hr	4,340	4.49%
8 hr -	9 hr	11,904	12.32%
9 hr -	10 hr	8,157	8.44%
10 hr -	11 hr	5,128	5.31%
11 hr -	12 hr	2,349	2.43%
12 hr -	13 hr	1,109	1.15%
13 hr -	14 hr	565	0.58%
14 hr -	15 hr	439	0.45%
15 hr -	16 hr	227	0.24%
16 hr -	24 hr	602	0.62%
24 hr -	36 hr	265	0.27%
36 hr -	48 hr	204	0.21%
48 hr -	60 hr	332	0.34%
60 hr -	72 hr	311	0.32%
72 hr -	84 hr	372	0.39%
84 hr -	96 hr	222	0.23%
96 hr -	108 hr	270	0.28%
108 hr -	120 hr	150	0.16%
120 hr -	132 hr	145	0.15%
132 hr -	144 hr	116	0.12%
144 hr -	156 hr	129	0.13%
156 hr -	168 hr	80	0.08%
168 hr -	180 hr	70	0.07%
180 hr -	192 hr	48	0.05%
192 hr -	999 hr	381	0.39%
	Totals	**96,592**	**100.00%**

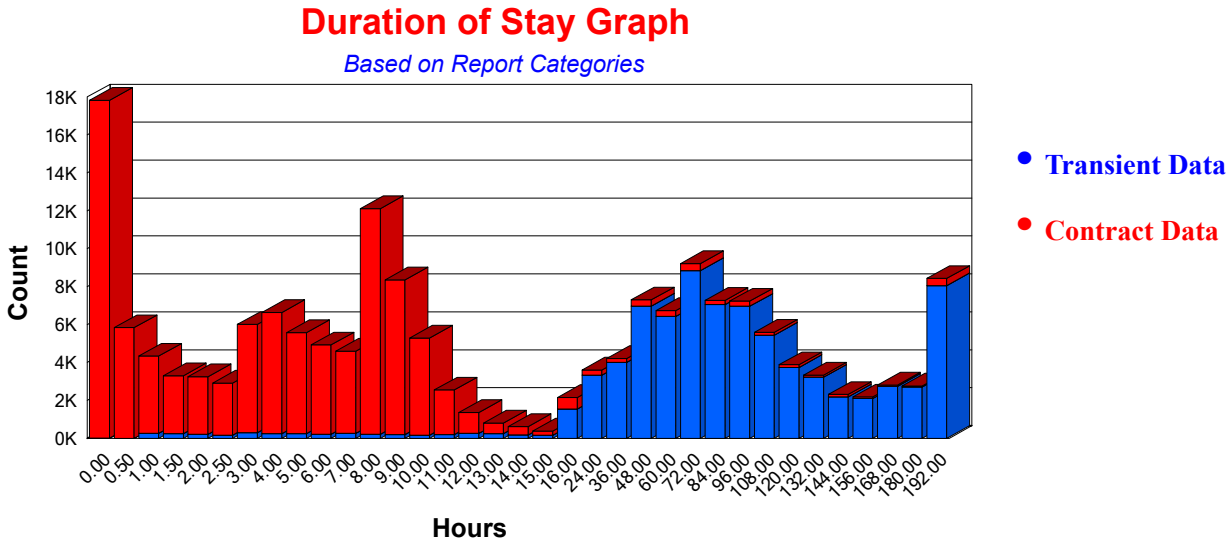
DURATION OF STAY REPORT

Facilities: (DEFAULT)

From: 01/01/2024 00:01
To: 06/30/2024 23:59

Rate = '4'
or Rate = '5'

Printed on 08/21/2024 13:49



Att. MM

CITY OF PORTLAND, MAINE
MEMORANDUM

TO: *Jon Jennings, City Manager*

FROM: *Paul Bradbury, Airport Director*

DATE: *January 14, 2020*

RE: *Portland International Jetport Parking Need*

I'm writing to provide more information on the need to commence planning and design for additional public surface parking spaces at the Portland International Jetport. The Jetport is a multimodal hub connecting many forms of ground transportation to the national air transportation system. This ground transportation includes bus, taxi, limo, charters, transportation network companies (Uber/Lyft), commercial shuttles, personal vehicles, rental cars, bicycles, pedestrians, and others. As a multimodal hub the Jetport's goal is to efficiently support all these methods of transportation. This said, the reality is that our travelers come from a mostly rural geographical area covering Maine, eastern central New Hampshire, and New Brunswick. The primary transportation means for much of this large mostly rural area remains personal vehicles.

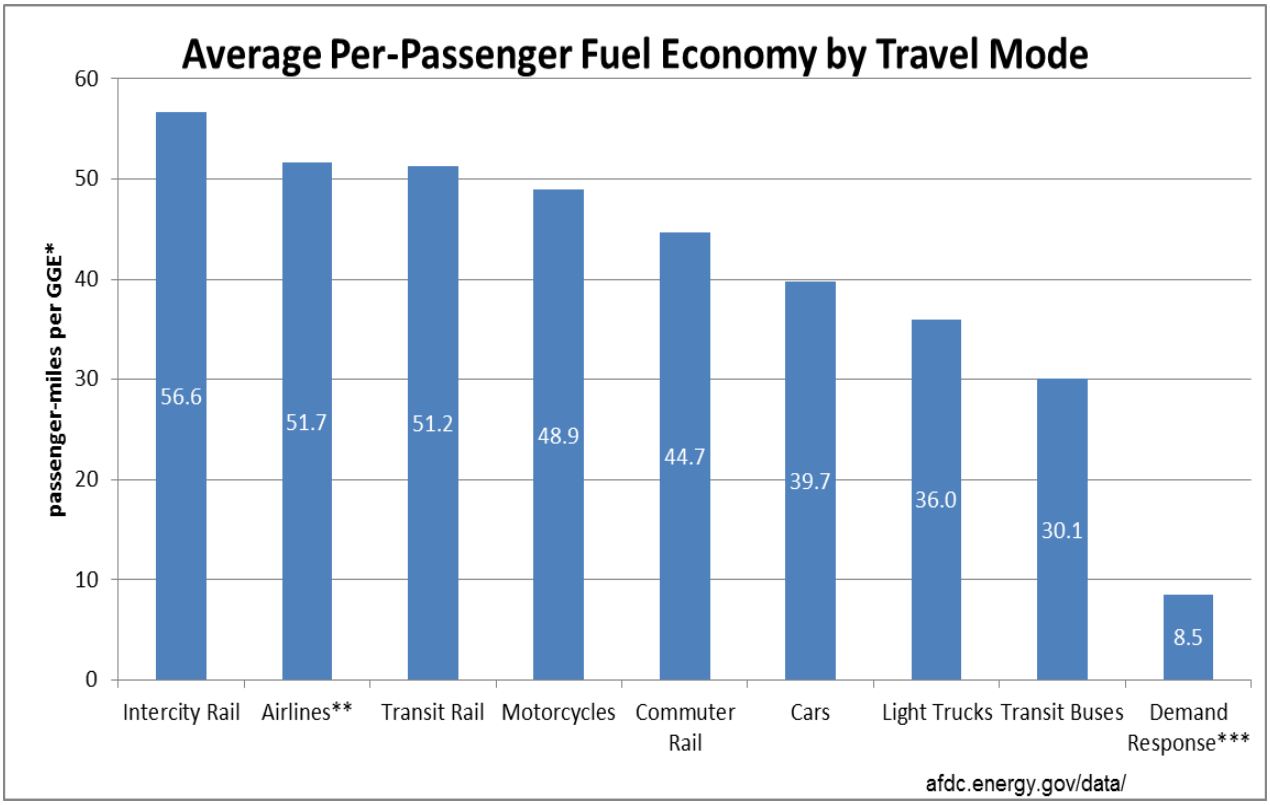
Over the past two years the Jetport has experienced substantial 17% growth. In 2019 the Jetport provided service to 2.18 million total passengers. According to industry standards, origination destination airports like the Jetport require approximately 1.25 parking spaces per 1,000 total passengers. Based upon this metric the Jetport requires 2,725 long term public parking spaces to accommodate its current passenger volumes. The Jetport has 2,325 long term public parking spaces on campus and an additional 459 long term parking spaces at its discount lot on District Road for a total of 2,784 spaces. At peak times of year we are now at capacity and need to consider options for additional parking capacity.

The introduction of transportation network companies like Uber and Lyft and electric vehicles is indicative of the rapid technological change that is happening in ground transportation. The next big technological change for ground transportation will be the widespread introduction of autonomous vehicles. This will not be in the short term less than ten years, but very likely it will occur shortly thereafter. This introduction can be expected to dramatically change car ownership and how vehicles are used. My expectation is the amount of airport parking needed per 1,000 total passengers will drop once autonomous vehicles become mainstream. For this reason I am proposing additional surface parking rather than another parking structure. A modest increase in surface parking of 250-375 spaces near the terminal and/or at the discount lot on District Road will provide the capacity needed to meet short term 3-5 year parking demand while giving us time to better understand the impacts technology will have on our future parking needs. I do not believe an expansion of the existing parking garage, which would require 30 year bonded debt is appropriate at this time given the uncertainty around future parking demand.

Many believe our national air transportation system and the use of scheduled commercial aviation is an energy intensive and inefficient means of travel, but the data tells a different story. United States domestic air travel actually provides the second highest average per passenger fuel

economy in the United States at 51.7 passenger miles per gasoline-gallon equivalent. Only intercity rail at 56.6 passenger miles per gasoline-gallon equivalent is more efficient. This data last updated in November 2018 by the U.S. Department of Energy is provided below. Scheduled U.S. domestic flights use less average energy per passenger mile than transit rail, commuter rail, cars, or transit buses. The reason for this low per passenger energy consumption is the high load factors and significant recent improvement in jet engine efficiency.

Scheduled commercial aviation is the safest and one of the most energy efficient ways to travel in this country. The Jetport provides a critical multimodal connection to this safe and efficient air transportation system. If we want our statewide air trade area to continue to access this connection locally and conveniently via the Jetport, we must provide adequate ground transportation access including parking.



Data Source: Table 2.14 of the Transportation Energy Data Book 36B. 2018. Oak Ridge National Laboratory. (cta.ornl.gov/data/index.shtml). BTU to GGE conversion taken from Appendix A3 of the Monthly Energy Review, September 2018. (eia.gov/totalenergy/data/monthly/pdf/sec13_3.pdf)

Notes:

*Gasoline-Gallon Equivalents (GGE) are used to compare gasoline, diesel, and electricity on a level basis. Alterations to the source data were made to account for the inefficiencies of electricity production. This impacts rail the most because it has the highest level of electric power.

**Domestic flights only. All fuel use is attributed to passengers, none to cargo that might be using the same airplane.

*** Includes passenger cars, vans, and small buses operating in response to calls from passengers to the transit operator who dispatches the vehicle.

Acronyms:MPGGE: Miles per gasoline-gallon equivalent

pmpGGE: passenger mile per gasoline-gallon equivelant

Worksheet available at afdc.energy.gov/data Last updated 11/26/2018

Preservation of Significant Natural Features 14-14.6.2(A)

The project site does not include any significant natural features. The proposed project area is comprised of existing gravel and bituminous parking areas and a previously undeveloped area of the Portland Jetport campus. The project will result in approximately 8,618 sf of wetland impacts.

Please see the attached wetlands report and the plan set for the existing conditions plan.

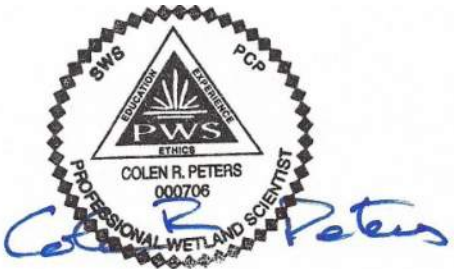
Wetland Delineation

To: **Owens McCullough, P.E. Project Manager**

From: **Cole Peters, PWS**

Date: **July 10, 2023**

Project: **19059- Portland Jetport Parking Expansion**



A field delineation of jurisdictional wetlands has been completed at the Portland International Jetport on both sides of Jetport Boulevard, northeast of International Parkway (Figure 1). The Federal Emergency Management Agency (FEMA) has prepared Flood Insurance Rate Maps (FIRM) for this part of Portland (Community Panel Number 230051 0012C, effective date 12/8/1998). No part of the area reviewed occurs within a FEMA designated 100-year floodplain (Zone A, AE). The City of Portland Zoning Map (June 24, 2022) identifies the area including the Site as the Airport Business (AB) District and no part of the area reviewed is subject to the City's Shoreland Zoning Ordinance.

Wetland Delineation:

Wetland boundaries were delineated at the Site by Cole Peters, PWS, and Anna Biddle, LSS, on May 31, 2023 with sequentially numbered pink flagging. The flagging was then located with a sub-meter accuracy global position system (GPS) unit to depict these boundaries on Figure 1.

Evidence indicative of wetland from three parameters – vegetation, soils and hydrology – was used to identify and delineate the wetlands in accordance with the 1987 *US Army Corps of Engineers Wetland Delineation Manual* and the subsequent *Regional Supplement to the US Army Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (January 2012). With the exception of unusual or atypical situations, evidence of wetland must be exhibited by all three parameters for an area or position to be designated as wetland. Characteristics of the delineated wetland are described below.

The freshwater wetland community on the Site is dominated by trees and shrubs that include: red maple (*Acer rubrum*), speckled alder (*Alnus incana*), arrowwood (*Viburnum recognitum*), glossy buckthorn (*Frangula alna*), and winterberry holly (*Ilex verticillata*). In open areas and the herbaceous understory are: meadowsweet (*Spirea latifolia*), bluejoint (*Calamagrostis canadensis*), tussock sedge (*Carex stricta*), and royal, cinnamon and sensitive ferns (*Osmunda regalis, Osmumdastrum cinnamomeum*, *Onoclea sensibilis*). All of these plants are identified as "Obligate" (OBL), "Facultative Wetland" (FACW) or "Facultative" (FAC) indicators of wetland by the 2016, *State of Maine National Wetland Plant List* prepared by the US Army Corps of Engineers and are therefore hydrophytes.

Dominant vegetation throughout upland areas of the Site consists of: white pine (*Pinus strobus,*), northern red oak (*Quercus rubra*), trembling aspen (*Populus tremuloides*), Tatarian honeysuckle (*Lonicera tatarica*), Japanese barberry (*Berberis thunbergii*), multiflora rose (*Rosa multiflora*), and bracken fern (*Pteridium aquilinum*). All of these plants are classified as "Facultative Upland" (FACU) or are not indicative of wetland, and when in predominance are indicative of upland.

The medium intensity soil survey prepared by the USDA Natural Resource Conservation Service (NRCS) indicates the poorly drained Swanton (Sz) Series occurs beneath wetlands delineated at the Site. The fine sandy loam of the Sz Series is designated as hydric and indicative of wetlands. A hand auger was also used to evaluate soils in areas delineated as wetlands. At sampling locations in areas dominated by hydrophytes, characteristics were representative of hydric soil indicator criteria F3: Depleted Matrix.

Hydrology is considered to be the "*driving force*" of wetlands (Mitch and Gosselink, 1986) and inherently is responsible for the adaptation of certain vegetation (hydrophytes) and the development of specific soil characteristics (hydric) indicative of wetlands. At the time of the survey, evidence of wetland hydrology observed at the Site included: localized standing water, saturated soils, sediment deposits, water-stained leaves, and drainage patterns indicative of wetlands.

The National Wetland Inventory (NWI) makes use of *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et. al, 1979) to differentiate types of wetlands. With this system, freshwater wetlands are classified based on dominant plant type as: Palustrine Forested (**PFO**), Palustrine Scrub-Shrub (**PSS**), Palustrine Emergent (**PEM**), Palustrine Open Water (**POW**), or Palustrine Unconsolidated Bottom (**PUB**). Wetlands classified by this system as PFO or PSS are more commonly known of as swamps whereas PEM typically represent marshes or meadows. POW and PUB generally lack vegetation and correspond to pond.

On the southeast side of Jetport Boulevard, deciduous trees generally dominate the two small isolated areas of deciduous forested wetlands (Photos 1, 2) (Figure 1) that are designated as PFO1 by the NWI Classification System. PFO1 wetland also occurs on the opposite side of Jetport Boulevard along International Parkway (Photo 3). The narrow, linear, parallel configuration of wetland indicate it was previously ditched, potentially for agriculture. Another area of wetland to the northeast borders the landscaped edge of Jetport Boulevard and extends onto adjoining property to the north (Photo 4). The wetland is dominated by a mixture of deciduous trees and shrubs designated by NWI as PFO1/PSS1. Based on depth, water near Jetport Boulevard in this wetland is likely to be permanent, potentially due to the absence of a drainage outlet.

Vernal Pools:

Vernal pools (**VP**s) are defined by the Maine Department of Environmental Protection (MDEP) as: "*a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and no viable populations of predatory fish*" (Chapter 335 §9). "Significant vernal pools" (**SVP**s) are recognized by the presence of fairy shrimp (*Eubrandhipus* spp.), or more than 40 wood frog (*Rana sylvatica*) egg masses or at least 10 blue spotted salamander (*Ambystoma laterale*) or 20 spotted salamander (*A. maculatum*) egg masses. VPs documented to be used by state-listed rare, endangered, or threatened species such as Blanding's turtles (*Emydoidea blanddingii*), spotted turtles (*Clemmys guttata*), ringed boghaunter dragonflies (*Williamsoni linterni*), Eastern ribbon snakes (*Thamnophis sauritus*), wood turtles (*Clemmys insculpta*), four-toed salamanders (*Hemidactylium scutalum*), swamp darner dragonflies (*Epiaeschna heros*), and comet darner dragonflies (*Anax longipes*), are also considered to be SVPs (Ch 335 §9B 1-4).

Under the provisions of Section 404 of the federal Clean Water Act, the US Army Corps of Engineers (USACE) regulates activities in "*waters of the United States"* including VPs, which are defined by the USACE New England District in the State of Maine General Permit (GP, reissued on October 14, 2020). The NED definition, while very similar to MDEP's, does not reference "natural" and does not recognize

or differentiate SVPs based on number of indicator species egg masses. Instead, the GP definition states: "*VPs are depressional wetland basins that typically go dry in most years and may contain inlets or outlets, typically of intermittent flow. Vernal pools range in both size and depth depending on landscape position and parent material(s). In most years, VPs support one or more of the following obligate species: wood frog (Rana sylvatica), spotted salamander (Ambystoma maculatum), blue spotted salamander (A. laterale) fairy shrimp (Eubrandhipus* spp.). *However, they should preclude sustainable populations of predatory fish."*

West of Penobscot Bay and southward from Augusta to Fryeburg, the Maine Department of Inland Fisheries and Wildlife (MDIFW) recommends evidence of VP indicator species egg masses be observed on separate dates during periods established for wood frogs (April 10th to April 25th) and spotted salamanders (April 20th to May 10th). Potential vernal pools (**PVP**s) can be identified outside (before/after) the recommended survey period, but are not necessarily indicative of regulatory jurisdiction. During the recommended survey periods VP and SVP characteristics are to be documented on MDIFW data forms and located with submeter accuracy GPS in order to identify the portion of Critical Terrestrial Habitat (**CTH**) within 250 feet around an SVP referred to as *Significant Vernal Pool Habitat* (**SVPH** Ch 335 §9A (7)).

Vernal pool surveys were conducted at the Site on April 11, and 23, 2023. Depressions do not occur in the three areas of PFO1 wetland for ponding of surface water to a depth and duration that is suitable for the occurrence of any form of vernal pool or indicator species egg masses. Ponded water in the PFO1/PSS1 wetland is suggestive of a vernal pool however, no amphibian indicator egg masses were observed here during either survey date. During the second survey, a solitary mallard (*Anas platyrhynchos*) drake was feeding in the pool.

Regulatory Assessment:

Activities in and adjacent to wetlands are regulated by the MDEP under the provisions of the Natural Resources Protection Act (NRPA) and associated Permit by Rule (Chapter 305), Wetland and Waterbodies Protection (Chapter 310) and Significant Wildlife Habitat (Chapter 335) Rules. Certain characteristics are relevant to whether a wetland is regulated as a "wetland of special significance" (WOSS).

Wetlands at the Site:

- do not contain a "critically imperiled (S1)" (Ch 310 §3F) or an "imperiled (S2)" (Ch 310 §3L) community as defined by the Natural Areas Program;
- do not contain significant wildlife habitat (38 MRSA §480-B (10) mapped by MDIFW;
- are not located within 250 feet of a "coastal wetland" (38 MRSA §480-B (2));
- are not located within 250 feet of a "great pond" (38 MRSA §465-A);
- do not contain more than 20,000 square feet of open water or aquatic or emergent marsh vegetation;
- do not occur in a 100-year floodplain mapped by the Federal Emergency Management Agency (FEMA) (38 MRSA §480-B(2-D));
- are not a "peatland" (Ch 310 §3P); and

- do not occur within 25 feet of a "river, stream or brook" (38 MRSA §480-B (9)).

Wetlands at the Site are therefore not "wetlands of special significance" (WOSS- Ch 310 §4A (1-8)).

Typically, activities requiring alteration of less than 4,300 square feet of non-WOSS wetland would be a "minor alteration" and would not require a NRPA permit (38 M.R.S.A. §480 Q (17)). In excess of this but less than 15,000 square feet would require a Tier 1 permit and a Tier 2 permit would be necessary for impacts between 15,000 square feet and an acre (43,560 square feet). The cumulative extent of previous approved wetland impacts is relevant to determining the applicable Tier of NRPA permitting. Excluding specific activities authorized by Permit by Rule (PBR - Chapter 305) provisions of the NRPA, activities exceeding one acre would require a Tier 3 permit.

Wetlands at the Site are also regulated by the US Army Corps of Engineers as "*waters of the United States*" under the provisions of Section 404 of the Clean Water Act. To authorize minimal-impact activities in wetlands, including placement of fill, the Corps makes use of a General Permit (GP) for the State of Maine. Such impacts to wetlands are broken down into two permit categories under the GP based on the following area thresholds: Category 1 – less than 15,000 square feet and Category 2 – 15,000 square feet to three acres. Activities eligible for Category 1 activities can be authorized with a Self-Verification Notification (SVN) Form submitted to the Corps. Category 2 activities are reviewed in conjunction with the US Fish and Wildlife Service, and the US Environmental Protection Agency and as appropriate the National Marine Fisheries Services, and require an application and written approval from the Corps of Engineers.



Photograph 1: Southwestward view of the 2,810± sq ft isolated forested wetland (PFO1) with International Parkway in the background.



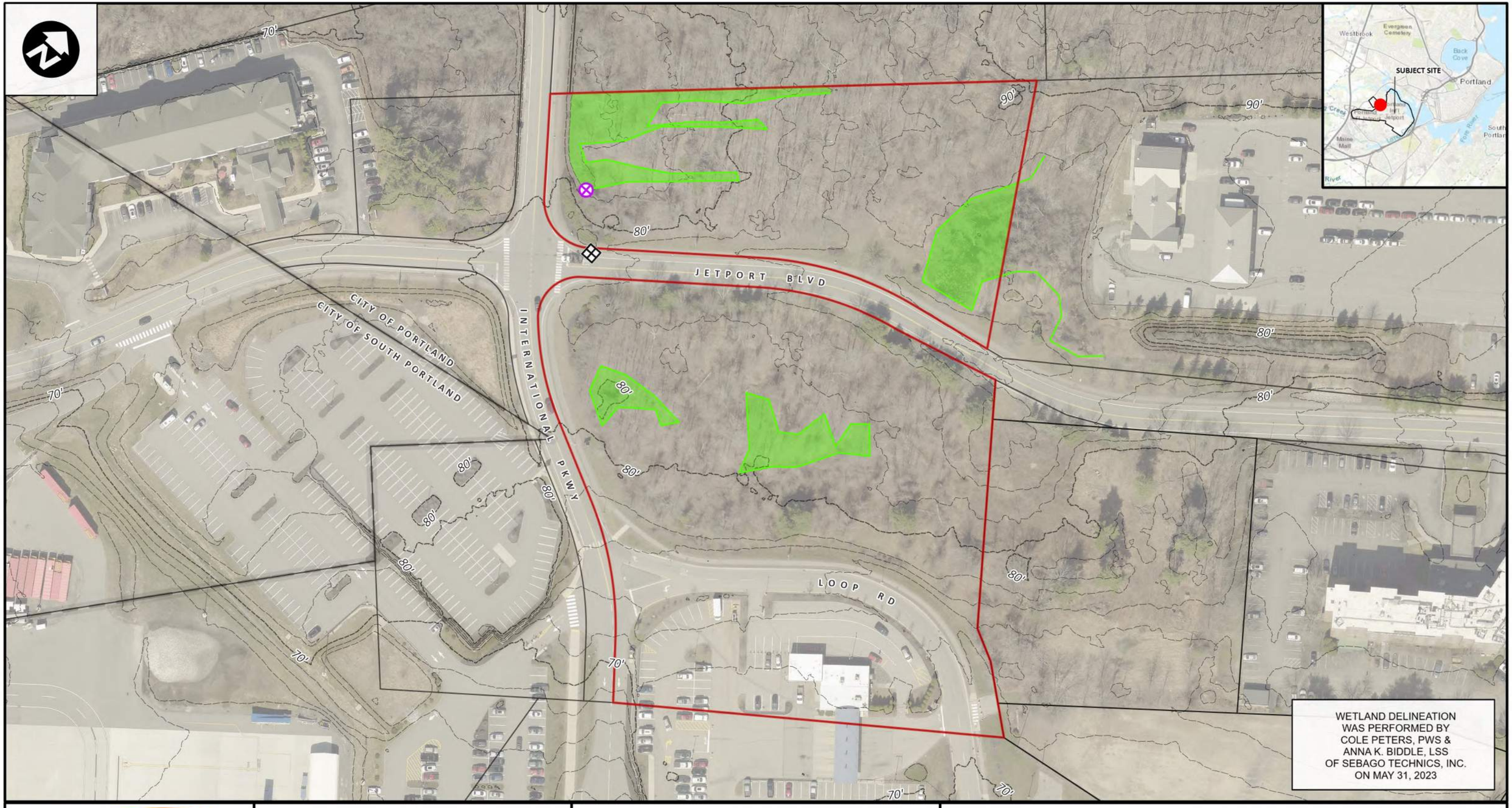
Photograph 2: Eastward view of the 5,820± isolated forested wetland (PFO1) with the Loop Road at center-right.



Photograph 3 Westward down gradient view of the forested wetland (PFO1) on the north side of Jetport Boulevard that appears to have been historically ditched.



Photograph 4: Northward view of ponded water in the deciduous forested and scrub shrub (PFO1/PSS1) wetland on the north side of Jetport Boulevard. No amphibian egg masses indicative of vernal pools were observed in the wetland during surveys conducted on April 11 and 21, 2023.



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75 John Roberts Rd. - Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

0 100 200 300
Feet
1" = 100' when printed at 11 x 17

FIGURE 1: NATURAL RESOURCES MAP

TAX MAP 210A, LOTS B-1 & A-7

INFORMATION: MAINE GEOLIBRARY
2020 USGS LIDAR TOPOGRAPHY
2021 SPRING ORTHOIMAGERY

THIS IS NOT A BOUNDARY SURVEY.
WETLAND FEATURES WERE DELINEATED
USING GPS TECHNOLOGY CAPABLE OF SUB-METER ACCURACY.

LOCATION: JETPORT BOULEVARD
PORTLAND, ME

DATE: 7/10/2023
PROJECT NUMBER: 19059

19059.aprx

- AREA OF INTEREST (AOI)
- TOWN BOUNDARY
- CATCH BASIN
- CULVERT OUTLET - 24" RCP
- DELINEATED WETLAND BOUNDARY
- WETLANDS WITHIN AOI
- 2' CONTOUR
- 10' CONTOUR

Map Projection : NAD 1983 StatePlane Maine West FIPS 1802 Feet

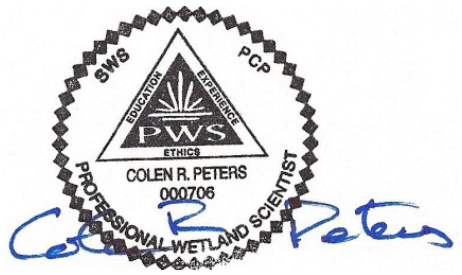
Wetland Functional Assessment

To: **Owens McCullough, P.E. Project Manager**

From: **Cole Peters, PWS**

Date: **February 5, 2024**

Project: 19059- Portland Jetport Parking Expansion



Parking expansion at the Portland International Jetport (PWM) will require 8,625 sq ft (0.198 acre) of wetland impact (the "Project"). Locations of impact are identified on the Grading Plan (Sheet C-203) with respective extents of the two areas which range between 2,807 and 5,818 sq ft (0.064 to 0.133 acre).

Surface drainage at this part of PWM is generally to the southwest toward an unnamed perennial tributary of the Stroudwater River. The mixed deciduous forested wetland (PFO1) at the Site occurs in the upper watershed of this stream more than approximately 900 ft from a defined stream channel (Figure 1). Wetland to be impacted by the Project lacks characteristics indicative of a "freshwater wetland of special significance" (Chapter 310 §4-A (1–8).

A field delineation of jurisdictional wetlands has been completed at PWM on both sides of Jetport Boulevard, northeast of International Parkway (Figure 1). The Federal Emergency Management Agency (FEMA) has prepared Flood Insurance Rate Maps (FIRM) for this part of Portland (Community Panel Number 230051 0012C, effective date 12/8/1998). No part of the area reviewed occurs within a FEMA designated 100-year floodplain (Zone A, AE). The City of Portland Zoning Map (June 24, 2022) identifies the area including the Site as the Airport Business (AB) District and no part of the area reviewed is subject to the City's Shoreland Zoning Ordinance.

An assessment of wetland functions and values that will be lost or degraded is necessary for alterations exceeding 15,000 square feet, in a freshwater wetland not of special significance (Chapter 310 §5-C (6)(a)(ii). The functional assessment presented below is based on field observations during the wetland delineation, referenced maps and other relevant, published information.

Functional Assessment Method:

A Descriptive Approach to assessing wetland functions and values described in a September 1999 supplement (the Supplement)[1] to *The Highway Methodology Workbook* by the New England Division of the U.S. Army Corps of Engineer (Corps) is an assessment method accepted by Maine Department of Environmental Protection (MDEP). Functions and values of wetlands at the Site are evaluated by this method and are discussed below.

The Supplement indicates "*Wetland functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society*". Wetland functions relate to the ecological significance of wetland properties without regard to subjective values. Wetland functions are generally considered to be the

[1] US Army Corps of Engineers, New England District, 1999. *The Highway Methodology Workbook Supplement: Wetland Functions and Values, A Descriptive Approach,* NAEEP-360-1-30A, 32 pgs.

result of biologic, geologic, hydrologic, biogeochemical, and/or physical processes that occur or take place in a wetland. Functions attributed to wetlands include the following:

- Groundwater Recharge/Discharge
- Floodflow Alteration (Storage & Desynchronization)
- Fish and Shellfish Habitat
- Sediment/Toxicant/Pathogen Retention
- Nutrient Removal/Retention/Transformation
- Production (Nutrient) Export
- Sediment/Shoreline Stabilization; and
- Wildlife Habitat

Wetland values are generally considered to be benefits derived from either these functions or other characteristics of a wetland. Perceived values arise from the functional ecological processes exhibited by wetlands but are determined also by human perceptions, the location of a specific wetland, the human pressures on a wetland, and the extent of the resource (Mitsch and Gosselink 2000)[2]. The value of a specific function, or combination thereof, is based on human judgment of the worth, merit, quality, or importance attributed to those functions. Values attributed to wetlands include the following:

- Recreation
- Education/Scientific Value
- Uniqueness/Heritage
- Visual Quality/Aesthetics; and
- Threatened or Endangered Species Habitat

The functions and values identified above may vary slightly in terminology, but encompass all the functions identified in, and addressed by, the Natural Resource Protection Act (NRPA) Wetland Protection Rules. As defined in these Rules, "functions" are:

> *The roles wetlands serve which are of value to society or the environment, including but not limited to, flood storage, flood water conveyance, ground water recharge and discharge, erosion control, wave attenuation, water quality protection, scenic and aesthetic use, food chain support, fisheries, wetland plant habitat, aquatic habitat and wildlife habitat* (Chapter 310 §3J).

A basic concept presented by the Supplement is an identification of "Considerations/Qualifiers" that can be used as indicators or descriptors of the presence of specific functions or values. From as few as three to as many as 32 of these Considerations/Qualifiers are identified in Appendix A of the Supplement for each of the respective wetland functions and values. These Considerations/ Qualifiers therefore become a checklist or outline of indicators of functions and values for wetland scientists to observe, compare against, and structure assessments. The Supplement indicates these Considerations are intended to be flexible and are ultimately based on "best professional judgment."

Site Wetland Functions and Values:

Functions and values of the wetland to be impacted by the Project are dependent on, and influenced by, various physical characteristics at the Site, which are indicative of relative levels of function and value.

[2] Mitch, W.J., and Gosselink, J.G., 2000. *Wetlands* (3rd ed.), Van Nostrand Reinhold Company, NY, 920 pgs.

These include size and proximity of wetlands to ongoing development activity, geologic setting, soil characteristics, presence and duration of hydrology, landscape position, and wetland cover type. Consequently, the effects of changes to these physical characteristics are evaluated in assessing whether an activity or project impacts wetland-specific functions and values.

Considerations/Qualifiers listed in Appendix A of the Supplement and observed in impacted wetlands at the Site are recorded for individual functions and values on the accompanying Wetland Function-Value Evaluation Form. The significance of these Considerations/Qualifiers to functions and values associated with these wetlands are discussed below and on the attached data form.

- **Groundwater Recharge/Discharge** – The Maine Geological Survey has not designated the unconsolidated deposits beneath the Site as a Significant Sand and Gravel Aquifer on this part of the Portland West Quadrangle (MGS Open-File No. 99-11). Recharge of underlying groundwater by the wetlands is therefore limited. No evidence of groundwater discharge was observed in the wetlands.

- **Floodflow Alteration (Storage and Desynchronization)** – Wetland where the Project is proposed does not occur in a 100-year floodplain mapped by the Federal Emergency Management Agency on the most recent Flood Insurance Rate Maps (Community Panel Number 230051 0012C, effective date 12/8/1998), for this part of Portland.

- **Fish and Shellfish Habitat** – Habitat for fish and shellfish does not occur in the non-riparian PFO wetland.

- **Sediment/Toxicant/Pathogen Retention** – This form of water quality improvement prevents degradation of water quality and *"relates to the effectiveness of the wetland as a trap for sediments, toxicants or pathogens in runoff from surrounding uplands or upstream eroding wetland areas*" (USACE NED, 1999). Wetlands have intrinsic abilities to modify or trap a wide spectrum of water-borne substances commonly considered pollutants or contaminents (Hammer, 1997)[3]. Wetlands at the Site provide this function to a limited extent, however this benefit to water quality improvement is generally constrained due to the absence of sources impacting water quality.

- **Nutrient Removal/Retention/Transformation** – "*This function relates to the effectiveness of the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries*" (USACE NED, 1999). Retention time in the wetland is influenced by physical characteristics of the wetland basin, and by the edaphic (soils), micro topographic, and vegetative conditions within the wetland. Wetlands at the Site provide this function to a limited extent, however this benefit to water quality improvement is generally constrained due to the absence of sources impacting water quality.

- **Production (Nutrient) Export** – "*This function relates to the effectiveness of a wetland to produce food or usable products for humans or other living organisms"* (USACE NED, 1999). No export can occur from the closed isolated depressions dominate by woody vegetation that lacks berries, fruit, nuts or other mast.

[3] Hammer, D.A., 1997. *Creating Freshwater Wetlands* (2nd ed.), Lewis Publishers, NY, 406 pgs.

- **Sediment/Shoreline Stabilization** – This function is typically associated with wetland areas that stabilize streambanks and shorelines of waterbodies from erosion and is therefore not provided by the wetland to be impacted.

- **Wildlife Habitat** – "*This function considers the effectiveness of a wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge*" (USACE NED, 1999). The forested wetland at the Site provides habitat cover for transitory wildlife that may travel through the area but the small, localized areas of wetlands do not provide habitat for most "wetland dependent wildlife" such as beaver, mink, muskrat, otter, and waterfowl. Although the August 2016 Portland Beginning with Habitat Map prepared MDIFW identifies presence of endangered New England Cottontail (NEC, *Sylvilagus transitionalis*) habitat in this part of the Jetport and the residential neighborhood to the northwest, based on previous work at PWM coordinated with MDIFW, the vegetative cover where work is proposed does not provide suitable habitat for NEC. Based on spring 2023 surveys conducted during the recommended period, significant vernal pools do not occur at the Site.

- **Recreation** – Wetlands support many types of direct recreation including hunting, trapping, fishing, wildlife watching, nature photography, berry picking, picnicking, hiking, walking, and boating (Hammer, 1997). Trails or other evidence of recreational use do not exist in the PFO1 wetland. This wetland value will not be impaired by the proposed Project.

- **Educational/Scientific Value** – The wetland does not contain attributes, nor does it occur in a location that merits being the topic and destination of school field trips. It is unknown whether scientific studies or research by students have taken place in the wetland but is unlikely.

- **Uniqueness/Heritage** – The PFO1 wetland at the Site is typical of one of the most common wetland types in southern Maine. This wetland type is not a critically imperiled (S1) or imperiled (S2) wetland community.

- **Visual Quality/Aesthetics** – Aesthetics, one of the most subjective values attributed to wetlands, generally is heightened by distant views or vistas with bodies of water. No open water or areas offering significant vistas are in the wetland.

- **Endangered Species Habitat** – The wetlands at the Site are not known to contain any federal or state-listed endangered or threatened species. As determined from the Portland Beginning with Habitat Map, no Rare or Exemplary Plant and Natural Communities tracked by the Maine Natural Areas Program (MNAP) in its Biological and Conservation Data system occur at the Site.

Conclusions:

As described above, all five values commonly attributed to wetlands are essentially absent from wetlands at the Site and therefore there is no effect or loss to result from the 8,625 sq ft (0.198 acre) of direct wetland impacts by placement of fill. In addition, three of the eight functions attributed to wetlands – Groundwater Recharge/Discharge, Fish and Shellfish Habitat, and Sediment Shoreline Protection – are also absent or not provided by wetlands at the Site and will also not be affected.

As justified by the absence of site-specific "Considerations/Qualifiers" indicative of the functions, the remaining five wetland functions at the Site are less than high or moderate quality.



Photo 1 – Wetlands that are to be impacted by the Project are located in the small patch of undeveloped woods in the upper right corner of this northward view across the Jetport Boulevard–International Parkway (left to right) intersection.



Photo 2 – Eastward view of the smaller (2,807 sq ft) isolated (no connection to surface drainage) PFO1 wetland located along the north side of International Parkway with the PWM terminal and existing long term parking area in the background.



Photo 3 – Eastward view of the larger (5,818 sq ft) isolated PFO1 wetland located near the center of the small patch of undeveloped woods, with the existing long term overnight parking lot in the background.

Wetland I.D. **#19059**

Total Area of Wetland: **8,624 sq ft** Human made? **No** Is wetland part of a wildlife corridor? **No** Or a "habitat island"? **No** Latitude: **43°39'00.46** Longitude: **70°18'50.09"**

Adjacent land use: **Portland International Jetport (PWM)** Distance to nearest roadway or other development: **< 20 ft** Prepared by: **Cole Peters, PWS** Date: **8/24/2023**

Dominant wetland systems present: **PFO1** Contiguous undeveloped buffer zone present: **None** Wetland Impact Type: **Fill - 8,624 sq ft (0.198 ac)**

Is the wetland a separate hydraulic system? **Yes, Isolated basin** If not, where does the wetland lie in the drainage basin? **High/Top** Evaluation based on: Office- **Yes** Field- **Yes**

How many tributaries contribute to the wetland? **None** Wildlife & vegetation diversity/abundance (**See accompanying report**) Corps manual wetland delineation completed: **Yes**

Function/Value	Suitability Y	Suitability N	#	PF	Comments-Rationales (Reference #)
Groundwater Recharge/ Discharge		X		---	The wetland does not occur on/over an MGS-designated Sand & Gravel Aquifer and groundwater recharge is limited by low permeability soils. No evidence of groundwater discharge was observed at the Site.
Floodflow Alteration		X		---	The wetland is in an isolated basin with a small catchment area and is not in a FEMA designated floodplain.
Fish and Shellfish Habitat		X		---	N/A- No stream or waterbody present.
Sediment/Toxicant Retention	X			No	Toxicant sources in the small watershed adjacent to wetland are not abundant.
Nutrient Removal	X			No	Nutrient sources in the small watershed adjacent to wetland are not abundant.
Production Export		X		---	No stream occurs within the wetland for downgradient export.
Sediment/Shoreline stabilization		X		--	N/A- Applies to wetlands along a streambank or shoreline.
Wildlife Habitat		X		---	Minimal wildlife habitat is provided by the wetland which is bordered on three sides by Jetport Drive, International Parkway and Loop Road that all lead to parking areas surrounding the terminal for Maine's busiest airport approximately 650 feet away.
Recreation		X		---	N/A- The forested wetland provides no recreational use.
Educational/Scientific		X		---	N/A- Site is undistinctive and not near schools.
Uniqueness/Heritage		X		---	N/A- PFO1 is a very common wetland type throughout southern Maine.
Visual Quality/Aesthetics		X		---	N/A- The forested wetland lacks a vista and is not discernably distinguishable from adjoining upland woods.
Endangered Species Habitat		X		---	No record or evidence observed.
Other				---	

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JANET T. MILLS
GOVERNOR

MELANIE LOYZIM
COMMISSIONER

February 9, 2024

Paul Bradbury
Portland International Jetport
1001 Westbrook Street
Portland, ME 04102

Re: Vernal Pool Significance Determination, Pool ID # 5273–Portland

Dear Paul Bradbury:

Vernal pools are temporary to semi-permanent wetlands occurring in shallow depressions that typically fill during the spring and dry during the summer or in drought years. They provide important breeding and foraging habitat for a wide variety of specialized wildlife species including several rare, threatened, and endangered species.

After conducting a field survey at your request, it has been determined that the vernal pool identified above on your property is NOT SIGNIFICANT because either: 1. the feature does not meet the definition of a vernal pool under the Significant Wildlife Habitat rules, 06-096 CMR 335(9) or 2. the vernal pool does not meet the biological standards for exceptional wildlife use of the Significant Wildlife Habitat rules, 06-096 CMR 335(9)(B). Therefore, activities within 250 feet of the pool are not regulated under the Natural Resources Protection Act (NRPA) unless there are other protected natural resources nearby such as streams or freshwater wetlands. I have attached a copy of the database printout that verifies the State's findings with respect to your survey.

I want to also advise you that the pool area on your property can be considered a freshwater wetland and therefore direct pool alterations may require permitting under the NRPA.

If you have any questions or need further clarification, please contact Mark Stebbins at 207-592-4810 or email at: Mark.N.Stebbins@maine.gov

Sincerely,

Robert Wood
Director, Bureau of Land Resources

cc. town file

IFW Recommendations for Significant Vernal Pool Determinations

The following is a list of pools and IFW's recommendations for whether or not they qualify as Significant Vernal Pools, one of Maine's Significant Wildlife Habitats.

Data current as of: Friday, February 09, 2024

IFW's Pool ID: 5273 Twp: Portland
Observer's ID: VP-1

UTM Coordinates of Pool Center: 394121 E, 4833920 N
ProjectType: 19059-PWM parking

Landowner:	Paul Bradbury - Portland International Jetport	Contact:	Cole Peters - Sebago Technics, Inc
	1001 Westbrook Street		75 John Roberts Road,Suite 4A
	Portland, ME 04102		South Portland, ME 04106
	(207) 756-8029 phb@portlandmaine.gov		(207) 200-2100 Cpeters@sebagotechnics.com

Survey Date: 4/11/2023 Additional Survey Dates: 04/21/2023

IFW's Recommendation: RED: NOT SIGNIFICANT, does not meet the vernal pool definition

IFW Comments:

Att. NN

EXISTING BUILDINGS/FACILITIES			EXISTING BUILDINGS/FACILITIES		
NO.	DESCRIPTION	ELEV.	NO.	DESCRIPTION	ELEV.
1	TERMINAL BUILDING	122.1	27	AIRPORT MAINTENANCE BUILDING	
2	AIR TRAFFIC CONTROL TOWER	161.7	28	VEHICLE FUEL (DIESEL/GASOLINE)	
3	AIRCRAFT RESCUE AND FIRE FIGHTING	86.5	29	FUEL DISPENSING STATION	
4	PARKING GARAGE	141	30	SAND/SALT STORAGE	
5	CELL PHONE LOT/PASSENGER PICKUP		31	GENERAL AVIATION HANGAR/OFFICES	
6	RENTAL CAR FACILITY		32	FLIGHT STANDARDS DISTRICT OFFICE	63.8
7	GENERAL AVIATION HANGAR/OFFICES	89.6	33	HEXAGON HANGER	58.8
8	FUEL FARM	74	34	MAINTENANCE/EQUIPMENT STORAGE	67.5
9	GENERAL AVIATION HANGAR/OFFICES	98.8	35	RUNWAY 29 GLIDESLOPE BUILDING	86.7
10	GENERAL AVIATION TERMINAL		36	RUNWAY 11 LOCALIZER BUILDING	
11	EMPLOYEE PARKING		37	FAA ELECTRICAL VAULT	
12	LONG TERM PARKING		38	REMOTE TRANSMITTER/RECEIVER SITE	
13	AIRPORT PARKING OFFICE AND VEHICLE MAINTENANCE FACILITY/NON-RESERVED TAXI		39	AUTOMATED SURFACE OBSERVATION SYSTEM	
14	THE NORTH LOT (OVERFLOW PARKING)		40	RUNWAY 11 GLIDESLOPE BUILDING	67.5
15	RENTAL CAR FACILITIES	86.7	41	RUNWAY 29 LOCALIZER BUILDING	75.4
16	SELF SERVICE AVIATION FUEL	94.2	42	FAA ALSF BUILDING	
17	GENERAL AVIATION HANGAR	95.1	43	GLYCOL RECYCLING FACILITY	59
18	GENERAL AVIATION HANGAR		44	UNDERGROUND STORAGE TANK FOR SPENT DEICING FLUID	
19	GENERAL AVIATION HANGAR	91.6	45	UNDERGROUND OIL STORAGE TANK (12,000 GALLONS)	
20	GENERAL AVIATION HANGAR	92	46	UNDERGROUND OIL STORAGE TANK (10,000 GALLONS)	
21	FAA TECH OPS FACILITY	46.8	47	GENERATOR FUEL (DIESEL)	
22	FED EX FACILITY	71.1	48	GEOTHERMAL WELL VAULT	
23	CUSTOMS OFFICE		49	SUPPORT PARCEL	N.A.
24	GENERAL AVIATION HANGAR/OFFICE	61.2	50	SUPPORT PARCEL	N.A.
25	AIRPORT BEACON	115.8	51	GENERAL AVIATION HANGAR/OFFICES	
26	LIGHTING VAULT		52	DEICING OPERATIONS FACILITY	

LEGEND		
EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AVIGATION EASEMENT
		MUNICIPAL BOUNDARY
BRL		BUILDING RESTRICTION LINE (BRL)
ROFA		RUNWAY OBJECT FREE AREA (ROFA)
ROFZ		RUNWAY OBJECT FREE ZONE (ROFZ)
RSA		RUNWAY SAFETY AREA (RSA)
		PRECISION OBSTACLE FREE ZONE (POFZ)
		BUILDING REMOVAL
		PAVEMENT REMOVAL
		ILS CRITICAL AREA
		PROPERTY ACQUISITION
		AIRPORT BUSINESS
		AIRPORT BUFFER AREA
		BUILDING / STRUCTURES
		FACILITY CONSTRUCTION - AIRFIELD
		FACILITY CONSTRUCTION - OTHER
		WATER QUALITY FILTER
		NO TAXI ISLAND
		FENCING
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
PAPI-4		NAVIGATIONAL AID LIGHTS (PAPI)
REIL		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		AIRFIELD LIGHTS
		SEGMENTED CIRCLE / WIND INDICATOR
		WIND INDICATOR (LIGHTED)
		TOPOGRAPHY
		WETLAND

ULTIMATE SHORT TERM BUILDING/FACILITIES	
NO.	DESCIPTION
1 ST	TERMINAL APRON EXPANSION NORTHWEST END - PHASE 1
2 ST	ENVIRONMENTAL ASSESSMENT AND PERMITTING FOR AIRPORT IMPROVEMENTS - NS
3 ST	GATE 1 APRON RECONSTRUCTION AND CONSTRUCT TW C SNOW SHOULDERS NORTH
4 ST	RUNWAY INCURSION WARNING SYSTEM - NS
5 ST	3RD FLOOR BYPASS AUTO EXIT PORTALS - NS
6 ST	GATE 1 - 6 REHABILITATION VERTICAL CIRCULATION IMPROVEMENT - NS
7 ST	PRE CONDITIONED AIRLIFTS FOR LOADING BRIDGES - NS
8 ST	GATE 1 ADDITIONAL LOADING BRIDGES - NS
9 ST	CENTRAL AIR HANDLING UNITS - NS
10 ST	TERMINAL APRON EXPANSION NORTHWEST END - PHASE 2
11 ST	ENVIRONMENTAL ASSESSMENT MITIGATION MEASURES - NS
12 ST	ARFF VEHICLE - NS
13 ST	SNOW REMOVAL TRACTOR FOR AIRFIELD LIGHTS/SIGNS - NS
14 ST	MAINTENANCE BUILDING GENERATOR AND ENCLOSURE
15 ST	CLICK TO ACTIVATE RUNWAY LIGHTS - NS
16 ST	ADMINISTRATION OFFICES ABOVE BAGAGE CLAIM - EAST END - NS
17 ST	ADDITIONAL LOADING BRIDGE FOR GATE 11
18 ST	LONG TERM HOLD/DEICING/RON APRON - PHASE 1
19 ST	FIS FACILITY
20 ST	SNOW MELT EQUIPMENT FOR CONTAINMENT SNOW - SRE/MAINTENANCE - NS
21 ST	LONG TERM HOLD/DEICING/RON APRON - PHASE 2
22 ST	RUNWAY 11 TAXIWAY BYPASS AND PERIMETER SERVICE ROAD REALIGNMENT
23 ST	TREE REMOVAL FOR GQS ON RUNWAY 36 END
24 ST	EXPAND BAGGAGE CLAIM - PHASE 2 - NS
25 ST	LOADING BRIDGE - NS
26 ST	CONSTRUCT AIR CARGO TAXIWAY - PHASE 1
27 ST	REHABILITATE CARGO APRON
28 ST	DISPLACEMENT PLOWS - NS
29 ST	AIRPORT SECURITY FENCE AND GATE UPGRADES (NORTH EAST AREA)
30 ST	DEICING OPERATIONS FACILITY RELOCATION
NS - NOT SHOWN	

ULTIMATE INTERMEDIATE TERM BUILDINGS/FACILITIES	
NO.	DESCRIPTION
1 IT	CONSTRUCT TAXIWAY C REALIGNMENT - PHASE 1
2 IT	LOADING BRIDGE - NS
3 IT	LAND ACQUISITION AND PARKING EXPANSION
4 IT	CONSTRUCT AIR CARGO TAXIWAY - PHASE 2
5 IT	LOADING BRIDGES - NS
6 IT	REPLACE REGIONAL BOARDING RAMPS AT GATE 1B AND 1C - NS
7 IT	RELOCATE TAXIWAY A EAST OF RUNWAY 18-36
8 IT	CONSTRUCT TAXIWAY C REALIGNMENT - PHASE 2
9 IT	RELOCATE SERVICE ACCESS ROAD EAST OF CARGO
10 IT	PARKING GARAGE EXPANSION - PHASE 3
NS - NOT SHOWN	

ULTIMATE LONG TERM BUILDINGS/FACILITIES	
NO.	DESCRIPTION
1 LT	CONSTRUCT AIR CARGO APRON - PHASE 1 (NORTH)
2 LT	CONSTRUCT AIR CARGO APRON - PHASE 2 (SOUTH)
3 LT	ARFF VEHICLE - NS
4 LT	CONSTRUCT TAXIWAY B RUNWAY 36 TO 29
5 LT	EXTEND CARGO APRON EAST INTERPORT LOCATION
6 LT	ROTARY SNOWPLOW 5000 TPH - NS
7 LT	EXPAND MAINTENANCE BUILDING
8 LT	CONSTRUCT AIRCRAFT ENGINE RUN-UP PAD
9 LT	SRE 18' FRT MTD BROOM - NS
10 LT	STRENGTHEN/REHAB RUNWAY 11-29
11 LT	DISPLACEMENT PLOWS/SPREADERS - NS
12 LT	STRENGTHEN/REHAB TAXIWAY A, D, E, AND F
13 LT	2,000 GALLON LIQUID SPREADER - NS
14 LT	ARFF VEHICLE - NS
15 LT	CONSTRUCT SOUTH APRON TAXIWAY
16 LT	CONSTRUCT SOUTH GENERAL AVIATION APRON - PHASE 1
17 LT	CONSTRUCT SOUTH GENERAL AVIATION APRON - PHASE 2
18 LT	TERMINAL WESTERLY EXPANSION
19 LT	REHABILITATE RUNWAY 18-36, TAXIWAY B AND TAXIWAY J
20 LT	CONSTRUCT SOUTH GENERAL AVIATION APRON - PHASE 3
21 LT	RAMP EXPANSION EAST OF AIR TRAFFIC CONTROL TOWER
22 LT	SNOW PLOWS - NS
23 LT	PARKING GARAGE EXPANSION - PHASE 4
24 LT	TERMINAL EASTERLY EXPANSION/RENOVATION
NS - NOT SHOWN	

THIRD PARTY TENANT DEVELOPMENT	
NO.	DESCRIPTION
CB1	AIR CARGO BUILDING
CB2	AIR CARGO BUILDING
H1	CONVENTIONAL HANGAR
H2	CONVENTIONAL HANGAR
H3	CONVENTIONAL HANGAR
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H5	CONVENTIONAL HANGAR
H6	CONVENTIONAL HANGAR
H7	CONVENTIONAL HANGAR
H8	GENERAL AVIATION HANGAR/OFFICES
H9	GENERAL AVIATION HANGAR/OFFICES
H10	CONVENTIONAL HANGAR
H11	CONVENTIONAL HANGAR
H12	CONVENTIONAL HANGAR
NS - NOT SHOWN	

NORTH

Magnetic Declination 15° 28' 09" West (March 2016)
Annual Rate of Change 00° 05' East (March 2016)

GRAPHIC SCALE
500 0 250 500 1000
(IN FEET)
1 inch = 500 ft.

REV	DESCRIPTION	DATE	BY	APP'D
4	SUBMITTED TO CITY, MDOT AND FAA FOR FINAL APPROVAL	07.09.18	DDA	DDA
3	SUBMITTED TO FAA FOR APPROVAL	11.29.17	DDA	DDA
2	ISSUED DRAFT ALP TO CITY AND FAA	11.17.16	DDA	DDA
1	ISSUED TO CLIENT FOR REVIEW	07.26.16	DDA	DDA

REVISIONS

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SUBMITTED BY:
Stantec

FOR APPROVAL BY:

FEDERAL AVIATION ADMINISTRATION
APPROVED: _____ Airport Planner, Airports Planning Brainch
DATE: _____

MAINE DEPARTMENT OF TRANSPORTATION
APPROVED: _____ Aviation Director
DATE: _____

CITY OF PORTLAND, MAINE
APPROVED: _____ Airport Director
DATE: _____

PORTLAND INTERNATIONAL JETPORT

ULTIMATE FACILITIES PLAN

PORTLAND, MAINE

Stantec Consulting Services Inc.
482 Payne Road
Scarborough, ME
Tel. 207.883.3355
WWW.STANTEC.COM

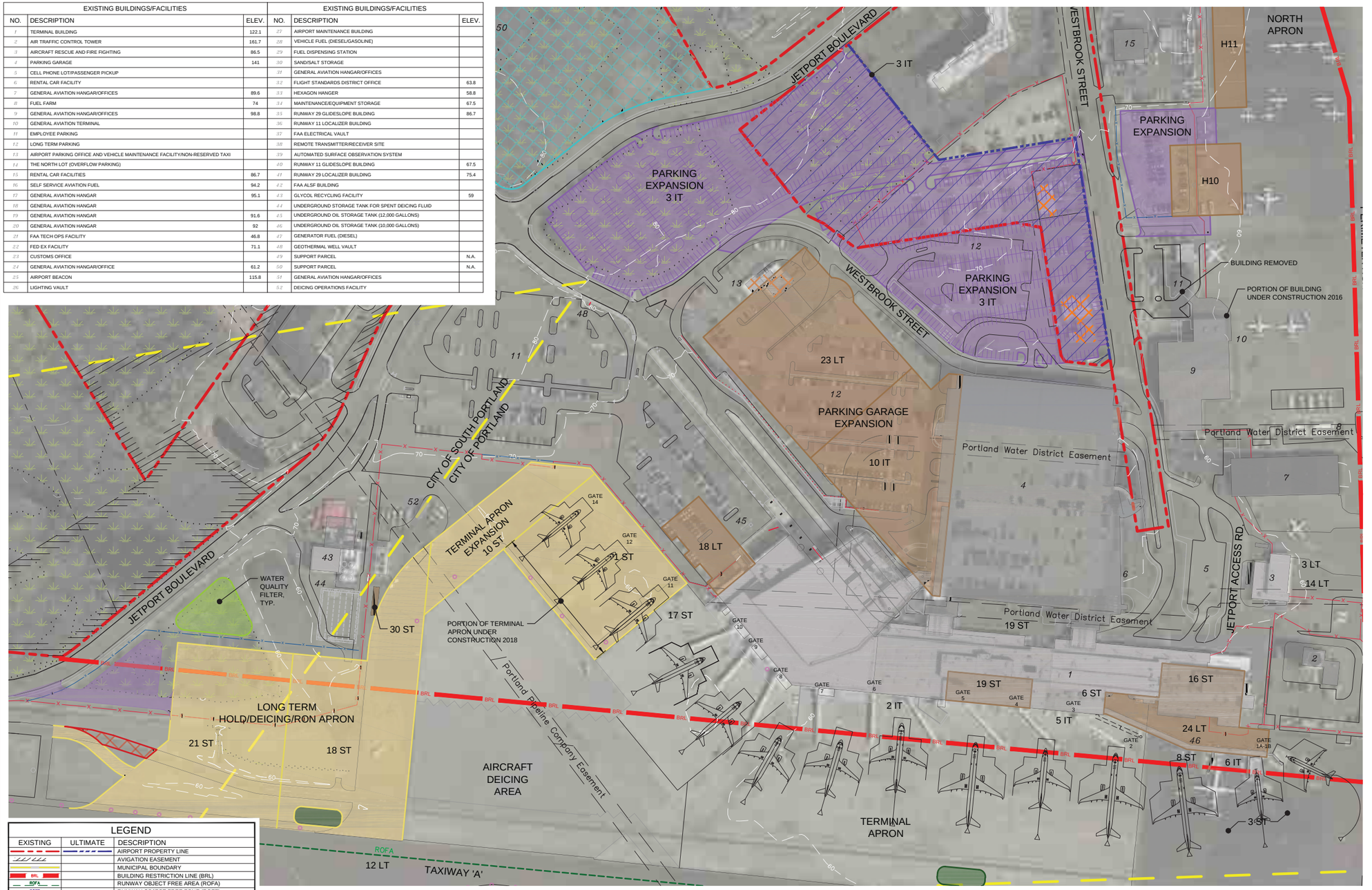
PLANNED BY: Dwight Anderson / Steve Benson
DETAILED BY: Lori Anthony / Tim Kahmann
APPROVED BY: Mike Dmyterko
FILE NAME: op_m116_site / 195350010

July 2018 | SHEET 4.0

Goffman Associates Airport Consultants

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9 ST	CENTRAL AIR HANDLING UNITS - NS
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11 ST	ENVIRONMENTAL ASSESSMENT MITIGATION MEASURES - NS
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30 ST	DEICING OPERATIONS FACILITY RELOCATION
NS - NOT SHOWN	

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24 LT	TERMINAL EASTERLY EXPANSION/RENOVATION
NS - NOT SHOWN	

THIRD PARTY TENANT DEVELOPMENT	
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H7	CONVENTIONAL HANGAR
H8	GENERAL AVIATION HANGAR/OFFICES
H9	GENERAL AVIATION HANGAR/OFFICES
H10	CONVENTIONAL HANGAR
H11	CONVENTIONAL HANGAR
H12	CONVENTIONAL HANGAR
NS - NOT SHOWN	

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AVIGATION EASEMENT
		MUNICIPAL BOUNDARY
BRL		BUILDING RESTRICTION LINE (BRL)
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		AIRPORT BUFFER AREA
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		FACILITY CONSTRUCTION - AIRFIELD
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		NO TAXI ISLAND
X	X	FENCING
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
PAPI--4		NAVIGATIONAL AID LIGHTS (PAPI)
REIL		RUNWAY END IDENTIFICATION LIGHT (REIL)
		AIRFIELD LIGHTS
		SEGMENTED CIRCLE / WIND INDICATOR
		WIND INDICATOR (LIGHTED)
1080		TOPOGRAPHY
		WETLAND

NORTH

Magnetic Declination 15° 26' 09" West (March 2016)
Annual Rate of Change 00° 05' East (March 2016)

GRAPHIC SCALE
100 0 50 100 200
(IN FEET)
1 inch = 100 ft.

REV.	DESCRIPTION	DATE	BY	APP'D
4	SUBMITTED TO CITY, MDOT AND FAA FOR FINAL APPROVAL	07.09.18	DDA	DDA
3	SUBMITTED TO FAA FOR APPROVAL	11.29.17	DDA	DDA
2	ISSUED DRAFT ALP TO CITY AND FAA	11.17.16	DDA	DDA
1	ISSUED TO CLIENT FOR REVIEW	07.26.16	DDA	DDA

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PORTLAND INTERNATIONAL JETPORT

TERMINAL AREA

PORTLAND, MAINE

Stantec Consulting Services Inc.
482 Payne Road
Scarborough, ME
Tel: 207.883.3355
WWW.STANTEC.COM

PLANNED BY: Dwight Anderson / Steve Benson
DETAILED BY: Lori Anthony / Tim Kahmann
APPROVED BY: Mike Dmyterko
FILE NAME: op_m116_site / 195350010

July 2018

SHEET 5.0

Coffman Associates Airport Consultants

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Landscape Preservation 14-14.6.2 (B)

1. The proposed project site consists of previously developed parking lots and an undeveloped wooded area; existing tree species within the wooded area include Ash, Maple, Oak, Birch, Aspen, Pine, Spruce, and Hemlock. Trees not impacted by the project will be protected throughout construction. The proposed project has a comprehensive landscaping plan that includes extensive buffers along road frontages, and a variety of canopy trees and plantings dispersed throughout the new parking lot.

2. Proposed removals are identified on the site demolition and tree removal drawings, and new plantings are presented on the landscape plans. Where applicable, protection measures outlined in the standards of the City Technical Manual will be utilized.

3. Trees ten (10) inches or larger diameter at breast height (DBH) within the project area have been located and documented as required. On January 19, 2024, Sebago Technics visited the site with City Arborist Mark Reiland to review the proposed project and the extent of tree removal and opportunities for tree preservation. During the review, the City Arborist noted numerous Ash trees (*Fraxinus species*) along Jetport Boulevard displaying signs of Emerald Ash Borer infestation and damage. Ash trees are the predominant deciduous street tree present along both sides of Jetport Boulevard, planted as part of a previous landscape scheme for the site. The landscape plan proposes to remove the infested Ash Trees along the south side of Jetport Boulevard adjacent to the proposed parking lot. The City Arborist also noted a few Hemlock trees (*Tsuga canadensis*) closest to the intersection of Jetport Boulevard and International Parkway, while not identified to be removed, would likely not thrive the change in sunlight and exposure to the parking lot. The landscape plan proposes to replace the Hemlocks with native evergreen trees. No mature feature trees as described in the Technical Manual were found on site.

4. Waivers are not requested, and a contribution to the City of Portland Tree Fund described in the Technical Manual is not necessary or proposed.

Please see the plan set for the proposed landscaping plans.

Att. OO

January 22, 2025
19059

Mr. Matt Grooms & Mr. Zachary Powell
City of Portland
Office of Planning and Urban Development
Congress Street
Portland, ME 04101

Supplemental Site Plan Information – Portland International Jetport Parking Expansion

Dear Matt & Zachary:

On behalf of the City of Portland, Sebago Technics Inc. has prepared the enclosed supplemental submittal for the Planning Department's and Planning Boards consideration of the parking lot expansion at the Portland International Jetport (PWM/Jetport). The proposed project was first submitted for Major Site Plan Review to the City on March 12, 2024, with comment responses submitted on August 30, 2024. The project was reviewed by the Planning Board on November 26, 2024, and was then tabled until more information is provided on the Parking Lot Island Landscaping waiver (Land Use Code Section 14.6.2(C)(3)(a)) and Impacts to Significant Natural Features (wetland impact) waiver (Land Use Code Section 14.6.2.(A)(1)) requested as part of the application.

This submittal is intended to summarily provide contextual background on the project and present supplemental information and narratives to expand upon the reasoning for the two waiver requests.

A. Background:

General: PWM prepared a Sustainable Airport Master Plan (SAMP) in June 2018 (approved by the FAA in 2019), outlining PWM's sustainable and strategic goals relating to federal aviation regulations and guidelines. Within Chapter 4 – Airport Facility Requirements, Section: Landside Requirements, the SAMP identifies short, intermediate, and long-term needs for parking at PWM.

The Jetports Sustainable Master Plan contemplates both surface parking and a future parking garage expansion. As shown on the Ultimate Facilities Plan and Terminal Area Plan (attached), the location of the proposed surface parking is depicted as surface parking on

the Terminal Area Plan. The plan also contemplates a future parking garage expansion, being an extension of the current parking garage next to the terminal building.

It is important to view the parking Master Plan as a sequential process where the proposed surface parking is the initial phase that addresses near term needs in an economical manner and builds parking capacity that will accommodate the displacement of surface parking at a future time when needs and economics support a parking garage expansion adjacent the existing garage and terminal.

Parking Need: Following the substantial increase in passengers at PWM in 2018 (15.3% increase) & 2019 (1.9% increase), the need for short and intermediate-term parking increased at PWM. In January 2020, PWM submitted a memorandum (Attachment 1) to Jon Jennings, City Manager, explaining the need to commence planning and design for additional public surface parking spaces.

The memorandum to the City Manager outlined destination airports (like the Jetport), require approximately 1.25 parking spaces per 1,000 total passengers. FAA AC 150/5360-13A identifies parking guidelines for Airport Terminal Facilities; noted in Section 8.6.3: Parking Level of Service is the "ratio of peak period requirements to facility capacity, with a ratio of 85% typically representing the limit of an acceptable LOS (Level of Service)", At the time of the submission of the Jennings memo, the Jetport had 2,784 long-term public parking spaces.

During the 2020 COVID-19 pandemic, enplanement numbers dropped dramatically, and the need to design and permit a surface parking lot was put on hold. As passenger travel steadily increased during the pandemic recovery, PWM recognized different time of duration patterns (average stay time increased), and continued to monitor the parking demands as they returned to pre-pandemic numbers in the past year. The Jetport provided service to approximately 2.22 million total passengers in 2023 and is projected to exceed 2.4 million total passengers in 2024 (awaiting the final passenger count for December). Based on the industry standard ratio stated in the Jennings memo, this equates to a requirement of 3,000 parking spaces. As stated previously, the Jetport currently has 2,784 long-term public parking spaces, and to increase parking to provide the 1.25 spaces per 1,000 total passengers (based on 2.4 million annual passengers), approximately 216 additional spaces (7.8% increase). A target of 250 to 375 additional spaces is desired to build in capacity for vehicles that circulate within the facility because it is difficult to find the last space in a large parking facility and there may be improperly parked vehicles that occupy two spaces. It also accommodates for normal passenger growth anticipated in next 3 to 5 years as outlined in the APO Terminal Area Forecast Detailed Report (Attachment 8) indicating an estimated 2.19% increase per year for the next five years.

In addition, PWM has provided car counts in the public parking lots from January 1 to October 31, 2024, to further document the need for additional parking. As shown in Attachment 2: PWM Parking Daily Counts, the public parking lots were above 85% full (103 days) of the count window or 34% of the time. Therefore, the Jetport does not have a

sufficient ratio of peak period to facility capacity and does not meet the 1.25 spaces per 1,000 total passengers standard. To address the capacity deficit and provide an acceptable LOS, the Jetport proposes, to increase parking by 265 spaces (net) which is within the identified range of increased parking (250 to 375).

B. Jetport Property:

General: In 2018, the Jetport began identifying areas suitable for surface parking expansion development to address capacity issues. The Jetport has a relatively small land area and is constrained by its location next to the Fore River, Maine Turnpike and surrounding land development. As a result, the Jetport land mass is either Airfield operations (taxiways, approach lighting, runway equipment, aprons, FAA controlled, etc.) or Facilities operations (parking, terminal, rental car facilities, etc.). Areas owned by the Jetport in the City of South Portland are almost entirely developed for Airfield operations and therefore unsuitable for surface parking development.

District Road/Pink Lot: PWM owns a portion of land on District Road that contains a long-term parking lot (referred to as the "Pink Lot") located adjacent to the City of Portland Public Works facility. The District Road facility was investigated for the feasibility of a surface parking lot, either through an expansion of the Pink Lot or a new parking lot north of the Public Works Facility. These investigations (Attachment 4) identified approximately 4.6 acres of wetlands, some of which are deemed Wetlands of Special Significance (WOSS), immediately southeast of the Pink Lot as well as a potentially significant vernal pool west of the Pink Lot. Furthermore, the District Road facility lies within the Long Creek Watershed, which is an Urban Impaired Stream Watershed according to Maine DEP Chapter 502, meaning the water quality of Long Creek is considered degraded, sensitive, or threatened to new development. The District Road facility also contains New England Cottontail (NEC) habitat, an endangered species, and could create an adverse effect on an endangered wildlife habitat. Therefore, the District Road parcel was considered constrained due to environmental considerations that included significant wildlife habitats, wetlands, and impacts within the Long Creek Watershed.

International Parkway: Most of the remaining land along the International Parkway between Jetport Boulevard and Congress Street is zoned Residential noting that recently the city has rezoned a portion of the land to Airport Business. There is also a Wetland Conservation Easement that encumbers a large portion of the available land and the lands along International Parkway are near the abutting residential neighborhood. The property is bisected by the Portland Pipeline Easement and the land is not configured or contains a large enough area to accommodate a large parking area. The Jetport has reviewed a small area of this land for a cell phone lot but is not pursuing this currently.

Proposed Surface Parking Development Area: The proposed surface parking lot expansion area is bounded by Jetport Boulevard to the north, International Parkway to the west, Loop Road to the south, and Westbrook Street to the east and is proximate to the Terminal building and identified as surface parking on the sustainable masterplan. Since the Jetport

land area is constrained and limited in size, the proposed project location is the most practicable location for the construction of a surface parking lot.

The project area is zoned correctly (identified as development area for the Jetport) as Airport Business and is within walking distance of the Terminal building. The proximity does not require an increase in looping shuttle operations that a parking expansion at District Road or on International Parkway north of Jetport Boulevard requires. However, for mobility impaired needs, three potential on-demand shuttle locations have been included in the parking design. As explained below, the natural resources within the project area are of lower function and value to the environment than those at District Road. The project area maintains existing vegetative buffers from surrounding residential neighborhoods since no construction is proposed north of Jetport Boulevard. Stormwater runoff within the project area discharges to the existing Jetport stormwater infrastructure and eventually drains to the Fore River, which is not an Urban Impaired Stream. This project area was included within the SAMP, and shown in Attachment 5: Ultimate Facilities Plan, Sheets 4.0 & 5.0.

Recognizing the City's goal to respect and preserve natural resources, wetlands were delineated within the project area in May of 2023 to determine the extent and significance of the natural resources present. Approximately 8,600+/- SF of pocket, forested wetlands were located, but no vernal pools were found. The functions and values of these wetlands were assessed during the delineation window, and it was determined that the wetlands did not contain any of the ecological functions specified by the New England Division of the U.S. Army Corps of Engineers. Since these specified functions are absent, there is minimal value/benefit obtained from these wetlands. The wetland report of this delineation and the Functions & Values Assessment were included within the Site Plan Application and Permitted through the US Army Corp of Engineers and Maine DEP. This delineation was later revised to include wetlands permitted to be impacted on the parcel previously owned by Mr. Toye. Therefore, the total wetlands were approximately 11,151 SF. (PWM acquired the Toye lot in 2021, as a parcel identified in the SAMP to be valuable due to its proximity to the Terminal.)

As a reminder, the project area also contains the paved Cell Phone Lot and the gravel Valet Lot (formerly the Park'N Jet lot owned by Mr. Toye). The gravel lot is not designed to the City of Portland's parking requirement standards, does not contain striping for efficient parking and adequate safety, contains inadequate lighting, and is unusable in the wintertime/mud season due to poor surface conditions and operational safety considerations. Runoff from the gravel lot drains generally south, to an existing catch basin. The runoff is untreated and conveys gravel and sediment into the Fore River Watershed. The gravel valet parking area also lacks entry/exit controls and adequate lighting for safety and security for PWM passengers. As such, the gravel lot, will be redeveloped as part of this project to address environmental considerations and provide a safer and more effective parking lot for self-park long term parking.

C. Waiver Request Justification:

The Planning Board has requested an expanded assessment to better justify the need for two waivers. These waivers include:

- **Waiver No. 2: Impacts to Significant Natural Features.**
- **Waiver No. 3: Parking Lot Island Landscaping.**

Waiver No. 2 Impacts to Significant Natural Features: The project includes the alteration of small, pocketed forested wetlands within the project area of low function and value as further described in other sections of this letter and in the NRPA Permit application that contains a Functions & Values Assessment, dated February 5, 2024, as well as the updated Wetland Delineation Map and Wetland Delineation Report, dated July 10, 2024. Please note that the wetland proposed to be altered are not identified by the Department of Inland Fisheries and Wildlife or identified by Maine Natural Areas Program to contain significant wildlife habitat or botanical features and were field reviewed with the MDEP.

Through the permitting process with the city, the Jetport has made modifications to the parking layout plan to preserve existing buffering near the intersection of Jetport Boulevard and International Parkway on the project site. These modifications have also included adjustments to the parking and battery storage project to preserve a portion of the small isolated forested wetland on the project site and increase retention of vegetation at the intersection of Jetport Boulevard and International Parkway. During this planning process, consideration was also given to reduced aisle widths and compact parking. This effort resulted in no appreciable reduction in the development area or preservation of wetlands. From an operational standpoint, the surface parking lots (as opposed to the more constricted space in the parking garage) provide an important operational need to accommodate full-size passenger vehicles/vans that utilize the Jetports parking lots.

During the MDEP permitting process, a site walk was held (early May of 2024) at the Jetport to field review the wetlands and project area. The area of wetland alteration is pocketed and isolated (no connection to surface drainage) and was determined to not contain essential functions or values. This was confirmed through the MDEP and USACE review and permitting process. The USACE has issued their permit approving the wetland alternative for the project. We understand the MDEP is working on the permit which the Jetport will provide to the city upon issuance.

At the request of the Planning Board, we have also prepared a diagrammatic assessment of the proposed surface parking lots. This assessment provides sequential evaluation of the existing, proposed and combined totals of each component demonstrating the overall need for the project to achieve the required number of long-term parking spaces. Please refer to Attachment 6 - Proposed Parking Lot Exhibit.

Given the lower ecological value of the wetlands in the project area and recognizing the City's desire to conserve wetlands, the Jetport (in addition to paying the state mandated in-lieu fee) is agreeable to placing a conservation easement over an equivalent wetland area north of Jetport Boulevard. This approach removes development pressures on these wetlands of interest in the AB Zone and builds upon other conservation measures north of Jetport Boulevard. The Jetport proposes as a condition of approval that in coordination with the planning department, the Jetport will place 11,151 s.f. of wetlands into conservation north of Jetport Boulevard.

Summary of Attachment 6: Proposed Parking Lot Exhibit

- Lot A: Lot A area includes the existing cell phone lot and gravel valet (former Park'N Jet) parking area with an existing capacity of 402 parking spaces. The current design provides 251 spaces with an overall net decrease of 151 parking spaces. The decrease in space is due to the non-standard configuration of the current Park'N Jet lot that is not self-park, is a gravel surface and is not consistently useable due to the lot surface and configuration. No wetlands will be impacted.

- Lot B: The current design for Lot B provides 196 spaces for a combined total with Lot A of 447 spaces, resulting in a net increase of 45 spaces, which would not provide PWM with the required parking total to address capacity concerns. Developing Lot B requires 2,533 SF of wetland impact that was previously permitted to be impacted by Mr. Toye. Portions of these wetlands were previously impacted, but the activity was discontinued, and therefore PWM included these impacts as part of their total wetland impacted to be permitted through Maine DEP and USACOE.

- Lot C: Because the combined total of Lots A and B only net an increase of 45 parking spaces, Lot C must be developed to meet the target need. Lot C provides 220 spaces and an overall net increase of 265 spaces, addressing capacity for intermediate parking needs at PWM. Developing Lot C impacts an additional 8,618 SF of wetlands, that as previously documented in the Functions and Values Report, are isolated pocketed wetlands of low function and value. The total of 11,151 SF of wetland impact (in Lots B and C) are required to address the intermediate term parking needs.

Waiver No. 3: Parking Lot Island Landscaping: We have prepared Attachment 7 which includes an analysis of the Current Landscape Plan and an Alternative Plan that increases the internal parking lot landscaping that results in a reduction of parking spaces. As presented previously to the Planning Board, the focus of the current landscaping plan was to create a significant landscape buffering plan around the perimeter of the parking lot with some interior landscaping that achieves the required number of parking spaces. The attached diagrams illustrate how the Current Landscape Plan meets the intent of the ordinance and supports the waiver request for reduced plantings within the parking lot landscape islands.

Summary of Attachment 7: Current and Alternate Landscape Plan

Current Landscape Plan: The Current Landscape Plan shows a total of 167 proposed trees divided into categories: (26) parking lot island trees, (31) trees along each side of the entrance and exit peninsulas, (53) perimeter trees that provide street tree and evergreen buffer trees along Loop Road and Jetport Boulevard, and (57) buffer trees along Embassy Suites property line, Westbrook Street, and adjacent to the Battery Storage. There are also (25) preserved trees that maintain street trees and perimeter buffer trees near the intersection of International Parkway and Jetport Boulevard. (Note the number of island trees has increased slightly from initial submission after further evaluation of available soil volume space and potential utility conflicts.)

Based on the required ratio of parking spaces to landscape island trees (1 tree + 5 shrubs for every 5 parking spaces), a total of 134 landscape island trees are required for 667 parking spaces. City Staff outlined the need for 36 street trees based on 1,243 lf of what is considered frontage on City's ROW and since the plan preserves 12 trees (less than 20' and visible from ROW), only 24 additional perimeter street trees are required. Therefore, the total number of additional trees required is 158 trees (134 + 24 plus an adequate buffer of property lines and the battery). The Current Landscape Plan shows 167 proposed trees and 25 preserved trees totaling 192 trees, meeting the intent of the Site Landscaping and Buffer Standards as outlined in the technical manual.

The benefits of the Current Landscape Plan include:

- Achieves a total parking amount within the established target to meet the current capacity needs.
- Layout maximizes the number of parking spaces while providing safe and efficient circulation.
- Layout has reduced maintenance and snow removal conflicts compared to the Alternate Plan
- Meets the intent of overall tree planting requirements by locating more trees around the perimeter and near the entrances and exit peninsulas.
- Trees placed in larger continuous soil volumes around the perimeter and within peninsulas are more likely to thrive and grow larger canopies and result in less overall maintenance.
- Soil volume is maximized per landscape island tree to increase long term viability of individual trees.
- Prioritizes the buffer along Jetport Boulevard for benefit of residential neighborhood to the north.

The disadvantages of the Current Landscape Plan are:

- Requires waiver of landscape island planting requirements
- There are less trees within the interior of the parking lot.

Alternate Landscape Plan: The Alternate Landscape Plan illustrates what the ordinance requires for internal parking lot island landscaping, resulting in 115 trees being planted in islands. The total number of island trees required is less than in the Current Landscape Plan because the total number of parking spaces decreases to accommodate the landscape island expansion. The expansion of the islands results in a decrease of 93 parking spaces for a net total of 172 spaces. This net total of parking is below the target capacity needed.

The benefits of the Alternate Landscape Plan include:

- No waiver required – meets landscape island tree planting standard
- More trees within the parking lot.

The disadvantages of the Alternate Plan are:

- Meeting landscape island requirements results in a substantial loss of parking and no longer provides the parking required to address the capacity needs.
- Less efficient parking layout which increases operational maintenance.
- Higher density of trees per available soil volume decreases overall long-term canopy growth. More trees in smaller spaces increases competition and may increase forestry maintenance.
- Meeting the minimum required perimeter planting reduces the buffer for adjacent neighborhood.

Thank you for your time and attention to this project. We look forward to discussing the project further with staff and the Planning Board.

Sincerely,

SEBAGO TECHNICS, INC.



Owens McCullough, P.E., LEED-AP
Senior Vice President, Strategy & Client Development

cc: Paul Bradbury, P.E., Airport Director
Attachments:

1. Memorandum from Mr. Paul Bradbury, Airport Director, to Jon Jennings, Former City of Portland Manager, RE: Portland International Jetport Parking Need.
2. Portland International Jetport (PWM) Parking Daily Counts, YTD January 1, 2024 – October 31, 2024.
3. Opportunities and Constraints Map prepared by Sebago Technics.
4. Portland International Jetport – 2018 Delineated Wetland Areas Plan Exhibits.
5. Jetport 2018 Sustainable Airport Master Plan – Ultimate Facilities Plans, Sheets 4.0 & 5.0.
6. Proposed Surface Parking Lot Exhibit
7. Current/Alternate Landscape Plan Exhibit

Site Landscaping and Buffers 14-14.6.2(C)

The proposed project has been designed to comply with the applicable landscape and buffering requirements of the City Ordinance. The project is located in the A-B zone.

1. Landscaping.
    a. Landscape plans are provided within the plan set, identifying proposed plantings and existing trees to remain. The proposed plantings include a mixture of deciduous trees, evergreen trees, shrubs, perennials, and grasses. Diverse buffers are proposed along the perimeter of the project, with enhanced plantings around the entrance and exits of the new parking lot; canopy trees are proposed within most of the internal parking lot islands. Parking lot islands located above the subsurface stormwater infrastructure do not have proposed trees. Native species have been incorporated into the planting design, and most trees can be found on the City of Portland Recommended Tree List and/or have been recommended by the City Arborist.

2. Buffers.
    a. Loading and service areas are not included in this project. The proposed battery storage will be screened by evergreen trees and evergreen shrubs; additionally, fencing will be provided around the perimeter of the battery storage.
    b. The proposed project abuts the Residential 1 Zone along Jetport Boulevard. A fifteen (15) foot wide buffer consisting of evergreen trees, deciduous trees, and understory plantings is proposed along the south side of Jetport Boulevard Road to buffer views of the parking lot from abutting property.

3. Parking and vehicle display lot landscaping.
    a. The applicant is required to provide one (1) tree and three (3) shrubs for every five (5) parking spaces. The proposed surface parking lot has 684 (434 new) parking spaces, which will require 137 trees and 411 shrubs. The applicant is proposing 177 trees and 552 shrubs.
    b. Landscape islands have been distributed between parking stalls so that uninterrupted pavement does not exceed 40 parking spaces.

4. Street Trees.
    a. Street Trees are proposed along Jetport Boulevard, Loop Road, and Westbrook Street. The spacing of street trees varies due to numerous factors, including utility conflicts and other site constraints. Proposed street trees include species identified on the City of Portland Recommended Tree List.

    Please see the plan set for the proposed landscaping plans.

Att. Q

Water Quality, Stormwater Management, and Erosion Control 14-14.6.2(D)

1. The subject site is comprised of a partially developed area (an existing paved lot and a gravel lot) and an undeveloped area. The proposed plan has been designed to meet the applicable City standards for stormwater management to minimize to the extent practicable the total area of impervious surface on site, as well as the volume and rate of runoff from the lot.

   Please see the stormwater management plan.

2. The proposed project has been designed to be in compliance with the stormwater management standards of the City Technical Manual. Please see the stormwater management plan.

3. The proposed development does not propose any stormwater infiltration or other practices that would be expected to pose a risk of groundwater contamination either during or post-construction. Please see the plan set and the stormwater management plan.

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STORMWATER MANAGEMENT REPORT

For

PORTLAND INTERNATIONAL JETPORT
PORTLAND, MAINE

Prepared for:

Portland International Jetport
1001 Westbrook Street
Portland, ME 04101

Prepared by:

Sebago Technics, Inc.
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February, 2024

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STORMWATER MANAGEMENT REPORT
PORTLAND INTERNATIONAL JETPORT
PORTLAND, ME

1. Introduction

This Stormwater Management Plan Report has been prepared to present analyses performed to address the potential impacts associated with the project due to proposed modification in stormwater runoff characteristics and land cover changes. The stormwater management controls that are outlined in this report have been designed to suit the proposed development and to comply with applicable regulatory requirements.

The project will require a major site plan approval from the City of Portland along with an amendment to the Site Location of Development Act (SLODA) permit (L-13760) and a Natural Resources Protection Act (NRPA) permit through the Maine Department of Environmental Protection (DEP) due to wetland impacts and a related permit through the US Army Core of Engineers (USACE).

The City of Portland zoning maps indicate the property is zoned “Airport Business” with the allowed uses including “parking lots and garages” (Sec. 14-197.1. Permitted uses) and a maximum impervious surface ratio of 70% (City Order No. 295-88, 5-23-88).

2. Existing Conditions

The project site is located at the Portland International Jetport (PWM) and is owned by the City of Portland. The entire acreage for the property is approximately 666 acres with 473 acres of airfield area and 193 acres of area beyond the airfield.

The project site for the proposed development is located near the intersection of Jetport Boulevard and International Parkway. There is an existing paved cellphone lot as well as an existing gravel lot located off Loop Road in the southern section of the project site. The gravel lot drains to the south on the surface of the lot as there is no storm drain network or water quality treatment within this lot. The stormwater runoff from the surface enters a grass swale between the lots and eventually drains to a catch basin near the southeastern corner of the cellphone lot. The northern section of the site consists of undeveloped, wooded land. The project site is approximately 13 acres.

The slopes range from 0% to 8% throughout the entire project site with the lowest approximate elevation of 52 FT and the highest approximate elevation of 90 FT.

The site is tributary to the Fore River, which is considered a major river segment. The site is not located within an urban impaired stream or lake-most at risk watershed according to Chapter 502 of the Maine DEP regulations.

The proposed development area of the site is not located in an identified flood zone per the FEMA Flood Insurance Rate Map.

3. Soils

Soil characteristics were obtained from the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey completed by Sebago Technics. The Hydrologic Groups (HSG) of the soils is classified by Technical Release TR-55 of the Soil Conservation Service as follows:

Soil Map Symbol	Soil Name	Slope (%)	HSG
BuB	Lamoine silt loam	3-8	C/D
Gp	Gravel pits	N/A	N/A
PbB	Paxton fine sandy loam	3-8	C
Sn	Scantic silt loam	0-3	D
Sz	Swanton fine sandy loam	0-3	C/D
WmB	Windsor loamy sand	0-8	A

Hydrologic Soil Group boundaries are delineated on the Watershed Map. A copy of the Class D Intensity Soil Survey is included as Appendix 4.

4. Proposed Site Improvements

The proposed development will consist of two (2) paved parking lots: the lower lot and the upper lot. The upper and lower lots together are proposed to consist of 684 long- term parking spaces. There are landscaped islands proposed in each of the lots.

In total, the proposed site improvements result in 7.24 acres of disturbed area and 7.24 acres of proposed developed area, which consists of 5.64 acres of new impervious area and 1.60 acres of new landscaped or vegetated area.

Lower Lot

The lower lot is proposed to be located where the existing paved cellphone and valet gravel lots currently exist. There is a proposed entrance on Loop Road and exit on Westbrook Street. There is also an internal connecting road from the lower lot to the upper lot. The lower lot is proposed to consist of eight (8) ADA- compliant parking spaces and 248 standard parking spaces. The lower lot is proposed to be treated by one (1) Contech Stormfilter BMP with upstream CMP Pipe Detention. The total area tributary to the treatment system is equal to 105,340 SF (2.42 Ac), which includes approximately 90,030 SF (2.07 Ac) of impervious area.

Upper Lot

The upper lot is proposed to be located northwest of the lower lot, bounded by Jetport Boulevard to the northeast and Loop Road to the southwest. The entrance to the upper lot is the same as the lower lot on Loop Road with an exit onto Loop Road. The upper lot is proposed to consist of twelve (12) ADA-compliant parking spaces and 416 standard parking spaces. The upper lot is proposed to be treated by one (1) Contech Stormfilter BMP with upstream CMP Pipe Detention. The total area of the lot is approximately 180,210 SF (4.14 Ac), which includes approximately 146,080 SF (3.35 Ac) of impervious area.

The overall stormwater management system for the project will consist of catch basins and two (2) subsurface drainage systems. The two (2) subsurface drainage systems will be water quality treatment systems with upstream detention designated to the long-term parking lots. Since the Jetport discharges to the Fore River, the applicant will be pursuing a waiver of the Flooding Standard pursuant to MDEP Rules, Chapter 500(4)(F)(3)(b).

5. Existing Conditions Model

The existing conditions watershed plan consists of nine (9) subcatchments labeled 1S through 9S in the HydroCAD model. Four (4) locations were identified as Points of Analyses (POA) for comparing peak runoff rates. Please refer to the Existing Conditions HydroCAD model and Existing Conditions Watershed Plan. The overall drainage area included in the model is equal to 11.88 acres.

POA-1 is located near the intersection of Loop Road and Westbrook Street and represents the discharge pipe of existing catch basin B-32A. For the specific study point, there are five (5) existing catch basins that capture the stormwater runoff of the contributing watersheds. Watersheds 1S, 2S, 3S, 4S, 6S, and 8S contribute to POA-1 with an overall runoff area of approximately 9.06 acres.

POA-2 is located along Westbrook Street at an existing drainage manhole (WS-DMH-2). Watershed 5S contributes to this study point with a runoff area of approximately 0.82 acres.

POA-3 is located on an abutting property at an existing catch basin. Watershed 9S contributes to this study point with a runoff area of approximately 0.36 acres.

POA-4 is located along Loop Road at an existing drainage manhole (unlabeled). Watershed 7S contributes to this study point with a runoff area of approximately 1.64 acres.

6. Proposed Conditions Model

The proposed conditions consists of the same overall watershed area as the existing conditions, however, the pre-development subcatchments have been broken into smaller

watersheds as a result of the proposed development. The total area in the proposed conditions model remains unchanged from the existing conditions model at 11.88 acres.

POA1: Subcatchments 1S, 2.1S, 3.1S thru 3.7S, 4.1S thru 4.8S, 6.1S, and 8.1S thru 8.12S are tributary to POA-1 with an overall tributary area of 10.21 acres. The increase in tributary area is a result of the proposed development and alteration of drainage patterns to convey and treat stormwater to the two (2) subsurface drainage systems.

Subcatchments 8.2S thru 8.12S are tributary to Stormfilter Treatment Unit #1 (SF-1), represented by nodes 8.83P, 8.84P, and 8.85P. 8.83P represents the water quality detention of the Stormfilter, while 8.84P represents the peak flow detention of the upstream storage configuration. 8.85P represents the 18" discharge pipe that combines the water quality discharge and peak detention flow, which eventually drains to POA-1.

Subcatchments 3.1S thru 3.7S and 4.2S thru 4.8S are tributary to Stormfilter Treatment Unit #2 (SF-2), represented by nodes 3.32P, 3.33P, and 3.34P. 3.32P represents the water quality detention of the Stormfilter, while 3.33P represents the peak flow detention of the upstream storage configuration. 3.34P represents the 24" discharge pipe that combines the water quality discharge and peak detention flow, which eventually drains to POA-1.

Subcatchment 1S remains unchanged from the existing condition. Subcatchment 2.1S represents existing conditions subcatchment 2S that has been altered as a result of the proposed project through the change in land cover type and altered grading and drainage patterns. Subcatchment 6.1S represents the existing conditions subcatchment 6S that has been altered as a result of the proposed project through grading and land cover changes. Subcatchment 8.1S represents the remainder of existing conditions subcatchment 8S that remains largely unchanged from the existing condition and does not drain to SF-1. Subcatchments 1S, 2.1S, 6.1S and 8.1S are tributary to existing conditions catch basin B-34, represented by node 2P, which eventually drains to POA-1.

POA-2: Subcatchment 5.1S is tributary to POA-2 with an overall tributary area of 0.47 acres. 5.1S represents the remainder of existing conditions subcatchment 5S that continues to drain to POA-2. 5.1S is the result of the alterations to subcatchment 9S in the proposed development, which consists of grading and conveyance of stormwater to be attenuated and treated by SF-2.

POA-3: Subcatchment 9.1S is tributary to POA-3 with an overall tributary area of 0.16 acres. 9.1S represents the remainder of existing conditions subcatchment 9S that continues to drain to POA-3. 9.1S is the result of the alterations to subcatchment 9S in the proposed development, which consists of grading and conveyance of stormwater to be attenuated and treated by SF-1.

POA-4: Subcatchment 7.1S is tributary to POA-4 with an overall tributary area of 1.02 acres. 7.1S represents the remainder of existing conditions subcatchment 7S that continues to

drain to the existing conditions drain manhole that is represented by node 7P in the existing and proposed conditions models.

7. Stormwater Management

Basic Standard - Chapter 500, Section 4(B)

Since the project will disturb more than one (1) acre of land area, MDEP Basic Standards apply, requiring that grading or other construction activities on the site do not impede or otherwise alter drainage ways to have an unreasonable adverse impact. We have avoided adverse impacts by providing an Erosion & Sedimentation Control Plan, and an Inspection, Maintenance and Housekeeping Plan (Appendix 3) to be implemented during construction and post-construction stabilization of the site. These construction requirements have been developed following Best Management Practice guidelines.

General Standard - Chapter 500, Section 4(C)

Since the project will create more than one (1) acre of impervious surface, MDEP General Standards apply, which require a project's stormwater management system to include treatment measures that will mitigate for the increased frequency and duration of channel erosive flows due to runoff from smaller storms, provide for effective treatment of pollutants in stormwater, and mitigate potential temperature impacts. The General Standards require treatment of no less than 95% of the site's created impervious area and no less than 80% of the site's created developed area (landscaped area and impervious area combined). To mitigate the changes in hydrologic patterns due to the development of this project, two (2) Contech Stormfilter Treatment BMP's have been implemented into the stormwater management infrastructure. Filtration BMPs are very effective at removing a wide range of pollutants through the use of organic soil filter media.

The Best Management Practices (two (2) subsurface drainage systems) have been designed and sized in accordance with DEP BMP standards contained within Chapter 500 and the BMP Manual. Sizing calculations can be found in Appendix 1. Through the use of the aforementioned BMP's 96.0% of new impervious area and 90.5% of new developed area will be receiving treatment. This meets the requirements for the Maine DEP General Standards.

It is worth noting that in the proposed condition, the redevelopment of the area occupied by the existing gravel and cellphone lots will provide greater water quality than in the existing condition. As described above, in the existing condition, the existing gravel parking lot has no storm drain network to drain the runoff and is not treated prior to entering the Jetport storm drain network. It contributes untreated, turbulent stormwater runoff to the existing system. In the proposed condition, with the implementation of the proposed BMP's, the system will remove pollutants, cool the water, and provide attenuation to the stormwater runoff of the area. This will mitigate impacts to the Fore River Watershed from an area that is already developed.

Flooding Standard - Chapter 500, Section 4(F)

Since the planned project will create more than three (3) acres of impervious surface, MDEP Flooding Standards must be met. The Flooding Standard requires a project's stormwater management system detain, retain, or result in the infiltration of stormwater from 24-hour storms of the 2, 10, and 25-year frequencies such that the peak flows of stormwater from the project site do not exceed the peak flows of stormwater prior to undertaking the project. The project is located within the direct watershed of the Fore River, which is a major river segment. Therefore, the project qualifies for a waiver from the Flooding Standard as defined in MDEP's Chapter 500, Section 4(F)-3(a). As stated above, the majority of the proposed developed area discharges to the existing stormdrain network. Therefore, the project was designed to treat and attenuate stormwater discharge so the pipe capacity of the existing stormdrain network was not increased or exceeded.

A runoff evaluation was performed using the methodology outlined in the USDA Soil Conservation Service's "Urban Hydrology for Small Watersheds - Technical Release #55 (TR-55)". HydroCAD computer software was utilized to perform the calculations.

HydroCAD Stormwater Analysis

Runoff curve numbers were determined for each of the watersheds by measuring the area of each hydrologic soil group within each type of land cover. The type of land cover was determined based on survey data, field reconnaissance and aerial photography. Times of concentration were determined from site topographic maps in accordance with SCS procedures.

The 24-hour rainfall values utilized in the hydrologic model were obtained from Appendix H of MDEP's Chapter 500: Stormwater Management (effective date August 2015). Rainfall values for Cumberland SE County are listed in the table below.

Storm Frequency Precipitation (in./24 hr) Cumberland SE County	
2-year	3.1
10-year	4.6
25-year	5.8

The following table presents the results of the peak runoff calculations at the analysis points for the existing and proposed conditions.

Peak Runoff Rate Summary Table			
Analysis Point	**Storm Event**	**Existing Conditions (cfs)**	**Proposed Conditions (cfs)**
POA-1	2-year	12.9	9.0
	10-year	20.7	15.0
	25-year	27.0	19.8
POA-2	2-year	2.3	1.2
	10-year	3.5	1.9
	25-year	4.5	2.5
POA-3	2-year	0.6	0.3
	10-year	1.2	0.5
	25-year	1.6	0.7
POA-4	2-year	2.3	2.3
	10-year	3.8	3.6
	25-year	5.0	4.6

The HydroCAD Data output sheets from this analysis are appended to this report (Appendix 2) along with the Stormwater Management Plans (Appendix 5). The model predicts that the peak runoff rates in the proposed condition at Points of Analyses 1, 2, 3, & 4 are at or below existing condition runoff rates for the 2, 10, and 25-year storm events with implementation of the proposed stormwater management practices.

8. Summary

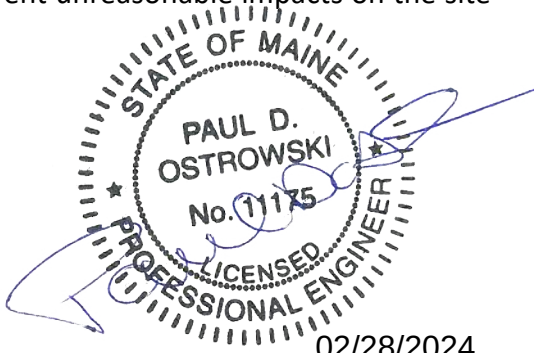
The proposed development has been designed to manage stormwater runoff through Best Management Practices approved by MDEP. Stormwater BMP's provide treatment to 96.0% (95% required) of impervious areas, and 90.5% (80% required) of the total developed area. Runoff discharging from the site in the proposed condition will be at or below existing conditions for the 2, 10, and 25-year storm events at points of analyses 1, 2, 3, & 4. Additionally, erosion and sedimentation controls along with associated maintenance and housekeeping procedures have been outlined to prevent unreasonable impacts on the site and to the surrounding environment.

Prepared by:

SEBAGO TECHNICS, INC.



Tanner F. Goodine, EI
Civil Engineer
TFG/PDO



02/28/2024

Paul D. Ostrowski, PE
Senior Project Engineer

Appendix 1

Stormwater Quality Calculations

Table 1: MDEP GENERAL STANDARD CALCULATIONS

Job #19059: Portland International Jetport (PWM) Parking Expansion

AREA ID	WATERSHED SIZE (S.F.)	EXISTING ONSITE IMPERVIOUS AREA TO REMAIN (S.F.)	NEW ONSITE IMPERVIOUS AREA (S.F.)	NEW ONSITE IMPERVIOUS AREA NOT TREATED BY POROUS ASPHALT* (S.F.)	EXISTING ONSITE LANDSCAPED AREA TO REMAIN (S.F.)	NEW ONSITE LANDSCAPED AREA (S.F.)	NET NEW DEVELOPED AREA (S.F.)	NET EXISTING DEVELOPED AREAS (S.F.)	TREATMENT PROVIDED?	IMPERVIOUS AREA TREATED (S.F.)	LANDSCAPED AREA TREATED (S.F.)	DEVELOPED AREA TREATED (S.F.)	TREATMENT BMP
1S	34,840	33,500			1,340		0	34,840	NO	0	0	0	
2.1S	29,840	16,315	4,530		1,065	7,930	12,460	17,380	NO	0	0	0	
3.1S	1,450		900			550	1,450	0	YES	900	550	1,450	SF-2
3.2S	4,400		2,300			2,100	4,400	0	YES	2,300	2,100	4,400	SF-2
3.3S	7,500		6,550			950	7,500	0	YES	6,550	950	7,500	SF-2
3.4S	5,170		4,660			510	5,170	0	YES	4,660	510	5,170	SF-2
3.5S	7,350		6,520			830	7,350	0	YES	6,520	830	7,350	SF-2
3.6S	7,080		7,080				7,080	0	YES	7,080	0	7,080	SF-2
3.7S	6,280		5,470			810	6,280	0	YES	5,470	810	6,280	SF-2
4.1S	30,540	15,510			8,544	4,758	4,758	24,054	NO	0	0	0	
4.2S	11,860		9,785			2,075	11,860	0	YES	9,785	2,075	11,860	SF-2
4.3S	10,630		9,425			1,205	10,630	0	YES	9,425	1,205	10,630	SF-2
4.4S	11,040		9,180			1,860	11,040	0	YES	9,180	1,860	11,040	SF-2
4.5S	5,620		3,490			2,130	5,620	0	YES	3,490	2,130	5,620	SF-2
4.6S	9,090		7,990			1,100	9,090	0	YES	7,990	1,100	9,090	SF-2
4.7S	6,020		6,020			0	6,020	0	YES	6,020	0	6,020	SF-2
4.8S	11,850		10,665			1,185	11,850	0	YES	10,665	1,185	11,850	SF-2
5.1S	20,660	10,000	495		10,165		495	20,165	NO	0	0	0	
6.1S	50,370	41,330	900		8,140	0	900	49,470	NO	0	0	0	
7.1S	44,485	28,795	2,450		4,120	7,640	10,090	32,915	NO	0	0	0	
8.1S	13,930	5,530	1,380		7,020		1,380	12,550	NO	0	0	0	
8.2S	19,350		16,340			3,010	19,350	0	YES	16,340	3,010	19,350	SF-1
8.3S	33,150		31,640			1,510	33,150	0	YES	31,640	1,510	33,150	SF-1
8.4S	22,420		17,510			4,910	22,420	0	YES	17,510	4,910	22,420	SF-1
8.5S	15,090		12,280			2,810	15,090	0	YES	12,280	2,810	15,090	SF-1
8.6S	9,090		0			9,090	9,090	0	YES	0	9,090	9,090	SF-1
8.7S	11,120		7,885			3,235	11,120	0	YES	7,885	3,235	11,120	SF-1
8.8S	5,080		1,800			3,280	5,080	0	YES	1,800	3,280	5,080	SF-1
8.9S	9,920		8,240			1,680	9,920	0	YES	8,240	1,680	9,920	SF-1
8.10S	17,310		16,705			605	17,310	0	YES	16,705	605	17,310	SF-1
8.11S	8,440		7,765			675	8,440	0	YES	7,765	675	8,440	SF-1
8.12S	26,900		23,570			3,330	26,900	0	YES	23,570	3,330	26,900	SF-1
8.13S	2,340		2,340				2,340	0	YES	2,340	0	2,340	SF-1
9.1S	6,800					2,000			NO	0	0	0	
TOTAL (S.F.)	**517,015**	**150,980**	**245,865**		**40,394**	**71,768**	**315,633**	**191,374**		**236,110**	**49,440**	**285,550**	

TOTAL NEW IMPERVIOUS AREA (S.F.)	**245,865**	**TOTAL DEVELOPED AREA (S.F.)**	**315,633**
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (S.F.)	**236,110**	**TOTAL AREA RECEIVING TREATMENT (S.F.)**	**285,550**
% OF IMPERVIOUS AREA RECEIVING TREATMENT	**96.0%**	**% OF AREA RECEIVING TREATMENT**	**90.5%**

Contech Engineered Solutions LLC
71 US Rte 1, Suite F
Scarborough, ME 04074
Phone: (207) 885-6191
www.ContechES.com

December 13, 2023

Tanner Goodine, EI
Sebago Technics, Inc.
75 John Roberts Road, Suite 4A
South Portland, ME 04106

RE: Portland Jetport Parking (Contech Reference No. 777919)
Review of StormFilter Design

To whom it may concern,

The purpose of this letter is to document Contech Engineered Solutions review of the plans and the proposed application of the StormFilter Media Filtration System water quality unit for your project.

Contech Engineered Solutions (Contech) has reviewed the StormFilter (SF) design for this project. We believe the SF configuration to be an appropriate water quality solution for this site.

The SF system with Phosphosorb (Psorb) media cartridges is approved for use by MEDEP meeting the General Standard of the Stormwater rules (Chapter 500) if designed, installed, and maintained in accordance with the provisions noted in the February 24, 2023 approval letter from the MEDEP.

The StormFilter system is designed in accordance with the maximum drain down rate of 1.67 gallons per minute per square foot of filter surface area (18.79 gpm per 27" cartridge). Additionally, the StormFilter is designed with an upstream water quality volume (WQv) detention system to retain, route and treat the entire WQ event flow from the contributing drainage area to the treatment unit. The resultant volume from the WQ event storm is detained in the upstream detention to an elevation below any bypass flow paths resulting in a routed storm event volume through the SF cartridges with a required emptying time of 24 to 48 hours.

Due to the extended detention time upstream of the SF in the WQv detention system, Contech assumes sedimentation of the larger solids at an estimated 50 percent reduction of the total suspended solids prior to the treatment by the StormFilter vault.

StormFilter 1: The engineer of record provided a drainage area of 4.14 acres, of which 3.35 acres is impervious. In order to adequately treat the runoff from this area, Contech recommends an offline StormFilter Vault 8'x11' (model SF0811) with quantity 18 x 27" Phosphosorb cartridges based on sediment mass loading design methodology.

StormFilter 2: The engineer of record provided a drainage area of 2.42 acres, of which 2.07 acres is impervious. In order to adequately treat the runoff from this area, Contech recommends an offline StormFilter 96" diameter Manhole (model SFMH96) with quantity 11 x 27" Phosphosorb cartridges based on sediment mass loading design methodology.

The SF system requires a hydraulic headwater condition to fully immerse the media and activate the cartridge float valve. For 27" SF cartridges, this headwater condition is 3.05 ft above SF outlet invert. This is achieved by the either physical inlet to outlet pipe elevation drop or an upstream WQ detention filling during the WQ storm flow to the required SF float valve activation elevation.

The WQv is routed through the SF vault and the detention system WQ outlet control shall be designed by the Engineer of Record to drain down in 24 to 48 hours after the beginning of the storm resulting in a cumulative treated WQv.

Contech Engineered Solutions LLC
71 US Rte 1, Suite F
Scarborough, ME 04074
Phone: (207) 885-6191
www.ContechES.com

It is recommended to have the site detention system storage designed to store the WQv and flood control volume separately with the two parts of the detention system separated by a weir to ensure that the WQv is captured for treatment prior to overflowing into the flood control detention.

Our systems require periodic maintenance to continue operating properly. Given typical runoff pollutant loading rates, Contech recommends maintenance inspections on an annual basis.

This system is expected to operate in accordance with Contech's design intent. Please feel free to contact me if you have any questions or concerns.

Sincerely,



David Adams, PE
Contech Engineered Solutions, LLC.
(207) 885-6191
dadams@conteches.com

StormFilter Design Calculation

CONTECH Stormwater Solutions Inc. Engineer:	**DRA**	
Date	**12/1/2023**	

Site Information

Project Name	**Portland Jetport Parking**	
Project State	**ME**	
Project Location	**Portland**	
Site Designation	**Lot 1**	
Drainage Area, Ad	**4.14**	ac
Impervious Area, Ai	**3.35**	ac
Pervious Area, Ap	**0.78**	
% Impervious	**81**	%
Runoff Coefficient, Rc	**0.78**	

Upstream Detention System

Detention pretreatment credit	**50%**	

Mass loading calculations

Mean Annual Rainfall, P	**49**	in
Agency required % removal	**80%**	
Percent Runoff Capture	**90%**	
Mean Annual Runoff, V_t	**516,267**	ft^3
Event Mean Concentration of Pollutant, EMC	**75**	mg/l
Annual Mass Load, M_{total}	**2,416**	lbs

Water Quality Volume

90% Rainfall Depth	**1.00**	in
Volume to be treated	**0.269**	ac-ft
Volume to be treated by filters	**11,707**	ft^3

Filter System

Filtration brand	**StormFilter**	
Specific Flow Rate	**1.00**	gpm/ft^2
Cartridge height	**27**	in

Number of cartridges - mass loading

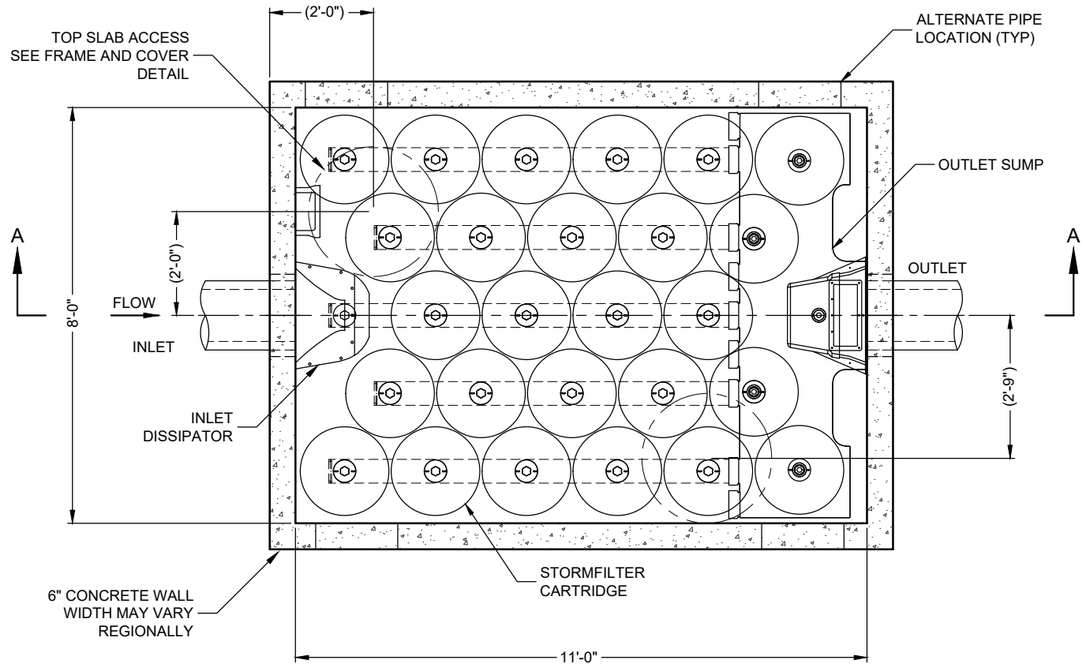
Mass removed by pretreatment system, M_{pre}	**1,208**	lbs
Mass load to filters after pretreatment, M_{pass1}	**1,208**	lbs
Mass to be captured by filters, M_{filter}	**966**	lbs
Allowable Cartridge Flow rate, Q_{cart}	**11.25**	gpm
Mass load per cartridge, M_{cart} (lbs)	**54**	lbs
Number of Cartridges required, N_{mass}	**18**	ea
Treatment Capacity	**0.451**	cfs

Determine Critical Sizing Value

Method to Use:	**MASS-LOADING**

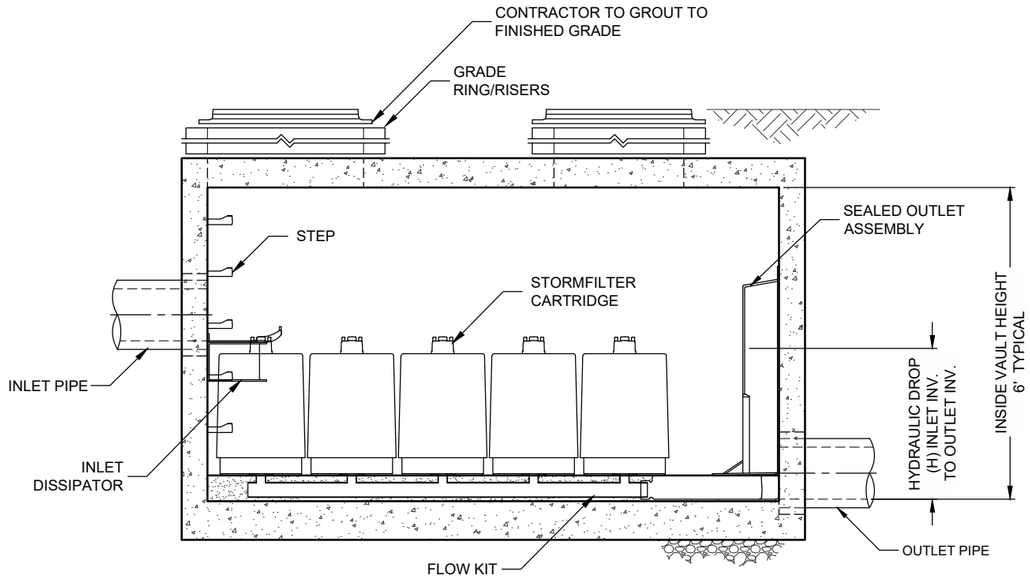
SUMMARY

Treatment Flow Rate (cfs)	0.451
Cartridge Flow Rate (gpm)	11.25
Number of Cartridges	18



PLAN VIEW

VAULT STYLE: OUTLET SUMP (NIB)



SECTION A-A

The Stormwater Management StormFilter®

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,322,629; 5,524,376; 5,707,527; 5,865,197; 6,027,639; 6,849,048. RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

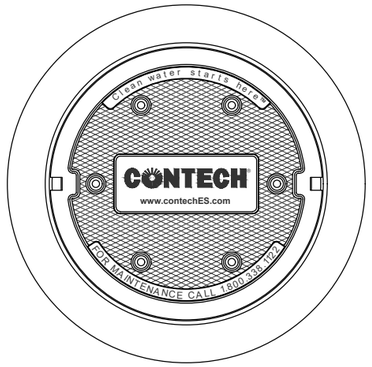
STORMFILTER DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD VAULT STYLE IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (26). VAULT STYLE OPTIONS INCLUDE INLET BAY (17), INLET BAY/OUTLET BAY (12), OUTLET BAY (21), FULL HEIGHT BAFFLE WALL (17). STORMFILTER 8X11 PEAK HYDRAULIC CAPACITY IS 1.8 CFS. IF THE SITE CONDITIONS EXCEED 1.8 CFS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			1.8'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	10	8.35	5

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY



FRAME AND COVER

(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
CARTRIDGE HEIGHT (27", 18", LOW DROP(LD))	*
NUMBER OF CARTRIDGES REQUIRED	*
CARTRIDGE FLOW RATE	*
MEDIA TYPE (PERLITE, ZPG, PSORB)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE #1	*	*	*
INLET PIPE #2	*	*	*
OUTLET PIPE	*	*	*

UPSTREAM RIM ELEVATION	*
DOWNSTREAM RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR SITE SPECIFIC DRAWINGS WITH DETAILED VAULT DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
7. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).
8. STORMFILTER STRUCTURE SHALL BE PRECAST CONFORMING TO ASTM C-857 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER VAULT (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL VAULT SECTIONS AND ASSEMBLE VAULT.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

SF0811
STORMFILTER
STANDARD DETAIL

I:\STORMWATER\COMMOPS\10 STORMFILTER\40 STANDARD DRAWINGS\VAULT\DWG\SF0811-DTL SEALED OUTLET RISER.DWG 8/10/2021 2:40 PM

StormFilter Design Calculation

CONTECH Stormwater Solutions Inc. Engineer:	**DRA**	
Date	**12/1/2023**	

Site Information

Project Name	**Portland Jetport Parking**	
Project State	**ME**	
Project Location	**Portland**	
Site Designation	**Lot 2**	
Drainage Area, Ad	**2.42**	ac
Impervious Area, Ai	**2.07**	ac
Pervious Area, Ap	**0.35**	
% Impervious	**85**	%
Runoff Coefficient, Rc	**0.82**	

Upstream Detention System

Detention pretreatment credit	**50%**	

Mass loading calculations

Mean Annual Rainfall, P	**49**	in
Agency required % removal	**80%**	
Percent Runoff Capture	**90%**	
Mean Annual Runoff, V_t	**317,144**	ft^3
Event Mean Concentration of Pollutant, EMC	**75**	mg/l
Annual Mass Load, M_{total}	**1,484**	lbs

Water Quality Volume

90% Rainfall Depth	**1.00**	in
Volume to be treated	**0.165**	ac-ft
Volume to be treated by filters	**7,191**	ft^3

Filter System

Filtration brand	**StormFilter**	
Specific Flow Rate	**1.00**	gpm/ft^2
Cartridge height	**27**	in

Number of cartridges - mass loading

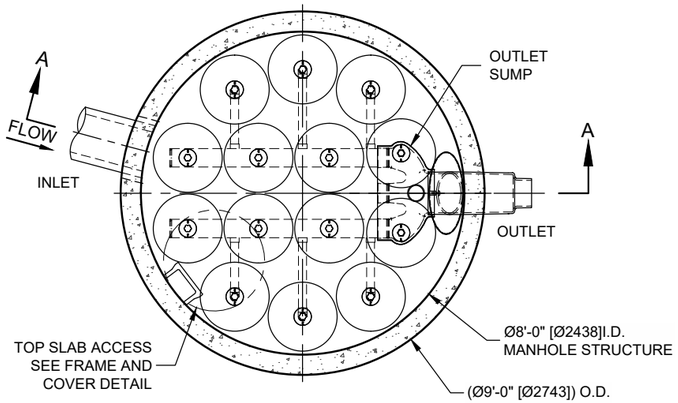
Mass removed by pretreatment system, M_{pre}	**742**	lbs
Mass load to filters after pretreatment, M_{pass1}	**742**	lbs
Mass to be captured by filters, M_{filter}	**594**	lbs
Allowable Cartridge Flow rate, Q_{cart}	**11.25**	gpm
Mass load per cartridge, M_{cart} (lbs)	**54**	lbs
Number of Cartridges required, N_{mass}	**11**	ea
Treatment Capacity	**0.276**	cfs

Determine Critical Sizing Value

Method to Use:	**MASS-LOADING**

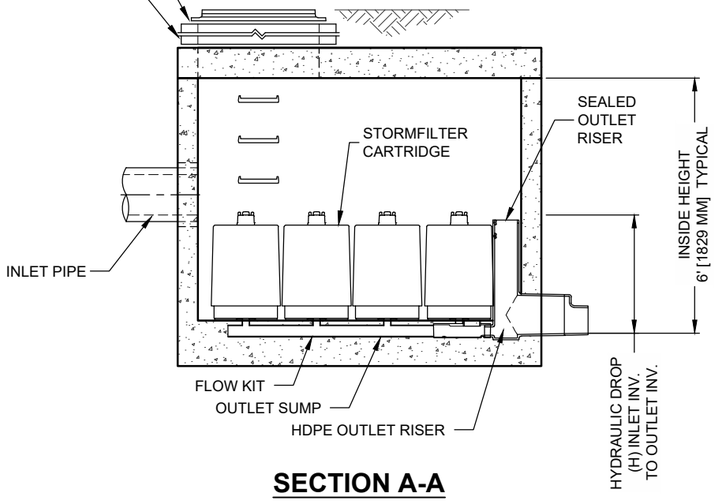
SUMMARY

Treatment Flow Rate (cfs)	0.276
Cartridge Flow Rate (gpm)	11.25
Number of Cartridges	11



PLAN VIEW

STANDARD OUTLET RISER
FLOWKIT: 43A



SECTION A-A

The Stormwater Management StormFilter®

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,322,629; 5,524,576; 5,707,527; 5,985,157; 6,027,639; 6,649,048; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

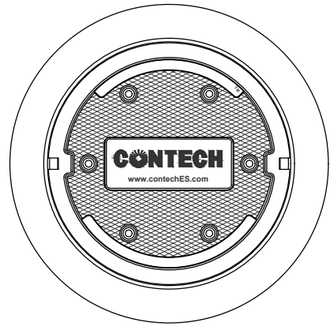
STORMFILTER DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD MANHOLE STYLE IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (14). VOLUME SYSTEM IS ALSO AVAILABLE WITH MAXIMUM 14 CARTRIDGES. Ø8'-0" [2438 mm] MANHOLE STORMFILTER PEAK HYDRAULIC CAPACITY IS 1.8 CFS [51 L/s] . IF THE SITE CONDITIONS EXCEED 1.8 CFS [51 L/s] AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27" [686 mm]			18" [458 mm]			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05' [930 mm]			2.3' [700 mm]			1.8' [550 mm]		
SPECIFIC FLOW RATE (gpm/sf) [L/s/m^2]	2 [1.30]	1.67* [1.08]	1 [0.65]	2 [1.30]	1.67* [1.08]	1 [0.65]	2 [1.30]	1.67* [1.08]	1 [0.65]
CARTRIDGE FLOW RATE (gpm) [L/s]	22.5 [1.42]	18.79 [1.19]	11.25 [0.71]	15 [0.95]	12.53 [0.79]	7.5 [0.44]	10 [0.63]	8.35 [0.54]	5 [0.32]

* 1.67 gpm/sf [1.08 L/s/m^2] SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY



FRAME AND COVER

(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs) [L/s]	*
PEAK FLOW RATE (cfs) [L/s]	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
CARTRIDGE HEIGHT (SEE TABLE ABOVE)	*
NUMBER OF CARTRIDGES REQUIRED	*
CARTRIDGE FLOW RATE	*
MEDIA TYPE (PERLITE, ZPG, PSORB)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE #1	*	*	*
INLET PIPE #2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR SITE SPECIFIC DRAWINGS WITH DETAILED VAULT DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' [1524 mm] AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES [178 mm]. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
7. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) [L/s] DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft)[m^2].
8. STORMFILTER STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET PIPE(S).
E. CONTRACTOR TO PROVIDE AND INSTALL CONNECTOR TO THE OUTLET RISER STUB. STORMFILTER EQUIPPED WITH A DUAL DIAMETER HDPE OUTLET STUB AND SAND COLLAR. IF OUTLET PIPE IS LARGER THAN 8 INCHES [200 mm], CONTRACTOR TO REMOVE THE 8 INCH [200 mm] OUTLET STUB AT MOLDED-IN CUT LINE. COUPLING BY FERNCO OR EQUAL AND PROVIDED BY CONTRACTOR.
F. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

SFMH96
STORMFILTER
STANDARD DETAIL

Summary for Pond 8.83P: WQ DET & SF-1

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 0.83" for WQ SF-1 event
Inflow = 3.7 cfs @ 12.09 hrs, Volume= 12,434 cf
Outflow = 0.7 cfs @ 12.52 hrs, Volume= 12,434 cf, Atten= 80%, Lag= 26.3 min
Primary = 0.5 cfs @ 12.52 hrs, Volume= 12,311 cf
Secondary = 0.3 cfs @ 12.52 hrs, Volume= 123 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.62' @ 12.52 hrs Surf.Area= 1,115 sf Storage= 4,521 cf

Plug-Flow detention time= 93.2 min calculated for 12,434 cf (100% of inflow)
Center-of-Mass det. time= 93.2 min (880.1 - 786.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	62.50'	0 cf	**10.00'W x 111.50'L x 8.00'H Field A** 8,920 cf Overall - 5,504 cf Embedded = 3,416 cf x 0.0% Voids
#2A	62.50'	5,504 cf	**CMP Round 96** x 5 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +1.50' x 50.27 sf x 1 rows 8.00' Header x 50.27 sf x 1 = 402.1 cf Inside
		5,504 cf	Total Available Storage

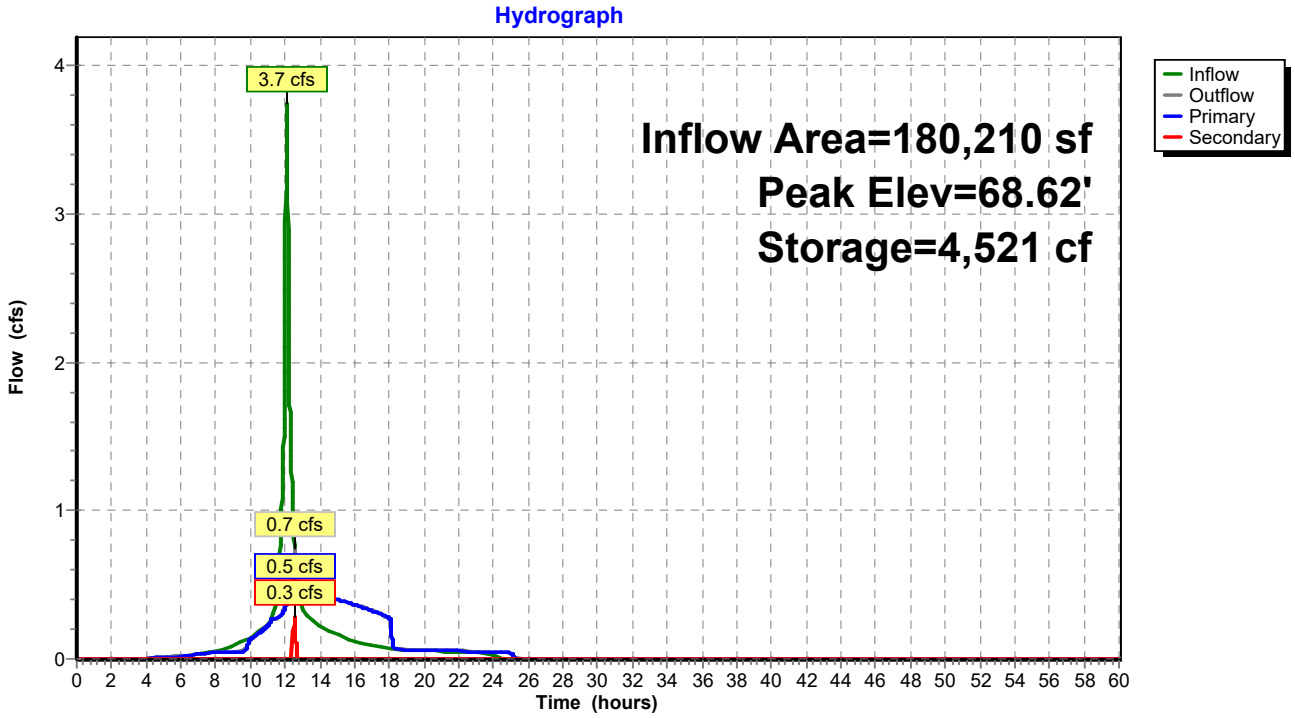
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	62.50'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 62.50' / 62.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	60.60'	**Tube/Siphon/Float Valve X 18.00** 0.586" Diameter, C= 0.600, 0.263" Trickle Diameter Starts@63.35'
#3	Primary	60.60'	**12.0" Round 12" Stormfilter Outlet** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.60' / 60.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Secondary	68.58'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 6.08 6.16 6.24 6.32 6.40 6.48 6.56 6.64 6.72 6.80 6.88 6.96 7.04 7.12 7.20 7.28 7.36 7.44 7.52 7.60 7.68 7.76 7.84 7.92 8.00 Width (feet) 6.83 6.73 6.63 6.52 6.40 6.28 6.15 6.01 5.87 5.71 5.55 5.38 5.20 5.01 4.80 4.58 4.34 4.08 3.80 3.49 3.14 2.73 2.24 1.59 0.00

Primary OutFlow Max=0.5 cfs @ 12.52 hrs HW=68.62' (Free Discharge)
└**3=12" Stormfilter Outlet** (Passes 0.5 cfs of 8.2 cfs potential flow)
└**2=Tube/Siphon/Float Valve** (Orifice Controls 0.5 cfs @ 13.64 fps)
└**1=Culvert** (Passes 0.5 cfs of 9.0 cfs potential flow)

Secondary OutFlow Max=0.2 cfs @ 12.52 hrs HW=68.62' (Free Discharge)
└**4=Custom Weir/Orifice** (Weir Controls 0.2 cfs @ 0.69 fps)

Pond 8.83P: WQ DET & SF-1



Summary for Pond 3.32P: WQ DET & SF-2

Inflow Area = 105,340 sf, 85.47% Impervious, Inflow Depth = 0.82" for WQ SF-2 event
Inflow = 2.2 cfs @ 12.09 hrs, Volume= 7,215 cf
Outflow = 0.3 cfs @ 12.59 hrs, Volume= 7,215 cf, Atten= 85%, Lag= 30.1 min
Primary = 0.3 cfs @ 12.59 hrs, Volume= 7,195 cf
Secondary = 0.0 cfs @ 12.59 hrs, Volume= 20 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.41' @ 12.59 hrs Surf.Area= 1,634 sf Storage= 2,580 cf

Plug-Flow detention time= 87.6 min calculated for 7,214 cf (100% of inflow)
Center-of-Mass det. time= 87.6 min (874.4 - 786.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	60.00'	0 cf	**8.00'W x 204.25'L x 9.00'H Field A** 14,706 cf Overall - 10,166 cf Embedded = 4,540 cf x 0.0% Voids
#2A	60.00'	10,166 cf	**CMP Round 96** x 9 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +14.25' x 50.27 sf x 1 rows 8.00' Header x 50.27 sf x 1 = 402.1 cf Inside
		10,166 cf	Total Available Storage

Storage Group A created with Chamber Wizard

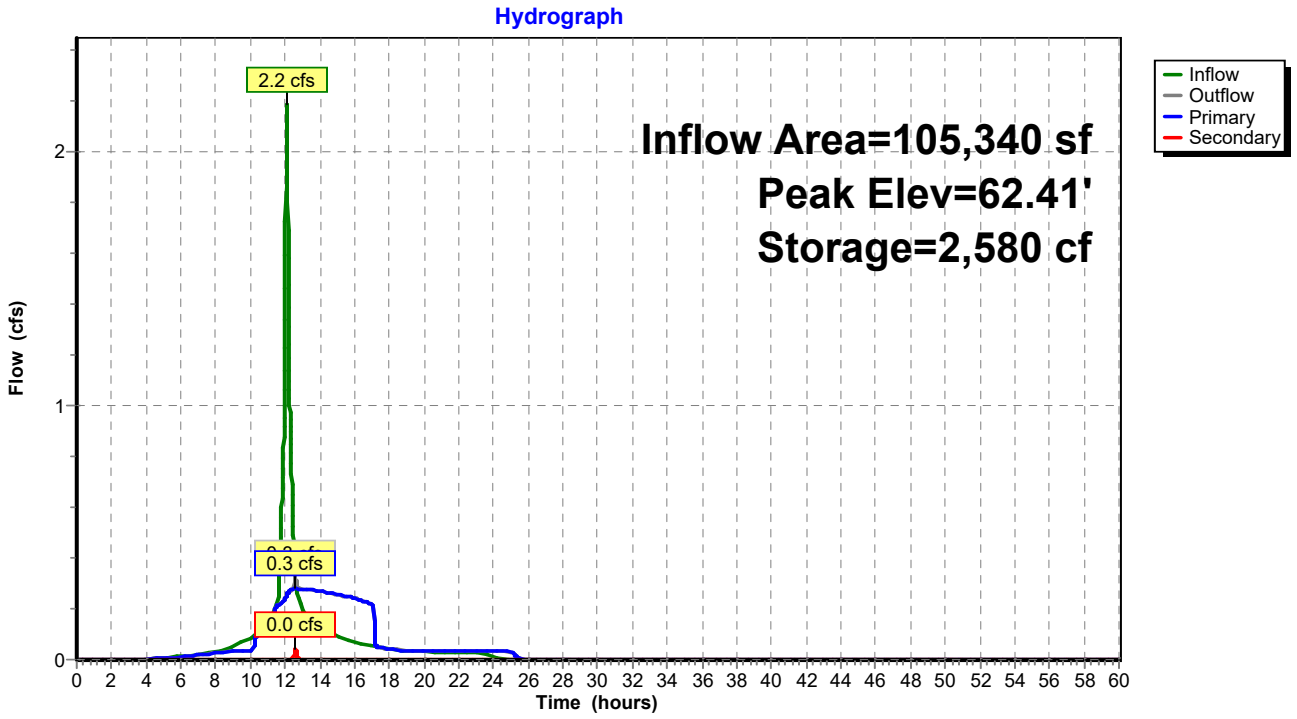
Device	Routing	Invert	Outlet Devices
#1	Device 2	60.00'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 60.00' / 59.95' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	57.70'	**Tube/Siphon/Float Valve X 11.00** 0.668" Diameter, C= 0.600, 0.263" Trickle Diameter Starts@60.45'
#3	Primary	57.70'	**12.0" Round 12" Stormfilter Outlet** L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.70' / 57.60' S= 0.0077 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Secondary	62.40'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 2.40 2.48 2.56 2.64 2.72 2.80 2.88 2.96 3.04 3.12 3.20 3.28 3.36 3.44 3.52 3.60 3.68 3.76 3.84 3.92 4.00 4.08 4.16 4.24 4.32 4.40 4.48 4.56 4.64 4.72 4.80 4.88 4.96 5.04 5.12 5.20 5.28 5.36 5.44 5.52 5.60 5.68 5.76 5.84 5.92 6.00 6.08 6.16 6.24 6.32 6.40 6.48 6.56 6.64 6.72 6.80 6.88 6.96 7.04 7.12 7.20 7.28 7.36 7.44 7.52 7.60 7.68 7.76 7.84 7.92 8.00 Width (feet) 7.33 7.40 7.46 7.52 7.58 7.63 7.68 7.72 7.77 7.80 7.84 7.87 7.90 7.92 7.94 7.96 7.97 7.99 7.99 8.00 8.00 8.00 7.99 7.99 7.97 7.96 7.94 7.92 7.90 7.87 7.84 7.80 7.77 7.72 7.68 7.63 7.58 7.52 7.46 7.40 7.33 7.26 7.18 7.10 7.02 6.93 6.83 6.73 6.63 6.52 6.40 6.28 6.15 6.01 5.87 5.71 5.55 5.38 5.20 5.01 4.80 4.58 4.34 4.08 3.80 3.49 3.14 2.73 2.24 1.59

0.00

Primary OutFlow Max=0.3 cfs @ 12.59 hrs HW=62.41' (Free Discharge)
└**3=12" Stormfilter Outlet** (Passes 0.3 cfs of 6.1 cfs potential flow)
└**2=Tube/Siphon/Float Valve** (Orifice Controls 0.3 cfs @ 10.45 fps)
└**1=Culvert** (Passes 0.3 cfs of 5.2 cfs potential flow)

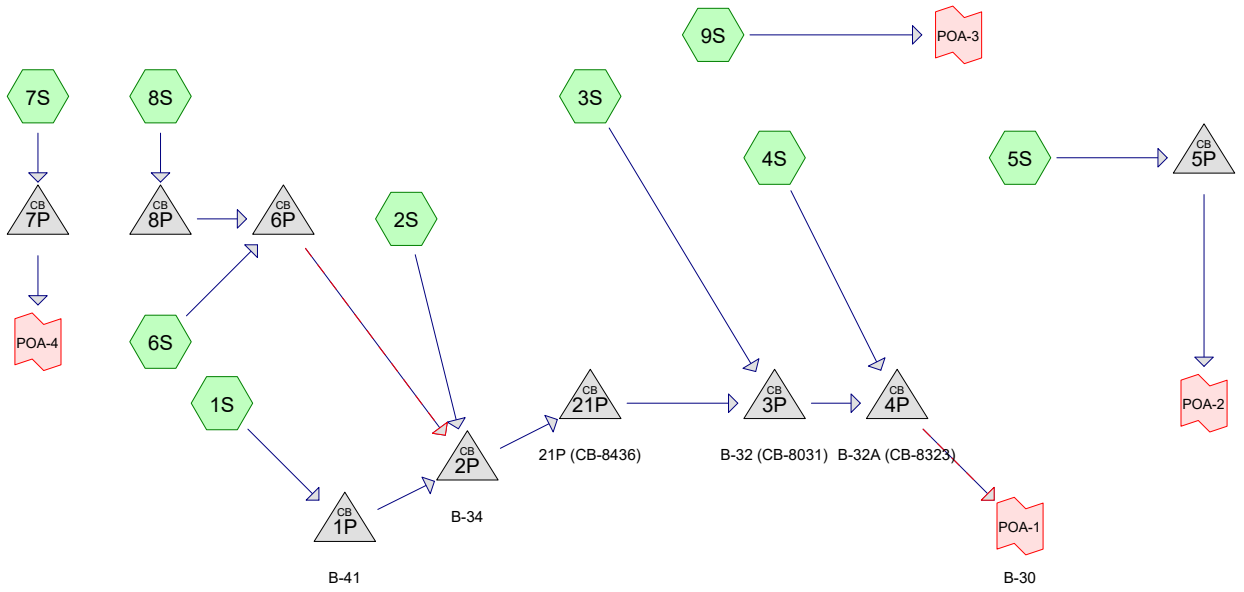
Secondary OutFlow Max=0.0 cfs @ 12.59 hrs HW=62.41' (Free Discharge)
└**4=Custom Weir/Orifice** (Weir Controls 0.0 cfs @ 0.33 fps)

Pond 3.32P: WQ DET & SF-2



Appendix 2A

Existing Conditions HydroCAD Summary



Subcat Reach Pond Link

Routing Diagram for 19059 - PRE
Prepared by Sebago Technics, Inc., Printed 2/23/2024
HydroCAD® 10.00-24 s/n 01856 © 2018 HydroCAD Software Solutions LLC

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=34,840 sf 96.15% Impervious Runoff Depth=2.82"
Tc=6.0 min CN=WQ Runoff=2.4 cfs 8,185 cf

Subcatchment2S: Runoff Area=23,550 sf 62.59% Impervious Runoff Depth=2.43"
Tc=6.0 min CN=WQ Runoff=1.4 cfs 4,761 cf

Subcatchment3S: Runoff Area=107,470 sf 32.46% Impervious Runoff Depth=2.04"
Flow Length=835' Tc=33.4 min CN=WQ Runoff=3.0 cfs 18,233 cf

Subcatchment4S: Runoff Area=80,650 sf 29.23% Impervious Runoff Depth=2.58"
Flow Length=480' Tc=7.8 min CN=WQ Runoff=4.9 cfs 17,338 cf

Subcatchment5S: Runoff Area=35,560 sf 28.26% Impervious Runoff Depth=2.62"
Tc=6.0 min CN=WQ Runoff=2.3 cfs 7,757 cf

Subcatchment6S: Runoff Area=63,780 sf 67.70% Impervious Runoff Depth=2.37"
Flow Length=280' Tc=14.5 min CN=WQ Runoff=2.9 cfs 12,622 cf

Subcatchment7S: Runoff Area=71,445 sf 40.30% Impervious Runoff Depth=2.05"
Flow Length=460' Tc=25.7 min CN=WQ Runoff=2.3 cfs 12,219 cf

Subcatchment8S: Runoff Area=84,725 sf 9.68% Impervious Runoff Depth=1.36"
Flow Length=505' Tc=27.8 min CN=WQ Runoff=1.7 cfs 9,571 cf

Subcatchment9S: Runoff Area=15,800 sf 0.00% Impervious Runoff Depth=1.53"
Tc=6.0 min CN=83 Runoff=0.6 cfs 2,011 cf

Pond 1P: B-41 Peak Elev=58.76' Inflow=2.4 cfs 8,185 cf
18.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=2.4 cfs 8,185 cf

Pond 2P: B-34 Peak Elev=59.25' Inflow=6.7 cfs 35,138 cf
18.0" Round Culvert n=0.013 L=140.0' S=0.0116 '/' Outflow=6.7 cfs 35,138 cf

Pond 3P: B-32 (CB-8031) Peak Elev=57.21' Inflow=8.1 cfs 53,372 cf
24.0" Round Culvert n=0.013 L=22.0' S=-0.0036 '/' Outflow=8.1 cfs 53,372 cf

Pond 4P: B-32A (CB-8323) Peak Elev=57.69' Inflow=12.9 cfs 70,710 cf
Primary=12.9 cfs 70,710 cf Secondary=0.0 cfs 0 cf Outflow=12.9 cfs 70,710 cf

Pond 5P: Peak Elev=60.88' Inflow=2.3 cfs 7,757 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=2.3 cfs 7,757 cf

Pond 6P: Peak Elev=64.44' Inflow=4.1 cfs 22,193 cf
Primary=4.1 cfs 22,193 cf Secondary=0.0 cfs 0 cf Outflow=4.1 cfs 22,193 cf

Pond 7P: Peak Elev=66.07' Inflow=2.3 cfs 12,219 cf
12.0" Round Culvert n=0.013 L=100.0' S=0.0100 '/' Outflow=2.3 cfs 12,219 cf

Pond 8P: Peak Elev=64.34' Inflow=1.7 cfs 9,571 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0189 '/' Outflow=1.7 cfs 9,571 cf

Pond 21P: 21P (CB-8436) Peak Elev=57.37' Inflow=6.7 cfs 35,138 cf
24.0" Round Culvert n=0.013 L=90.0' S=0.0029 '/' Outflow=6.7 cfs 35,138 cf

Link POA-1: B-30 Inflow=12.9 cfs 70,710 cf
Primary=12.9 cfs 70,710 cf

Link POA-2: Inflow=2.3 cfs 7,757 cf
Primary=2.3 cfs 7,757 cf

Link POA-3: Inflow=0.6 cfs 2,011 cf
Primary=0.6 cfs 2,011 cf

Link POA-4: Inflow=2.3 cfs 12,219 cf
Primary=2.3 cfs 12,219 cf

Total Runoff Area = 517,820 sf Runoff Volume = 92,697 cf Average Runoff Depth = 2.15"
61.97% Pervious = 320,900 sf 38.03% Impervious = 196,920 sf

Summary for Subcatchment 1S:

Runoff = 2.4 cfs @ 12.08 hrs, Volume= 8,185 cf, Depth= 2.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
33,500	98	Paved parking, HSG D
1,340	84	50-75% Grass cover, Fair, HSG D
34,840		Weighted Average
1,340		3.85% Pervious Area
33,500		96.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 2S:

Runoff = 1.4 cfs @ 12.09 hrs, Volume= 4,761 cf, Depth= 2.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
14,740	98	Paved parking, HSG D
730	96	Gravel surface, HSG D
8,080	84	50-75% Grass cover, Fair, HSG D
23,550		Weighted Average
8,810		37.41% Pervious Area
14,740		62.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3S:

Runoff = 3.0 cfs @ 12.44 hrs, Volume= 18,233 cf, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
34,880	98	Paved parking, HSG D
7,880	96	Gravel surface, HSG D
2,770	84	50-75% Grass cover, Fair, HSG D
58,940	83	Woods, Poor, HSG D
3,000	77	Woods, Poor, HSG C
107,470		Weighted Average
72,590		67.54% Pervious Area
34,880		32.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0150	0.07		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
6.8	250	0.0150	0.61		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.6	100	0.0300	2.79		**Shallow Concentrated Flow, C-D** Unpaved Kv= 16.1 fps
0.1	10	0.0100	1.50		**Shallow Concentrated Flow, D-E** Grassed Waterway Kv= 15.0 fps
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, E-F** Paved Kv= 20.3 fps
0.1	10	0.0200	2.12		**Shallow Concentrated Flow, F-G** Grassed Waterway Kv= 15.0 fps
0.7	170	0.0400	4.06		**Shallow Concentrated Flow, G-H** Paved Kv= 20.3 fps
0.5	170	0.0100	5.90	4.63	**Pipe Channel, H-I** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
33.4	835	Total			

Summary for Subcatchment 4S:

Runoff = 4.9 cfs @ 12.11 hrs, Volume= 17,338 cf, Depth= 2.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
23,570	98	Paved parking, HSG D
46,780	96	Gravel surface, HSG D
10,300	84	50-75% Grass cover, Fair, HSG D
80,650		Weighted Average
57,080		70.77% Pervious Area
23,570		29.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	20	0.0400	0.07		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	180	0.0350	3.01		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
2.2	280	0.0200	2.12		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
7.8	480	Total			

Summary for Subcatchment 5S:

Runoff = 2.3 cfs @ 12.08 hrs, Volume= 7,757 cf, Depth= 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (sf)	CN	Description
*	10,050	98	Paved parking, HSG D
	22,320	96	Gravel surface, HSG D
	3,190	84	50-75% Grass cover, Fair, HSG D
	35,560		Weighted Average
	25,510		71.74% Pervious Area
	10,050		28.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 6S:

Runoff = 2.9 cfs @ 12.19 hrs, Volume= 12,622 cf, Depth= 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
37,150	98	Paved parking, HSG D
6,030	98	Roofs, HSG D
640	96	Gravel surface, HSG D
1,670	79	50-75% Grass cover, Fair, HSG C
6,470	84	50-75% Grass cover, Fair, HSG D
11,820	77	Woods, Poor, HSG C
63,780		Weighted Average
20,600		32.30% Pervious Area
43,180		67.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0700	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	65	0.0500	1.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.3	115	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
14.5	280	Total			

Summary for Subcatchment 7S:

Runoff = 2.3 cfs @ 12.36 hrs, Volume= 12,219 cf, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
28,795	98	Paved parking, HSG D
4,120	79	50-75% Grass cover, Fair, HSG C
38,530	83	Woods, Poor, HSG D
71,445		Weighted Average
42,650		59.70% Pervious Area
28,795		40.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.5	110	0.0225	0.08		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.4	90	0.0150	0.61		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.1	10	0.0150	1.84		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
0.7	250	0.0100	5.90	4.63	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
25.7	460	Total			

Summary for Subcatchment 8S:

Runoff = 1.7 cfs @ 12.39 hrs, Volume= 9,571 cf, Depth= 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
8,205	98	Paved parking, HSG D
10,390	83	Woods, Poor, HSG D
66,130	77	Woods, Poor, HSG C
84,725		Weighted Average
76,520		90.32% Pervious Area
8,205		9.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	110	0.0300	0.09		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
6.9	180	0.0075	0.43		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.4	35	0.1000	1.58		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
0.5	180	0.0100	5.90	4.63	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
27.8	505	Total			

Summary for Subcatchment 9S:

Runoff = 0.6 cfs @ 12.09 hrs, Volume= 2,011 cf, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
15,800	83	Woods, Poor, HSG D
15,800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Pond 1P: B-41

Inflow Area = 34,840 sf, 96.15% Impervious, Inflow Depth = 2.82" for 2-YR event
Inflow = 2.4 cfs @ 12.08 hrs, Volume= 8,185 cf
Outflow = 2.4 cfs @ 12.08 hrs, Volume= 8,185 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.4 cfs @ 12.08 hrs, Volume= 8,185 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.76' @ 12.08 hrs
Flood Elev= 63.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.90'	**18.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 57.90' / 57.75' S= 0.0100 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.4 cfs @ 12.08 hrs HW=58.76' (Free Discharge)
1=Culvert (Barrel Controls 2.4 cfs @ 3.26 fps)

Summary for Pond 2P: B-34

Inflow Area = 206,895 sf, 48.15% Impervious, Inflow Depth = 2.04" for 2-YR event
Inflow = 6.7 cfs @ 12.11 hrs, Volume= 35,138 cf
Outflow = 6.7 cfs @ 12.11 hrs, Volume= 35,138 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.7 cfs @ 12.11 hrs, Volume= 35,138 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.25' @ 12.11 hrs
Flood Elev= 63.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**18.0" Round Culvert**
			L= 140.0' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 57.50' / 55.88' S= 0.0116 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.7 cfs @ 12.11 hrs HW=59.25' (Free Discharge)
1=Culvert (Inlet Controls 6.7 cfs @ 3.80 fps)

Summary for Pond 3P: B-32 (CB-8031)

Inflow Area = 314,365 sf, 42.79% Impervious, Inflow Depth = 2.04" for 2-YR event
Inflow = 8.1 cfs @ 12.13 hrs, Volume= 53,372 cf
Outflow = 8.1 cfs @ 12.13 hrs, Volume= 53,372 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.1 cfs @ 12.13 hrs, Volume= 53,372 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.21' @ 12.13 hrs
Flood Elev= 66.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert**
			L= 22.0' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 55.44' / 55.52' S= -0.0036 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.1 cfs @ 12.13 hrs HW=57.21' (Free Discharge)
1=Culvert (Barrel Controls 8.1 cfs @ 3.66 fps)

Summary for Pond 4P: B-32A (CB-8323)

Inflow Area = 395,015 sf, 40.02% Impervious, Inflow Depth = 2.15" for 2-YR event
Inflow = 12.9 cfs @ 12.12 hrs, Volume= 70,710 cf
Outflow = 12.9 cfs @ 12.12 hrs, Volume= 70,710 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.9 cfs @ 12.12 hrs, Volume= 70,710 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.69' @ 12.12 hrs
Flood Elev= 59.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.52' / 54.90' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	59.39'	**15.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=12.9 cfs @ 12.12 hrs HW=57.69' (Free Discharge)
└**1=Culvert** (Inlet Controls 12.9 cfs @ 4.11 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=55.52' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond 5P:

Inflow Area = 35,560 sf, 28.26% Impervious, Inflow Depth = 2.62" for 2-YR event
Inflow = 2.3 cfs @ 12.08 hrs, Volume= 7,757 cf
Outflow = 2.3 cfs @ 12.08 hrs, Volume= 7,757 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.3 cfs @ 12.08 hrs, Volume= 7,757 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 60.88' @ 12.08 hrs
Flood Elev= 66.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 59.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.3 cfs @ 12.08 hrs HW=60.88' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.3 cfs @ 2.52 fps)

Summary for Pond 6P:

Inflow Area = 148,505 sf, 34.60% Impervious, Inflow Depth = 1.79" for 2-YR event
Inflow = 4.1 cfs @ 12.23 hrs, Volume= 22,193 cf
Outflow = 4.1 cfs @ 12.23 hrs, Volume= 22,193 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.1 cfs @ 12.23 hrs, Volume= 22,193 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.44' @ 12.23 hrs
Flood Elev= 71.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.08'	**12.0" Round Culvert** L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.08' / 57.67' S= 0.0147 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	70.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=4.1 cfs @ 12.23 hrs HW=64.44' (Free Discharge)
↑**1=Culvert** (Inlet Controls 4.1 cfs @ 5.19 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=62.08' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond 7P:

Inflow Area = 71,445 sf, 40.30% Impervious, Inflow Depth = 2.05" for 2-YR event
Inflow = 2.3 cfs @ 12.36 hrs, Volume= 12,219 cf
Outflow = 2.3 cfs @ 12.36 hrs, Volume= 12,219 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.3 cfs @ 12.36 hrs, Volume= 12,219 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.07' @ 12.36 hrs
Flood Elev= 69.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.00'	**12.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.00' / 64.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.3 cfs @ 12.36 hrs HW=66.07' (Free Discharge)
↑**1=Culvert** (Inlet Controls 2.3 cfs @ 2.87 fps)

Summary for Pond 8P:

Inflow Area = 84,725 sf, 9.68% Impervious, Inflow Depth = 1.36" for 2-YR event
Inflow = 1.7 cfs @ 12.39 hrs, Volume= 9,571 cf
Outflow = 1.7 cfs @ 12.39 hrs, Volume= 9,571 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.7 cfs @ 12.39 hrs, Volume= 9,571 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.34' @ 12.39 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.50' / 62.18' S= 0.0189 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.7 cfs @ 12.39 hrs HW=64.34' (Free Discharge)
1=Culvert (Inlet Controls 1.7 cfs @ 2.46 fps)

Summary for Pond 21P: 21P (CB-8436)

Inflow Area = 206,895 sf, 48.15% Impervious, Inflow Depth = 2.04" for 2-YR event
Inflow = 6.7 cfs @ 12.11 hrs, Volume= 35,138 cf
Outflow = 6.7 cfs @ 12.11 hrs, Volume= 35,138 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.7 cfs @ 12.11 hrs, Volume= 35,138 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.37' @ 12.11 hrs
Flood Elev= 67.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.88'	**24.0" Round Culvert** L= 90.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.88' / 55.62' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.7 cfs @ 12.11 hrs HW=57.37' (Free Discharge)
1=Culvert (Barrel Controls 6.7 cfs @ 3.73 fps)

Summary for Link POA-1: B-30

Inflow Area = 395,015 sf, 40.02% Impervious, Inflow Depth = 2.15" for 2-YR event
Inflow = 12.9 cfs @ 12.12 hrs, Volume= 70,710 cf
Primary = 12.9 cfs @ 12.12 hrs, Volume= 70,710 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-2:

Inflow Area = 35,560 sf, 28.26% Impervious, Inflow Depth = 2.62" for 2-YR event
Inflow = 2.3 cfs @ 12.08 hrs, Volume= 7,757 cf
Primary = 2.3 cfs @ 12.08 hrs, Volume= 7,757 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-3:

Inflow Area = 15,800 sf, 0.00% Impervious, Inflow Depth = 1.53" for 2-YR event
Inflow = 0.6 cfs @ 12.09 hrs, Volume= 2,011 cf
Primary = 0.6 cfs @ 12.09 hrs, Volume= 2,011 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-4:

Inflow Area = 71,445 sf, 40.30% Impervious, Inflow Depth = 2.05" for 2-YR event
Inflow = 2.3 cfs @ 12.36 hrs, Volume= 12,219 cf
Primary = 2.3 cfs @ 12.36 hrs, Volume= 12,219 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=34,840 sf 96.15% Impervious Runoff Depth=4.31"
Tc=6.0 min CN=WQ Runoff=3.6 cfs 12,507 cf

Subcatchment2S: Runoff Area=23,550 sf 62.59% Impervious Runoff Depth=3.86"
Tc=6.0 min CN=WQ Runoff=2.2 cfs 7,569 cf

Subcatchment3S: Runoff Area=107,470 sf 32.46% Impervious Runoff Depth=3.40"
Flow Length=835' Tc=33.4 min CN=WQ Runoff=5.0 cfs 30,468 cf

Subcatchment4S: Runoff Area=80,650 sf 29.23% Impervious Runoff Depth=4.05"
Flow Length=480' Tc=7.8 min CN=WQ Runoff=7.5 cfs 27,187 cf

Subcatchment5S: Runoff Area=35,560 sf 28.26% Impervious Runoff Depth=4.09"
Tc=6.0 min CN=WQ Runoff=3.5 cfs 12,119 cf

Subcatchment6S: Runoff Area=63,780 sf 67.70% Impervious Runoff Depth=3.78"
Flow Length=280' Tc=14.5 min CN=WQ Runoff=4.5 cfs 20,090 cf

Subcatchment7S: Runoff Area=71,445 sf 40.30% Impervious Runoff Depth=3.42"
Flow Length=460' Tc=25.7 min CN=WQ Runoff=3.8 cfs 20,353 cf

Subcatchment8S: Runoff Area=84,725 sf 9.68% Impervious Runoff Depth=2.56"
Flow Length=505' Tc=27.8 min CN=WQ Runoff=3.3 cfs 18,052 cf

Subcatchment9S: Runoff Area=15,800 sf 0.00% Impervious Runoff Depth=2.81"
Tc=6.0 min CN=83 Runoff=1.2 cfs 3,706 cf

Pond 1P: B-41 Peak Elev=59.00' Inflow=3.6 cfs 12,507 cf
18.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=3.6 cfs 12,507 cf

Pond 2P: B-34 Peak Elev=60.86' Inflow=10.9 cfs 58,219 cf
18.0" Round Culvert n=0.013 L=140.0' S=0.0116 '/' Outflow=10.9 cfs 58,219 cf

Pond 3P: B-32 (CB-8031) Peak Elev=57.96' Inflow=13.4 cfs 88,687 cf
24.0" Round Culvert n=0.013 L=22.0' S=-0.0036 '/' Outflow=13.4 cfs 88,687 cf

Pond 4P: B-32A (CB-8323) Peak Elev=59.43' Inflow=20.7 cfs 115,873 cf
Primary=20.4 cfs 115,836 cf Secondary=0.3 cfs 37 cf Outflow=20.7 cfs 115,873 cf

Pond 5P: Peak Elev=61.19' Inflow=3.5 cfs 12,119 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=3.5 cfs 12,119 cf

Pond 6P: Peak Elev=70.56' Inflow=7.0 cfs 38,143 cf
Primary=6.5 cfs 37,911 cf Secondary=0.5 cfs 231 cf Outflow=7.0 cfs 38,143 cf

Pond 7P: Peak Elev=67.08' Inflow=3.8 cfs 20,353 cf
12.0" Round Culvert n=0.013 L=100.0' S=0.0100 '/' Outflow=3.8 cfs 20,353 cf

Pond 8P: Peak Elev=65.25' Inflow=3.3 cfs 18,052 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0189 '/' Outflow=3.3 cfs 18,052 cf

Pond 21P: 21P (CB-8436) Peak Elev=57.91' Inflow=10.9 cfs 58,219 cf
24.0" Round Culvert n=0.013 L=90.0' S=0.0029 '/' Outflow=10.9 cfs 58,219 cf

Link POA-1: B-30 Inflow=20.7 cfs 115,873 cf
Primary=20.7 cfs 115,873 cf

Link POA-2: Inflow=3.5 cfs 12,119 cf
Primary=3.5 cfs 12,119 cf

Link POA-3: Inflow=1.2 cfs 3,706 cf
Primary=1.2 cfs 3,706 cf

Link POA-4: Inflow=3.8 cfs 20,353 cf
Primary=3.8 cfs 20,353 cf

Total Runoff Area = 517,820 sf Runoff Volume = 152,052 cf Average Runoff Depth = 3.52"
61.97% Pervious = 320,900 sf 38.03% Impervious = 196,920 sf

Summary for Subcatchment 1S:

Runoff = 3.6 cfs @ 12.08 hrs, Volume= 12,507 cf, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
33,500	98	Paved parking, HSG D
1,340	84	50-75% Grass cover, Fair, HSG D
34,840		Weighted Average
1,340		3.85% Pervious Area
33,500		96.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 2S:

Runoff = 2.2 cfs @ 12.08 hrs, Volume= 7,569 cf, Depth= 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
14,740	98	Paved parking, HSG D
730	96	Gravel surface, HSG D
8,080	84	50-75% Grass cover, Fair, HSG D
23,550		Weighted Average
8,810		37.41% Pervious Area
14,740		62.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3S:

Runoff = 5.0 cfs @ 12.44 hrs, Volume= 30,468 cf, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
34,880	98	Paved parking, HSG D
7,880	96	Gravel surface, HSG D
2,770	84	50-75% Grass cover, Fair, HSG D
58,940	83	Woods, Poor, HSG D
3,000	77	Woods, Poor, HSG C
107,470		Weighted Average
72,590		67.54% Pervious Area
34,880		32.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0150	0.07		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
6.8	250	0.0150	0.61		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.6	100	0.0300	2.79		**Shallow Concentrated Flow, C-D** Unpaved Kv= 16.1 fps
0.1	10	0.0100	1.50		**Shallow Concentrated Flow, D-E** Grassed Waterway Kv= 15.0 fps
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, E-F** Paved Kv= 20.3 fps
0.1	10	0.0200	2.12		**Shallow Concentrated Flow, F-G** Grassed Waterway Kv= 15.0 fps
0.7	170	0.0400	4.06		**Shallow Concentrated Flow, G-H** Paved Kv= 20.3 fps
0.5	170	0.0100	5.90	4.63	**Pipe Channel, H-I** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
33.4	835	Total			

Summary for Subcatchment 4S:

Runoff = 7.5 cfs @ 12.11 hrs, Volume= 27,187 cf, Depth= 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
23,570	98	Paved parking, HSG D
46,780	96	Gravel surface, HSG D
10,300	84	50-75% Grass cover, Fair, HSG D
80,650		Weighted Average
57,080		70.77% Pervious Area
23,570		29.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	20	0.0400	0.07		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	180	0.0350	3.01		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
2.2	280	0.0200	2.12		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
7.8	480	Total			

Summary for Subcatchment 5S:

Runoff = 3.5 cfs @ 12.08 hrs, Volume= 12,119 cf, Depth= 4.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

	Area (sf)	CN	Description
*	10,050	98	Paved parking, HSG D
	22,320	96	Gravel surface, HSG D
	3,190	84	50-75% Grass cover, Fair, HSG D
	35,560		Weighted Average
	25,510		71.74% Pervious Area
	10,050		28.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 6S:

Runoff = 4.5 cfs @ 12.19 hrs, Volume= 20,090 cf, Depth= 3.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
37,150	98	Paved parking, HSG D
6,030	98	Roofs, HSG D
640	96	Gravel surface, HSG D
1,670	79	50-75% Grass cover, Fair, HSG C
6,470	84	50-75% Grass cover, Fair, HSG D
11,820	77	Woods, Poor, HSG C
63,780		Weighted Average
20,600		32.30% Pervious Area
43,180		67.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0700	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	65	0.0500	1.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.3	115	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
14.5	280	Total			

Summary for Subcatchment 7S:

Runoff = 3.8 cfs @ 12.34 hrs, Volume= 20,353 cf, Depth= 3.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
28,795	98	Paved parking, HSG D
4,120	79	50-75% Grass cover, Fair, HSG C
38,530	83	Woods, Poor, HSG D
71,445		Weighted Average
42,650		59.70% Pervious Area
28,795		40.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.5	110	0.0225	0.08		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.4	90	0.0150	0.61		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.1	10	0.0150	1.84		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
0.7	250	0.0100	5.90	4.63	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
25.7	460	Total			

Summary for Subcatchment 8S:

Runoff = 3.3 cfs @ 12.39 hrs, Volume= 18,052 cf, Depth= 2.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
8,205	98	Paved parking, HSG D
10,390	83	Woods, Poor, HSG D
66,130	77	Woods, Poor, HSG C
84,725		Weighted Average
76,520		90.32% Pervious Area
8,205		9.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	110	0.0300	0.09		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
6.9	180	0.0075	0.43		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.4	35	0.1000	1.58		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
0.5	180	0.0100	5.90	4.63	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
27.8	505	Total			

Summary for Subcatchment 9S:

Runoff = 1.2 cfs @ 12.09 hrs, Volume= 3,706 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
15,800	83	Woods, Poor, HSG D
15,800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Pond 1P: B-41

Inflow Area = 34,840 sf, 96.15% Impervious, Inflow Depth = 4.31" for 10-YR event
Inflow = 3.6 cfs @ 12.08 hrs, Volume= 12,507 cf
Outflow = 3.6 cfs @ 12.08 hrs, Volume= 12,507 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.6 cfs @ 12.08 hrs, Volume= 12,507 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.00' @ 12.08 hrs
Flood Elev= 63.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.90'	**18.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 57.90' / 57.75' S= 0.0100 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.6 cfs @ 12.08 hrs HW=59.00' (Free Discharge)
1=Culvert (Barrel Controls 3.6 cfs @ 3.57 fps)

Summary for Pond 2P: B-34

Inflow Area = 206,895 sf, 48.15% Impervious, Inflow Depth = 3.38" for 10-YR event
Inflow = 10.9 cfs @ 12.12 hrs, Volume= 58,219 cf
Outflow = 10.9 cfs @ 12.12 hrs, Volume= 58,219 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.9 cfs @ 12.12 hrs, Volume= 58,219 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 60.86' @ 12.12 hrs
Flood Elev= 63.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**18.0" Round Culvert**
			L= 140.0' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 57.50' / 55.88' S= 0.0116 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=10.8 cfs @ 12.12 hrs HW=60.86' (Free Discharge)
1=Culvert (Inlet Controls 10.8 cfs @ 6.14 fps)

Summary for Pond 3P: B-32 (CB-8031)

Inflow Area = 314,365 sf, 42.79% Impervious, Inflow Depth = 3.39" for 10-YR event
Inflow = 13.4 cfs @ 12.26 hrs, Volume= 88,687 cf
Outflow = 13.4 cfs @ 12.26 hrs, Volume= 88,687 cf, Atten= 0%, Lag= 0.0 min
Primary = 13.4 cfs @ 12.26 hrs, Volume= 88,687 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.96' @ 12.26 hrs
Flood Elev= 66.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert**
			L= 22.0' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 55.44' / 55.52' S= -0.0036 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=13.4 cfs @ 12.26 hrs HW=57.96' (Free Discharge)
1=Culvert (Barrel Controls 13.4 cfs @ 4.37 fps)

Summary for Pond 4P: B-32A (CB-8323)

Inflow Area = 395,015 sf, 40.02% Impervious, Inflow Depth = 3.52" for 10-YR event
Inflow = 20.7 cfs @ 12.12 hrs, Volume= 115,873 cf
Outflow = 20.7 cfs @ 12.12 hrs, Volume= 115,873 cf, Atten= 0%, Lag= 0.0 min
Primary = 20.4 cfs @ 12.12 hrs, Volume= 115,836 cf
Secondary = 0.3 cfs @ 12.12 hrs, Volume= 37 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.43' @ 12.12 hrs
Flood Elev= 59.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.52' / 54.90' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	59.39'	**15.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=20.4 cfs @ 12.12 hrs HW=59.42' (Free Discharge)
1=Culvert (Inlet Controls 20.4 cfs @ 6.48 fps)

Secondary OutFlow Max=0.3 cfs @ 12.12 hrs HW=59.42' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 0.3 cfs @ 0.52 fps)

Summary for Pond 5P:

Inflow Area = 35,560 sf, 28.26% Impervious, Inflow Depth = 4.09" for 10-YR event
Inflow = 3.5 cfs @ 12.08 hrs, Volume= 12,119 cf
Outflow = 3.5 cfs @ 12.08 hrs, Volume= 12,119 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.5 cfs @ 12.08 hrs, Volume= 12,119 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 61.19' @ 12.08 hrs
Flood Elev= 66.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 59.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.5 cfs @ 12.08 hrs HW=61.19' (Free Discharge)
1=Culvert (Inlet Controls 3.5 cfs @ 2.93 fps)

Summary for Pond 6P:

Inflow Area = 148,505 sf, 34.60% Impervious, Inflow Depth = 3.08" for 10-YR event
Inflow = 7.0 cfs @ 12.23 hrs, Volume= 38,143 cf
Outflow = 7.0 cfs @ 12.23 hrs, Volume= 38,143 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.5 cfs @ 12.23 hrs, Volume= 37,911 cf
Secondary = 0.5 cfs @ 12.23 hrs, Volume= 231 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.56' @ 12.23 hrs
Flood Elev= 71.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.08'	**12.0" Round Culvert** L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.08' / 57.67' S= 0.0147 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	70.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=6.5 cfs @ 12.23 hrs HW=70.56' (Free Discharge)
↑**1=Culvert** (Barrel Controls 6.5 cfs @ 8.23 fps)

Secondary OutFlow Max=0.5 cfs @ 12.23 hrs HW=70.56' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.5 cfs @ 0.70 fps)

Summary for Pond 7P:

Inflow Area = 71,445 sf, 40.30% Impervious, Inflow Depth = 3.42" for 10-YR event
Inflow = 3.8 cfs @ 12.34 hrs, Volume= 20,353 cf
Outflow = 3.8 cfs @ 12.34 hrs, Volume= 20,353 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.8 cfs @ 12.34 hrs, Volume= 20,353 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.08' @ 12.34 hrs
Flood Elev= 69.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.00'	**12.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.00' / 64.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.8 cfs @ 12.34 hrs HW=67.08' (Free Discharge)
↑**1=Culvert** (Inlet Controls 3.8 cfs @ 4.78 fps)

Summary for Pond 8P:

Inflow Area = 84,725 sf, 9.68% Impervious, Inflow Depth = 2.56" for 10-YR event
Inflow = 3.3 cfs @ 12.39 hrs, Volume= 18,052 cf
Outflow = 3.3 cfs @ 12.39 hrs, Volume= 18,052 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.3 cfs @ 12.39 hrs, Volume= 18,052 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 65.25' @ 12.39 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.50' / 62.18' S= 0.0189 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.3 cfs @ 12.39 hrs HW=65.25' (Free Discharge)
1=Culvert (Inlet Controls 3.3 cfs @ 4.26 fps)

Summary for Pond 21P: 21P (CB-8436)

Inflow Area = 206,895 sf, 48.15% Impervious, Inflow Depth = 3.38" for 10-YR event
Inflow = 10.9 cfs @ 12.12 hrs, Volume= 58,219 cf
Outflow = 10.9 cfs @ 12.12 hrs, Volume= 58,219 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.9 cfs @ 12.12 hrs, Volume= 58,219 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.91' @ 12.12 hrs
Flood Elev= 67.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.88'	**24.0" Round Culvert** L= 90.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.88' / 55.62' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.9 cfs @ 12.12 hrs HW=57.91' (Free Discharge)
1=Culvert (Barrel Controls 10.9 cfs @ 4.23 fps)

Summary for Link POA-1: B-30

Inflow Area = 395,015 sf, 40.02% Impervious, Inflow Depth = 3.52" for 10-YR event
Inflow = 20.7 cfs @ 12.12 hrs, Volume= 115,873 cf
Primary = 20.7 cfs @ 12.12 hrs, Volume= 115,873 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-2:

Inflow Area = 35,560 sf, 28.26% Impervious, Inflow Depth = 4.09" for 10-YR event
Inflow = 3.5 cfs @ 12.08 hrs, Volume= 12,119 cf
Primary = 3.5 cfs @ 12.08 hrs, Volume= 12,119 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-3:

Inflow Area = 15,800 sf, 0.00% Impervious, Inflow Depth = 2.81" for 10-YR event
Inflow = 1.2 cfs @ 12.09 hrs, Volume= 3,706 cf
Primary = 1.2 cfs @ 12.09 hrs, Volume= 3,706 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-4:

Inflow Area = 71,445 sf, 40.30% Impervious, Inflow Depth = 3.42" for 10-YR event
Inflow = 3.8 cfs @ 12.34 hrs, Volume= 20,353 cf
Primary = 3.8 cfs @ 12.34 hrs, Volume= 20,353 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=34,840 sf 96.15% Impervious Runoff Depth=5.50"
Tc=6.0 min CN=WQ Runoff=4.5 cfs 15,975 cf

Subcatchment2S: Runoff Area=23,550 sf 62.59% Impervious Runoff Depth=5.02"
Tc=6.0 min CN=WQ Runoff=2.9 cfs 9,856 cf

Subcatchment3S: Runoff Area=107,470 sf 32.46% Impervious Runoff Depth=4.53"
Flow Length=835' Tc=33.4 min CN=WQ Runoff=6.7 cfs 40,604 cf

Subcatchment4S: Runoff Area=80,650 sf 29.23% Impervious Runoff Depth=5.23"
Flow Length=480' Tc=7.8 min CN=WQ Runoff=9.6 cfs 35,138 cf

Subcatchment5S: Runoff Area=35,560 sf 28.26% Impervious Runoff Depth=5.28"
Tc=6.0 min CN=WQ Runoff=4.5 cfs 15,635 cf

Subcatchment6S: Runoff Area=63,780 sf 67.70% Impervious Runoff Depth=4.93"
Flow Length=280' Tc=14.5 min CN=WQ Runoff=5.9 cfs 26,203 cf

Subcatchment7S: Runoff Area=71,445 sf 40.30% Impervious Runoff Depth=4.55"
Flow Length=460' Tc=25.7 min CN=WQ Runoff=5.0 cfs 27,091 cf

Subcatchment8S: Runoff Area=84,725 sf 9.68% Impervious Runoff Depth=3.60"
Flow Length=505' Tc=27.8 min CN=WQ Runoff=4.7 cfs 25,399 cf

Subcatchment9S: Runoff Area=15,800 sf 0.00% Impervious Runoff Depth=3.91"
Tc=6.0 min CN=83 Runoff=1.6 cfs 5,143 cf

Pond 1P: B-41 Peak Elev=59.18' Inflow=4.5 cfs 15,975 cf
18.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=4.5 cfs 15,975 cf

Pond 2P: B-34 Peak Elev=62.76' Inflow=14.3 cfs 77,433 cf
18.0" Round Culvert n=0.013 L=140.0' S=0.0116 '/' Outflow=14.3 cfs 77,433 cf

Pond 3P: B-32 (CB-8031) Peak Elev=58.77' Inflow=17.9 cfs 118,037 cf
24.0" Round Culvert n=0.013 L=22.0' S=-0.0036 '/' Outflow=17.9 cfs 118,037 cf

Pond 4P: B-32A (CB-8323) Peak Elev=59.66' Inflow=27.0 cfs 153,175 cf
Primary=21.1 cfs 149,393 cf Secondary=5.8 cfs 3,782 cf Outflow=27.0 cfs 153,175 cf

Pond 5P: Peak Elev=61.57' Inflow=4.5 cfs 15,635 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=4.5 cfs 15,635 cf

Pond 6P: Peak Elev=70.69' Inflow=9.5 cfs 51,602 cf
Primary=6.5 cfs 48,670 cf Secondary=3.0 cfs 2,932 cf Outflow=9.5 cfs 51,602 cf

Pond 7P: Peak Elev=68.28' Inflow=5.0 cfs 27,091 cf
12.0" Round Culvert n=0.013 L=100.0' S=0.0100 '/' Outflow=5.0 cfs 27,091 cf

Pond 8P: Peak Elev=66.50' Inflow=4.7 cfs 25,399 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0189 '/' Outflow=4.7 cfs 25,399 cf

Pond 21P: 21P (CB-8436) Peak Elev=58.59' Inflow=14.3 cfs 77,433 cf
24.0" Round Culvert n=0.013 L=90.0' S=0.0029 '/' Outflow=14.3 cfs 77,433 cf

Link POA-1: B-30 Inflow=27.0 cfs 153,175 cf
Primary=27.0 cfs 153,175 cf

Link POA-2: Inflow=4.5 cfs 15,635 cf
Primary=4.5 cfs 15,635 cf

Link POA-3: Inflow=1.6 cfs 5,143 cf
Primary=1.6 cfs 5,143 cf

Link POA-4: Inflow=5.0 cfs 27,091 cf
Primary=5.0 cfs 27,091 cf

Total Runoff Area = 517,820 sf Runoff Volume = 201,043 cf Average Runoff Depth = 4.66"
61.97% Pervious = 320,900 sf 38.03% Impervious = 196,920 sf

Summary for Subcatchment 1S:

Runoff = 4.5 cfs @ 12.08 hrs, Volume= 15,975 cf, Depth= 5.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
33,500	98	Paved parking, HSG D
1,340	84	50-75% Grass cover, Fair, HSG D
34,840		Weighted Average
1,340		3.85% Pervious Area
33,500		96.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 2S:

Runoff = 2.9 cfs @ 12.08 hrs, Volume= 9,856 cf, Depth= 5.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
14,740	98	Paved parking, HSG D
730	96	Gravel surface, HSG D
8,080	84	50-75% Grass cover, Fair, HSG D
23,550		Weighted Average
8,810		37.41% Pervious Area
14,740		62.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3S:

Runoff = 6.7 cfs @ 12.44 hrs, Volume= 40,604 cf, Depth= 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
34,880	98	Paved parking, HSG D
7,880	96	Gravel surface, HSG D
2,770	84	50-75% Grass cover, Fair, HSG D
58,940	83	Woods, Poor, HSG D
3,000	77	Woods, Poor, HSG C
107,470		Weighted Average
72,590		67.54% Pervious Area
34,880		32.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	100	0.0150	0.07		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
6.8	250	0.0150	0.61		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.6	100	0.0300	2.79		**Shallow Concentrated Flow, C-D** Unpaved Kv= 16.1 fps
0.1	10	0.0100	1.50		**Shallow Concentrated Flow, D-E** Grassed Waterway Kv= 15.0 fps
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, E-F** Paved Kv= 20.3 fps
0.1	10	0.0200	2.12		**Shallow Concentrated Flow, F-G** Grassed Waterway Kv= 15.0 fps
0.7	170	0.0400	4.06		**Shallow Concentrated Flow, G-H** Paved Kv= 20.3 fps
0.5	170	0.0100	5.90	4.63	**Pipe Channel, H-I** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
33.4	835	Total			

Summary for Subcatchment 4S:

Runoff = 9.6 cfs @ 12.11 hrs, Volume= 35,138 cf, Depth= 5.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
23,570	98	Paved parking, HSG D
46,780	96	Gravel surface, HSG D
10,300	84	50-75% Grass cover, Fair, HSG D
80,650		Weighted Average
57,080		70.77% Pervious Area
23,570		29.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	20	0.0400	0.07		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	180	0.0350	3.01		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
2.2	280	0.0200	2.12		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
7.8	480	Total			

Summary for Subcatchment 5S:

Runoff = 4.5 cfs @ 12.08 hrs, Volume= 15,635 cf, Depth= 5.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	10,050	98	Paved parking, HSG D
	22,320	96	Gravel surface, HSG D
	3,190	84	50-75% Grass cover, Fair, HSG D
	35,560		Weighted Average
	25,510		71.74% Pervious Area
	10,050		28.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 6S:

Runoff = 5.9 cfs @ 12.19 hrs, Volume= 26,203 cf, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
37,150	98	Paved parking, HSG D
6,030	98	Roofs, HSG D
640	96	Gravel surface, HSG D
1,670	79	50-75% Grass cover, Fair, HSG C
6,470	84	50-75% Grass cover, Fair, HSG D
11,820	77	Woods, Poor, HSG C
63,780		Weighted Average
20,600		32.30% Pervious Area
43,180		67.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0700	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	65	0.0500	1.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.3	115	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
14.5	280	Total			

Summary for Subcatchment 7S:

Runoff = 5.0 cfs @ 12.34 hrs, Volume= 27,091 cf, Depth= 4.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
28,795	98	Paved parking, HSG D
4,120	79	50-75% Grass cover, Fair, HSG C
38,530	83	Woods, Poor, HSG D
71,445		Weighted Average
42,650		59.70% Pervious Area
28,795		40.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.5	110	0.0225	0.08		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.4	90	0.0150	0.61		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.1	10	0.0150	1.84		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
0.7	250	0.0100	5.90	4.63	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
25.7	460	Total			

Summary for Subcatchment 8S:

Runoff = 4.7 cfs @ 12.39 hrs, Volume= 25,399 cf, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
8,205	98	Paved parking, HSG D
10,390	83	Woods, Poor, HSG D
66,130	77	Woods, Poor, HSG C
84,725		Weighted Average
76,520		90.32% Pervious Area
8,205		9.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	110	0.0300	0.09		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
6.9	180	0.0075	0.43		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.4	35	0.1000	1.58		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
0.5	180	0.0100	5.90	4.63	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
27.8	505	Total			

Summary for Subcatchment 9S:

Runoff = 1.6 cfs @ 12.09 hrs, Volume= 5,143 cf, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
15,800	83	Woods, Poor, HSG D
15,800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Pond 1P: B-41

Inflow Area = 34,840 sf, 96.15% Impervious, Inflow Depth = 5.50" for 25-YR event
Inflow = 4.5 cfs @ 12.08 hrs, Volume= 15,975 cf
Outflow = 4.5 cfs @ 12.08 hrs, Volume= 15,975 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.5 cfs @ 12.08 hrs, Volume= 15,975 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.18' @ 12.08 hrs
Flood Elev= 63.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.90'	**18.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 57.90' / 57.75' S= 0.0100 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.5 cfs @ 12.08 hrs HW=59.18' (Free Discharge)
1=Culvert (Barrel Controls 4.5 cfs @ 3.77 fps)

Summary for Pond 2P: B-34

Inflow Area = 206,895 sf, 48.15% Impervious, Inflow Depth = 4.49" for 25-YR event
Inflow = 14.3 cfs @ 12.12 hrs, Volume= 77,433 cf
Outflow = 14.3 cfs @ 12.12 hrs, Volume= 77,433 cf, Atten= 0%, Lag= 0.0 min
Primary = 14.3 cfs @ 12.12 hrs, Volume= 77,433 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.76' @ 12.12 hrs
Flood Elev= 63.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**18.0" Round Culvert**
			L= 140.0' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 57.50' / 55.88' S= 0.0116 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=14.3 cfs @ 12.12 hrs HW=62.76' (Free Discharge)
1=Culvert (Inlet Controls 14.3 cfs @ 8.07 fps)

Summary for Pond 3P: B-32 (CB-8031)

Inflow Area = 314,365 sf, 42.79% Impervious, Inflow Depth = 4.51" for 25-YR event
Inflow = 17.9 cfs @ 12.26 hrs, Volume= 118,037 cf
Outflow = 17.9 cfs @ 12.26 hrs, Volume= 118,037 cf, Atten= 0%, Lag= 0.0 min
Primary = 17.9 cfs @ 12.26 hrs, Volume= 118,037 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.77' @ 12.26 hrs
Flood Elev= 66.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert**
			L= 22.0' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 55.44' / 55.52' S= -0.0036 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=17.9 cfs @ 12.26 hrs HW=58.77' (Free Discharge)
1=Culvert (Inlet Controls 17.9 cfs @ 5.70 fps)

Summary for Pond 4P: B-32A (CB-8323)

Inflow Area = 395,015 sf, 40.02% Impervious, Inflow Depth = 4.65" for 25-YR event
Inflow = 27.0 cfs @ 12.12 hrs, Volume= 153,175 cf
Outflow = 27.0 cfs @ 12.12 hrs, Volume= 153,175 cf, Atten= 0%, Lag= 0.0 min
Primary = 21.1 cfs @ 12.12 hrs, Volume= 149,393 cf
Secondary = 5.8 cfs @ 12.12 hrs, Volume= 3,782 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.66' @ 12.12 hrs
Flood Elev= 59.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.52' / 54.90' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	59.39'	**15.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=21.1 cfs @ 12.12 hrs HW=59.65' (Free Discharge)
└**1=Culvert** (Inlet Controls 21.1 cfs @ 6.73 fps)

Secondary OutFlow Max=5.8 cfs @ 12.12 hrs HW=59.65' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 5.8 cfs @ 1.46 fps)

Summary for Pond 5P:

Inflow Area = 35,560 sf, 28.26% Impervious, Inflow Depth = 5.28" for 25-YR event
Inflow = 4.5 cfs @ 12.08 hrs, Volume= 15,635 cf
Outflow = 4.5 cfs @ 12.08 hrs, Volume= 15,635 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.5 cfs @ 12.08 hrs, Volume= 15,635 cf

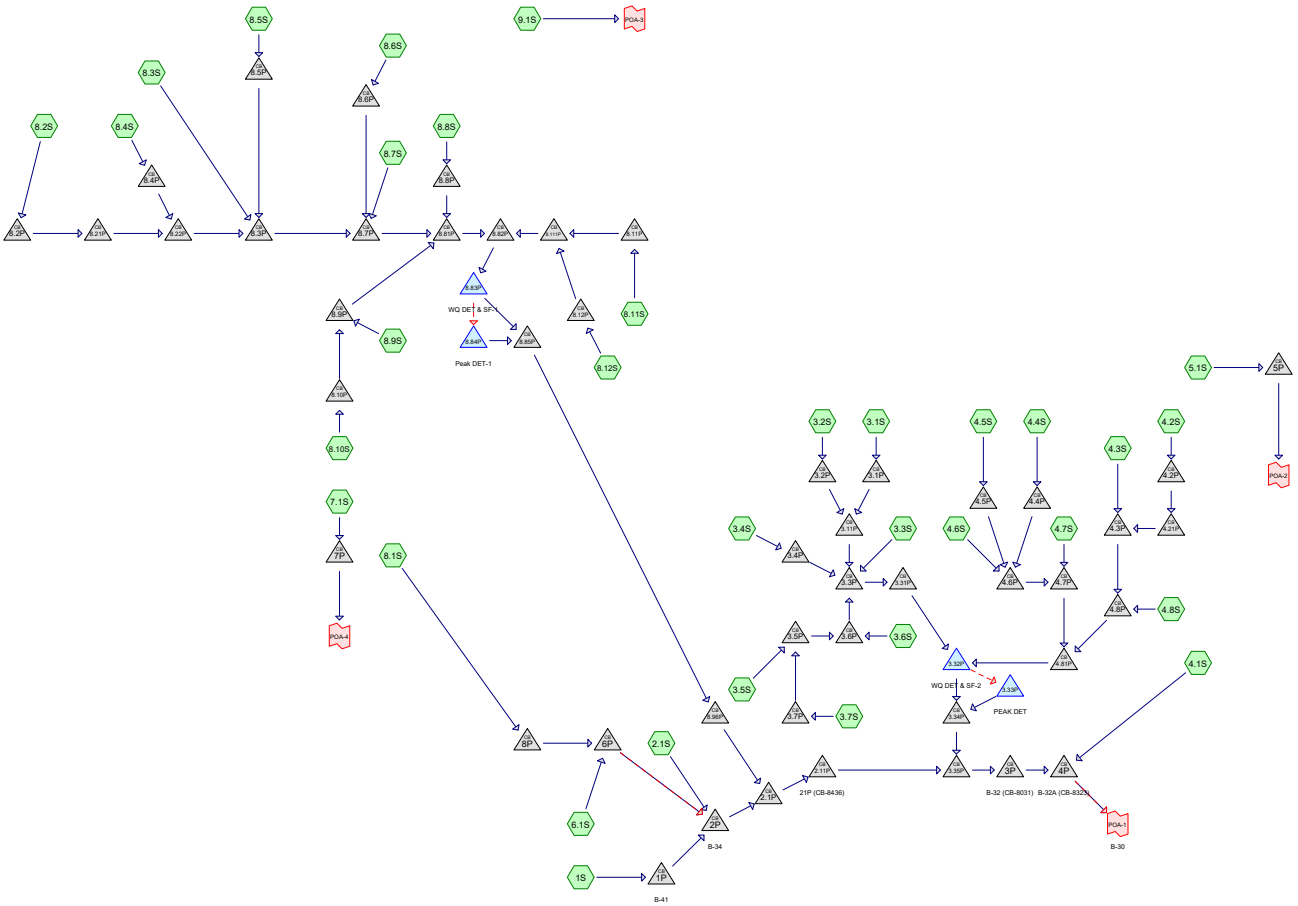
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 61.57' @ 12.08 hrs
Flood Elev= 66.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 59.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.5 cfs @ 12.08 hrs HW=61.56' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.5 cfs @ 3.68 fps)

Appendix 2B

Proposed Conditions
HydroCAD Summary



Subcat Reach Pond Link

Routing Diagram for 19059 - POST
Prepared by Sebago Technics, Printed 2/28/2024
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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR	Type III 24-hr		Default	24.00	1	3.10	2
2	10-YR	Type III 24-hr		Default	24.00	1	4.60	2
3	25-YR	Type III 24-hr		Default	24.00	1	5.80	2

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=34,840 sf 96.15% Impervious Runoff Depth=2.82"
Tc=6.0 min CN=WQ Runoff=2.4 cfs 8,185 cf

Subcatchment2.1S: Runoff Area=29,840 sf 69.86% Impervious Runoff Depth=2.49"
Tc=6.0 min CN=WQ Runoff=1.8 cfs 6,180 cf

Subcatchment3.1S: Runoff Area=1,450 sf 62.07% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=WQ Runoff=0.1 cfs 276 cf

Subcatchment3.2S: Runoff Area=4,400 sf 52.27% Impervious Runoff Depth=2.13"
Tc=6.0 min CN=WQ Runoff=0.2 cfs 782 cf

Subcatchment3.3S: Runoff Area=7,500 sf 87.33% Impervious Runoff Depth=2.67"
Tc=6.0 min CN=WQ Runoff=0.5 cfs 1,670 cf

Subcatchment3.4S: Runoff Area=5,170 sf 90.14% Impervious Runoff Depth=2.72"
Tc=6.0 min CN=WQ Runoff=0.3 cfs 1,170 cf

Subcatchment3.5S: Runoff Area=7,350 sf 88.71% Impervious Runoff Depth=2.69"
Tc=6.0 min CN=WQ Runoff=0.5 cfs 1,650 cf

Subcatchment3.6S: Runoff Area=7,080 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.5 cfs 1,692 cf

Subcatchment3.7S: Runoff Area=6,280 sf 87.10% Impervious Runoff Depth=2.67"
Tc=6.0 min CN=WQ Runoff=0.4 cfs 1,397 cf

Subcatchment4.1S: Runoff Area=30,540 sf 50.79% Impervious Runoff Depth=2.24"
Flow Length=135' Tc=12.1 min CN=WQ Runoff=1.4 cfs 5,709 cf

Subcatchment4.2S: Runoff Area=11,860 sf 82.50% Impervious Runoff Depth=2.65"
Tc=6.0 min CN=WQ Runoff=0.8 cfs 2,615 cf

Subcatchment4.3S: Runoff Area=10,630 sf 88.66% Impervious Runoff Depth=2.69"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,386 cf

Subcatchment4.4S: Runoff Area=11,040 sf 83.15% Impervious Runoff Depth=2.61"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,399 cf

Subcatchment4.5S: Runoff Area=5,620 sf 62.10% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=WQ Runoff=0.3 cfs 1,069 cf

Subcatchment4.6S: Runoff Area=9,090 sf 87.90% Impervious Runoff Depth=2.68"
Tc=6.0 min CN=WQ Runoff=0.6 cfs 2,031 cf

Subcatchment4.7S: Runoff Area=6,020 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.4 cfs 1,439 cf

Subcatchment4.8S: Runoff Area=11,850 sf 90.00% Impervious Runoff Depth=2.71"
Tc=6.0 min CN=WQ Runoff=0.8 cfs 2,680 cf

Subcatchment5.1S: Runoff Area=20,660 sf 50.80% Impervious Runoff Depth=2.24"
Tc=6.0 min CN=WQ Runoff=1.2 cfs 3,863 cf

Subcatchment6.1S: Runoff Area=50,370 sf 83.84% Impervious Runoff Depth=2.65"
Flow Length=280' Tc=14.5 min CN=WQ Runoff=2.5 cfs 11,130 cf

Subcatchment7.1S: Runoff Area=45,290 sf 74.03% Impervious Runoff Depth=2.45"
Flow Length=425' Tc=11.4 min CN=WQ Runoff=2.3 cfs 9,250 cf

Subcatchment8.10S: Runoff Area=8,440 sf 92.00% Impervious Runoff Depth=2.74"
Tc=6.0 min CN=WQ Runoff=0.6 cfs 1,930 cf

Subcatchment8.11S: Runoff Area=26,900 sf 87.62% Impervious Runoff Depth=2.68"
Tc=6.0 min CN=WQ Runoff=1.7 cfs 6,001 cf

Subcatchment8.12S: Runoff Area=2,340 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.2 cfs 559 cf

Subcatchment8.1S: Runoff Area=13,930 sf 49.61% Impervious Runoff Depth=2.02"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,349 cf

Subcatchment8.2S: Runoff Area=19,350 sf 84.44% Impervious Runoff Depth=2.63"
Tc=6.0 min CN=WQ Runoff=1.2 cfs 4,238 cf

Subcatchment8.3S: Runoff Area=48,240 sf 91.04% Impervious Runoff Depth=2.73"
Tc=6.0 min CN=WQ Runoff=3.2 cfs 10,974 cf

Subcatchment8.4S: Runoff Area=22,420 sf 78.10% Impervious Runoff Depth=2.53"
Tc=6.0 min CN=WQ Runoff=1.4 cfs 4,727 cf

Subcatchment8.5S: Runoff Area=9,090 sf 0.00% Impervious Runoff Depth=1.33"
Tc=6.0 min CN=80 Runoff=0.3 cfs 1,004 cf

Subcatchment8.6S: Runoff Area=11,120 sf 70.91% Impervious Runoff Depth=2.42"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,242 cf

Subcatchment8.7S: Runoff Area=5,080 sf 35.43% Impervious Runoff Depth=1.87"
Tc=6.0 min CN=WQ Runoff=0.2 cfs 792 cf

Subcatchment8.8S: Runoff Area=9,920 sf 83.06% Impervious Runoff Depth=2.61"
Tc=6.0 min CN=WQ Runoff=0.6 cfs 2,155 cf

Subcatchment8.9S: Runoff Area=17,310 sf 96.50% Impervious Runoff Depth=2.81"
Tc=6.0 min CN=WQ Runoff=1.2 cfs 4,059 cf

Subcatchment9.1S: Runoff Area=6,800 sf 0.00% Impervious Runoff Depth=1.47"
Tc=6.0 min CN=WQ Runoff=0.3 cfs 832 cf

Pond 1P: B-41 Peak Elev=58.76' Inflow=2.4 cfs 8,185 cf
18.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=2.4 cfs 8,185 cf

Pond 2.11P: 21P (CB-8436) Peak Elev=57.49' Inflow=7.4 cfs 66,525 cf
24.0" Round Culvert n=0.013 L=80.0' S=0.0024 '/' Outflow=7.4 cfs 66,525 cf

Pond 2.1P: Peak Elev=57.59' Inflow=7.4 cfs 66,525 cf
24.0" Round Culvert n=0.013 L=40.0' S=0.0032 '/' Outflow=7.4 cfs 66,525 cf

Pond 2P: B-34 Peak Elev=59.27' Inflow=6.8 cfs 27,844 cf
18.0" Round Culvert n=0.013 L=140.0' S=0.0116 '/' Outflow=6.8 cfs 27,844 cf

Pond 3.11P: Peak Elev=66.16' Inflow=0.3 cfs 1,057 cf
12.0" Round Culvert n=0.013 L=30.0' S=0.0117 '/' Outflow=0.3 cfs 1,057 cf

Pond 3.1P: Peak Elev=67.45' Inflow=0.1 cfs 276 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0200 '/' Outflow=0.1 cfs 276 cf

Pond 3.2P: Peak Elev=67.04' Inflow=0.2 cfs 782 cf
12.0" Round Culvert n=0.013 L=80.0' S=0.0109 '/' Outflow=0.2 cfs 782 cf

Pond 3.31P: Peak Elev=62.55' Inflow=2.5 cfs 8,636 cf
24.0" Round Culvert n=0.013 L=42.0' S=0.0119 '/' Outflow=2.5 cfs 8,636 cf

Pond 3.32P: WQ DET & SF-2 Peak Elev=62.81' Storage=3,180 cf Inflow=6.8 cfs 23,255 cf
Primary=0.3 cfs 13,778 cf Secondary=6.3 cfs 9,478 cf Outflow=6.6 cfs 23,255 cf

Pond 3.33P: PEAK DET Peak Elev=62.04' Storage=8,295 cf Inflow=6.3 cfs 9,478 cf
Outflow=0.1 cfs 9,478 cf

Pond 3.34P: Peak Elev=57.80' Inflow=0.4 cfs 23,255 cf
24.0" Round Culvert n=0.013 L=62.0' S=0.0102 '/' Outflow=0.4 cfs 23,255 cf

Pond 3.35P: Peak Elev=57.35' Inflow=7.8 cfs 89,780 cf
24.0" Round Culvert n=0.013 L=25.0' S=0.0028 '/' Outflow=7.8 cfs 89,780 cf

Pond 3.3P: Peak Elev=63.64' Inflow=2.5 cfs 8,636 cf
18.0" Round Culvert n=0.013 L=45.0' S=0.0111 '/' Outflow=2.5 cfs 8,636 cf

Pond 3.4P: Peak Elev=66.58' Inflow=0.3 cfs 1,170 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0160 '/' Outflow=0.3 cfs 1,170 cf

Pond 3.5P: Peak Elev=64.85' Inflow=0.9 cfs 3,047 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=0.9 cfs 3,047 cf

Pond 3.6P: Peak Elev=64.19' Inflow=1.4 cfs 4,739 cf
15.0" Round Culvert n=0.013 L=45.0' S=0.0111 '/' Outflow=1.4 cfs 4,739 cf

Pond 3.7P: Peak Elev=65.16' Inflow=0.4 cfs 1,397 cf
12.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=0.4 cfs 1,397 cf

Pond 3P: B-32 (CB-8031) Peak Elev=57.17' Inflow=7.8 cfs 89,780 cf
24.0" Round Culvert n=0.013 L=22.0' S=-0.0036 '/' Outflow=7.8 cfs 89,780 cf

Pond 4.21P: Peak Elev=67.52' Inflow=0.8 cfs 2,615 cf
15.0" Round Culvert n=0.013 L=82.0' S=0.0121 '/' Outflow=0.8 cfs 2,615 cf

Pond 4.2P: Peak Elev=68.67' Inflow=0.8 cfs 2,615 cf
15.0" Round Culvert n=0.013 L=104.0' S=0.0100 '/' Outflow=0.8 cfs 2,615 cf

Pond 4.3P: Peak Elev=66.43' Inflow=1.5 cfs 5,001 cf
18.0" Round Culvert n=0.013 L=105.0' S=0.0158 '/' Outflow=1.5 cfs 5,001 cf

Pond 4.4P: Peak Elev=68.38' Inflow=0.7 cfs 2,399 cf
12.0" Round Culvert n=0.013 L=83.0' S=0.0169 '/' Outflow=0.7 cfs 2,399 cf

Pond 4.5P: Peak Elev=69.41' Inflow=0.3 cfs 1,069 cf
12.0" Round Culvert n=0.013 L=122.0' S=0.0213 '/' Outflow=0.3 cfs 1,069 cf

Pond 4.6P: Peak Elev=66.65' Inflow=1.6 cfs 5,500 cf
18.0" Round Culvert n=0.013 L=77.0' S=0.0169 '/' Outflow=1.6 cfs 5,500 cf

Pond 4.7P: Peak Elev=64.71' Inflow=2.0 cfs 6,938 cf
18.0" Round Culvert x 2.00 n=0.013 L=22.0' S=0.0227 '/' Outflow=2.0 cfs 6,938 cf

Pond 4.81P: Peak Elev=64.20' Inflow=4.3 cfs 14,619 cf
24.0" Round Culvert n=0.013 L=15.0' S=0.0267 '/' Outflow=4.3 cfs 14,619 cf

Pond 4.8P: Peak Elev=64.36' Inflow=2.2 cfs 7,680 cf
24.0" Round Culvert n=0.013 L=35.0' S=0.0100 '/' Outflow=2.2 cfs 7,680 cf

Pond 4P: B-32A (CB-8323) Peak Elev=57.12' Inflow=9.0 cfs 95,489 cf
Primary=9.0 cfs 95,489 cf Secondary=0.0 cfs 0 cf Outflow=9.0 cfs 95,489 cf

Pond 5P: Peak Elev=60.59' Inflow=1.2 cfs 3,863 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=1.2 cfs 3,863 cf

Pond 6P: Peak Elev=63.56' Inflow=3.0 cfs 13,479 cf
Primary=3.0 cfs 13,479 cf Secondary=0.0 cfs 0 cf Outflow=3.0 cfs 13,479 cf

Pond 7P: Peak Elev=66.08' Inflow=2.3 cfs 9,250 cf
12.0" Round Culvert n=0.013 L=100.0' S=0.0100 '/' Outflow=2.3 cfs 9,250 cf

Pond 8.10P: Peak Elev=69.73' Inflow=0.6 cfs 1,930 cf
12.0" Round Culvert n=0.013 L=15.0' S=0.0367 '/' Outflow=0.6 cfs 1,930 cf

Pond 8.111P: Peak Elev=68.67' Inflow=1.9 cfs 6,560 cf
18.0" Round Culvert n=0.013 L=160.0' S=0.0103 '/' Outflow=1.9 cfs 6,560 cf

Pond 8.11P: Peak Elev=70.69' Inflow=1.7 cfs 6,001 cf
15.0" Round Culvert n=0.013 L=144.0' S=0.0122 '/' Outflow=1.7 cfs 6,001 cf

Pond 8.12P: Peak Elev=70.97' Inflow=0.2 cfs 559 cf
12.0" Round Culvert n=0.013 L=120.0' S=0.0121 '/' Outflow=0.2 cfs 559 cf

Pond 8.21P: Peak Elev=71.51' Inflow=1.2 cfs 4,238 cf
24.0" Round Culvert n=0.013 L=100.0' S=0.0240 '/' Outflow=1.2 cfs 4,238 cf

Pond 8.22P: Peak Elev=69.27' Inflow=2.6 cfs 8,965 cf
24.0" Round Culvert n=0.013 L=30.0' S=0.0133 '/' Outflow=2.6 cfs 8,965 cf

Pond 8.2P: Peak Elev=74.27' Inflow=1.2 cfs 4,238 cf
18.0" Round Culvert n=0.013 L=120.0' S=0.0183 '/' Outflow=1.2 cfs 4,238 cf

Pond 8.3P: Peak Elev=69.24' Inflow=6.1 cfs 20,942 cf
24.0" Round Culvert n=0.013 L=45.0' S=0.0178 '/' Outflow=6.1 cfs 20,942 cf

Pond 8.4P: Peak Elev=70.65' Inflow=1.4 cfs 4,727 cf
15.0" Round Culvert n=0.013 L=40.0' S=0.0163 '/' Outflow=1.4 cfs 4,727 cf

Pond 8.5P: Peak Elev=74.76' Inflow=0.3 cfs 1,004 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0220 '/' Outflow=0.3 cfs 1,004 cf

Pond 8.6P: Peak Elev=71.73' Inflow=0.7 cfs 2,242 cf
15.0" Round Culvert n=0.013 L=60.0' S=0.0200 '/' Outflow=0.7 cfs 2,242 cf

Pond 8.7P: Peak Elev=68.12' Inflow=7.0 cfs 23,976 cf
30.0" Round Culvert n=0.013 L=57.0' S=0.0114 '/' Outflow=7.0 cfs 23,976 cf

Pond 8.81P: Peak Elev=67.63' Inflow=9.4 cfs 32,121 cf
36.0" Round Culvert n=0.013 L=13.0' S=0.0192 '/' Outflow=9.4 cfs 32,121 cf

Pond 8.82P: Peak Elev=66.85' Inflow=11.3 cfs 38,681 cf
36.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=11.3 cfs 38,681 cf

Pond 8.83P: WQ DET & SF-1 Peak Elev=69.22' Storage=4,933 cf Inflow=11.3 cfs 38,681 cf
Primary=0.5 cfs 22,563 cf Secondary=10.8 cfs 16,118 cf Outflow=11.2 cfs 38,681 cf

Pond 8.84P: Peak DET-1 Peak Elev=64.90' Storage=12,614 cf Inflow=10.8 cfs 16,118 cf
Outflow=1.0 cfs 16,118 cf

Pond 8.85P: Peak Elev=61.11' Inflow=1.4 cfs 38,681 cf
18.0" Round Culvert n=0.013 L=226.0' S=0.0084 '/' Outflow=1.4 cfs 38,681 cf

Pond 8.8P: Peak Elev=70.92' Inflow=0.6 cfs 2,155 cf
15.0" Round Culvert n=0.013 L=23.0' S=0.0217 '/' Outflow=0.6 cfs 2,155 cf

Pond 8.96P: Peak Elev=59.11' Inflow=1.4 cfs 38,681 cf
18.0" Round Culvert n=0.013 L=80.0' S=0.0311 '/' Outflow=1.4 cfs 38,681 cf

Pond 8.9P: Peak Elev=70.24' Inflow=1.7 cfs 5,989 cf
12.0" Round Culvert n=0.013 L=18.0' S=0.0361 '/' Outflow=1.7 cfs 5,989 cf

Pond 8P: Peak Elev=61.06' Inflow=0.7 cfs 2,349 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0100 '/' Outflow=0.7 cfs 2,349 cf

Link POA-1: B-30 Inflow=9.0 cfs 95,489 cf
Primary=9.0 cfs 95,489 cf

Link POA-2: Inflow=1.2 cfs 3,863 cf
Primary=1.2 cfs 3,863 cf

Link POA-3: Inflow=0.3 cfs 832 cf
Primary=0.3 cfs 832 cf

Link POA-4: Inflow=2.3 cfs 9,250 cf
Primary=2.3 cfs 9,250 cf

Total Runoff Area = 517,820 sf Runoff Volume = 109,434 cf Average Runoff Depth = 2.54"
22.92% Pervious = 118,690 sf 77.08% Impervious = 399,130 sf

Summary for Subcatchment 1S:

Runoff = 2.4 cfs @ 12.08 hrs, Volume= 8,185 cf, Depth= 2.82"
Routed to Pond 1P : B-41

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
33,500	98	Paved parking, HSG D
1,340	84	50-75% Grass cover, Fair, HSG D
34,840		Weighted Average
1,340		3.85% Pervious Area
33,500		96.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 2.1S:

Runoff = 1.8 cfs @ 12.08 hrs, Volume= 6,180 cf, Depth= 2.49"
Routed to Pond 2P : B-34

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
20,845	98	Paved parking, HSG D
8,995	84	50-75% Grass cover, Fair, HSG D
29,840		Weighted Average
8,995		30.14% Pervious Area
20,845		69.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.1S:

Runoff = 0.1 cfs @ 12.09 hrs, Volume= 276 cf, Depth= 2.28"
Routed to Pond 3.1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
550	80	>75% Grass cover, Good, HSG D
900	98	Paved parking, HSG D
1,450		Weighted Average
550		37.93% Pervious Area
900		62.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.2S:

Runoff = 0.2 cfs @ 12.09 hrs, Volume= 782 cf, Depth= 2.13"
Routed to Pond 3.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
2,100	80	>75% Grass cover, Good, HSG D
2,300	98	Paved parking, HSG D
4,400		Weighted Average
2,100		47.73% Pervious Area
2,300		52.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.3S:

Runoff = 0.5 cfs @ 12.08 hrs, Volume= 1,670 cf, Depth= 2.67"
Routed to Pond 3.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
950	80	>75% Grass cover, Good, HSG D
6,550	98	Paved parking, HSG D
7,500		Weighted Average
950		12.67% Pervious Area
6,550		87.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.4S:

Runoff = 0.3 cfs @ 12.08 hrs, Volume= 1,170 cf, Depth= 2.72"
Routed to Pond 3.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
510	80	>75% Grass cover, Good, HSG D
4,660	98	Paved parking, HSG D
5,170		Weighted Average
510		9.86% Pervious Area
4,660		90.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.5S:

Runoff = 0.5 cfs @ 12.08 hrs, Volume= 1,650 cf, Depth= 2.69"
Routed to Pond 3.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
6,520	98	Paved parking, HSG D
830	80	>75% Grass cover, Good, HSG D
7,350		Weighted Average
830		11.29% Pervious Area
6,520		88.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.6S:

Runoff = 0.5 cfs @ 12.08 hrs, Volume= 1,692 cf, Depth= 2.87"
Routed to Pond 3.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
7,080	98	Paved parking, HSG D
7,080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.7S:

Runoff = 0.4 cfs @ 12.08 hrs, Volume= 1,397 cf, Depth= 2.67"
Routed to Pond 3.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
810	80	>75% Grass cover, Good, HSG D
5,470	98	Paved parking, HSG D
6,280		Weighted Average
810		12.90% Pervious Area
5,470		87.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.1S:

Runoff = 1.4 cfs @ 12.16 hrs, Volume= 5,709 cf, Depth= 2.24"
Routed to Pond 4P : B-32A (CB-8323)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
12,790	98	Paved parking, HSG D
15,030	84	50-75% Grass cover, Fair, HSG D
2,720	98	Roofs, HSG D
30,540		Weighted Average
15,030		49.21% Pervious Area
15,510		50.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	110	0.0150	0.15		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.0	25	0.3300	8.62		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
12.1	135	Total			

Summary for Subcatchment 4.2S:

Runoff = 0.8 cfs @ 12.08 hrs, Volume= 2,615 cf, Depth= 2.65"
Routed to Pond 4.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
9,785	98	Paved parking, HSG D
2,075	84	50-75% Grass cover, Fair, HSG D
11,860		Weighted Average
2,075		17.50% Pervious Area
9,785		82.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.3S:

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,386 cf, Depth= 2.69"
Routed to Pond 4.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
1,205	80	>75% Grass cover, Good, HSG D
9,425	98	Paved parking, HSG D
10,630		Weighted Average
1,205		11.34% Pervious Area
9,425		88.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.4S:

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,399 cf, Depth= 2.61"
Routed to Pond 4.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
1,860	80	>75% Grass cover, Good, HSG D
9,180	98	Paved parking, HSG D
11,040		Weighted Average
1,860		16.85% Pervious Area
9,180		83.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.5S:

Runoff = 0.3 cfs @ 12.09 hrs, Volume= 1,069 cf, Depth= 2.28"
Routed to Pond 4.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
2,130	80	>75% Grass cover, Good, HSG D
3,490	98	Paved parking, HSG D
5,620		Weighted Average
2,130		37.90% Pervious Area
3,490		62.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.6S:

Runoff = 0.6 cfs @ 12.08 hrs, Volume= 2,031 cf, Depth= 2.68"
Routed to Pond 4.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
7,990	98	Paved parking, HSG D
1,100	80	>75% Grass cover, Good, HSG D
9,090		Weighted Average
1,100		12.10% Pervious Area
7,990		87.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.7S:

Runoff = 0.4 cfs @ 12.08 hrs, Volume= 1,439 cf, Depth= 2.87"
Routed to Pond 4.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
6,020	98	Paved parking, HSG D
6,020		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.8S:

Runoff = 0.8 cfs @ 12.08 hrs, Volume= 2,680 cf, Depth= 2.71"
Routed to Pond 4.8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
10,665	98	Paved parking, HSG D
1,185	80	>75% Grass cover, Good, HSG D
11,850		Weighted Average
1,185		10.00% Pervious Area
10,665		90.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 5.1S:

Runoff = 1.2 cfs @ 12.09 hrs, Volume= 3,863 cf, Depth= 2.24"
Routed to Pond 5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (sf)	CN	Description
*	10,495	98	Paved parking, HSG D
	10,165	84	50-75% Grass cover, Fair, HSG D
	20,660		Weighted Average
	10,165		49.20% Pervious Area
	10,495		50.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 6.1S:

Runoff = 2.5 cfs @ 12.19 hrs, Volume= 11,130 cf, Depth= 2.65"
Routed to Pond 6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
36,200	98	Paved parking, HSG D
6,030	98	Roofs, HSG D
1,670	79	50-75% Grass cover, Fair, HSG C
6,470	84	50-75% Grass cover, Fair, HSG D
50,370		Weighted Average
8,140		16.16% Pervious Area
42,230		83.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0700	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	65	0.0500	1.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.3	115	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
14.5	280	Total			

Summary for Subcatchment 7.1S:

Runoff = 2.3 cfs @ 12.15 hrs, Volume= 9,250 cf, Depth= 2.45"
Routed to Pond 7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
31,245	98	Paved parking, HSG D
11,760	79	50-75% Grass cover, Fair, HSG C
2,285	98	Unconnected pavement, HSG D
45,290		Weighted Average
11,760		25.97% Pervious Area
33,530		74.03% Impervious Area
2,285		6.81% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0200	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.7	75	0.0150	1.84		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.7	250	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
11.4	425	Total			

Summary for Subcatchment 8.10S:

Runoff = 0.6 cfs @ 12.08 hrs, Volume= 1,930 cf, Depth= 2.74"
Routed to Pond 8.10P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
675	80	>75% Grass cover, Good, HSG D
7,765	98	Paved parking, HSG D
8,440		Weighted Average
675		8.00% Pervious Area
7,765		92.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.11S:

Runoff = 1.7 cfs @ 12.08 hrs, Volume= 6,001 cf, Depth= 2.68"
Routed to Pond 8.11P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
3,330	80	>75% Grass cover, Good, HSG D
23,570	98	Paved parking, HSG D
26,900		Weighted Average
3,330		12.38% Pervious Area
23,570		87.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.12S:

Runoff = 0.2 cfs @ 12.08 hrs, Volume= 559 cf, Depth= 2.87"
Routed to Pond 8.12P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
2,340	98	Paved parking, HSG D
2,340		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.1S:

Runoff = 0.7 cfs @ 12.09 hrs, Volume= 2,349 cf, Depth= 2.02"
Routed to Pond 8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
6,910	98	Paved parking, HSG D
2,655	74	>75% Grass cover, Good, HSG C
4,365	80	>75% Grass cover, Good, HSG D
13,930		Weighted Average
7,020		50.39% Pervious Area
6,910		49.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.2S:

Runoff = 1.2 cfs @ 12.08 hrs, Volume= 4,238 cf, Depth= 2.63"
Routed to Pond 8.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
3,010	80	>75% Grass cover, Good, HSG D
16,340	98	Paved parking, HSG D
19,350		Weighted Average
3,010		15.56% Pervious Area
16,340		84.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.3S:

Runoff = 3.2 cfs @ 12.08 hrs, Volume= 10,974 cf, Depth= 2.73"
Routed to Pond 8.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
4,320	80	>75% Grass cover, Good, HSG D
43,920	98	Paved parking, HSG D
48,240		Weighted Average
4,320		8.96% Pervious Area
43,920		91.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.4S:

Runoff = 1.4 cfs @ 12.08 hrs, Volume= 4,727 cf, Depth= 2.53"
Routed to Pond 8.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
4,910	80	>75% Grass cover, Good, HSG D
17,510	98	Paved parking, HSG D
22,420		Weighted Average
4,910		21.90% Pervious Area
17,510		78.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.5S:

Runoff = 0.3 cfs @ 12.09 hrs, Volume= 1,004 cf, Depth= 1.33"
Routed to Pond 8.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
9,090	80	>75% Grass cover, Good, HSG D
9,090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.6S:

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,242 cf, Depth= 2.42"
Routed to Pond 8.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
3,235	80	>75% Grass cover, Good, HSG D
7,885	98	Paved parking, HSG D
11,120		Weighted Average
3,235		29.09% Pervious Area
7,885		70.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.7S:

Runoff = 0.2 cfs @ 12.09 hrs, Volume= 792 cf, Depth= 1.87"
Routed to Pond 8.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
3,280	80	>75% Grass cover, Good, HSG D
1,800	98	Paved parking, HSG D
5,080		Weighted Average
3,280		64.57% Pervious Area
1,800		35.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.8S:

Runoff = 0.6 cfs @ 12.08 hrs, Volume= 2,155 cf, Depth= 2.61"
Routed to Pond 8.8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
1,680	80	>75% Grass cover, Good, HSG D
8,240	98	Paved parking, HSG D
9,920		Weighted Average
1,680		16.94% Pervious Area
8,240		83.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.9S:

Runoff = 1.2 cfs @ 12.08 hrs, Volume= 4,059 cf, Depth= 2.81"
Routed to Pond 8.9P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
605	80	>75% Grass cover, Good, HSG D
16,705	98	Paved parking, HSG D
17,310		Weighted Average
605		3.50% Pervious Area
16,705		96.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 9.1S:

Runoff = 0.3 cfs @ 12.09 hrs, Volume= 832 cf, Depth= 1.47"
Routed to Link POA-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
4,800	83	Woods, Poor, HSG D
2,000	80	>75% Grass cover, Good, HSG D
6,800		Weighted Average
6,800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Pond 1P: B-41

Inflow Area = 34,840 sf, 96.15% Impervious, Inflow Depth = 2.82" for 2-YR event
Inflow = 2.4 cfs @ 12.08 hrs, Volume= 8,185 cf
Outflow = 2.4 cfs @ 12.08 hrs, Volume= 8,185 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.4 cfs @ 12.08 hrs, Volume= 8,185 cf
Routed to Pond 2P : B-34

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.76' @ 12.08 hrs
Flood Elev= 63.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.90'	**18.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.90' / 57.75' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.4 cfs @ 12.08 hrs HW=58.76' (Free Discharge)
1=Culvert (Barrel Controls 2.4 cfs @ 3.26 fps)

Summary for Pond 2.11P: 21P (CB-8436)

Inflow Area = 309,190 sf, 80.71% Impervious, Inflow Depth = 2.58" for 2-YR event
Inflow = 7.4 cfs @ 12.10 hrs, Volume= 66,525 cf
Outflow = 7.4 cfs @ 12.10 hrs, Volume= 66,525 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.4 cfs @ 12.10 hrs, Volume= 66,525 cf
Routed to Pond 3.35P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.49' @ 12.10 hrs
Flood Elev= 68.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.88'	**24.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.88' / 55.69' S= 0.0024 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.4 cfs @ 12.10 hrs HW=57.49' (Free Discharge)
1=Culvert (Barrel Controls 7.4 cfs @ 3.72 fps)

Summary for Pond 2.1P:

Inflow Area = 309,190 sf, 80.71% Impervious, Inflow Depth = 2.58" for 2-YR event
Inflow = 7.4 cfs @ 12.10 hrs, Volume= 66,525 cf
Outflow = 7.4 cfs @ 12.10 hrs, Volume= 66,525 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.4 cfs @ 12.10 hrs, Volume= 66,525 cf
Routed to Pond 2.11P : 21P (CB-8436)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.59' @ 12.10 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	56.01'	**24.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 56.01' / 55.88' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.4 cfs @ 12.10 hrs HW=57.59' (Free Discharge)
1=Culvert (Barrel Controls 7.4 cfs @ 3.80 fps)

Summary for Pond 2P: B-34

Inflow Area = 128,980 sf, 80.23% Impervious, Inflow Depth = 2.59" for 2-YR event
Inflow = 6.8 cfs @ 12.10 hrs, Volume= 27,844 cf
Outflow = 6.8 cfs @ 12.10 hrs, Volume= 27,844 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.8 cfs @ 12.10 hrs, Volume= 27,844 cf
Routed to Pond 2.1P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.27' @ 12.10 hrs
Flood Elev= 63.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**18.0" Round Culvert** L= 140.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 55.88' S= 0.0116 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.8 cfs @ 12.10 hrs HW=59.27' (Free Discharge)
1=Culvert (Inlet Controls 6.8 cfs @ 3.84 fps)

Summary for Pond 3.11P:

Inflow Area = 5,850 sf, 54.70% Impervious, Inflow Depth = 2.17" for 2-YR event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 1,057 cf
Outflow = 0.3 cfs @ 12.09 hrs, Volume= 1,057 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.09 hrs, Volume= 1,057 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 66.16' @ 12.09 hrs
Flood Elev= 71.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.85'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.85' / 65.50' S= 0.0117 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.3 cfs @ 12.09 hrs HW=66.16' (Free Discharge)
1=Culvert (Inlet Controls 0.3 cfs @ 1.50 fps)

Summary for Pond 3.1P:

Inflow Area = 1,450 sf, 62.07% Impervious, Inflow Depth = 2.28" for 2-YR event
Inflow = 0.1 cfs @ 12.09 hrs, Volume= 276 cf
Outflow = 0.1 cfs @ 12.09 hrs, Volume= 276 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.1 cfs @ 12.09 hrs, Volume= 276 cf
Routed to Pond 3.11P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.45' @ 12.09 hrs
Flood Elev= 72.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.30'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.30' / 65.90' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.1 cfs @ 12.09 hrs HW=67.45' (Free Discharge)
1=Culvert (Inlet Controls 0.1 cfs @ 1.05 fps)

Summary for Pond 3.2P:

Inflow Area = 4,400 sf, 52.27% Impervious, Inflow Depth = 2.13" for 2-YR event
Inflow = 0.2 cfs @ 12.09 hrs, Volume= 782 cf
Outflow = 0.2 cfs @ 12.09 hrs, Volume= 782 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.09 hrs, Volume= 782 cf
Routed to Pond 3.11P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.04' @ 12.09 hrs
Flood Elev= 70.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.77'	**12.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.77' / 65.90' S= 0.0109 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.2 cfs @ 12.09 hrs HW=67.04' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.2 cfs @ 1.39 fps)

Summary for Pond 3.31P:

Inflow Area = 39,230 sf, 85.34% Impervious, Inflow Depth = 2.64" for 2-YR event
Inflow = 2.5 cfs @ 12.08 hrs, Volume= 8,636 cf
Outflow = 2.5 cfs @ 12.08 hrs, Volume= 8,636 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.5 cfs @ 12.08 hrs, Volume= 8,636 cf
Routed to Pond 3.32P : WQ DET & SF-2

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.55' @ 12.08 hrs
Flood Elev= 70.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	61.80'	**24.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 61.80' / 61.30' S= 0.0119 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.5 cfs @ 12.08 hrs HW=62.55' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.5 cfs @ 2.33 fps)

Summary for Pond 3.32P: WQ DET & SF-2

Inflow Area = 105,340 sf, 85.47% Impervious, Inflow Depth = 2.65" for 2-YR event
Inflow = 6.8 cfs @ 12.08 hrs, Volume= 23,255 cf
Outflow = 6.6 cfs @ 12.10 hrs, Volume= 23,255 cf, Atten= 2%, Lag= 1.1 min
Primary = 0.3 cfs @ 12.10 hrs, Volume= 13,778 cf
Routed to Pond 3.34P :
Secondary = 6.3 cfs @ 12.10 hrs, Volume= 9,478 cf
Routed to Pond 3.33P : PEAK DET

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.81' @ 12.10 hrs Surf.Area= 1,634 sf Storage= 3,180 cf

Plug-Flow detention time= 55.9 min calculated for 23,251 cf (100% of inflow)
Center-of-Mass det. time= 55.9 min (819.3 - 763.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	60.00'	0 cf	**8.00'W x 204.25'L x 9.00'H Field A** 14,706 cf Overall - 10,166 cf Embedded = 4,540 cf x 0.0% Voids
#2A	60.00'	10,166 cf	**CMP Round 96** x 9 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +14.25' x 50.27 sf x 1 rows 8.00' Header x 50.27 sf x 1 = 402.1 cf Inside
		10,166 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	60.00'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 60.00' / 59.95' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	57.70'	**Tube/Siphon/Float Valve X 11.00** 0.668" Diameter, C= 0.600, 0.263" Trickle Diameter Starts@60.45'
#3	Primary	57.70'	**12.0" Round 12" Stormfilter Outlet** L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.70' / 57.60' S= 0.0077 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Secondary	62.40'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 2.40 2.48 2.56 2.64 2.72 2.80 2.88 2.96 3.04 3.12 3.20 3.28 3.36 3.44 3.52 3.60 3.68 3.76 3.84 3.92 4.00 4.08 4.16 4.24 4.32 4.40 4.48 4.56 4.64 4.72 4.80 4.88 4.96 5.04 5.12 5.20 5.28 5.36 5.44 5.52 5.60 5.68 5.76 5.84 5.92 6.00 6.08 6.16 6.24 6.32 6.40 6.48 6.56 6.64 6.72 6.80 6.88 6.96 7.04 7.12 7.20 7.28 7.36 7.44 7.52 7.60 7.68 7.76 7.84 7.92 8.00 Width (feet) 7.33 7.40 7.46 7.52 7.58 7.63 7.68 7.72 7.77 7.80 7.84 7.87 7.90 7.92 7.94 7.96 7.97 7.99 7.99 8.00 8.00 8.00 7.99 7.99 7.97 7.96 7.94 7.92 7.90 7.87 7.84 7.80 7.77 7.72 7.68 7.63 7.58 7.52 7.46 7.40 7.33 7.26 7.18 7.10 7.02 6.93 6.83 6.73 6.63 6.52 6.40 6.28 6.15 6.01 5.87 5.71 5.55 5.38 5.20 5.01 4.80 4.58 4.34 4.08 3.80 3.49 3.14 2.73 2.24 1.59 0.00

Primary OutFlow Max=0.3 cfs @ 12.10 hrs HW=62.81' (Free Discharge)
└**3=12" Stormfilter Outlet** (Passes 0.3 cfs of 6.4 cfs potential flow)
└**2=Tube/Siphon/Float Valve** (Orifice Controls 0.3 cfs @ 10.88 fps)
└**1=Culvert** (Passes 0.3 cfs of 5.7 cfs potential flow)

Secondary OutFlow Max=6.3 cfs @ 12.10 hrs HW=62.81' (Free Discharge)
└**4=Custom Weir/Orifice** (Weir Controls 6.3 cfs @ 2.08 fps)

Summary for Pond 3.33P: PEAK DET

Inflow = 6.3 cfs @ 12.10 hrs, Volume= 9,478 cf
Outflow = 0.1 cfs @ 13.71 hrs, Volume= 9,478 cf, Atten= 98%, Lag= 96.2 min
Primary = 0.1 cfs @ 13.71 hrs, Volume= 9,478 cf
Routed to Pond 3.34P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.04' @ 13.71 hrs Surf.Area= 8,258 sf Storage= 8,295 cf

Plug-Flow detention time= 616.5 min calculated for 9,476 cf (100% of inflow)
Center-of-Mass det. time= 616.7 min (1,357.2 - 740.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	60.00'	0 cf	**63.00'W x 124.00'L x 8.00'H Field A** 62,496 cf Overall - 38,152 cf Embedded = 24,344 cf x 0.0% Voids
#2A	60.00'	38,152 cf	**CMP Round 96** x 30 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +16.00' x 50.27 sf x 6 rows 63.00' Header x 50.27 sf x 1 = 3,166.7 cf Inside
#3	60.00'	3,217 cf	**CMP Round 96** x 3 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +4.00' x 50.27 sf x 1 rows
		41,368 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**2.0" Vert. DRAINDOWN ORIFICE** C= 0.600 Limited to weir flow at low heads
#2	Primary	65.50'	**0.5' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Primary	63.50'	**36.0" W x 6.0" H Vert. CAPACITY ORIFICE** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.1 cfs @ 13.71 hrs HW=62.04' (Free Discharge)
- **1=DRAINDOWN ORIFICE** (Orifice Controls 0.1 cfs @ 6.73 fps)
- **2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)
- **3=CAPACITY ORIFICE** (Controls 0.0 cfs)

Summary for Pond 3.34P:

Inflow Area = 105,340 sf, 85.47% Impervious, Inflow Depth = 2.65" for 2-YR event
Inflow = 0.4 cfs @ 13.56 hrs, Volume= 23,255 cf
Outflow = 0.4 cfs @ 13.56 hrs, Volume= 23,255 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.4 cfs @ 13.56 hrs, Volume= 23,255 cf
Routed to Pond 3.35P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.80' @ 13.56 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**24.0" Round Culvert** L= 62.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 56.87' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.4 cfs @ 13.56 hrs HW=57.80' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.4 cfs @ 1.46 fps)

Summary for Pond 3.35P:

Inflow Area = 414,530 sf, 81.92% Impervious, Inflow Depth = 2.60" for 2-YR event
Inflow = 7.8 cfs @ 12.10 hrs, Volume= 89,780 cf
Outflow = 7.8 cfs @ 12.10 hrs, Volume= 89,780 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.8 cfs @ 12.10 hrs, Volume= 89,780 cf
Routed to Pond 3P : B-32 (CB-8031)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.35' @ 12.10 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.69'	**24.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.69' / 55.62' S= 0.0028 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.8 cfs @ 12.10 hrs HW=57.35' (Free Discharge)
└**1=Culvert** (Barrel Controls 7.8 cfs @ 3.79 fps)

Summary for Pond 3.3P:

Inflow Area = 39,230 sf, 85.34% Impervious, Inflow Depth = 2.64" for 2-YR event
Inflow = 2.5 cfs @ 12.08 hrs, Volume= 8,636 cf
Outflow = 2.5 cfs @ 12.08 hrs, Volume= 8,636 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.5 cfs @ 12.08 hrs, Volume= 8,636 cf
Routed to Pond 3.31P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 63.64' @ 12.08 hrs
Flood Elev= 69.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.80'	**18.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.80' / 62.30' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.5 cfs @ 12.08 hrs HW=63.64' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.5 cfs @ 2.46 fps)

Summary for Pond 3.4P:

Inflow Area = 5,170 sf, 90.14% Impervious, Inflow Depth = 2.72" for 2-YR event
Inflow = 0.3 cfs @ 12.08 hrs, Volume= 1,170 cf
Outflow = 0.3 cfs @ 12.08 hrs, Volume= 1,170 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.08 hrs, Volume= 1,170 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.58' @ 12.08 hrs
Flood Elev= 69.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.25'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.25' / 65.45' S= 0.0160 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.3 cfs @ 12.08 hrs HW=66.57' (Free Discharge)
1=Culvert (Inlet Controls 0.3 cfs @ 1.53 fps)

Summary for Pond 3.5P:

Inflow Area = 13,630 sf, 87.97% Impervious, Inflow Depth = 2.68" for 2-YR event
Inflow = 0.9 cfs @ 12.08 hrs, Volume= 3,047 cf
Outflow = 0.9 cfs @ 12.08 hrs, Volume= 3,047 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.9 cfs @ 12.08 hrs, Volume= 3,047 cf
Routed to Pond 3.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.85' @ 12.08 hrs
Flood Elev= 68.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.30'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.30' / 63.80' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.9 cfs @ 12.08 hrs HW=64.85' (Free Discharge)
1=Culvert (Inlet Controls 0.9 cfs @ 1.99 fps)

Summary for Pond 3.6P:

Inflow Area = 20,710 sf, 92.08% Impervious, Inflow Depth = 2.75" for 2-YR event
Inflow = 1.4 cfs @ 12.08 hrs, Volume= 4,739 cf
Outflow = 1.4 cfs @ 12.08 hrs, Volume= 4,739 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.08 hrs, Volume= 4,739 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 64.19' @ 12.08 hrs
Flood Elev= 69.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.55'	**15.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.55' / 63.05' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.4 cfs @ 12.08 hrs HW=64.19' (Free Discharge)
1=Culvert (Inlet Controls 1.4 cfs @ 2.15 fps)

Summary for Pond 3.7P:

Inflow Area = 6,280 sf, 87.10% Impervious, Inflow Depth = 2.67" for 2-YR event
Inflow = 0.4 cfs @ 12.08 hrs, Volume= 1,397 cf
Outflow = 0.4 cfs @ 12.08 hrs, Volume= 1,397 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.4 cfs @ 12.08 hrs, Volume= 1,397 cf
Routed to Pond 3.5P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 65.16' @ 12.08 hrs
Flood Elev= 68.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.80'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.80' / 64.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.4 cfs @ 12.08 hrs HW=65.16' (Free Discharge)
1=Culvert (Inlet Controls 0.4 cfs @ 1.61 fps)

Summary for Pond 3P: B-32 (CB-8031)

Inflow Area = 414,530 sf, 81.92% Impervious, Inflow Depth = 2.60" for 2-YR event
Inflow = 7.8 cfs @ 12.10 hrs, Volume= 89,780 cf
Outflow = 7.8 cfs @ 12.10 hrs, Volume= 89,780 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.8 cfs @ 12.10 hrs, Volume= 89,780 cf
Routed to Pond 4P : B-32A (CB-8323)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.17' @ 12.10 hrs
Flood Elev= 66.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.44' / 55.52' S= -0.0036 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.8 cfs @ 12.10 hrs HW=57.17' (Free Discharge)
└**1=Culvert** (Barrel Controls 7.8 cfs @ 3.61 fps)

Summary for Pond 4.21P:

Inflow Area = 11,860 sf, 82.50% Impervious, Inflow Depth = 2.65" for 2-YR event
Inflow = 0.8 cfs @ 12.08 hrs, Volume= 2,615 cf
Outflow = 0.8 cfs @ 12.08 hrs, Volume= 2,615 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.08 hrs, Volume= 2,615 cf
Routed to Pond 4.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.52' @ 12.08 hrs
Flood Elev= 72.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.05'	**15.0" Round Culvert** L= 82.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.05' / 66.06' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.8 cfs @ 12.08 hrs HW=67.52' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.8 cfs @ 1.83 fps)

Summary for Pond 4.2P:

Inflow Area = 11,860 sf, 82.50% Impervious, Inflow Depth = 2.65" for 2-YR event
Inflow = 0.8 cfs @ 12.08 hrs, Volume= 2,615 cf
Outflow = 0.8 cfs @ 12.08 hrs, Volume= 2,615 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.08 hrs, Volume= 2,615 cf
Routed to Pond 4.21P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.67' @ 12.08 hrs
Flood Elev= 72.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.20'	**15.0" Round Culvert** L= 104.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.20' / 67.16' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.8 cfs @ 12.08 hrs HW=68.67' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.8 cfs @ 1.83 fps)

Summary for Pond 4.3P:

Inflow Area = 22,490 sf, 85.42% Impervious, Inflow Depth = 2.67" for 2-YR event
Inflow = 1.5 cfs @ 12.08 hrs, Volume= 5,001 cf
Outflow = 1.5 cfs @ 12.08 hrs, Volume= 5,001 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.5 cfs @ 12.08 hrs, Volume= 5,001 cf
Routed to Pond 4.8P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.43' @ 12.08 hrs
Flood Elev= 70.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.81'	**18.0" Round Culvert** L= 105.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.81' / 64.15' S= 0.0158 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.5 cfs @ 12.08 hrs HW=66.43' (Free Discharge)
1=Culvert (Inlet Controls 1.5 cfs @ 2.11 fps)

Summary for Pond 4.4P:

Inflow Area = 11,040 sf, 83.15% Impervious, Inflow Depth = 2.61" for 2-YR event
Inflow = 0.7 cfs @ 12.08 hrs, Volume= 2,399 cf
Outflow = 0.7 cfs @ 12.08 hrs, Volume= 2,399 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.08 hrs, Volume= 2,399 cf
Routed to Pond 4.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.38' @ 12.08 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.90'	**12.0" Round Culvert** L= 83.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.90' / 66.50' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.7 cfs @ 12.08 hrs HW=68.38' (Free Discharge)
1=Culvert (Inlet Controls 0.7 cfs @ 1.86 fps)

Summary for Pond 4.5P:

Inflow Area = 5,620 sf, 62.10% Impervious, Inflow Depth = 2.28" for 2-YR event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 1,069 cf
Outflow = 0.3 cfs @ 12.09 hrs, Volume= 1,069 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.09 hrs, Volume= 1,069 cf
Routed to Pond 4.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 69.41' @ 12.09 hrs
Flood Elev= 72.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.10'	**12.0" Round Culvert** L= 122.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.10' / 66.50' S= 0.0213 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.3 cfs @ 12.09 hrs HW=69.41' (Free Discharge)
1=Culvert (Inlet Controls 0.3 cfs @ 1.50 fps)

Summary for Pond 4.6P:

Inflow Area = 25,750 sf, 80.23% Impervious, Inflow Depth = 2.56" for 2-YR event
Inflow = 1.6 cfs @ 12.08 hrs, Volume= 5,500 cf
Outflow = 1.6 cfs @ 12.08 hrs, Volume= 5,500 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.6 cfs @ 12.08 hrs, Volume= 5,500 cf
Routed to Pond 4.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.65' @ 12.08 hrs
Flood Elev= 70.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.00'	**18.0" Round Culvert** L= 77.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.00' / 64.70' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.6 cfs @ 12.08 hrs HW=66.65' (Free Discharge)
1=Culvert (Inlet Controls 1.6 cfs @ 2.17 fps)

Summary for Pond 4.7P:

Inflow Area = 31,770 sf, 83.98% Impervious, Inflow Depth = 2.62" for 2-YR event
Inflow = 2.0 cfs @ 12.08 hrs, Volume= 6,938 cf
Outflow = 2.0 cfs @ 12.08 hrs, Volume= 6,938 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.0 cfs @ 12.08 hrs, Volume= 6,938 cf
Routed to Pond 4.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.71' @ 12.08 hrs
Flood Elev= 69.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.20'	**18.0" Round Culvert X 2.00** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.20' / 63.70' S= 0.0227 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.0 cfs @ 12.08 hrs HW=64.71' (Free Discharge)
1=Culvert (Inlet Controls 2.0 cfs @ 1.91 fps)

Summary for Pond 4.81P:

Inflow Area = 66,110 sf, 85.55% Impervious, Inflow Depth = 2.65" for 2-YR event
Inflow = 4.3 cfs @ 12.08 hrs, Volume= 14,619 cf
Outflow = 4.3 cfs @ 12.08 hrs, Volume= 14,619 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.3 cfs @ 12.08 hrs, Volume= 14,619 cf
Routed to Pond 3.32P : WQ DET & SF-2

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.20' @ 12.08 hrs
Flood Elev= 69.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.20'	**24.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.20' / 62.80' S= 0.0267 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.2 cfs @ 12.08 hrs HW=64.20' (Free Discharge)
1=Culvert (Inlet Controls 4.2 cfs @ 2.69 fps)

Summary for Pond 4.8P:

Inflow Area = 34,340 sf, 87.00% Impervious, Inflow Depth = 2.68" for 2-YR event
Inflow = 2.2 cfs @ 12.08 hrs, Volume= 7,680 cf
Outflow = 2.2 cfs @ 12.08 hrs, Volume= 7,680 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.2 cfs @ 12.08 hrs, Volume= 7,680 cf
Routed to Pond 4.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.36' @ 12.08 hrs
Flood Elev= 68.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.65'	**24.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.65' / 63.30' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.2 cfs @ 12.08 hrs HW=64.35' (Free Discharge)
1=Culvert (Inlet Controls 2.2 cfs @ 2.26 fps)

Summary for Pond 4P: B-32A (CB-8323)

Inflow Area = 445,070 sf, 79.79% Impervious, Inflow Depth = 2.57" for 2-YR event
Inflow = 9.0 cfs @ 12.11 hrs, Volume= 95,489 cf
Outflow = 9.0 cfs @ 12.11 hrs, Volume= 95,489 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.0 cfs @ 12.11 hrs, Volume= 95,489 cf
Routed to Link POA-1 : B-30
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA-1 : B-30

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.12' @ 12.11 hrs
Flood Elev= 59.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.52' / 54.90' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	59.39'	**15.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=9.0 cfs @ 12.11 hrs HW=57.12' (Free Discharge)
1=Culvert (Barrel Controls 9.0 cfs @ 4.57 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=55.52' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond 5P:

Inflow Area = 20,660 sf, 50.80% Impervious, Inflow Depth = 2.24" for 2-YR event
Inflow = 1.2 cfs @ 12.09 hrs, Volume= 3,863 cf
Outflow = 1.2 cfs @ 12.09 hrs, Volume= 3,863 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.09 hrs, Volume= 3,863 cf
Routed to Link POA-2 :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 60.59' @ 12.09 hrs
Flood Elev= 66.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 59.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.2 cfs @ 12.09 hrs HW=60.58' (Free Discharge)
1=Culvert (Inlet Controls 1.2 cfs @ 2.06 fps)

Summary for Pond 6P:

Inflow Area = 64,300 sf, 76.42% Impervious, Inflow Depth = 2.52" for 2-YR event
Inflow = 3.0 cfs @ 12.17 hrs, Volume= 13,479 cf
Outflow = 3.0 cfs @ 12.17 hrs, Volume= 13,479 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.0 cfs @ 12.17 hrs, Volume= 13,479 cf
Routed to Pond 2P : B-34
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 2P : B-34

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 63.56' @ 12.17 hrs
Flood Elev= 71.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.08'	**12.0" Round Culvert** L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.08' / 57.67' S= 0.0147 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	70.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=3.0 cfs @ 12.17 hrs HW=63.56' (Free Discharge)
1=Culvert (Inlet Controls 3.0 cfs @ 3.76 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=62.08' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond 7P:

Inflow Area = 45,290 sf, 74.03% Impervious, Inflow Depth = 2.45" for 2-YR event
Inflow = 2.3 cfs @ 12.15 hrs, Volume= 9,250 cf
Outflow = 2.3 cfs @ 12.15 hrs, Volume= 9,250 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.3 cfs @ 12.15 hrs, Volume= 9,250 cf
Routed to Link POA-4 :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.08' @ 12.15 hrs
Flood Elev= 69.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.00'	**12.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.00' / 64.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.3 cfs @ 12.15 hrs HW=66.08' (Free Discharge)
1=Culvert (Inlet Controls 2.3 cfs @ 2.89 fps)

Summary for Pond 8.10P:

Inflow Area = 8,440 sf, 92.00% Impervious, Inflow Depth = 2.74" for 2-YR event
Inflow = 0.6 cfs @ 12.08 hrs, Volume= 1,930 cf
Outflow = 0.6 cfs @ 12.08 hrs, Volume= 1,930 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.6 cfs @ 12.08 hrs, Volume= 1,930 cf
Routed to Pond 8.9P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.73' @ 12.08 hrs
Flood Elev= 72.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.30'	**12.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.30' / 68.75' S= 0.0367 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.6 cfs @ 12.08 hrs HW=69.73' (Free Discharge)
1=Culvert (Inlet Controls 0.6 cfs @ 1.75 fps)

Summary for Pond 8.111P:

Inflow Area = 29,240 sf, 88.61% Impervious, Inflow Depth = 2.69" for 2-YR event
Inflow = 1.9 cfs @ 12.08 hrs, Volume= 6,560 cf
Outflow = 1.9 cfs @ 12.08 hrs, Volume= 6,560 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.9 cfs @ 12.08 hrs, Volume= 6,560 cf
Routed to Pond 8.82P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.67' @ 12.08 hrs
Flood Elev= 74.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.95'	**18.0" Round Culvert** L= 160.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.95' / 66.30' S= 0.0103 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.9 cfs @ 12.08 hrs HW=68.67' (Free Discharge)
1=Culvert (Inlet Controls 1.9 cfs @ 2.28 fps)

Summary for Pond 8.11P:

Inflow Area = 26,900 sf, 87.62% Impervious, Inflow Depth = 2.68" for 2-YR event
Inflow = 1.7 cfs @ 12.08 hrs, Volume= 6,001 cf
Outflow = 1.7 cfs @ 12.08 hrs, Volume= 6,001 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.7 cfs @ 12.08 hrs, Volume= 6,001 cf
Routed to Pond 8.111P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 70.69' @ 12.08 hrs
Flood Elev= 73.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.95'	**15.0" Round Culvert** L= 144.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.95' / 68.20' S= 0.0122 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.7 cfs @ 12.08 hrs HW=70.69' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 1.7 cfs @ 2.31 fps)

Summary for Pond 8.12P:

Inflow Area = 2,340 sf,100.00% Impervious, Inflow Depth = 2.87" for 2-YR event
Inflow = 0.2 cfs @ 12.08 hrs, Volume= 559 cf
Outflow = 0.2 cfs @ 12.08 hrs, Volume= 559 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.08 hrs, Volume= 559 cf
Routed to Pond 8.111P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.97' @ 12.08 hrs
Flood Elev= 74.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.75'	**12.0" Round Culvert** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.75' / 69.30' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.2 cfs @ 12.08 hrs HW=70.97' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.2 cfs @ 1.26 fps)

Summary for Pond 8.21P:

Inflow Area = 19,350 sf, 84.44% Impervious, Inflow Depth = 2.63" for 2-YR event
Inflow = 1.2 cfs @ 12.08 hrs, Volume= 4,238 cf
Outflow = 1.2 cfs @ 12.08 hrs, Volume= 4,238 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.08 hrs, Volume= 4,238 cf
Routed to Pond 8.22P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.51' @ 12.08 hrs
Flood Elev= 76.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	**24.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.00' / 68.60' S= 0.0240 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.2 cfs @ 12.08 hrs HW=71.51' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.2 cfs @ 1.93 fps)

Summary for Pond 8.22P:

Inflow Area = 41,770 sf, 81.04% Impervious, Inflow Depth = 2.58" for 2-YR event
Inflow = 2.6 cfs @ 12.08 hrs, Volume= 8,965 cf
Outflow = 2.6 cfs @ 12.08 hrs, Volume= 8,965 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.08 hrs, Volume= 8,965 cf
Routed to Pond 8.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.27' @ 12.08 hrs
Flood Elev= 75.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.50'	**24.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.50' / 68.10' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.6 cfs @ 12.08 hrs HW=69.27' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.6 cfs @ 2.35 fps)

Summary for Pond 8.2P:

Inflow Area = 19,350 sf, 84.44% Impervious, Inflow Depth = 2.63" for 2-YR event
Inflow = 1.2 cfs @ 12.08 hrs, Volume= 4,238 cf
Outflow = 1.2 cfs @ 12.08 hrs, Volume= 4,238 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.08 hrs, Volume= 4,238 cf
Routed to Pond 8.21P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 74.27' @ 12.08 hrs
Flood Elev= 79.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.70'	**18.0" Round Culvert** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.70' / 71.50' S= 0.0183 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.2 cfs @ 12.08 hrs HW=74.26' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.2 cfs @ 2.02 fps)

Summary for Pond 8.3P:

Inflow Area = 99,100 sf, 78.48% Impervious, Inflow Depth = 2.54" for 2-YR event
Inflow = 6.1 cfs @ 12.08 hrs, Volume= 20,942 cf
Outflow = 6.1 cfs @ 12.08 hrs, Volume= 20,942 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.1 cfs @ 12.08 hrs, Volume= 20,942 cf
Routed to Pond 8.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.24' @ 12.08 hrs
Flood Elev= 74.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.00'	**24.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.00' / 67.20' S= 0.0178 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.1 cfs @ 12.08 hrs HW=69.24' (Free Discharge)
1=Culvert (Inlet Controls 6.1 cfs @ 2.99 fps)

Summary for Pond 8.4P:

Inflow Area = 22,420 sf, 78.10% Impervious, Inflow Depth = 2.53" for 2-YR event
Inflow = 1.4 cfs @ 12.08 hrs, Volume= 4,727 cf
Outflow = 1.4 cfs @ 12.08 hrs, Volume= 4,727 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.08 hrs, Volume= 4,727 cf
Routed to Pond 8.22P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.65' @ 12.08 hrs
Flood Elev= 75.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**15.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.00' / 69.35' S= 0.0163 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.4 cfs @ 12.08 hrs HW=70.64' (Free Discharge)
1=Culvert (Inlet Controls 1.4 cfs @ 2.16 fps)

Summary for Pond 8.5P:

Inflow Area = 9,090 sf, 0.00% Impervious, Inflow Depth = 1.33" for 2-YR event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 1,004 cf
Outflow = 0.3 cfs @ 12.09 hrs, Volume= 1,004 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.09 hrs, Volume= 1,004 cf
Routed to Pond 8.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 74.76' @ 12.09 hrs
Flood Elev= 77.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.45'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.45' / 73.35' S= 0.0220 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.3 cfs @ 12.09 hrs HW=74.76' (Free Discharge)
1=Culvert (Inlet Controls 0.3 cfs @ 1.51 fps)

Summary for Pond 8.6P:

Inflow Area = 11,120 sf, 70.91% Impervious, Inflow Depth = 2.42" for 2-YR event
Inflow = 0.7 cfs @ 12.08 hrs, Volume= 2,242 cf
Outflow = 0.7 cfs @ 12.08 hrs, Volume= 2,242 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.08 hrs, Volume= 2,242 cf
Routed to Pond 8.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.73' @ 12.08 hrs
Flood Elev= 75.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.30'	**15.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.30' / 70.10' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.7 cfs @ 12.08 hrs HW=71.73' (Free Discharge)
1=Culvert (Inlet Controls 0.7 cfs @ 1.76 fps)

Summary for Pond 8.7P:

Inflow Area = 115,300 sf, 75.85% Impervious, Inflow Depth = 2.50" for 2-YR event
Inflow = 7.0 cfs @ 12.08 hrs, Volume= 23,976 cf
Outflow = 7.0 cfs @ 12.08 hrs, Volume= 23,976 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.0 cfs @ 12.08 hrs, Volume= 23,976 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.12' @ 12.08 hrs
Flood Elev= 73.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.90'	**30.0" Round Culvert** L= 57.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.90' / 66.25' S= 0.0114 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=7.0 cfs @ 12.08 hrs HW=68.11' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.0 cfs @ 2.96 fps)

Summary for Pond 8.81P:

Inflow Area = 150,970 sf, 79.60% Impervious, Inflow Depth = 2.55" for 2-YR event
Inflow = 9.4 cfs @ 12.08 hrs, Volume= 32,121 cf
Outflow = 9.4 cfs @ 12.08 hrs, Volume= 32,121 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.4 cfs @ 12.08 hrs, Volume= 32,121 cf
Routed to Pond 8.82P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.63' @ 12.08 hrs
Flood Elev= 74.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.25'	**36.0" Round Culvert** L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.25' / 66.00' S= 0.0192 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=9.4 cfs @ 12.08 hrs HW=67.63' (Free Discharge)
└**1=Culvert** (Barrel Controls 9.4 cfs @ 4.34 fps)

Summary for Pond 8.82P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 2.58" for 2-YR event
Inflow = 11.3 cfs @ 12.08 hrs, Volume= 38,681 cf
Outflow = 11.3 cfs @ 12.08 hrs, Volume= 38,681 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.3 cfs @ 12.08 hrs, Volume= 38,681 cf
Routed to Pond 8.83P : WQ DET & SF-1

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.85' @ 12.08 hrs
Flood Elev= 75.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.25'	**36.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.25' / 65.10' S= 0.0214 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=11.3 cfs @ 12.08 hrs HW=66.85' (Free Discharge)
└**1=Culvert** (Barrel Controls 11.3 cfs @ 4.25 fps)

Summary for Pond 8.83P: WQ DET & SF-1

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 2.58" for 2-YR event
Inflow = 11.3 cfs @ 12.08 hrs, Volume= 38,681 cf
Outflow = 11.2 cfs @ 12.09 hrs, Volume= 38,681 cf, Atten= 0%, Lag= 0.5 min
Primary = 0.5 cfs @ 12.09 hrs, Volume= 22,563 cf
Routed to Pond 8.85P :
Secondary = 10.8 cfs @ 12.09 hrs, Volume= 16,118 cf
Routed to Pond 8.84P : Peak DET-1

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.22' @ 12.09 hrs Surf.Area= 1,115 sf Storage= 4,933 cf

Plug-Flow detention time= 61.1 min calculated for 38,674 cf (100% of inflow)
Center-of-Mass det. time= 61.1 min (826.7 - 765.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	62.50'	0 cf	**10.00'W x 111.50'L x 8.00'H Field A** 8,920 cf Overall - 5,504 cf Embedded = 3,416 cf x 0.0% Voids
#2A	62.50'	5,504 cf	**CMP Round 96** x 5 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +1.50' x 50.27 sf x 1 rows 8.00' Header x 50.27 sf x 1 = 402.1 cf Inside
		5,504 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	62.50'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 62.50' / 62.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	60.60'	**Tube/Siphon/Float Valve X 18.00** 0.586" Diameter, C= 0.600, 0.263" Trickle Diameter Starts@63.35'
#3	Primary	60.60'	**12.0" Round 12" Stormfilter Outlet** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.60' / 60.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Secondary	68.58'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 6.08 6.16 6.24 6.32 6.40 6.48 6.56 6.64 6.72 6.80 6.88 6.96 7.04 7.12 7.20 7.28 7.36 7.44 7.52 7.60 7.68 7.76 7.84 7.92 8.00 Width (feet) 6.83 6.73 6.63 6.52 6.40 6.28 6.15 6.01 5.87 5.71 5.55 5.38 5.20 5.01 4.80 4.58 4.34 4.08 3.80 3.49 3.14 2.73 2.24 1.59 0.00

Primary OutFlow Max=0.5 cfs @ 12.09 hrs HW=69.21' (Free Discharge)
└**3=12" Stormfilter Outlet** (Passes 0.5 cfs of 8.5 cfs potential flow)
└**2=Tube/Siphon/Float Valve** (Orifice Controls 0.5 cfs @ 14.13 fps)
└**1=Culvert** (Passes 0.5 cfs of 9.4 cfs potential flow)

Secondary OutFlow Max=10.7 cfs @ 12.09 hrs HW=69.21' (Free Discharge)
└**4=Custom Weir/Orifice** (Weir Controls 10.7 cfs @ 2.65 fps)

Summary for Pond 8.84P: Peak DET-1

Inflow = 10.8 cfs @ 12.09 hrs, Volume= 16,118 cf
Outflow = 1.0 cfs @ 12.66 hrs, Volume= 16,118 cf, Atten= 91%, Lag= 34.0 min
Primary = 1.0 cfs @ 12.66 hrs, Volume= 16,118 cf
Routed to Pond 8.85P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.90' @ 12.66 hrs Surf.Area= 10,780 sf Storage= 12,614 cf

Plug-Flow detention time= 576.8 min calculated for 16,118 cf (100% of inflow)
Center-of-Mass det. time= 576.8 min (1,316.4 - 739.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	62.50'	0 cf	**98.00'W x 110.00'L x 8.00'H Field A** 86,240 cf Overall - 50,064 cf Embedded = 36,176 cf x 0.0% Voids
#2A	62.50'	50,064 cf	**CMP Round 96** x 45 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L 45 Chambers in 9 Rows 96.00' Header x 50.27 sf x 1 = 4,825.5 cf Inside
		50,064 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**6.0' 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
#2	Primary	66.00'	**36.0" W x 12.0" H Vert. OVERFLOW ORIFICE** C= 0.600 Limited to weir flow at low heads
#3	Primary	62.50'	**2.0" Vert. DRAINDOWN ORIFICE** C= 0.600 Limited to weir flow at low heads
#4	Primary	64.50'	**6.0" W x 6.0" H Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.0 cfs @ 12.66 hrs HW=64.90' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)
└**2=OVERFLOW ORIFICE** (Controls 0.0 cfs)
└**3=DRAINDOWN ORIFICE** (Orifice Controls 0.2 cfs @ 7.32 fps)
└**4=Orifice/Grate** (Orifice Controls 0.8 cfs @ 2.02 fps)

Summary for Pond 8.85P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 2.58" for 2-YR event
Inflow = 1.4 cfs @ 12.66 hrs, Volume= 38,681 cf
Outflow = 1.4 cfs @ 12.66 hrs, Volume= 38,681 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.66 hrs, Volume= 38,681 cf
Routed to Pond 8.96P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 61.11' @ 12.66 hrs
Flood Elev= 73.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.50'	**18.0" Round Culvert** L= 226.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.50' / 58.60' S= 0.0084 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.4 cfs @ 12.66 hrs HW=61.11' (Free Discharge)
1=Culvert (Inlet Controls 1.4 cfs @ 2.10 fps)

Summary for Pond 8.8P:

Inflow Area = 9,920 sf, 83.06% Impervious, Inflow Depth = 2.61" for 2-YR event
Inflow = 0.6 cfs @ 12.08 hrs, Volume= 2,155 cf
Outflow = 0.6 cfs @ 12.08 hrs, Volume= 2,155 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.6 cfs @ 12.08 hrs, Volume= 2,155 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.92' @ 12.08 hrs
Flood Elev= 75.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.50'	**15.0" Round Culvert** L= 23.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.50' / 70.00' S= 0.0217 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.6 cfs @ 12.08 hrs HW=70.92' (Free Discharge)
1=Culvert (Inlet Controls 0.6 cfs @ 1.74 fps)

Summary for Pond 8.96P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 2.58" for 2-YR event
Inflow = 1.4 cfs @ 12.66 hrs, Volume= 38,681 cf
Outflow = 1.4 cfs @ 12.66 hrs, Volume= 38,681 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.66 hrs, Volume= 38,681 cf
Routed to Pond 2.1P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 59.11' @ 12.66 hrs
Flood Elev= 68.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	58.50'	**18.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 58.50' / 56.01' S= 0.0311 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.4 cfs @ 12.66 hrs HW=59.11' (Free Discharge)
1=Culvert (Inlet Controls 1.4 cfs @ 2.10 fps)

Summary for Pond 8.9P:

Inflow Area = 25,750 sf, 95.03% Impervious, Inflow Depth = 2.79" for 2-YR event
Inflow = 1.7 cfs @ 12.08 hrs, Volume= 5,989 cf
Outflow = 1.7 cfs @ 12.08 hrs, Volume= 5,989 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.7 cfs @ 12.08 hrs, Volume= 5,989 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.24' @ 12.08 hrs
Flood Elev= 73.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.40'	**12.0" Round Culvert** L= 18.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.40' / 68.75' S= 0.0361 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.7 cfs @ 12.08 hrs HW=70.24' (Free Discharge)
1=Culvert (Inlet Controls 1.7 cfs @ 2.46 fps)

Summary for Pond 8P:

Inflow Area = 13,930 sf, 49.61% Impervious, Inflow Depth = 2.02" for 2-YR event
Inflow = 0.7 cfs @ 12.09 hrs, Volume= 2,349 cf
Outflow = 0.7 cfs @ 12.09 hrs, Volume= 2,349 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.09 hrs, Volume= 2,349 cf
Routed to Pond 6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 61.06' @ 12.09 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.58'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.58' / 59.88' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.7 cfs @ 12.09 hrs HW=61.06' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.7 cfs @ 1.86 fps)

Summary for Link POA-1: B-30

Inflow Area = 445,070 sf, 79.79% Impervious, Inflow Depth = 2.57" for 2-YR event
Inflow = 9.0 cfs @ 12.11 hrs, Volume= 95,489 cf
Primary = 9.0 cfs @ 12.11 hrs, Volume= 95,489 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-2:

Inflow Area = 20,660 sf, 50.80% Impervious, Inflow Depth = 2.24" for 2-YR event
Inflow = 1.2 cfs @ 12.09 hrs, Volume= 3,863 cf
Primary = 1.2 cfs @ 12.09 hrs, Volume= 3,863 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-3:

Inflow Area = 6,800 sf, 0.00% Impervious, Inflow Depth = 1.47" for 2-YR event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 832 cf
Primary = 0.3 cfs @ 12.09 hrs, Volume= 832 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-4:

Inflow Area = 45,290 sf, 74.03% Impervious, Inflow Depth = 2.45" for 2-YR event
Inflow = 2.3 cfs @ 12.15 hrs, Volume= 9,250 cf
Primary = 2.3 cfs @ 12.15 hrs, Volume= 9,250 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=34,840 sf 96.15% Impervious Runoff Depth=4.31"
Tc=6.0 min CN=WQ Runoff=3.6 cfs 12,507 cf

Subcatchment2.1S: Runoff Area=29,840 sf 69.86% Impervious Runoff Depth=3.92"
Tc=6.0 min CN=WQ Runoff=2.9 cfs 9,759 cf

Subcatchment3.1S: Runoff Area=1,450 sf 62.07% Impervious Runoff Depth=3.67"
Tc=6.0 min CN=WQ Runoff=0.1 cfs 444 cf

Subcatchment3.2S: Runoff Area=4,400 sf 52.27% Impervious Runoff Depth=3.50"
Tc=6.0 min CN=WQ Runoff=0.4 cfs 1,282 cf

Subcatchment3.3S: Runoff Area=7,500 sf 87.33% Impervious Runoff Depth=4.13"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,584 cf

Subcatchment3.4S: Runoff Area=5,170 sf 90.14% Impervious Runoff Depth=4.18"
Tc=6.0 min CN=WQ Runoff=0.5 cfs 1,803 cf

Subcatchment3.5S: Runoff Area=7,350 sf 88.71% Impervious Runoff Depth=4.16"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,547 cf

Subcatchment3.6S: Runoff Area=7,080 sf 100.00% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=98 Runoff=0.7 cfs 2,575 cf

Subcatchment3.7S: Runoff Area=6,280 sf 87.10% Impervious Runoff Depth=4.13"
Tc=6.0 min CN=WQ Runoff=0.6 cfs 2,161 cf

Subcatchment4.1S: Runoff Area=30,540 sf 50.79% Impervious Runoff Depth=3.65"
Flow Length=135' Tc=12.1 min CN=WQ Runoff=2.3 cfs 9,281 cf

Subcatchment4.2S: Runoff Area=11,860 sf 82.50% Impervious Runoff Depth=4.11"
Tc=6.0 min CN=WQ Runoff=1.2 cfs 4,061 cf

Subcatchment4.3S: Runoff Area=10,630 sf 88.66% Impervious Runoff Depth=4.16"
Tc=6.0 min CN=WQ Runoff=1.1 cfs 3,683 cf

Subcatchment4.4S: Runoff Area=11,040 sf 83.15% Impervious Runoff Depth=4.06"
Tc=6.0 min CN=WQ Runoff=1.1 cfs 3,733 cf

Subcatchment4.5S: Runoff Area=5,620 sf 62.10% Impervious Runoff Depth=3.68"
Tc=6.0 min CN=WQ Runoff=0.5 cfs 1,721 cf

Subcatchment4.6S: Runoff Area=9,090 sf 87.90% Impervious Runoff Depth=4.14"
Tc=6.0 min CN=WQ Runoff=0.9 cfs 3,139 cf

Subcatchment4.7S: Runoff Area=6,020 sf 100.00% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=98 Runoff=0.6 cfs 2,189 cf

Subcatchment4.8S: Runoff Area=11,850 sf 90.00% Impervious Runoff Depth=4.18"
Tc=6.0 min CN=WQ Runoff=1.2 cfs 4,130 cf

Subcatchment5.1S: Runoff Area=20,660 sf 50.80% Impervious Runoff Depth=3.65"
Tc=6.0 min CN=WQ Runoff=1.9 cfs 6,279 cf

Subcatchment6.1S: Runoff Area=50,370 sf 83.84% Impervious Runoff Depth=4.11"
Flow Length=280' Tc=14.5 min CN=WQ Runoff=3.8 cfs 17,267 cf

Subcatchment7.1S: Runoff Area=45,290 sf 74.03% Impervious Runoff Depth=3.87"
Flow Length=425' Tc=11.4 min CN=WQ Runoff=3.6 cfs 14,605 cf

Subcatchment8.10S: Runoff Area=8,440 sf 92.00% Impervious Runoff Depth=4.22"
Tc=6.0 min CN=WQ Runoff=0.8 cfs 2,967 cf

Subcatchment8.11S: Runoff Area=26,900 sf 87.62% Impervious Runoff Depth=4.14"
Tc=6.0 min CN=WQ Runoff=2.7 cfs 9,278 cf

Subcatchment8.12S: Runoff Area=2,340 sf 100.00% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=98 Runoff=0.2 cfs 851 cf

Subcatchment8.1S: Runoff Area=13,930 sf 49.61% Impervious Runoff Depth=3.35"
Tc=6.0 min CN=WQ Runoff=1.2 cfs 3,893 cf

Subcatchment8.2S: Runoff Area=19,350 sf 84.44% Impervious Runoff Depth=4.08"
Tc=6.0 min CN=WQ Runoff=1.9 cfs 6,581 cf

Subcatchment8.3S: Runoff Area=48,240 sf 91.04% Impervious Runoff Depth=4.20"
Tc=6.0 min CN=WQ Runoff=4.8 cfs 16,889 cf

Subcatchment8.4S: Runoff Area=22,420 sf 78.10% Impervious Runoff Depth=3.97"
Tc=6.0 min CN=WQ Runoff=2.1 cfs 7,410 cf

Subcatchment8.5S: Runoff Area=9,090 sf 0.00% Impervious Runoff Depth=2.55"
Tc=6.0 min CN=80 Runoff=0.6 cfs 1,929 cf

Subcatchment8.6S: Runoff Area=11,120 sf 70.91% Impervious Runoff Depth=3.84"
Tc=6.0 min CN=WQ Runoff=1.0 cfs 3,554 cf

Subcatchment8.7S: Runoff Area=5,080 sf 35.43% Impervious Runoff Depth=3.19"
Tc=6.0 min CN=WQ Runoff=0.4 cfs 1,351 cf

Subcatchment8.8S: Runoff Area=9,920 sf 83.06% Impervious Runoff Depth=4.06"
Tc=6.0 min CN=WQ Runoff=1.0 cfs 3,353 cf

Subcatchment8.9S: Runoff Area=17,310 sf 96.50% Impervious Runoff Depth=4.30"
Tc=6.0 min CN=WQ Runoff=1.8 cfs 6,203 cf

Subcatchment9.1S: Runoff Area=6,800 sf 0.00% Impervious Runoff Depth=2.74"
Tc=6.0 min CN=WQ Runoff=0.5 cfs 1,550 cf

Pond 1P: B-41 Peak Elev=59.00' Inflow=3.6 cfs 12,507 cf
18.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=3.6 cfs 12,507 cf

Pond 2.11P: 21P (CB-8436) Peak Elev=58.18' Inflow=12.4 cfs 103,791 cf
24.0" Round Culvert n=0.013 L=80.0' S=0.0024 '/' Outflow=12.4 cfs 103,791 cf

Pond 2.1P: Peak Elev=58.25' Inflow=12.4 cfs 103,791 cf
24.0" Round Culvert n=0.013 L=40.0' S=0.0032 '/' Outflow=12.4 cfs 103,791 cf

Pond 2P: B-34 Peak Elev=60.68' Inflow=10.5 cfs 43,426 cf
18.0" Round Culvert n=0.013 L=140.0' S=0.0116 '/' Outflow=10.5 cfs 43,426 cf

Pond 3.11P: Peak Elev=66.26' Inflow=0.5 cfs 1,726 cf
12.0" Round Culvert n=0.013 L=30.0' S=0.0117 '/' Outflow=0.5 cfs 1,726 cf

Pond 3.1P: Peak Elev=67.50' Inflow=0.1 cfs 444 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0200 '/' Outflow=0.1 cfs 444 cf

Pond 3.2P: Peak Elev=67.12' Inflow=0.4 cfs 1,282 cf
12.0" Round Culvert n=0.013 L=80.0' S=0.0109 '/' Outflow=0.4 cfs 1,282 cf

Pond 3.31P: Peak Elev=62.75' Inflow=3.8 cfs 13,396 cf
24.0" Round Culvert n=0.013 L=42.0' S=0.0119 '/' Outflow=3.8 cfs 13,396 cf

Pond 3.32P: WQ DET & SF-2 Peak Elev=62.94' Storage=3,395 cf Inflow=10.4 cfs 36,052 cf
Primary=0.3 cfs 17,012 cf Secondary=9.9 cfs 19,040 cf Outflow=10.2 cfs 36,052 cf

Pond 3.33P: PEAK DET Peak Elev=63.37' Storage=16,581 cf Inflow=9.9 cfs 19,040 cf
Outflow=0.2 cfs 19,039 cf

Pond 3.34P: Peak Elev=57.81' Inflow=0.5 cfs 36,051 cf
24.0" Round Culvert n=0.013 L=62.0' S=0.0102 '/' Outflow=0.5 cfs 36,051 cf

Pond 3.35P: Peak Elev=58.01' Inflow=12.8 cfs 139,843 cf
24.0" Round Culvert n=0.013 L=25.0' S=0.0028 '/' Outflow=12.8 cfs 139,843 cf

Pond 3.3P: Peak Elev=63.89' Inflow=3.8 cfs 13,396 cf
18.0" Round Culvert n=0.013 L=45.0' S=0.0111 '/' Outflow=3.8 cfs 13,396 cf

Pond 3.4P: Peak Elev=66.66' Inflow=0.5 cfs 1,803 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0160 '/' Outflow=0.5 cfs 1,803 cf

Pond 3.5P: Peak Elev=65.01' Inflow=1.3 cfs 4,708 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=1.3 cfs 4,708 cf

Pond 3.6P: Peak Elev=64.37' Inflow=2.1 cfs 7,283 cf
15.0" Round Culvert n=0.013 L=45.0' S=0.0111 '/' Outflow=2.1 cfs 7,283 cf

Pond 3.7P: Peak Elev=65.25' Inflow=0.6 cfs 2,161 cf
12.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=0.6 cfs 2,161 cf

Pond 3P: B-32 (CB-8031) Peak Elev=57.86' Inflow=12.8 cfs 139,843 cf
24.0" Round Culvert n=0.013 L=22.0' S=-0.0036 '/' Outflow=12.8 cfs 139,843 cf

Pond 4.21P: Peak Elev=67.64' Inflow=1.2 cfs 4,061 cf
15.0" Round Culvert n=0.013 L=82.0' S=0.0121 '/' Outflow=1.2 cfs 4,061 cf

Pond 4.2P: Peak Elev=68.79' Inflow=1.2 cfs 4,061 cf
15.0" Round Culvert n=0.013 L=104.0' S=0.0100 '/' Outflow=1.2 cfs 4,061 cf

Pond 4.3P: Peak Elev=66.59' Inflow=2.2 cfs 7,744 cf
18.0" Round Culvert n=0.013 L=105.0' S=0.0158 '/' Outflow=2.2 cfs 7,744 cf

Pond 4.4P: Peak Elev=68.52' Inflow=1.1 cfs 3,733 cf
12.0" Round Culvert n=0.013 L=83.0' S=0.0169 '/' Outflow=1.1 cfs 3,733 cf

Pond 4.5P: Peak Elev=69.50' Inflow=0.5 cfs 1,721 cf
12.0" Round Culvert n=0.013 L=122.0' S=0.0213 '/' Outflow=0.5 cfs 1,721 cf

Pond 4.6P: Peak Elev=66.83' Inflow=2.5 cfs 8,593 cf
18.0" Round Culvert n=0.013 L=77.0' S=0.0169 '/' Outflow=2.5 cfs 8,593 cf

Pond 4.7P: Peak Elev=64.84' Inflow=3.1 cfs 10,783 cf
18.0" Round Culvert x 2.00 n=0.013 L=22.0' S=0.0227 '/' Outflow=3.1 cfs 10,783 cf

Pond 4.81P: Peak Elev=64.49' Inflow=6.5 cfs 22,657 cf
24.0" Round Culvert n=0.013 L=15.0' S=0.0267 '/' Outflow=6.5 cfs 22,657 cf

Pond 4.8P: Peak Elev=64.54' Inflow=3.4 cfs 11,874 cf
24.0" Round Culvert n=0.013 L=35.0' S=0.0100 '/' Outflow=3.4 cfs 11,874 cf

Pond 4P: B-32A (CB-8323) Peak Elev=58.09' Inflow=15.0 cfs 149,124 cf
Primary=15.0 cfs 149,124 cf Secondary=0.0 cfs 0 cf Outflow=15.0 cfs 149,124 cf

Pond 5P: Peak Elev=60.77' Inflow=1.9 cfs 6,279 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=1.9 cfs 6,279 cf

Pond 6P: Peak Elev=64.94' Inflow=4.6 cfs 21,160 cf
Primary=4.6 cfs 21,160 cf Secondary=0.0 cfs 0 cf Outflow=4.6 cfs 21,160 cf

Pond 7P: Peak Elev=66.93' Inflow=3.6 cfs 14,605 cf
12.0" Round Culvert n=0.013 L=100.0' S=0.0100 '/' Outflow=3.6 cfs 14,605 cf

Pond 8.10P: Peak Elev=69.84' Inflow=0.8 cfs 2,967 cf
12.0" Round Culvert n=0.013 L=15.0' S=0.0367 '/' Outflow=0.8 cfs 2,967 cf

Pond 8.111P: Peak Elev=68.86' Inflow=2.9 cfs 10,129 cf
18.0" Round Culvert n=0.013 L=160.0' S=0.0103 '/' Outflow=2.9 cfs 10,129 cf

Pond 8.11P: Peak Elev=70.91' Inflow=2.7 cfs 9,278 cf
15.0" Round Culvert n=0.013 L=144.0' S=0.0122 '/' Outflow=2.7 cfs 9,278 cf

Pond 8.12P: Peak Elev=71.02' Inflow=0.2 cfs 851 cf
12.0" Round Culvert n=0.013 L=120.0' S=0.0121 '/' Outflow=0.2 cfs 851 cf

Pond 8.21P: Peak Elev=71.64' Inflow=1.9 cfs 6,581 cf
24.0" Round Culvert n=0.013 L=100.0' S=0.0240 '/' Outflow=1.9 cfs 6,581 cf

Pond 8.22P: Peak Elev=69.47' Inflow=4.0 cfs 13,991 cf
24.0" Round Culvert n=0.013 L=30.0' S=0.0133 '/' Outflow=4.0 cfs 13,991 cf

Pond 8.2P: Peak Elev=74.42' Inflow=1.9 cfs 6,581 cf
18.0" Round Culvert n=0.013 L=120.0' S=0.0183 '/' Outflow=1.9 cfs 6,581 cf

Pond 8.3P: Peak Elev=69.64' Inflow=9.5 cfs 32,809 cf
24.0" Round Culvert n=0.013 L=45.0' S=0.0178 '/' Outflow=9.5 cfs 32,809 cf

Pond 8.4P: Peak Elev=70.84' Inflow=2.1 cfs 7,410 cf
15.0" Round Culvert n=0.013 L=40.0' S=0.0163 '/' Outflow=2.1 cfs 7,410 cf

Pond 8.5P: Peak Elev=74.90' Inflow=0.6 cfs 1,929 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0220 '/' Outflow=0.6 cfs 1,929 cf

Pond 8.6P: Peak Elev=71.85' Inflow=1.0 cfs 3,554 cf
15.0" Round Culvert n=0.013 L=60.0' S=0.0200 '/' Outflow=1.0 cfs 3,554 cf

Pond 8.7P: Peak Elev=68.47' Inflow=10.9 cfs 37,713 cf
30.0" Round Culvert n=0.013 L=57.0' S=0.0114 '/' Outflow=10.9 cfs 37,713 cf

Pond 8.81P: Peak Elev=68.04' Inflow=14.5 cfs 50,237 cf
36.0" Round Culvert n=0.013 L=13.0' S=0.0192 '/' Outflow=14.5 cfs 50,237 cf

Pond 8.82P: Peak Elev=67.33' Inflow=17.4 cfs 60,366 cf
36.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=17.4 cfs 60,366 cf

Pond 8.83P: WQ DET & SF-1 Peak Elev=69.45' Storage=5,079 cf Inflow=17.4 cfs 60,366 cf
Primary=0.5 cfs 27,880 cf Secondary=16.9 cfs 32,486 cf Outflow=17.4 cfs 60,366 cf

Pond 8.84P: Peak DET-1 Peak Elev=66.00' Storage=21,025 cf Inflow=16.9 cfs 32,486 cf
Outflow=2.9 cfs 32,486 cf

Pond 8.85P: Peak Elev=61.50' Inflow=3.3 cfs 60,366 cf
18.0" Round Culvert n=0.013 L=226.0' S=0.0084 '/' Outflow=3.3 cfs 60,366 cf

Pond 8.8P: Peak Elev=71.03' Inflow=1.0 cfs 3,353 cf
15.0" Round Culvert n=0.013 L=23.0' S=0.0217 '/' Outflow=1.0 cfs 3,353 cf

Pond 8.96P: Peak Elev=59.50' Inflow=3.3 cfs 60,366 cf
18.0" Round Culvert n=0.013 L=80.0' S=0.0311 '/' Outflow=3.3 cfs 60,366 cf

Pond 8.9P: Peak Elev=70.67' Inflow=2.6 cfs 9,170 cf
12.0" Round Culvert n=0.013 L=18.0' S=0.0361 '/' Outflow=2.6 cfs 9,170 cf

Pond 8P: Peak Elev=61.22' Inflow=1.2 cfs 3,893 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0100 '/' Outflow=1.2 cfs 3,893 cf

Link POA-1: B-30 Inflow=15.0 cfs 149,124 cf
Primary=15.0 cfs 149,124 cf

Link POA-2: Inflow=1.9 cfs 6,279 cf
Primary=1.9 cfs 6,279 cf

Link POA-3: Inflow=0.5 cfs 1,550 cf
Primary=0.5 cfs 1,550 cf

Link POA-4: Inflow=3.6 cfs 14,605 cf
Primary=3.6 cfs 14,605 cf

Total Runoff Area = 517,820 sf Runoff Volume = 171,559 cf Average Runoff Depth = 3.98"
22.92% Pervious = 118,690 sf 77.08% Impervious = 399,130 sf

Summary for Subcatchment 1S:

Runoff = 3.6 cfs @ 12.08 hrs, Volume= 12,507 cf, Depth= 4.31"
Routed to Pond 1P : B-41

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
33,500	98	Paved parking, HSG D
1,340	84	50-75% Grass cover, Fair, HSG D
34,840		Weighted Average
1,340		3.85% Pervious Area
33,500		96.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 2.1S:

Runoff = 2.9 cfs @ 12.08 hrs, Volume= 9,759 cf, Depth= 3.92"
Routed to Pond 2P : B-34

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
20,845	98	Paved parking, HSG D
8,995	84	50-75% Grass cover, Fair, HSG D
29,840		Weighted Average
8,995		30.14% Pervious Area
20,845		69.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.1S:

Runoff = 0.1 cfs @ 12.08 hrs, Volume= 444 cf, Depth= 3.67"
Routed to Pond 3.1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
550	80	>75% Grass cover, Good, HSG D
900	98	Paved parking, HSG D
1,450		Weighted Average
550		37.93% Pervious Area
900		62.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.2S:

Runoff = 0.4 cfs @ 12.09 hrs, Volume= 1,282 cf, Depth= 3.50"
Routed to Pond 3.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
2,100	80	>75% Grass cover, Good, HSG D
2,300	98	Paved parking, HSG D
4,400		Weighted Average
2,100		47.73% Pervious Area
2,300		52.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.3S:

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,584 cf, Depth= 4.13"
Routed to Pond 3.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
950	80	>75% Grass cover, Good, HSG D
6,550	98	Paved parking, HSG D
7,500		Weighted Average
950		12.67% Pervious Area
6,550		87.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.4S:

Runoff = 0.5 cfs @ 12.08 hrs, Volume= 1,803 cf, Depth= 4.18"
Routed to Pond 3.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
510	80	>75% Grass cover, Good, HSG D
4,660	98	Paved parking, HSG D
5,170		Weighted Average
510		9.86% Pervious Area
4,660		90.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.5S:

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,547 cf, Depth= 4.16"
Routed to Pond 3.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
6,520	98	Paved parking, HSG D
830	80	>75% Grass cover, Good, HSG D
7,350		Weighted Average
830		11.29% Pervious Area
6,520		88.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.6S:

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,575 cf, Depth= 4.36"
Routed to Pond 3.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
7,080	98	Paved parking, HSG D
7,080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.7S:

Runoff = 0.6 cfs @ 12.08 hrs, Volume= 2,161 cf, Depth= 4.13"
Routed to Pond 3.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
810	80	>75% Grass cover, Good, HSG D
5,470	98	Paved parking, HSG D
6,280		Weighted Average
810		12.90% Pervious Area
5,470		87.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.1S:

Runoff = 2.3 cfs @ 12.16 hrs, Volume= 9,281 cf, Depth= 3.65"
Routed to Pond 4P : B-32A (CB-8323)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
12,790	98	Paved parking, HSG D
15,030	84	50-75% Grass cover, Fair, HSG D
2,720	98	Roofs, HSG D
30,540		Weighted Average
15,030		49.21% Pervious Area
15,510		50.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	110	0.0150	0.15		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.0	25	0.3300	8.62		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
12.1	135	Total			

Summary for Subcatchment 4.2S:

Runoff = 1.2 cfs @ 12.08 hrs, Volume= 4,061 cf, Depth= 4.11"
Routed to Pond 4.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
9,785	98	Paved parking, HSG D
2,075	84	50-75% Grass cover, Fair, HSG D
11,860		Weighted Average
2,075		17.50% Pervious Area
9,785		82.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.3S:

Runoff = 1.1 cfs @ 12.08 hrs, Volume= 3,683 cf, Depth= 4.16"
Routed to Pond 4.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
1,205	80	>75% Grass cover, Good, HSG D
9,425	98	Paved parking, HSG D
10,630		Weighted Average
1,205		11.34% Pervious Area
9,425		88.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.4S:

Runoff = 1.1 cfs @ 12.08 hrs, Volume= 3,733 cf, Depth= 4.06"
Routed to Pond 4.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
1,860	80	>75% Grass cover, Good, HSG D
9,180	98	Paved parking, HSG D
11,040		Weighted Average
1,860		16.85% Pervious Area
9,180		83.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.5S:

Runoff = 0.5 cfs @ 12.08 hrs, Volume= 1,721 cf, Depth= 3.68"
Routed to Pond 4.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
2,130	80	>75% Grass cover, Good, HSG D
3,490	98	Paved parking, HSG D
5,620		Weighted Average
2,130		37.90% Pervious Area
3,490		62.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.6S:

Runoff = 0.9 cfs @ 12.08 hrs, Volume= 3,139 cf, Depth= 4.14"
Routed to Pond 4.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
7,990	98	Paved parking, HSG D
1,100	80	>75% Grass cover, Good, HSG D
9,090		Weighted Average
1,100		12.10% Pervious Area
7,990		87.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.7S:

Runoff = 0.6 cfs @ 12.08 hrs, Volume= 2,189 cf, Depth= 4.36"
Routed to Pond 4.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
6,020	98	Paved parking, HSG D
6,020		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.8S:

Runoff = 1.2 cfs @ 12.08 hrs, Volume= 4,130 cf, Depth= 4.18"
Routed to Pond 4.8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
10,665	98	Paved parking, HSG D
1,185	80	>75% Grass cover, Good, HSG D
11,850		Weighted Average
1,185		10.00% Pervious Area
10,665		90.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 5.1S:

Runoff = 1.9 cfs @ 12.09 hrs, Volume= 6,279 cf, Depth= 3.65"
Routed to Pond 5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

	Area (sf)	CN	Description
*	10,495	98	Paved parking, HSG D
	10,165	84	50-75% Grass cover, Fair, HSG D
	20,660		Weighted Average
	10,165		49.20% Pervious Area
	10,495		50.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 6.1S:

Runoff = 3.8 cfs @ 12.19 hrs, Volume= 17,267 cf, Depth= 4.11"
Routed to Pond 6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
36,200	98	Paved parking, HSG D
6,030	98	Roofs, HSG D
1,670	79	50-75% Grass cover, Fair, HSG C
6,470	84	50-75% Grass cover, Fair, HSG D
50,370		Weighted Average
8,140		16.16% Pervious Area
42,230		83.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0700	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	65	0.0500	1.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.3	115	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
14.5	280	Total			

Summary for Subcatchment 7.1S:

Runoff = 3.6 cfs @ 12.15 hrs, Volume= 14,605 cf, Depth= 3.87"
Routed to Pond 7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
31,245	98	Paved parking, HSG D
11,760	79	50-75% Grass cover, Fair, HSG C
2,285	98	Unconnected pavement, HSG D
45,290		Weighted Average
11,760		25.97% Pervious Area
33,530		74.03% Impervious Area
2,285		6.81% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0200	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.7	75	0.0150	1.84		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.7	250	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
11.4	425	Total			

Summary for Subcatchment 8.10S:

Runoff = 0.8 cfs @ 12.08 hrs, Volume= 2,967 cf, Depth= 4.22"
Routed to Pond 8.10P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
675	80	>75% Grass cover, Good, HSG D
7,765	98	Paved parking, HSG D
8,440		Weighted Average
675		8.00% Pervious Area
7,765		92.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.11S:

Runoff = 2.7 cfs @ 12.08 hrs, Volume= 9,278 cf, Depth= 4.14"
Routed to Pond 8.11P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
3,330	80	>75% Grass cover, Good, HSG D
23,570	98	Paved parking, HSG D
26,900		Weighted Average
3,330		12.38% Pervious Area
23,570		87.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.12S:

Runoff = 0.2 cfs @ 12.08 hrs, Volume= 851 cf, Depth= 4.36"
Routed to Pond 8.12P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
2,340	98	Paved parking, HSG D
2,340		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.1S:

Runoff = 1.2 cfs @ 12.09 hrs, Volume= 3,893 cf, Depth= 3.35"
Routed to Pond 8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
6,910	98	Paved parking, HSG D
2,655	74	>75% Grass cover, Good, HSG C
4,365	80	>75% Grass cover, Good, HSG D
13,930		Weighted Average
7,020		50.39% Pervious Area
6,910		49.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.2S:

Runoff = 1.9 cfs @ 12.08 hrs, Volume= 6,581 cf, Depth= 4.08"
Routed to Pond 8.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
3,010	80	>75% Grass cover, Good, HSG D
16,340	98	Paved parking, HSG D
19,350		Weighted Average
3,010		15.56% Pervious Area
16,340		84.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.3S:

Runoff = 4.8 cfs @ 12.08 hrs, Volume= 16,889 cf, Depth= 4.20"
Routed to Pond 8.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
4,320	80	>75% Grass cover, Good, HSG D
43,920	98	Paved parking, HSG D
48,240		Weighted Average
4,320		8.96% Pervious Area
43,920		91.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.4S:

Runoff = 2.1 cfs @ 12.08 hrs, Volume= 7,410 cf, Depth= 3.97"
Routed to Pond 8.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
4,910	80	>75% Grass cover, Good, HSG D
17,510	98	Paved parking, HSG D
22,420		Weighted Average
4,910		21.90% Pervious Area
17,510		78.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.5S:

Runoff = 0.6 cfs @ 12.09 hrs, Volume= 1,929 cf, Depth= 2.55"
Routed to Pond 8.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
9,090	80	>75% Grass cover, Good, HSG D
9,090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.6S:

Runoff = 1.0 cfs @ 12.08 hrs, Volume= 3,554 cf, Depth= 3.84"
Routed to Pond 8.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
3,235	80	>75% Grass cover, Good, HSG D
7,885	98	Paved parking, HSG D
11,120		Weighted Average
3,235		29.09% Pervious Area
7,885		70.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.7S:

Runoff = 0.4 cfs @ 12.09 hrs, Volume= 1,351 cf, Depth= 3.19"
Routed to Pond 8.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
3,280	80	>75% Grass cover, Good, HSG D
1,800	98	Paved parking, HSG D
5,080		Weighted Average
3,280		64.57% Pervious Area
1,800		35.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.8S:

Runoff = 1.0 cfs @ 12.08 hrs, Volume= 3,353 cf, Depth= 4.06"
Routed to Pond 8.8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
1,680	80	>75% Grass cover, Good, HSG D
8,240	98	Paved parking, HSG D
9,920		Weighted Average
1,680		16.94% Pervious Area
8,240		83.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.9S:

Runoff = 1.8 cfs @ 12.08 hrs, Volume= 6,203 cf, Depth= 4.30"
Routed to Pond 8.9P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
605	80	>75% Grass cover, Good, HSG D
16,705	98	Paved parking, HSG D
17,310		Weighted Average
605		3.50% Pervious Area
16,705		96.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 9.1S:

Runoff = 0.5 cfs @ 12.09 hrs, Volume= 1,550 cf, Depth= 2.74"
Routed to Link POA-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
4,800	83	Woods, Poor, HSG D
2,000	80	>75% Grass cover, Good, HSG D
6,800		Weighted Average
6,800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Pond 1P: B-41

Inflow Area = 34,840 sf, 96.15% Impervious, Inflow Depth = 4.31" for 10-YR event
Inflow = 3.6 cfs @ 12.08 hrs, Volume= 12,507 cf
Outflow = 3.6 cfs @ 12.08 hrs, Volume= 12,507 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.6 cfs @ 12.08 hrs, Volume= 12,507 cf
Routed to Pond 2P : B-34

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.00' @ 12.08 hrs
Flood Elev= 63.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.90'	**18.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.90' / 57.75' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.6 cfs @ 12.08 hrs HW=59.00' (Free Discharge)
1=Culvert (Barrel Controls 3.6 cfs @ 3.57 fps)

Summary for Pond 2.11P: 21P (CB-8436)

Inflow Area = 309,190 sf, 80.71% Impervious, Inflow Depth = 4.03" for 10-YR event
Inflow = 12.4 cfs @ 12.11 hrs, Volume= 103,791 cf
Outflow = 12.4 cfs @ 12.11 hrs, Volume= 103,791 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.4 cfs @ 12.11 hrs, Volume= 103,791 cf
Routed to Pond 3.35P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.18' @ 12.11 hrs
Flood Elev= 68.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.88'	**24.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.88' / 55.69' S= 0.0024 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.4 cfs @ 12.11 hrs HW=58.18' (Free Discharge)
1=Culvert (Barrel Controls 12.4 cfs @ 4.29 fps)

Summary for Pond 2.1P:

Inflow Area = 309,190 sf, 80.71% Impervious, Inflow Depth = 4.03" for 10-YR event
Inflow = 12.4 cfs @ 12.11 hrs, Volume= 103,791 cf
Outflow = 12.4 cfs @ 12.11 hrs, Volume= 103,791 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.4 cfs @ 12.11 hrs, Volume= 103,791 cf
Routed to Pond 2.11P : 21P (CB-8436)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.25' @ 12.11 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	56.01'	**24.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 56.01' / 55.88' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.4 cfs @ 12.11 hrs HW=58.24' (Free Discharge)
1=Culvert (Barrel Controls 12.4 cfs @ 4.41 fps)

Summary for Pond 2P: B-34

Inflow Area = 128,980 sf, 80.23% Impervious, Inflow Depth = 4.04" for 10-YR event
Inflow = 10.5 cfs @ 12.10 hrs, Volume= 43,426 cf
Outflow = 10.5 cfs @ 12.10 hrs, Volume= 43,426 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.5 cfs @ 12.10 hrs, Volume= 43,426 cf
Routed to Pond 2.1P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 60.68' @ 12.10 hrs
Flood Elev= 63.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**18.0" Round Culvert** L= 140.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 55.88' S= 0.0116 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=10.5 cfs @ 12.10 hrs HW=60.68' (Free Discharge)
1=Culvert (Inlet Controls 10.5 cfs @ 5.93 fps)

Summary for Pond 3.11P:

Inflow Area = 5,850 sf, 54.70% Impervious, Inflow Depth = 3.54" for 10-YR event
Inflow = 0.5 cfs @ 12.09 hrs, Volume= 1,726 cf
Outflow = 0.5 cfs @ 12.09 hrs, Volume= 1,726 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.09 hrs, Volume= 1,726 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 66.26' @ 12.09 hrs
Flood Elev= 71.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.85'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.85' / 65.50' S= 0.0117 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.5 cfs @ 12.09 hrs HW=66.26' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.5 cfs @ 1.71 fps)

Summary for Pond 3.1P:

Inflow Area = 1,450 sf, 62.07% Impervious, Inflow Depth = 3.67" for 10-YR event
Inflow = 0.1 cfs @ 12.08 hrs, Volume= 444 cf
Outflow = 0.1 cfs @ 12.08 hrs, Volume= 444 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.1 cfs @ 12.08 hrs, Volume= 444 cf
Routed to Pond 3.11P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.50' @ 12.08 hrs
Flood Elev= 72.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.30'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.30' / 65.90' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.1 cfs @ 12.08 hrs HW=67.50' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.1 cfs @ 1.19 fps)

Summary for Pond 3.2P:

Inflow Area = 4,400 sf, 52.27% Impervious, Inflow Depth = 3.50" for 10-YR event
Inflow = 0.4 cfs @ 12.09 hrs, Volume= 1,282 cf
Outflow = 0.4 cfs @ 12.09 hrs, Volume= 1,282 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.4 cfs @ 12.09 hrs, Volume= 1,282 cf
Routed to Pond 3.11P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.12' @ 12.09 hrs
Flood Elev= 70.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.77'	**12.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.77' / 65.90' S= 0.0109 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.4 cfs @ 12.09 hrs HW=67.12' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.4 cfs @ 1.58 fps)

Summary for Pond 3.31P:

Inflow Area = 39,230 sf, 85.34% Impervious, Inflow Depth = 4.10" for 10-YR event
Inflow = 3.8 cfs @ 12.08 hrs, Volume= 13,396 cf
Outflow = 3.8 cfs @ 12.08 hrs, Volume= 13,396 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.8 cfs @ 12.08 hrs, Volume= 13,396 cf
Routed to Pond 3.32P : WQ DET & SF-2

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.75' @ 12.08 hrs
Flood Elev= 70.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	61.80'	**24.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 61.80' / 61.30' S= 0.0119 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.8 cfs @ 12.08 hrs HW=62.75' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.8 cfs @ 2.62 fps)

Summary for Pond 3.32P: WQ DET & SF-2

Inflow Area = 105,340 sf, 85.47% Impervious, Inflow Depth = 4.11" for 10-YR event
Inflow = 10.4 cfs @ 12.08 hrs, Volume= 36,052 cf
Outflow = 10.2 cfs @ 12.10 hrs, Volume= 36,052 cf, Atten= 2%, Lag= 1.0 min
Primary = 0.3 cfs @ 12.10 hrs, Volume= 17,012 cf
Routed to Pond 3.34P :
Secondary = 9.9 cfs @ 12.10 hrs, Volume= 19,040 cf
Routed to Pond 3.33P : PEAK DET

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.94' @ 12.10 hrs Surf.Area= 1,634 sf Storage= 3,395 cf

Plug-Flow detention time= 48.5 min calculated for 36,046 cf (100% of inflow)
Center-of-Mass det. time= 48.5 min (804.8 - 756.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	60.00'	0 cf	**8.00'W x 204.25'L x 9.00'H Field A** 14,706 cf Overall - 10,166 cf Embedded = 4,540 cf x 0.0% Voids
#2A	60.00'	10,166 cf	**CMP Round 96** x 9 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +14.25' x 50.27 sf x 1 rows 8.00' Header x 50.27 sf x 1 = 402.1 cf Inside
		10,166 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	60.00'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 60.00' / 59.95' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	57.70'	**Tube/Siphon/Float Valve X 11.00** 0.668" Diameter, C= 0.600, 0.263" Trickle Diameter Starts@60.45'
#3	Primary	57.70'	**12.0" Round 12" Stormfilter Outlet** L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.70' / 57.60' S= 0.0077 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Secondary	62.40'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 2.40 2.48 2.56 2.64 2.72 2.80 2.88 2.96 3.04 3.12 3.20 3.28 3.36 3.44 3.52 3.60 3.68 3.76 3.84 3.92 4.00 4.08 4.16 4.24 4.32 4.40 4.48 4.56 4.64 4.72 4.80 4.88 4.96 5.04 5.12 5.20 5.28 5.36 5.44 5.52 5.60 5.68 5.76 5.84 5.92 6.00 6.08 6.16 6.24 6.32 6.40 6.48 6.56 6.64 6.72 6.80 6.88 6.96 7.04 7.12 7.20 7.28 7.36 7.44 7.52 7.60 7.68 7.76 7.84 7.92 8.00 Width (feet) 7.33 7.40 7.46 7.52 7.58 7.63 7.68 7.72 7.77 7.80 7.84 7.87 7.90 7.92 7.94 7.96 7.97 7.99 7.99 8.00 8.00 8.00 7.99 7.99 7.97 7.96 7.94 7.92 7.90 7.87 7.84 7.80 7.77 7.72 7.68 7.63 7.58 7.52 7.46 7.40 7.33 7.26 7.18 7.10 7.02 6.93 6.83 6.73 6.63 6.52 6.40 6.28 6.15 6.01 5.87 5.71 5.55 5.38 5.20 5.01 4.80 4.58 4.34 4.08 3.80 3.49 3.14 2.73 2.24 1.59 0.00

Primary OutFlow Max=0.3 cfs @ 12.10 hrs HW=62.94' (Free Discharge)
└**3=12" Stormfilter Outlet** (Passes 0.3 cfs of 6.5 cfs potential flow)
└**2=Tube/Siphon/Float Valve** (Orifice Controls 0.3 cfs @ 11.03 fps)
└**1=Culvert** (Passes 0.3 cfs of 5.9 cfs potential flow)

Secondary OutFlow Max=9.9 cfs @ 12.10 hrs HW=62.94' (Free Discharge)
└**4=Custom Weir/Orifice** (Weir Controls 9.9 cfs @ 2.40 fps)

Summary for Pond 3.33P: PEAK DET

Inflow = 9.9 cfs @ 12.10 hrs, Volume= 19,040 cf
Outflow = 0.2 cfs @ 14.65 hrs, Volume= 19,039 cf, Atten= 98%, Lag= 152.8 min
Primary = 0.2 cfs @ 14.65 hrs, Volume= 19,039 cf
Routed to Pond 3.34P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 63.37' @ 14.65 hrs Surf.Area= 8,318 sf Storage= 16,581 cf

Plug-Flow detention time= 947.8 min calculated for 19,036 cf (100% of inflow)
Center-of-Mass det. time= 948.1 min (1,691.2 - 743.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	60.00'	0 cf	**63.00'W x 124.00'L x 8.00'H Field A** 62,496 cf Overall - 38,152 cf Embedded = 24,344 cf x 0.0% Voids
#2A	60.00'	38,152 cf	**CMP Round 96** x 30 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +16.00' x 50.27 sf x 6 rows 63.00' Header x 50.27 sf x 1 = 3,166.7 cf Inside
#3	60.00'	3,217 cf	**CMP Round 96** x 3 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +4.00' x 50.27 sf x 1 rows
		41,368 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**2.0" Vert. DRAINDOWN ORIFICE** C= 0.600 Limited to weir flow at low heads
#2	Primary	65.50'	**0.5' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Primary	63.50'	**36.0" W x 6.0" H Vert. CAPACITY ORIFICE** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.2 cfs @ 14.65 hrs HW=63.37' (Free Discharge)
- **1=DRAINDOWN ORIFICE** (Orifice Controls 0.2 cfs @ 8.73 fps)
- **2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)
- **3=CAPACITY ORIFICE** (Controls 0.0 cfs)

Summary for Pond 3.34P:

Inflow Area = 105,340 sf, 85.47% Impervious, Inflow Depth > 4.11" for 10-YR event
Inflow = 0.5 cfs @ 14.43 hrs, Volume= 36,051 cf
Outflow = 0.5 cfs @ 14.43 hrs, Volume= 36,051 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 14.43 hrs, Volume= 36,051 cf
Routed to Pond 3.35P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.81' @ 14.43 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**24.0" Round Culvert** L= 62.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 56.87' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.5 cfs @ 14.43 hrs HW=57.81' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.5 cfs @ 1.50 fps)

Summary for Pond 3.35P:

Inflow Area = 414,530 sf, 81.92% Impervious, Inflow Depth = 4.05" for 10-YR event
Inflow = 12.8 cfs @ 12.11 hrs, Volume= 139,843 cf
Outflow = 12.8 cfs @ 12.11 hrs, Volume= 139,843 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.8 cfs @ 12.11 hrs, Volume= 139,843 cf
Routed to Pond 3P : B-32 (CB-8031)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.01' @ 12.11 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.69'	**24.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.69' / 55.62' S= 0.0028 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.8 cfs @ 12.11 hrs HW=58.01' (Free Discharge)
└**1=Culvert** (Barrel Controls 12.8 cfs @ 4.42 fps)

Summary for Pond 3.3P:

Inflow Area = 39,230 sf, 85.34% Impervious, Inflow Depth = 4.10" for 10-YR event
Inflow = 3.8 cfs @ 12.08 hrs, Volume= 13,396 cf
Outflow = 3.8 cfs @ 12.08 hrs, Volume= 13,396 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.8 cfs @ 12.08 hrs, Volume= 13,396 cf
Routed to Pond 3.31P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 63.89' @ 12.08 hrs
Flood Elev= 69.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.80'	**18.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.80' / 62.30' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.8 cfs @ 12.08 hrs HW=63.89' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.8 cfs @ 2.80 fps)

Summary for Pond 3.4P:

Inflow Area = 5,170 sf, 90.14% Impervious, Inflow Depth = 4.18" for 10-YR event
Inflow = 0.5 cfs @ 12.08 hrs, Volume= 1,803 cf
Outflow = 0.5 cfs @ 12.08 hrs, Volume= 1,803 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.08 hrs, Volume= 1,803 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.66' @ 12.08 hrs
Flood Elev= 69.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.25'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.25' / 65.45' S= 0.0160 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.5 cfs @ 12.08 hrs HW=66.66' (Free Discharge)
1=Culvert (Inlet Controls 0.5 cfs @ 1.71 fps)

Summary for Pond 3.5P:

Inflow Area = 13,630 sf, 87.97% Impervious, Inflow Depth = 4.15" for 10-YR event
Inflow = 1.3 cfs @ 12.08 hrs, Volume= 4,708 cf
Outflow = 1.3 cfs @ 12.08 hrs, Volume= 4,708 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.3 cfs @ 12.08 hrs, Volume= 4,708 cf
Routed to Pond 3.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 65.01' @ 12.08 hrs
Flood Elev= 68.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.30'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.30' / 63.80' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.3 cfs @ 12.08 hrs HW=65.01' (Free Discharge)
1=Culvert (Inlet Controls 1.3 cfs @ 2.26 fps)

Summary for Pond 3.6P:

Inflow Area = 20,710 sf, 92.08% Impervious, Inflow Depth = 4.22" for 10-YR event
Inflow = 2.1 cfs @ 12.08 hrs, Volume= 7,283 cf
Outflow = 2.1 cfs @ 12.08 hrs, Volume= 7,283 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.1 cfs @ 12.08 hrs, Volume= 7,283 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 64.37' @ 12.08 hrs
Flood Elev= 69.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.55'	**15.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.55' / 63.05' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.1 cfs @ 12.08 hrs HW=64.37' (Free Discharge)
1=Culvert (Inlet Controls 2.1 cfs @ 2.43 fps)

Summary for Pond 3.7P:

Inflow Area = 6,280 sf, 87.10% Impervious, Inflow Depth = 4.13" for 10-YR event
Inflow = 0.6 cfs @ 12.08 hrs, Volume= 2,161 cf
Outflow = 0.6 cfs @ 12.08 hrs, Volume= 2,161 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.6 cfs @ 12.08 hrs, Volume= 2,161 cf
Routed to Pond 3.5P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 65.25' @ 12.08 hrs
Flood Elev= 68.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.80'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.80' / 64.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.6 cfs @ 12.08 hrs HW=65.25' (Free Discharge)
1=Culvert (Inlet Controls 0.6 cfs @ 1.80 fps)

Summary for Pond 3P: B-32 (CB-8031)

Inflow Area = 414,530 sf, 81.92% Impervious, Inflow Depth = 4.05" for 10-YR event
Inflow = 12.8 cfs @ 12.11 hrs, Volume= 139,843 cf
Outflow = 12.8 cfs @ 12.11 hrs, Volume= 139,843 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.8 cfs @ 12.11 hrs, Volume= 139,843 cf
Routed to Pond 4P : B-32A (CB-8323)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 57.86' @ 12.11 hrs
Flood Elev= 66.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.44' / 55.52' S= -0.0036 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.8 cfs @ 12.11 hrs HW=57.85' (Free Discharge)
└**1=Culvert** (Barrel Controls 12.8 cfs @ 4.28 fps)

Summary for Pond 4.21P:

Inflow Area = 11,860 sf, 82.50% Impervious, Inflow Depth = 4.11" for 10-YR event
Inflow = 1.2 cfs @ 12.08 hrs, Volume= 4,061 cf
Outflow = 1.2 cfs @ 12.08 hrs, Volume= 4,061 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.08 hrs, Volume= 4,061 cf
Routed to Pond 4.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.64' @ 12.08 hrs
Flood Elev= 72.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.05'	**15.0" Round Culvert** L= 82.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.05' / 66.06' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.2 cfs @ 12.08 hrs HW=67.64' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.2 cfs @ 2.06 fps)

Summary for Pond 4.2P:

Inflow Area = 11,860 sf, 82.50% Impervious, Inflow Depth = 4.11" for 10-YR event
Inflow = 1.2 cfs @ 12.08 hrs, Volume= 4,061 cf
Outflow = 1.2 cfs @ 12.08 hrs, Volume= 4,061 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.08 hrs, Volume= 4,061 cf
Routed to Pond 4.21P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.79' @ 12.08 hrs
Flood Elev= 72.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.20'	**15.0" Round Culvert** L= 104.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.20' / 67.16' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.2 cfs @ 12.08 hrs HW=68.79' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.2 cfs @ 2.06 fps)

Summary for Pond 4.3P:

Inflow Area = 22,490 sf, 85.42% Impervious, Inflow Depth = 4.13" for 10-YR event
Inflow = 2.2 cfs @ 12.08 hrs, Volume= 7,744 cf
Outflow = 2.2 cfs @ 12.08 hrs, Volume= 7,744 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.2 cfs @ 12.08 hrs, Volume= 7,744 cf
Routed to Pond 4.8P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.59' @ 12.08 hrs
Flood Elev= 70.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.81'	**18.0" Round Culvert** L= 105.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.81' / 64.15' S= 0.0158 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.2 cfs @ 12.08 hrs HW=66.59' (Free Discharge)
1=Culvert (Inlet Controls 2.2 cfs @ 2.38 fps)

Summary for Pond 4.4P:

Inflow Area = 11,040 sf, 83.15% Impervious, Inflow Depth = 4.06" for 10-YR event
Inflow = 1.1 cfs @ 12.08 hrs, Volume= 3,733 cf
Outflow = 1.1 cfs @ 12.08 hrs, Volume= 3,733 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.1 cfs @ 12.08 hrs, Volume= 3,733 cf
Routed to Pond 4.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.52' @ 12.08 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.90'	**12.0" Round Culvert** L= 83.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.90' / 66.50' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.1 cfs @ 12.08 hrs HW=68.52' (Free Discharge)
1=Culvert (Inlet Controls 1.1 cfs @ 2.11 fps)

Summary for Pond 4.5P:

Inflow Area = 5,620 sf, 62.10% Impervious, Inflow Depth = 3.68" for 10-YR event
Inflow = 0.5 cfs @ 12.08 hrs, Volume= 1,721 cf
Outflow = 0.5 cfs @ 12.08 hrs, Volume= 1,721 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.08 hrs, Volume= 1,721 cf
Routed to Pond 4.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 69.50' @ 12.08 hrs
Flood Elev= 72.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.10'	**12.0" Round Culvert** L= 122.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.10' / 66.50' S= 0.0213 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.5 cfs @ 12.08 hrs HW=69.50' (Free Discharge)
1=Culvert (Inlet Controls 0.5 cfs @ 1.71 fps)

Summary for Pond 4.6P:

Inflow Area = 25,750 sf, 80.23% Impervious, Inflow Depth = 4.00" for 10-YR event
Inflow = 2.5 cfs @ 12.08 hrs, Volume= 8,593 cf
Outflow = 2.5 cfs @ 12.08 hrs, Volume= 8,593 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.5 cfs @ 12.08 hrs, Volume= 8,593 cf
Routed to Pond 4.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.83' @ 12.08 hrs
Flood Elev= 70.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.00'	**18.0" Round Culvert** L= 77.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.00' / 64.70' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.5 cfs @ 12.08 hrs HW=66.83' (Free Discharge)
1=Culvert (Inlet Controls 2.5 cfs @ 2.45 fps)

Summary for Pond 4.7P:

Inflow Area = 31,770 sf, 83.98% Impervious, Inflow Depth = 4.07" for 10-YR event
Inflow = 3.1 cfs @ 12.08 hrs, Volume= 10,783 cf
Outflow = 3.1 cfs @ 12.08 hrs, Volume= 10,783 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.1 cfs @ 12.08 hrs, Volume= 10,783 cf
Routed to Pond 4.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.84' @ 12.08 hrs
Flood Elev= 69.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.20'	**18.0" Round Culvert X 2.00** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.20' / 63.70' S= 0.0227 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.1 cfs @ 12.08 hrs HW=64.84' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.1 cfs @ 2.15 fps)

Summary for Pond 4.81P:

Inflow Area = 66,110 sf, 85.55% Impervious, Inflow Depth = 4.11" for 10-YR event
Inflow = 6.5 cfs @ 12.08 hrs, Volume= 22,657 cf
Outflow = 6.5 cfs @ 12.08 hrs, Volume= 22,657 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.5 cfs @ 12.08 hrs, Volume= 22,657 cf
Routed to Pond 3.32P : WQ DET & SF-2

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.49' @ 12.08 hrs
Flood Elev= 69.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.20'	**24.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.20' / 62.80' S= 0.0267 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.5 cfs @ 12.08 hrs HW=64.48' (Free Discharge)
└**1=Culvert** (Inlet Controls 6.5 cfs @ 3.05 fps)

Summary for Pond 4.8P:

Inflow Area = 34,340 sf, 87.00% Impervious, Inflow Depth = 4.15" for 10-YR event
Inflow = 3.4 cfs @ 12.08 hrs, Volume= 11,874 cf
Outflow = 3.4 cfs @ 12.08 hrs, Volume= 11,874 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.4 cfs @ 12.08 hrs, Volume= 11,874 cf
Routed to Pond 4.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.54' @ 12.08 hrs
Flood Elev= 68.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.65'	**24.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.65' / 63.30' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.4 cfs @ 12.08 hrs HW=64.54' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.4 cfs @ 2.53 fps)

Summary for Pond 4P: B-32A (CB-8323)

Inflow Area = 445,070 sf, 79.79% Impervious, Inflow Depth = 4.02" for 10-YR event
Inflow = 15.0 cfs @ 12.12 hrs, Volume= 149,124 cf
Outflow = 15.0 cfs @ 12.12 hrs, Volume= 149,124 cf, Atten= 0%, Lag= 0.0 min
Primary = 15.0 cfs @ 12.12 hrs, Volume= 149,124 cf
Routed to Link POA-1 : B-30
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA-1 : B-30

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.09' @ 12.12 hrs
Flood Elev= 59.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.52' / 54.90' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	59.39'	**15.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=14.9 cfs @ 12.12 hrs HW=58.09' (Free Discharge)
1=Culvert (Inlet Controls 14.9 cfs @ 4.76 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=55.52' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond 5P:

Inflow Area = 20,660 sf, 50.80% Impervious, Inflow Depth = 3.65" for 10-YR event
Inflow = 1.9 cfs @ 12.09 hrs, Volume= 6,279 cf
Outflow = 1.9 cfs @ 12.09 hrs, Volume= 6,279 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.9 cfs @ 12.09 hrs, Volume= 6,279 cf
Routed to Link POA-2 :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 60.77' @ 12.09 hrs
Flood Elev= 66.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 59.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.9 cfs @ 12.09 hrs HW=60.77' (Free Discharge)
1=Culvert (Inlet Controls 1.9 cfs @ 2.36 fps)

Summary for Pond 6P:

Inflow Area = 64,300 sf, 76.42% Impervious, Inflow Depth = 3.95" for 10-YR event
Inflow = 4.6 cfs @ 12.16 hrs, Volume= 21,160 cf
Outflow = 4.6 cfs @ 12.16 hrs, Volume= 21,160 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.6 cfs @ 12.16 hrs, Volume= 21,160 cf
Routed to Pond 2P : B-34
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 2P : B-34

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.94' @ 12.16 hrs
Flood Elev= 71.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.08'	**12.0" Round Culvert** L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.08' / 57.67' S= 0.0147 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	70.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=4.6 cfs @ 12.16 hrs HW=64.94' (Free Discharge)
1=Culvert (Inlet Controls 4.6 cfs @ 5.84 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=62.08' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond 7P:

Inflow Area = 45,290 sf, 74.03% Impervious, Inflow Depth = 3.87" for 10-YR event
Inflow = 3.6 cfs @ 12.15 hrs, Volume= 14,605 cf
Outflow = 3.6 cfs @ 12.15 hrs, Volume= 14,605 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.6 cfs @ 12.15 hrs, Volume= 14,605 cf
Routed to Link POA-4 :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.93' @ 12.15 hrs
Flood Elev= 69.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.00'	**12.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.00' / 64.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.6 cfs @ 12.15 hrs HW=66.92' (Free Discharge)
1=Culvert (Inlet Controls 3.6 cfs @ 4.54 fps)

Summary for Pond 8.10P:

Inflow Area = 8,440 sf, 92.00% Impervious, Inflow Depth = 4.22" for 10-YR event
Inflow = 0.8 cfs @ 12.08 hrs, Volume= 2,967 cf
Outflow = 0.8 cfs @ 12.08 hrs, Volume= 2,967 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.08 hrs, Volume= 2,967 cf
Routed to Pond 8.9P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.84' @ 12.08 hrs
Flood Elev= 72.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.30'	**12.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.30' / 68.75' S= 0.0367 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.8 cfs @ 12.08 hrs HW=69.84' (Free Discharge)
1=Culvert (Inlet Controls 0.8 cfs @ 1.97 fps)

Summary for Pond 8.111P:

Inflow Area = 29,240 sf, 88.61% Impervious, Inflow Depth = 4.16" for 10-YR event
Inflow = 2.9 cfs @ 12.08 hrs, Volume= 10,129 cf
Outflow = 2.9 cfs @ 12.08 hrs, Volume= 10,129 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.9 cfs @ 12.08 hrs, Volume= 10,129 cf
Routed to Pond 8.82P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.86' @ 12.08 hrs
Flood Elev= 74.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.95'	**18.0" Round Culvert** L= 160.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.95' / 66.30' S= 0.0103 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.9 cfs @ 12.08 hrs HW=68.86' (Free Discharge)
1=Culvert (Inlet Controls 2.9 cfs @ 2.57 fps)

Summary for Pond 8.11P:

Inflow Area = 26,900 sf, 87.62% Impervious, Inflow Depth = 4.14" for 10-YR event
Inflow = 2.7 cfs @ 12.08 hrs, Volume= 9,278 cf
Outflow = 2.7 cfs @ 12.08 hrs, Volume= 9,278 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.7 cfs @ 12.08 hrs, Volume= 9,278 cf
Routed to Pond 8.111P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 70.91' @ 12.08 hrs
Flood Elev= 73.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.95'	**15.0" Round Culvert** L= 144.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.95' / 68.20' S= 0.0122 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.7 cfs @ 12.08 hrs HW=70.91' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 2.7 cfs @ 2.63 fps)

Summary for Pond 8.12P:

Inflow Area = 2,340 sf,100.00% Impervious, Inflow Depth = 4.36" for 10-YR event
Inflow = 0.2 cfs @ 12.08 hrs, Volume= 851 cf
Outflow = 0.2 cfs @ 12.08 hrs, Volume= 851 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.08 hrs, Volume= 851 cf
Routed to Pond 8.111P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.02' @ 12.08 hrs
Flood Elev= 74.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.75'	**12.0" Round Culvert** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.75' / 69.30' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.2 cfs @ 12.08 hrs HW=71.02' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.2 cfs @ 1.40 fps)

Summary for Pond 8.21P:

Inflow Area = 19,350 sf, 84.44% Impervious, Inflow Depth = 4.08" for 10-YR event
Inflow = 1.9 cfs @ 12.08 hrs, Volume= 6,581 cf
Outflow = 1.9 cfs @ 12.08 hrs, Volume= 6,581 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.9 cfs @ 12.08 hrs, Volume= 6,581 cf
Routed to Pond 8.22P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.64' @ 12.08 hrs
Flood Elev= 76.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	**24.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.00' / 68.60' S= 0.0240 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.9 cfs @ 12.08 hrs HW=71.64' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.9 cfs @ 2.16 fps)

Summary for Pond 8.22P:

Inflow Area = 41,770 sf, 81.04% Impervious, Inflow Depth = 4.02" for 10-YR event
Inflow = 4.0 cfs @ 12.08 hrs, Volume= 13,991 cf
Outflow = 4.0 cfs @ 12.08 hrs, Volume= 13,991 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.0 cfs @ 12.08 hrs, Volume= 13,991 cf
Routed to Pond 8.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.47' @ 12.08 hrs
Flood Elev= 75.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.50'	**24.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.50' / 68.10' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.0 cfs @ 12.08 hrs HW=69.47' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.0 cfs @ 2.65 fps)

Summary for Pond 8.2P:

Inflow Area = 19,350 sf, 84.44% Impervious, Inflow Depth = 4.08" for 10-YR event
Inflow = 1.9 cfs @ 12.08 hrs, Volume= 6,581 cf
Outflow = 1.9 cfs @ 12.08 hrs, Volume= 6,581 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.9 cfs @ 12.08 hrs, Volume= 6,581 cf
Routed to Pond 8.21P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 74.42' @ 12.08 hrs
Flood Elev= 79.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.70'	**18.0" Round Culvert** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.70' / 71.50' S= 0.0183 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.9 cfs @ 12.08 hrs HW=74.41' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.9 cfs @ 2.27 fps)

Summary for Pond 8.3P:

Inflow Area = 99,100 sf, 78.48% Impervious, Inflow Depth = 3.97" for 10-YR event
Inflow = 9.5 cfs @ 12.08 hrs, Volume= 32,809 cf
Outflow = 9.5 cfs @ 12.08 hrs, Volume= 32,809 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.5 cfs @ 12.08 hrs, Volume= 32,809 cf
Routed to Pond 8.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.64' @ 12.08 hrs
Flood Elev= 74.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.00'	**24.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.00' / 67.20' S= 0.0178 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=9.5 cfs @ 12.08 hrs HW=69.64' (Free Discharge)
1=Culvert (Inlet Controls 9.5 cfs @ 3.44 fps)

Summary for Pond 8.4P:

Inflow Area = 22,420 sf, 78.10% Impervious, Inflow Depth = 3.97" for 10-YR event
Inflow = 2.1 cfs @ 12.08 hrs, Volume= 7,410 cf
Outflow = 2.1 cfs @ 12.08 hrs, Volume= 7,410 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.1 cfs @ 12.08 hrs, Volume= 7,410 cf
Routed to Pond 8.22P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.84' @ 12.08 hrs
Flood Elev= 75.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**15.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.00' / 69.35' S= 0.0163 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.1 cfs @ 12.08 hrs HW=70.83' (Free Discharge)
1=Culvert (Inlet Controls 2.1 cfs @ 2.46 fps)

Summary for Pond 8.5P:

Inflow Area = 9,090 sf, 0.00% Impervious, Inflow Depth = 2.55" for 10-YR event
Inflow = 0.6 cfs @ 12.09 hrs, Volume= 1,929 cf
Outflow = 0.6 cfs @ 12.09 hrs, Volume= 1,929 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.6 cfs @ 12.09 hrs, Volume= 1,929 cf
Routed to Pond 8.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 74.90' @ 12.09 hrs
Flood Elev= 77.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.45'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.45' / 73.35' S= 0.0220 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.6 cfs @ 12.09 hrs HW=74.90' (Free Discharge)
1=Culvert (Inlet Controls 0.6 cfs @ 1.81 fps)

Summary for Pond 8.6P:

Inflow Area = 11,120 sf, 70.91% Impervious, Inflow Depth = 3.84" for 10-YR event
Inflow = 1.0 cfs @ 12.08 hrs, Volume= 3,554 cf
Outflow = 1.0 cfs @ 12.08 hrs, Volume= 3,554 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.0 cfs @ 12.08 hrs, Volume= 3,554 cf
Routed to Pond 8.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.85' @ 12.08 hrs
Flood Elev= 75.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.30'	**15.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.30' / 70.10' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.0 cfs @ 12.08 hrs HW=71.85' (Free Discharge)
1=Culvert (Inlet Controls 1.0 cfs @ 1.99 fps)

Summary for Pond 8.7P:

Inflow Area = 115,300 sf, 75.85% Impervious, Inflow Depth = 3.93" for 10-YR event
Inflow = 10.9 cfs @ 12.08 hrs, Volume= 37,713 cf
Outflow = 10.9 cfs @ 12.08 hrs, Volume= 37,713 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.9 cfs @ 12.08 hrs, Volume= 37,713 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.47' @ 12.08 hrs
Flood Elev= 73.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.90'	**30.0" Round Culvert** L= 57.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.90' / 66.25' S= 0.0114 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=10.9 cfs @ 12.08 hrs HW=68.47' (Free Discharge)
└**1=Culvert** (Inlet Controls 10.9 cfs @ 3.37 fps)

Summary for Pond 8.81P:

Inflow Area = 150,970 sf, 79.60% Impervious, Inflow Depth = 3.99" for 10-YR event
Inflow = 14.5 cfs @ 12.08 hrs, Volume= 50,237 cf
Outflow = 14.5 cfs @ 12.08 hrs, Volume= 50,237 cf, Atten= 0%, Lag= 0.0 min
Primary = 14.5 cfs @ 12.08 hrs, Volume= 50,237 cf
Routed to Pond 8.82P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.04' @ 12.08 hrs
Flood Elev= 74.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.25'	**36.0" Round Culvert** L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.25' / 66.00' S= 0.0192 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=14.5 cfs @ 12.08 hrs HW=68.04' (Free Discharge)
└**1=Culvert** (Barrel Controls 14.5 cfs @ 4.73 fps)

Summary for Pond 8.82P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 4.02" for 10-YR event
Inflow = 17.4 cfs @ 12.08 hrs, Volume= 60,366 cf
Outflow = 17.4 cfs @ 12.08 hrs, Volume= 60,366 cf, Atten= 0%, Lag= 0.0 min
Primary = 17.4 cfs @ 12.08 hrs, Volume= 60,366 cf
Routed to Pond 8.83P : WQ DET & SF-1

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.33' @ 12.08 hrs
Flood Elev= 75.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.25'	**36.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.25' / 65.10' S= 0.0214 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=17.4 cfs @ 12.08 hrs HW=67.32' (Free Discharge)
└**1=Culvert** (Barrel Controls 17.4 cfs @ 4.70 fps)

Summary for Pond 8.83P: WQ DET & SF-1

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 4.02" for 10-YR event
Inflow = 17.4 cfs @ 12.08 hrs, Volume= 60,366 cf
Outflow = 17.4 cfs @ 12.09 hrs, Volume= 60,366 cf, Atten= 0%, Lag= 0.4 min
Primary = 0.5 cfs @ 12.09 hrs, Volume= 27,880 cf
Routed to Pond 8.85P :
Secondary = 16.9 cfs @ 12.09 hrs, Volume= 32,486 cf
Routed to Pond 8.84P : Peak DET-1

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.45' @ 12.09 hrs Surf.Area= 1,115 sf Storage= 5,079 cf

Plug-Flow detention time= 53.2 min calculated for 60,356 cf (100% of inflow)
Center-of-Mass det. time= 53.2 min (811.8 - 758.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	62.50'	0 cf	**10.00'W x 111.50'L x 8.00'H Field A** 8,920 cf Overall - 5,504 cf Embedded = 3,416 cf x 0.0% Voids
#2A	62.50'	5,504 cf	**CMP Round 96** x 5 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +1.50' x 50.27 sf x 1 rows 8.00' Header x 50.27 sf x 1 = 402.1 cf Inside
		5,504 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	62.50'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 62.50' / 62.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	60.60'	**Tube/Siphon/Float Valve X 18.00** 0.586" Diameter, C= 0.600, 0.263" Trickle Diameter Starts@63.35'
#3	Primary	60.60'	**12.0" Round 12" Stormfilter Outlet** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.60' / 60.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Secondary	68.58'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 6.08 6.16 6.24 6.32 6.40 6.48 6.56 6.64 6.72 6.80 6.88 6.96 7.04 7.12 7.20 7.28 7.36 7.44 7.52 7.60 7.68 7.76 7.84 7.92 8.00 Width (feet) 6.83 6.73 6.63 6.52 6.40 6.28 6.15 6.01 5.87 5.71 5.55 5.38 5.20 5.01 4.80 4.58 4.34 4.08 3.80 3.49 3.14 2.73 2.24 1.59 0.00

Primary OutFlow Max=0.5 cfs @ 12.09 hrs HW=69.45' (Free Discharge)
└**3=12" Stormfilter Outlet** (Passes 0.5 cfs of 8.6 cfs potential flow)
└**2=Tube/Siphon/Float Valve** (Orifice Controls 0.5 cfs @ 14.33 fps)
└**1=Culvert** (Passes 0.5 cfs of 9.6 cfs potential flow)

Secondary OutFlow Max=16.9 cfs @ 12.09 hrs HW=69.45' (Free Discharge)
└**4=Custom Weir/Orifice** (Weir Controls 16.9 cfs @ 3.13 fps)

Summary for Pond 8.84P: Peak DET-1

Inflow = 16.9 cfs @ 12.09 hrs, Volume= 32,486 cf
Outflow = 2.9 cfs @ 12.53 hrs, Volume= 32,486 cf, Atten= 83%, Lag= 26.5 min
Primary = 2.9 cfs @ 12.53 hrs, Volume= 32,486 cf
Routed to Pond 8.85P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.00' @ 12.53 hrs Surf.Area= 10,780 sf Storage= 21,025 cf

Plug-Flow detention time= 344.9 min calculated for 32,486 cf (100% of inflow)
Center-of-Mass det. time= 344.9 min (1,087.2 - 742.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	62.50'	0 cf	**98.00'W x 110.00'L x 8.00'H Field A** 86,240 cf Overall - 50,064 cf Embedded = 36,176 cf x 0.0% Voids
#2A	62.50'	50,064 cf	**CMP Round 96** x 45 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L 45 Chambers in 9 Rows 96.00' Header x 50.27 sf x 1 = 4,825.5 cf Inside
		50,064 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**6.0' 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
#2	Primary	66.00'	**36.0" W x 12.0" H Vert. OVERFLOW ORIFICE** C= 0.600 Limited to weir flow at low heads
#3	Primary	62.50'	**2.0" Vert. DRAINDOWN ORIFICE** C= 0.600 Limited to weir flow at low heads
#4	Primary	64.50'	**6.0" W x 6.0" H Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.9 cfs @ 12.53 hrs HW=66.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)
└**2=OVERFLOW ORIFICE** (Controls 0.0 cfs)
└**3=DRAINDOWN ORIFICE** (Orifice Controls 0.2 cfs @ 8.89 fps)
└**4=Orifice/Grate** (Orifice Controls 2.7 cfs @ 5.37 fps)

Summary for Pond 8.85P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 4.02" for 10-YR event
Inflow = 3.3 cfs @ 12.53 hrs, Volume= 60,366 cf
Outflow = 3.3 cfs @ 12.53 hrs, Volume= 60,366 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.3 cfs @ 12.53 hrs, Volume= 60,366 cf
Routed to Pond 8.96P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 61.50' @ 12.53 hrs
Flood Elev= 73.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.50'	**18.0" Round Culvert** L= 226.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.50' / 58.60' S= 0.0084 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.3 cfs @ 12.53 hrs HW=61.50' (Free Discharge)
1=Culvert (Inlet Controls 3.3 cfs @ 2.68 fps)

Summary for Pond 8.8P:

Inflow Area = 9,920 sf, 83.06% Impervious, Inflow Depth = 4.06" for 10-YR event
Inflow = 1.0 cfs @ 12.08 hrs, Volume= 3,353 cf
Outflow = 1.0 cfs @ 12.08 hrs, Volume= 3,353 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.0 cfs @ 12.08 hrs, Volume= 3,353 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.03' @ 12.08 hrs
Flood Elev= 75.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.50'	**15.0" Round Culvert** L= 23.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.50' / 70.00' S= 0.0217 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.0 cfs @ 12.08 hrs HW=71.03' (Free Discharge)
1=Culvert (Inlet Controls 1.0 cfs @ 1.95 fps)

Summary for Pond 8.96P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 4.02" for 10-YR event
Inflow = 3.3 cfs @ 12.53 hrs, Volume= 60,366 cf
Outflow = 3.3 cfs @ 12.53 hrs, Volume= 60,366 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.3 cfs @ 12.53 hrs, Volume= 60,366 cf
Routed to Pond 2.1P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 59.50' @ 12.53 hrs
Flood Elev= 68.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	58.50'	**18.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 58.50' / 56.01' S= 0.0311 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.3 cfs @ 12.53 hrs HW=59.50' (Free Discharge)
1=Culvert (Inlet Controls 3.3 cfs @ 2.68 fps)

Summary for Pond 8.9P:

Inflow Area = 25,750 sf, 95.03% Impervious, Inflow Depth = 4.27" for 10-YR event
Inflow = 2.6 cfs @ 12.08 hrs, Volume= 9,170 cf
Outflow = 2.6 cfs @ 12.08 hrs, Volume= 9,170 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.08 hrs, Volume= 9,170 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.67' @ 12.08 hrs
Flood Elev= 73.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.40'	**12.0" Round Culvert** L= 18.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.40' / 68.75' S= 0.0361 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.6 cfs @ 12.08 hrs HW=70.66' (Free Discharge)
1=Culvert (Inlet Controls 2.6 cfs @ 3.32 fps)

Summary for Pond 8P:

Inflow Area = 13,930 sf, 49.61% Impervious, Inflow Depth = 3.35" for 10-YR event
Inflow = 1.2 cfs @ 12.09 hrs, Volume= 3,893 cf
Outflow = 1.2 cfs @ 12.09 hrs, Volume= 3,893 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.09 hrs, Volume= 3,893 cf
Routed to Pond 6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 61.22' @ 12.09 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.58'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.58' / 59.88' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.2 cfs @ 12.09 hrs HW=61.22' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.2 cfs @ 2.16 fps)

Summary for Link POA-1: B-30

Inflow Area = 445,070 sf, 79.79% Impervious, Inflow Depth = 4.02" for 10-YR event
Inflow = 15.0 cfs @ 12.12 hrs, Volume= 149,124 cf
Primary = 15.0 cfs @ 12.12 hrs, Volume= 149,124 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-2:

Inflow Area = 20,660 sf, 50.80% Impervious, Inflow Depth = 3.65" for 10-YR event
Inflow = 1.9 cfs @ 12.09 hrs, Volume= 6,279 cf
Primary = 1.9 cfs @ 12.09 hrs, Volume= 6,279 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-3:

Inflow Area = 6,800 sf, 0.00% Impervious, Inflow Depth = 2.74" for 10-YR event
Inflow = 0.5 cfs @ 12.09 hrs, Volume= 1,550 cf
Primary = 0.5 cfs @ 12.09 hrs, Volume= 1,550 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-4:

Inflow Area = 45,290 sf, 74.03% Impervious, Inflow Depth = 3.87" for 10-YR event
Inflow = 3.6 cfs @ 12.15 hrs, Volume= 14,605 cf
Primary = 3.6 cfs @ 12.15 hrs, Volume= 14,605 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=34,840 sf 96.15% Impervious Runoff Depth=5.50"
Tc=6.0 min CN=WQ Runoff=4.5 cfs 15,975 cf

Subcatchment2.1S: Runoff Area=29,840 sf 69.86% Impervious Runoff Depth=5.09"
Tc=6.0 min CN=WQ Runoff=3.7 cfs 12,667 cf

Subcatchment3.1S: Runoff Area=1,450 sf 62.07% Impervious Runoff Depth=4.82"
Tc=6.0 min CN=WQ Runoff=0.2 cfs 582 cf

Subcatchment3.2S: Runoff Area=4,400 sf 52.27% Impervious Runoff Depth=4.63"
Tc=6.0 min CN=WQ Runoff=0.5 cfs 1,696 cf

Subcatchment3.3S: Runoff Area=7,500 sf 87.33% Impervious Runoff Depth=5.31"
Tc=6.0 min CN=WQ Runoff=0.9 cfs 3,321 cf

Subcatchment3.4S: Runoff Area=5,170 sf 90.14% Impervious Runoff Depth=5.37"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,313 cf

Subcatchment3.5S: Runoff Area=7,350 sf 88.71% Impervious Runoff Depth=5.34"
Tc=6.0 min CN=WQ Runoff=0.9 cfs 3,271 cf

Subcatchment3.6S: Runoff Area=7,080 sf 100.00% Impervious Runoff Depth=5.56"
Tc=6.0 min CN=98 Runoff=0.9 cfs 3,282 cf

Subcatchment3.7S: Runoff Area=6,280 sf 87.10% Impervious Runoff Depth=5.31"
Tc=6.0 min CN=WQ Runoff=0.8 cfs 2,778 cf

Subcatchment4.1S: Runoff Area=30,540 sf 50.79% Impervious Runoff Depth=4.80"
Flow Length=135' Tc=12.1 min CN=WQ Runoff=3.0 cfs 12,211 cf

Subcatchment4.2S: Runoff Area=11,860 sf 82.50% Impervious Runoff Depth=5.29"
Tc=6.0 min CN=WQ Runoff=1.5 cfs 5,229 cf

Subcatchment4.3S: Runoff Area=10,630 sf 88.66% Impervious Runoff Depth=5.34"
Tc=6.0 min CN=WQ Runoff=1.3 cfs 4,730 cf

Subcatchment4.4S: Runoff Area=11,040 sf 83.15% Impervious Runoff Depth=5.23"
Tc=6.0 min CN=WQ Runoff=1.4 cfs 4,813 cf

Subcatchment4.5S: Runoff Area=5,620 sf 62.10% Impervious Runoff Depth=4.82"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,257 cf

Subcatchment4.6S: Runoff Area=9,090 sf 87.90% Impervious Runoff Depth=5.32"
Tc=6.0 min CN=WQ Runoff=1.1 cfs 4,034 cf

Subcatchment4.7S: Runoff Area=6,020 sf 100.00% Impervious Runoff Depth=5.56"
Tc=6.0 min CN=98 Runoff=0.8 cfs 2,790 cf

Subcatchment4.8S: Runoff Area=11,850 sf 90.00% Impervious Runoff Depth=5.37"
Tc=6.0 min CN=WQ Runoff=1.5 cfs 5,299 cf

Subcatchment5.1S: Runoff Area=20,660 sf 50.80% Impervious Runoff Depth=4.80"
Tc=6.0 min CN=WQ Runoff=2.5 cfs 8,261 cf

Subcatchment6.1S: Runoff Area=50,370 sf 83.84% Impervious Runoff Depth=5.29"
Flow Length=280' Tc=14.5 min CN=WQ Runoff=4.9 cfs 22,223 cf

Subcatchment7.1S: Runoff Area=45,290 sf 74.03% Impervious Runoff Depth=5.03"
Flow Length=425' Tc=11.4 min CN=WQ Runoff=4.6 cfs 18,973 cf

Subcatchment8.10S: Runoff Area=8,440 sf 92.00% Impervious Runoff Depth=5.41"
Tc=6.0 min CN=WQ Runoff=1.1 cfs 3,802 cf

Subcatchment8.11S: Runoff Area=26,900 sf 87.62% Impervious Runoff Depth=5.32"
Tc=6.0 min CN=WQ Runoff=3.4 cfs 11,924 cf

Subcatchment8.12S: Runoff Area=2,340 sf 100.00% Impervious Runoff Depth=5.56"
Tc=6.0 min CN=98 Runoff=0.3 cfs 1,085 cf

Subcatchment8.1S: Runoff Area=13,930 sf 49.61% Impervious Runoff Depth=4.46"
Tc=6.0 min CN=WQ Runoff=1.5 cfs 5,180 cf

Subcatchment8.2S: Runoff Area=19,350 sf 84.44% Impervious Runoff Depth=5.26"
Tc=6.0 min CN=WQ Runoff=2.4 cfs 8,477 cf

Subcatchment8.3S: Runoff Area=48,240 sf 91.04% Impervious Runoff Depth=5.39"
Tc=6.0 min CN=WQ Runoff=6.1 cfs 21,654 cf

Subcatchment8.4S: Runoff Area=22,420 sf 78.10% Impervious Runoff Depth=5.13"
Tc=6.0 min CN=WQ Runoff=2.8 cfs 9,590 cf

Subcatchment8.5S: Runoff Area=9,090 sf 0.00% Impervious Runoff Depth=3.60"
Tc=6.0 min CN=80 Runoff=0.9 cfs 2,728 cf

Subcatchment8.6S: Runoff Area=11,120 sf 70.91% Impervious Runoff Depth=4.99"
Tc=6.0 min CN=WQ Runoff=1.3 cfs 4,626 cf

Subcatchment8.7S: Runoff Area=5,080 sf 35.43% Impervious Runoff Depth=4.30"
Tc=6.0 min CN=WQ Runoff=0.6 cfs 1,819 cf

Subcatchment8.8S: Runoff Area=9,920 sf 83.06% Impervious Runoff Depth=5.23"
Tc=6.0 min CN=WQ Runoff=1.2 cfs 4,323 cf

Subcatchment8.9S: Runoff Area=17,310 sf 96.50% Impervious Runoff Depth=5.49"
Tc=6.0 min CN=WQ Runoff=2.2 cfs 7,924 cf

Subcatchment9.1S: Runoff Area=6,800 sf 0.00% Impervious Runoff Depth=3.82"
Tc=6.0 min CN=WQ Runoff=0.7 cfs 2,163 cf

Pond 1P: B-41 Peak Elev=59.18' Inflow=4.5 cfs 15,975 cf
18.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=4.5 cfs 15,975 cf

Pond 2.11P: 21P (CB-8436) Peak Elev=58.94' Inflow=16.6 cfs 133,997 cf
24.0" Round Culvert n=0.013 L=80.0' S=0.0024 '/' Outflow=16.6 cfs 133,997 cf

Pond 2.1P: Peak Elev=58.94' Inflow=16.6 cfs 133,997 cf
24.0" Round Culvert n=0.013 L=40.0' S=0.0032 '/' Outflow=16.6 cfs 133,997 cf

Pond 2P: B-34 Peak Elev=62.26' Inflow=13.4 cfs 56,046 cf
18.0" Round Culvert n=0.013 L=140.0' S=0.0116 '/' Outflow=13.4 cfs 56,046 cf

Pond 3.11P: Peak Elev=66.32' Inflow=0.7 cfs 2,279 cf
12.0" Round Culvert n=0.013 L=30.0' S=0.0117 '/' Outflow=0.7 cfs 2,279 cf

Pond 3.1P: Peak Elev=67.53' Inflow=0.2 cfs 582 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0200 '/' Outflow=0.2 cfs 582 cf

Pond 3.2P: Peak Elev=67.17' Inflow=0.5 cfs 1,696 cf
12.0" Round Culvert n=0.013 L=80.0' S=0.0109 '/' Outflow=0.5 cfs 1,696 cf

Pond 3.31P: Peak Elev=62.89' Inflow=4.9 cfs 17,244 cf
24.0" Round Culvert n=0.013 L=42.0' S=0.0119 '/' Outflow=4.9 cfs 17,244 cf

Pond 3.32P: WQ DET & SF-2 Peak Elev=63.04' Storage=3,551 cf Inflow=13.2 cfs 46,396 cf
Primary=0.3 cfs 19,032 cf Secondary=12.7 cfs 27,363 cf Outflow=13.0 cfs 46,396 cf

Pond 3.33P: PEAK DET Peak Elev=63.81' Storage=19,431 cf Inflow=12.7 cfs 27,363 cf
Outflow=1.9 cfs 27,359 cf

Pond 3.34P: Peak Elev=58.19' Inflow=2.2 cfs 46,391 cf
24.0" Round Culvert n=0.013 L=62.0' S=0.0102 '/' Outflow=2.2 cfs 46,391 cf

Pond 3.35P: Peak Elev=58.73' Inflow=17.0 cfs 180,388 cf
24.0" Round Culvert n=0.013 L=25.0' S=0.0028 '/' Outflow=17.0 cfs 180,388 cf

Pond 3.3P: Peak Elev=64.09' Inflow=4.9 cfs 17,244 cf
18.0" Round Culvert n=0.013 L=45.0' S=0.0111 '/' Outflow=4.9 cfs 17,244 cf

Pond 3.4P: Peak Elev=66.72' Inflow=0.7 cfs 2,313 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0160 '/' Outflow=0.7 cfs 2,313 cf

Pond 3.5P: Peak Elev=65.14' Inflow=1.7 cfs 6,050 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=1.7 cfs 6,050 cf

Pond 3.6P: Peak Elev=64.51' Inflow=2.6 cfs 9,331 cf
15.0" Round Culvert n=0.013 L=45.0' S=0.0111 '/' Outflow=2.6 cfs 9,331 cf

Pond 3.7P: Peak Elev=65.32' Inflow=0.8 cfs 2,778 cf
12.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=0.8 cfs 2,778 cf

Pond 3P: B-32 (CB-8031) Peak Elev=58.56' Inflow=17.0 cfs 180,388 cf
24.0" Round Culvert n=0.013 L=22.0' S=-0.0036 '/' Outflow=17.0 cfs 180,388 cf

Pond 4.21P: Peak Elev=67.73' Inflow=1.5 cfs 5,229 cf
15.0" Round Culvert n=0.013 L=82.0' S=0.0121 '/' Outflow=1.5 cfs 5,229 cf

Pond 4.2P: Peak Elev=68.88' Inflow=1.5 cfs 5,229 cf
15.0" Round Culvert n=0.013 L=104.0' S=0.0100 '/' Outflow=1.5 cfs 5,229 cf

Pond 4.3P: Peak Elev=66.71' Inflow=2.8 cfs 9,959 cf
18.0" Round Culvert n=0.013 L=105.0' S=0.0158 '/' Outflow=2.8 cfs 9,959 cf

Pond 4.4P: Peak Elev=68.62' Inflow=1.4 cfs 4,813 cf
12.0" Round Culvert n=0.013 L=83.0' S=0.0169 '/' Outflow=1.4 cfs 4,813 cf

Pond 4.5P: Peak Elev=69.57' Inflow=0.7 cfs 2,257 cf
12.0" Round Culvert n=0.013 L=122.0' S=0.0213 '/' Outflow=0.7 cfs 2,257 cf

Pond 4.6P: Peak Elev=66.97' Inflow=3.2 cfs 11,104 cf
18.0" Round Culvert n=0.013 L=77.0' S=0.0169 '/' Outflow=3.2 cfs 11,104 cf

Pond 4.7P: Peak Elev=64.94' Inflow=4.0 cfs 13,894 cf
18.0" Round Culvert x 2.00 n=0.013 L=22.0' S=0.0227 '/' Outflow=4.0 cfs 13,894 cf

Pond 4.81P: Peak Elev=64.70' Inflow=8.3 cfs 29,152 cf
24.0" Round Culvert n=0.013 L=15.0' S=0.0267 '/' Outflow=8.3 cfs 29,152 cf

Pond 4.8P: Peak Elev=64.67' Inflow=4.3 cfs 15,258 cf
24.0" Round Culvert n=0.013 L=35.0' S=0.0100 '/' Outflow=4.3 cfs 15,258 cf

Pond 4P: B-32A (CB-8323) Peak Elev=59.27' Inflow=19.8 cfs 192,599 cf
Primary=19.8 cfs 192,599 cf Secondary=0.0 cfs 0 cf Outflow=19.8 cfs 192,599 cf

Pond 5P: Peak Elev=60.91' Inflow=2.5 cfs 8,261 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=2.5 cfs 8,261 cf

Pond 6P: Peak Elev=68.61' Inflow=5.9 cfs 27,403 cf
Primary=5.9 cfs 27,403 cf Secondary=0.0 cfs 0 cf Outflow=5.9 cfs 27,403 cf

Pond 7P: Peak Elev=67.89' Inflow=4.6 cfs 18,973 cf
12.0" Round Culvert n=0.013 L=100.0' S=0.0100 '/' Outflow=4.6 cfs 18,973 cf

Pond 8.10P: Peak Elev=69.92' Inflow=1.1 cfs 3,802 cf
12.0" Round Culvert n=0.013 L=15.0' S=0.0367 '/' Outflow=1.1 cfs 3,802 cf

Pond 8.111P: Peak Elev=69.01' Inflow=3.7 cfs 13,009 cf
18.0" Round Culvert n=0.013 L=160.0' S=0.0103 '/' Outflow=3.7 cfs 13,009 cf

Pond 8.11P: Peak Elev=71.10' Inflow=3.4 cfs 11,924 cf
15.0" Round Culvert n=0.013 L=144.0' S=0.0122 '/' Outflow=3.4 cfs 11,924 cf

Pond 8.12P: Peak Elev=71.06' Inflow=0.3 cfs 1,085 cf
12.0" Round Culvert n=0.013 L=120.0' S=0.0121 '/' Outflow=0.3 cfs 1,085 cf

Pond 8.21P: Peak Elev=71.74' Inflow=2.4 cfs 8,477 cf
24.0" Round Culvert n=0.013 L=100.0' S=0.0240 '/' Outflow=2.4 cfs 8,477 cf

Pond 8.22P: Peak Elev=69.62' Inflow=5.2 cfs 18,067 cf
24.0" Round Culvert n=0.013 L=30.0' S=0.0133 '/' Outflow=5.2 cfs 18,067 cf

Pond 8.2P: Peak Elev=74.52' Inflow=2.4 cfs 8,477 cf
18.0" Round Culvert n=0.013 L=120.0' S=0.0183 '/' Outflow=2.4 cfs 8,477 cf

Pond 8.3P: Peak Elev=70.04' Inflow=12.2 cfs 42,448 cf
24.0" Round Culvert n=0.013 L=45.0' S=0.0178 '/' Outflow=12.2 cfs 42,448 cf

Pond 8.4P: Peak Elev=70.98' Inflow=2.8 cfs 9,590 cf
15.0" Round Culvert n=0.013 L=40.0' S=0.0163 '/' Outflow=2.8 cfs 9,590 cf

Pond 8.5P: Peak Elev=75.00' Inflow=0.9 cfs 2,728 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0220 '/' Outflow=0.9 cfs 2,728 cf

Pond 8.6P: Peak Elev=71.93' Inflow=1.3 cfs 4,626 cf
15.0" Round Culvert n=0.013 L=60.0' S=0.0200 '/' Outflow=1.3 cfs 4,626 cf

Pond 8.7P: Peak Elev=68.74' Inflow=14.1 cfs 48,892 cf
30.0" Round Culvert n=0.013 L=57.0' S=0.0114 '/' Outflow=14.1 cfs 48,892 cf

Pond 8.81P: Peak Elev=68.34' Inflow=18.6 cfs 64,942 cf
36.0" Round Culvert n=0.013 L=13.0' S=0.0192 '/' Outflow=18.6 cfs 64,942 cf

Pond 8.82P: Peak Elev=67.67' Inflow=22.4 cfs 77,951 cf
36.0" Round Culvert n=0.013 L=7.0' S=0.0214 '/' Outflow=22.4 cfs 77,951 cf

Pond 8.83P: WQ DET & SF-1 Peak Elev=69.63' Storage=5,179 cf Inflow=22.4 cfs 77,951 cf
Primary=0.5 cfs 31,184 cf Secondary=21.8 cfs 46,767 cf Outflow=22.3 cfs 77,951 cf

Pond 8.84P: Peak DET-1 Peak Elev=66.56' Storage=25,516 cf Inflow=21.8 cfs 46,767 cf
Outflow=7.5 cfs 46,766 cf

Pond 8.85P: Peak Elev=62.66' Inflow=8.0 cfs 77,951 cf
18.0" Round Culvert n=0.013 L=226.0' S=0.0084 '/' Outflow=8.0 cfs 77,951 cf

Pond 8.8P: Peak Elev=71.11' Inflow=1.2 cfs 4,323 cf
15.0" Round Culvert n=0.013 L=23.0' S=0.0217 '/' Outflow=1.2 cfs 4,323 cf

Pond 8.96P: Peak Elev=60.66' Inflow=8.0 cfs 77,951 cf
18.0" Round Culvert n=0.013 L=80.0' S=0.0311 '/' Outflow=8.0 cfs 77,951 cf

Pond 8.9P: Peak Elev=71.13' Inflow=3.3 cfs 11,726 cf
12.0" Round Culvert n=0.013 L=18.0' S=0.0361 '/' Outflow=3.3 cfs 11,726 cf

Pond 8P: Peak Elev=61.35' Inflow=1.5 cfs 5,180 cf
12.0" Round Culvert n=0.013 L=70.0' S=0.0100 '/' Outflow=1.5 cfs 5,180 cf

Link POA-1: B-30 Inflow=19.8 cfs 192,599 cf
Primary=19.8 cfs 192,599 cf

Link POA-2: Inflow=2.5 cfs 8,261 cf
Primary=2.5 cfs 8,261 cf

Link POA-3: Inflow=0.7 cfs 2,163 cf
Primary=0.7 cfs 2,163 cf

Link POA-4: Inflow=4.6 cfs 18,973 cf
Primary=4.6 cfs 18,973 cf

Total Runoff Area = 517,820 sf Runoff Volume = 222,000 cf Average Runoff Depth = 5.14"
22.92% Pervious = 118,690 sf 77.08% Impervious = 399,130 sf

Summary for Subcatchment 1S:

Runoff = 4.5 cfs @ 12.08 hrs, Volume= 15,975 cf, Depth= 5.50"
Routed to Pond 1P : B-41

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
33,500	98	Paved parking, HSG D
1,340	84	50-75% Grass cover, Fair, HSG D
34,840		Weighted Average
1,340		3.85% Pervious Area
33,500		96.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 2.1S:

Runoff = 3.7 cfs @ 12.08 hrs, Volume= 12,667 cf, Depth= 5.09"
Routed to Pond 2P : B-34

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
20,845	98	Paved parking, HSG D
8,995	84	50-75% Grass cover, Fair, HSG D
29,840		Weighted Average
8,995		30.14% Pervious Area
20,845		69.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.1S:

Runoff = 0.2 cfs @ 12.08 hrs, Volume= 582 cf, Depth= 4.82"
Routed to Pond 3.1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
550	80	>75% Grass cover, Good, HSG D
900	98	Paved parking, HSG D
1,450		Weighted Average
550		37.93% Pervious Area
900		62.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.2S:

Runoff = 0.5 cfs @ 12.09 hrs, Volume= 1,696 cf, Depth= 4.63"
Routed to Pond 3.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
2,100	80	>75% Grass cover, Good, HSG D
2,300	98	Paved parking, HSG D
4,400		Weighted Average
2,100		47.73% Pervious Area
2,300		52.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.3S:

Runoff = 0.9 cfs @ 12.08 hrs, Volume= 3,321 cf, Depth= 5.31"
Routed to Pond 3.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
950	80	>75% Grass cover, Good, HSG D
6,550	98	Paved parking, HSG D
7,500		Weighted Average
950		12.67% Pervious Area
6,550		87.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.4S:

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,313 cf, Depth= 5.37"
Routed to Pond 3.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
510	80	>75% Grass cover, Good, HSG D
4,660	98	Paved parking, HSG D
5,170		Weighted Average
510		9.86% Pervious Area
4,660		90.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.5S:

Runoff = 0.9 cfs @ 12.08 hrs, Volume= 3,271 cf, Depth= 5.34"
Routed to Pond 3.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
6,520	98	Paved parking, HSG D
830	80	>75% Grass cover, Good, HSG D
7,350		Weighted Average
830		11.29% Pervious Area
6,520		88.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.6S:

Runoff = 0.9 cfs @ 12.08 hrs, Volume= 3,282 cf, Depth= 5.56"
Routed to Pond 3.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
7,080	98	Paved parking, HSG D
7,080		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 3.7S:

Runoff = 0.8 cfs @ 12.08 hrs, Volume= 2,778 cf, Depth= 5.31"
Routed to Pond 3.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
810	80	>75% Grass cover, Good, HSG D
5,470	98	Paved parking, HSG D
6,280		Weighted Average
810		12.90% Pervious Area
5,470		87.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.1S:

Runoff = 3.0 cfs @ 12.16 hrs, Volume= 12,211 cf, Depth= 4.80"
Routed to Pond 4P : B-32A (CB-8323)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
12,790	98	Paved parking, HSG D
15,030	84	50-75% Grass cover, Fair, HSG D
2,720	98	Roofs, HSG D
30,540		Weighted Average
15,030		49.21% Pervious Area
15,510		50.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	110	0.0150	0.15		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.0	25	0.3300	8.62		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
12.1	135	Total			

Summary for Subcatchment 4.2S:

Runoff = 1.5 cfs @ 12.08 hrs, Volume= 5,229 cf, Depth= 5.29"
Routed to Pond 4.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
9,785	98	Paved parking, HSG D
2,075	84	50-75% Grass cover, Fair, HSG D
11,860		Weighted Average
2,075		17.50% Pervious Area
9,785		82.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.3S:

Runoff = 1.3 cfs @ 12.08 hrs, Volume= 4,730 cf, Depth= 5.34"
Routed to Pond 4.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
1,205	80	>75% Grass cover, Good, HSG D
9,425	98	Paved parking, HSG D
10,630		Weighted Average
1,205		11.34% Pervious Area
9,425		88.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.4S:

Runoff = 1.4 cfs @ 12.08 hrs, Volume= 4,813 cf, Depth= 5.23"
Routed to Pond 4.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
1,860	80	>75% Grass cover, Good, HSG D
9,180	98	Paved parking, HSG D
11,040		Weighted Average
1,860		16.85% Pervious Area
9,180		83.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.5S:

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,257 cf, Depth= 4.82"
Routed to Pond 4.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
2,130	80	>75% Grass cover, Good, HSG D
3,490	98	Paved parking, HSG D
5,620		Weighted Average
2,130		37.90% Pervious Area
3,490		62.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.6S:

Runoff = 1.1 cfs @ 12.08 hrs, Volume= 4,034 cf, Depth= 5.32"
Routed to Pond 4.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
7,990	98	Paved parking, HSG D
1,100	80	>75% Grass cover, Good, HSG D
9,090		Weighted Average
1,100		12.10% Pervious Area
7,990		87.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.7S:

Runoff = 0.8 cfs @ 12.08 hrs, Volume= 2,790 cf, Depth= 5.56"
Routed to Pond 4.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
6,020	98	Paved parking, HSG D
6,020		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 4.8S:

Runoff = 1.5 cfs @ 12.08 hrs, Volume= 5,299 cf, Depth= 5.37"
Routed to Pond 4.8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
10,665	98	Paved parking, HSG D
1,185	80	>75% Grass cover, Good, HSG D
11,850		Weighted Average
1,185		10.00% Pervious Area
10,665		90.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 5.1S:

Runoff = 2.5 cfs @ 12.08 hrs, Volume= 8,261 cf, Depth= 4.80"
Routed to Pond 5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	10,495	98	Paved parking, HSG D
	10,165	84	50-75% Grass cover, Fair, HSG D
	20,660		Weighted Average
	10,165		49.20% Pervious Area
	10,495		50.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 6.1S:

Runoff = 4.9 cfs @ 12.19 hrs, Volume= 22,223 cf, Depth= 5.29"
Routed to Pond 6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
36,200	98	Paved parking, HSG D
6,030	98	Roofs, HSG D
1,670	79	50-75% Grass cover, Fair, HSG C
6,470	84	50-75% Grass cover, Fair, HSG D
50,370		Weighted Average
8,140		16.16% Pervious Area
42,230		83.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0700	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	65	0.0500	1.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.3	115	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
14.5	280	Total			

Summary for Subcatchment 7.1S:

Runoff = 4.6 cfs @ 12.15 hrs, Volume= 18,973 cf, Depth= 5.03"
Routed to Pond 7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
31,245	98	Paved parking, HSG D
11,760	79	50-75% Grass cover, Fair, HSG C
2,285	98	Unconnected pavement, HSG D
45,290		Weighted Average
11,760		25.97% Pervious Area
33,530		74.03% Impervious Area
2,285		6.81% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0200	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.7	75	0.0150	1.84		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.7	250	0.0100	5.90	4.63	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
11.4	425	Total			

Summary for Subcatchment 8.10S:

Runoff = 1.1 cfs @ 12.08 hrs, Volume= 3,802 cf, Depth= 5.41"
Routed to Pond 8.10P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
675	80	>75% Grass cover, Good, HSG D
7,765	98	Paved parking, HSG D
8,440		Weighted Average
675		8.00% Pervious Area
7,765		92.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.11S:

Runoff = 3.4 cfs @ 12.08 hrs, Volume= 11,924 cf, Depth= 5.32"
Routed to Pond 8.11P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
3,330	80	>75% Grass cover, Good, HSG D
23,570	98	Paved parking, HSG D
26,900		Weighted Average
3,330		12.38% Pervious Area
23,570		87.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.12S:

Runoff = 0.3 cfs @ 12.08 hrs, Volume= 1,085 cf, Depth= 5.56"
Routed to Pond 8.12P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
2,340	98	Paved parking, HSG D
2,340		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.1S:

Runoff = 1.5 cfs @ 12.09 hrs, Volume= 5,180 cf, Depth= 4.46"
Routed to Pond 8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
6,910	98	Paved parking, HSG D
2,655	74	>75% Grass cover, Good, HSG C
4,365	80	>75% Grass cover, Good, HSG D
13,930		Weighted Average
7,020		50.39% Pervious Area
6,910		49.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.2S:

Runoff = 2.4 cfs @ 12.08 hrs, Volume= 8,477 cf, Depth= 5.26"
Routed to Pond 8.2P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
3,010	80	>75% Grass cover, Good, HSG D
16,340	98	Paved parking, HSG D
19,350		Weighted Average
3,010		15.56% Pervious Area
16,340		84.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.3S:

Runoff = 6.1 cfs @ 12.08 hrs, Volume= 21,654 cf, Depth= 5.39"
Routed to Pond 8.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
4,320	80	>75% Grass cover, Good, HSG D
43,920	98	Paved parking, HSG D
48,240		Weighted Average
4,320		8.96% Pervious Area
43,920		91.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.4S:

Runoff = 2.8 cfs @ 12.08 hrs, Volume= 9,590 cf, Depth= 5.13"
Routed to Pond 8.4P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
4,910	80	>75% Grass cover, Good, HSG D
17,510	98	Paved parking, HSG D
22,420		Weighted Average
4,910		21.90% Pervious Area
17,510		78.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.5S:

Runoff = 0.9 cfs @ 12.09 hrs, Volume= 2,728 cf, Depth= 3.60"
Routed to Pond 8.5P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
9,090	80	>75% Grass cover, Good, HSG D
9,090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.6S:

Runoff = 1.3 cfs @ 12.08 hrs, Volume= 4,626 cf, Depth= 4.99"
Routed to Pond 8.6P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
3,235	80	>75% Grass cover, Good, HSG D
7,885	98	Paved parking, HSG D
11,120		Weighted Average
3,235		29.09% Pervious Area
7,885		70.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.7S:

Runoff = 0.6 cfs @ 12.09 hrs, Volume= 1,819 cf, Depth= 4.30"
Routed to Pond 8.7P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
3,280	80	>75% Grass cover, Good, HSG D
1,800	98	Paved parking, HSG D
5,080		Weighted Average
3,280		64.57% Pervious Area
1,800		35.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.8S:

Runoff = 1.2 cfs @ 12.08 hrs, Volume= 4,323 cf, Depth= 5.23"
Routed to Pond 8.8P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
1,680	80	>75% Grass cover, Good, HSG D
8,240	98	Paved parking, HSG D
9,920		Weighted Average
1,680		16.94% Pervious Area
8,240		83.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 8.9S:

Runoff = 2.2 cfs @ 12.08 hrs, Volume= 7,924 cf, Depth= 5.49"
Routed to Pond 8.9P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
605	80	>75% Grass cover, Good, HSG D
16,705	98	Paved parking, HSG D
17,310		Weighted Average
605		3.50% Pervious Area
16,705		96.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Subcatchment 9.1S:

Runoff = 0.7 cfs @ 12.09 hrs, Volume= 2,163 cf, Depth= 3.82"
Routed to Link POA-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
4,800	83	Woods, Poor, HSG D
2,000	80	>75% Grass cover, Good, HSG D
6,800		Weighted Average
6,800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Summary for Pond 1P: B-41

Inflow Area = 34,840 sf, 96.15% Impervious, Inflow Depth = 5.50" for 25-YR event
Inflow = 4.5 cfs @ 12.08 hrs, Volume= 15,975 cf
Outflow = 4.5 cfs @ 12.08 hrs, Volume= 15,975 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.5 cfs @ 12.08 hrs, Volume= 15,975 cf
Routed to Pond 2P : B-34

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.18' @ 12.08 hrs
Flood Elev= 63.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.90'	**18.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.90' / 57.75' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.5 cfs @ 12.08 hrs HW=59.18' (Free Discharge)
1=Culvert (Barrel Controls 4.5 cfs @ 3.77 fps)

Summary for Pond 2.11P: 21P (CB-8436)

Inflow Area = 309,190 sf, 80.71% Impervious, Inflow Depth = 5.20" for 25-YR event
Inflow = 16.6 cfs @ 12.11 hrs, Volume= 133,997 cf
Outflow = 16.6 cfs @ 12.11 hrs, Volume= 133,997 cf, Atten= 0%, Lag= 0.0 min
Primary = 16.6 cfs @ 12.11 hrs, Volume= 133,997 cf
Routed to Pond 3.35P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.94' @ 12.11 hrs
Flood Elev= 68.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.88'	**24.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.88' / 55.69' S= 0.0024 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=16.6 cfs @ 12.11 hrs HW=58.94' (Free Discharge)
1=Culvert (Barrel Controls 16.6 cfs @ 5.27 fps)

Summary for Pond 2.1P:

Inflow Area = 309,190 sf, 80.71% Impervious, Inflow Depth = 5.20" for 25-YR event
Inflow = 16.6 cfs @ 12.11 hrs, Volume= 133,997 cf
Outflow = 16.6 cfs @ 12.11 hrs, Volume= 133,997 cf, Atten= 0%, Lag= 0.0 min
Primary = 16.6 cfs @ 12.11 hrs, Volume= 133,997 cf
Routed to Pond 2.11P : 21P (CB-8436)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.94' @ 12.11 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	56.01'	**24.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 56.01' / 55.88' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=16.6 cfs @ 12.11 hrs HW=58.94' (Free Discharge)
1=Culvert (Inlet Controls 16.6 cfs @ 5.28 fps)

Summary for Pond 2P: B-34

Inflow Area = 128,980 sf, 80.23% Impervious, Inflow Depth = 5.21" for 25-YR event
Inflow = 13.4 cfs @ 12.10 hrs, Volume= 56,046 cf
Outflow = 13.4 cfs @ 12.10 hrs, Volume= 56,046 cf, Atten= 0%, Lag= 0.0 min
Primary = 13.4 cfs @ 12.10 hrs, Volume= 56,046 cf
Routed to Pond 2.1P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.26' @ 12.10 hrs
Flood Elev= 63.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**18.0" Round Culvert** L= 140.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 55.88' S= 0.0116 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=13.4 cfs @ 12.10 hrs HW=62.25' (Free Discharge)
1=Culvert (Inlet Controls 13.4 cfs @ 7.60 fps)

Summary for Pond 3.11P:

Inflow Area = 5,850 sf, 54.70% Impervious, Inflow Depth = 4.67" for 25-YR event
Inflow = 0.7 cfs @ 12.08 hrs, Volume= 2,279 cf
Outflow = 0.7 cfs @ 12.08 hrs, Volume= 2,279 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.08 hrs, Volume= 2,279 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 66.32' @ 12.08 hrs
Flood Elev= 71.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.85'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.85' / 65.50' S= 0.0117 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.7 cfs @ 12.08 hrs HW=66.32' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.7 cfs @ 1.85 fps)

Summary for Pond 3.1P:

Inflow Area = 1,450 sf, 62.07% Impervious, Inflow Depth = 4.82" for 25-YR event
Inflow = 0.2 cfs @ 12.08 hrs, Volume= 582 cf
Outflow = 0.2 cfs @ 12.08 hrs, Volume= 582 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.08 hrs, Volume= 582 cf
Routed to Pond 3.11P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.53' @ 12.08 hrs
Flood Elev= 72.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.30'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.30' / 65.90' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.2 cfs @ 12.08 hrs HW=67.52' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.2 cfs @ 1.27 fps)

Summary for Pond 3.2P:

Inflow Area = 4,400 sf, 52.27% Impervious, Inflow Depth = 4.63" for 25-YR event
Inflow = 0.5 cfs @ 12.09 hrs, Volume= 1,696 cf
Outflow = 0.5 cfs @ 12.09 hrs, Volume= 1,696 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.09 hrs, Volume= 1,696 cf
Routed to Pond 3.11P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.17' @ 12.09 hrs
Flood Elev= 70.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.77'	**12.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.77' / 65.90' S= 0.0109 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.5 cfs @ 12.09 hrs HW=67.17' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.5 cfs @ 1.70 fps)

Summary for Pond 3.31P:

Inflow Area = 39,230 sf, 85.34% Impervious, Inflow Depth = 5.27" for 25-YR event
Inflow = 4.9 cfs @ 12.08 hrs, Volume= 17,244 cf
Outflow = 4.9 cfs @ 12.08 hrs, Volume= 17,244 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.9 cfs @ 12.08 hrs, Volume= 17,244 cf
Routed to Pond 3.32P : WQ DET & SF-2

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.89' @ 12.08 hrs
Flood Elev= 70.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	61.80'	**24.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 61.80' / 61.30' S= 0.0119 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.9 cfs @ 12.08 hrs HW=62.89' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.9 cfs @ 2.81 fps)

Summary for Pond 3.32P: WQ DET & SF-2

Inflow Area = 105,340 sf, 85.47% Impervious, Inflow Depth = 5.29" for 25-YR event
Inflow = 13.2 cfs @ 12.08 hrs, Volume= 46,396 cf
Outflow = 13.0 cfs @ 12.10 hrs, Volume= 46,396 cf, Atten= 2%, Lag= 0.9 min
Primary = 0.3 cfs @ 12.10 hrs, Volume= 19,032 cf
Routed to Pond 3.34P :
Secondary = 12.7 cfs @ 12.10 hrs, Volume= 27,363 cf
Routed to Pond 3.33P : PEAK DET

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 63.04' @ 12.10 hrs Surf.Area= 1,634 sf Storage= 3,551 cf

Plug-Flow detention time= 45.1 min calculated for 46,388 cf (100% of inflow)
Center-of-Mass det. time= 45.1 min (797.7 - 752.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	60.00'	0 cf	**8.00'W x 204.25'L x 9.00'H Field A** 14,706 cf Overall - 10,166 cf Embedded = 4,540 cf x 0.0% Voids
#2A	60.00'	10,166 cf	**CMP Round 96** x 9 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +14.25' x 50.27 sf x 1 rows 8.00' Header x 50.27 sf x 1 = 402.1 cf Inside
		10,166 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	60.00'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 60.00' / 59.95' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	57.70'	**Tube/Siphon/Float Valve X 11.00** 0.668" Diameter, C= 0.600, 0.263" Trickle Diameter Starts@60.45'
#3	Primary	57.70'	**12.0" Round 12" Stormfilter Outlet** L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.70' / 57.60' S= 0.0077 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Secondary	62.40'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 2.40 2.48 2.56 2.64 2.72 2.80 2.88 2.96 3.04 3.12 3.20 3.28 3.36 3.44 3.52 3.60 3.68 3.76 3.84 3.92 4.00 4.08 4.16 4.24 4.32 4.40 4.48 4.56 4.64 4.72 4.80 4.88 4.96 5.04 5.12 5.20 5.28 5.36 5.44 5.52 5.60 5.68 5.76 5.84 5.92 6.00 6.08 6.16 6.24 6.32 6.40 6.48 6.56 6.64 6.72 6.80 6.88 6.96 7.04 7.12 7.20 7.28 7.36 7.44 7.52 7.60 7.68 7.76 7.84 7.92 8.00 Width (feet) 7.33 7.40 7.46 7.52 7.58 7.63 7.68 7.72 7.77 7.80 7.84 7.87 7.90 7.92 7.94 7.96 7.97 7.99 7.99 8.00 8.00 8.00 7.99 7.99 7.97 7.96 7.94 7.92 7.90 7.87 7.84 7.80 7.77 7.72 7.68 7.63 7.58 7.52 7.46 7.40 7.33 7.26 7.18 7.10 7.02 6.93 6.83 6.73 6.63 6.52 6.40 6.28 6.15 6.01 5.87 5.71 5.55 5.38 5.20 5.01 4.80 4.58 4.34 4.08 3.80 3.49 3.14 2.73 2.24 1.59 0.00

Primary OutFlow Max=0.3 cfs @ 12.10 hrs HW=63.04' (Free Discharge)
└**3=12" Stormfilter Outlet** (Passes 0.3 cfs of 6.6 cfs potential flow)
└**2=Tube/Siphon/Float Valve** (Orifice Controls 0.3 cfs @ 11.13 fps)
└**1=Culvert** (Passes 0.3 cfs of 6.0 cfs potential flow)

Secondary OutFlow Max=12.7 cfs @ 12.10 hrs HW=63.04' (Free Discharge)
└**4=Custom Weir/Orifice** (Weir Controls 12.7 cfs @ 2.61 fps)

Summary for Pond 3.33P: PEAK DET

Inflow = 12.7 cfs @ 12.10 hrs, Volume= 27,363 cf
Outflow = 1.9 cfs @ 12.58 hrs, Volume= 27,359 cf, Atten= 85%, Lag= 28.9 min
Primary = 1.9 cfs @ 12.58 hrs, Volume= 27,359 cf
Routed to Pond 3.34P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 63.81' @ 12.58 hrs Surf.Area= 8,323 sf Storage= 19,431 cf

Plug-Flow detention time= 763.4 min calculated for 27,354 cf (100% of inflow)
Center-of-Mass det. time= 763.7 min (1,507.1 - 743.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	60.00'	0 cf	**63.00'W x 124.00'L x 8.00'H Field A** 62,496 cf Overall - 38,152 cf Embedded = 24,344 cf x 0.0% Voids
#2A	60.00'	38,152 cf	**CMP Round 96** x 30 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +16.00' x 50.27 sf x 6 rows 63.00' Header x 50.27 sf x 1 = 3,166.7 cf Inside
#3	60.00'	3,217 cf	**CMP Round 96** x 3 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +4.00' x 50.27 sf x 1 rows
		41,368 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**2.0" Vert. DRAINDOWN ORIFICE** C= 0.600 Limited to weir flow at low heads
#2	Primary	65.50'	**0.5' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Primary	63.50'	**36.0" W x 6.0" H Vert. CAPACITY ORIFICE** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.9 cfs @ 12.58 hrs HW=63.81' (Free Discharge)
- **1=DRAINDOWN ORIFICE** (Orifice Controls 0.2 cfs @ 9.29 fps)
- **2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)
- **3=CAPACITY ORIFICE** (Orifice Controls 1.7 cfs @ 1.79 fps)

Summary for Pond 3.34P:

Inflow Area = 105,340 sf, 85.47% Impervious, Inflow Depth > 5.28" for 25-YR event
Inflow = 2.2 cfs @ 12.58 hrs, Volume= 46,391 cf
Outflow = 2.2 cfs @ 12.58 hrs, Volume= 46,391 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.2 cfs @ 12.58 hrs, Volume= 46,391 cf
Routed to Pond 3.35P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.19' @ 12.58 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**24.0" Round Culvert** L= 62.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 56.87' S= 0.0102 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.2 cfs @ 12.58 hrs HW=58.19' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.2 cfs @ 2.24 fps)

Summary for Pond 3.35P:

Inflow Area = 414,530 sf, 81.92% Impervious, Inflow Depth = 5.22" for 25-YR event
Inflow = 17.0 cfs @ 12.11 hrs, Volume= 180,388 cf
Outflow = 17.0 cfs @ 12.11 hrs, Volume= 180,388 cf, Atten= 0%, Lag= 0.0 min
Primary = 17.0 cfs @ 12.11 hrs, Volume= 180,388 cf
Routed to Pond 3P : B-32 (CB-8031)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.73' @ 12.11 hrs
Flood Elev= 67.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.69'	**24.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.69' / 55.62' S= 0.0028 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=17.0 cfs @ 12.11 hrs HW=58.72' (Free Discharge)
└**1=Culvert** (Inlet Controls 17.0 cfs @ 5.42 fps)

Summary for Pond 3.3P:

Inflow Area = 39,230 sf, 85.34% Impervious, Inflow Depth = 5.27" for 25-YR event
Inflow = 4.9 cfs @ 12.08 hrs, Volume= 17,244 cf
Outflow = 4.9 cfs @ 12.08 hrs, Volume= 17,244 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.9 cfs @ 12.08 hrs, Volume= 17,244 cf
Routed to Pond 3.31P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.09' @ 12.08 hrs
Flood Elev= 69.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.80'	**18.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.80' / 62.30' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.9 cfs @ 12.08 hrs HW=64.09' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.9 cfs @ 3.05 fps)

Summary for Pond 3.4P:

Inflow Area = 5,170 sf, 90.14% Impervious, Inflow Depth = 5.37" for 25-YR event
Inflow = 0.7 cfs @ 12.08 hrs, Volume= 2,313 cf
Outflow = 0.7 cfs @ 12.08 hrs, Volume= 2,313 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.08 hrs, Volume= 2,313 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.72' @ 12.08 hrs
Flood Elev= 69.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.25'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.25' / 65.45' S= 0.0160 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.7 cfs @ 12.08 hrs HW=66.72' (Free Discharge)
1=Culvert (Inlet Controls 0.7 cfs @ 1.83 fps)

Summary for Pond 3.5P:

Inflow Area = 13,630 sf, 87.97% Impervious, Inflow Depth = 5.33" for 25-YR event
Inflow = 1.7 cfs @ 12.08 hrs, Volume= 6,050 cf
Outflow = 1.7 cfs @ 12.08 hrs, Volume= 6,050 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.7 cfs @ 12.08 hrs, Volume= 6,050 cf
Routed to Pond 3.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 65.14' @ 12.08 hrs
Flood Elev= 68.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.30'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.30' / 63.80' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.7 cfs @ 12.08 hrs HW=65.13' (Free Discharge)
1=Culvert (Inlet Controls 1.7 cfs @ 2.46 fps)

Summary for Pond 3.6P:

Inflow Area = 20,710 sf, 92.08% Impervious, Inflow Depth = 5.41" for 25-YR event
Inflow = 2.6 cfs @ 12.08 hrs, Volume= 9,331 cf
Outflow = 2.6 cfs @ 12.08 hrs, Volume= 9,331 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.08 hrs, Volume= 9,331 cf
Routed to Pond 3.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 64.51' @ 12.08 hrs
Flood Elev= 69.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.55'	**15.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.55' / 63.05' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.6 cfs @ 12.08 hrs HW=64.50' (Free Discharge)
1=Culvert (Inlet Controls 2.6 cfs @ 2.63 fps)

Summary for Pond 3.7P:

Inflow Area = 6,280 sf, 87.10% Impervious, Inflow Depth = 5.31" for 25-YR event
Inflow = 0.8 cfs @ 12.08 hrs, Volume= 2,778 cf
Outflow = 0.8 cfs @ 12.08 hrs, Volume= 2,778 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.08 hrs, Volume= 2,778 cf
Routed to Pond 3.5P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 65.32' @ 12.08 hrs
Flood Elev= 68.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.80'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.80' / 64.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.8 cfs @ 12.08 hrs HW=65.32' (Free Discharge)
1=Culvert (Inlet Controls 0.8 cfs @ 1.93 fps)

Summary for Pond 3P: B-32 (CB-8031)

Inflow Area = 414,530 sf, 81.92% Impervious, Inflow Depth = 5.22" for 25-YR event
Inflow = 17.0 cfs @ 12.11 hrs, Volume= 180,388 cf
Outflow = 17.0 cfs @ 12.11 hrs, Volume= 180,388 cf, Atten= 0%, Lag= 0.0 min
Primary = 17.0 cfs @ 12.11 hrs, Volume= 180,388 cf
Routed to Pond 4P : B-32A (CB-8323)

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.56' @ 12.11 hrs
Flood Elev= 66.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.44' / 55.52' S= -0.0036 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=17.0 cfs @ 12.11 hrs HW=58.55' (Free Discharge)
└**1=Culvert** (Inlet Controls 17.0 cfs @ 5.42 fps)

Summary for Pond 4.21P:

Inflow Area = 11,860 sf, 82.50% Impervious, Inflow Depth = 5.29" for 25-YR event
Inflow = 1.5 cfs @ 12.08 hrs, Volume= 5,229 cf
Outflow = 1.5 cfs @ 12.08 hrs, Volume= 5,229 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.5 cfs @ 12.08 hrs, Volume= 5,229 cf
Routed to Pond 4.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.73' @ 12.08 hrs
Flood Elev= 72.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.05'	**15.0" Round Culvert** L= 82.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.05' / 66.06' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.5 cfs @ 12.08 hrs HW=67.73' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.5 cfs @ 2.21 fps)

Summary for Pond 4.2P:

Inflow Area = 11,860 sf, 82.50% Impervious, Inflow Depth = 5.29" for 25-YR event
Inflow = 1.5 cfs @ 12.08 hrs, Volume= 5,229 cf
Outflow = 1.5 cfs @ 12.08 hrs, Volume= 5,229 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.5 cfs @ 12.08 hrs, Volume= 5,229 cf
Routed to Pond 4.21P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.88' @ 12.08 hrs
Flood Elev= 72.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.20'	**15.0" Round Culvert** L= 104.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.20' / 67.16' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.5 cfs @ 12.08 hrs HW=68.88' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.5 cfs @ 2.21 fps)

Summary for Pond 4.3P:

Inflow Area = 22,490 sf, 85.42% Impervious, Inflow Depth = 5.31" for 25-YR event
Inflow = 2.8 cfs @ 12.08 hrs, Volume= 9,959 cf
Outflow = 2.8 cfs @ 12.08 hrs, Volume= 9,959 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.8 cfs @ 12.08 hrs, Volume= 9,959 cf
Routed to Pond 4.8P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.71' @ 12.08 hrs
Flood Elev= 70.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.81'	**18.0" Round Culvert** L= 105.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.81' / 64.15' S= 0.0158 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.8 cfs @ 12.08 hrs HW=66.71' (Free Discharge)
1=Culvert (Inlet Controls 2.8 cfs @ 2.55 fps)

Summary for Pond 4.4P:

Inflow Area = 11,040 sf, 83.15% Impervious, Inflow Depth = 5.23" for 25-YR event
Inflow = 1.4 cfs @ 12.08 hrs, Volume= 4,813 cf
Outflow = 1.4 cfs @ 12.08 hrs, Volume= 4,813 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.08 hrs, Volume= 4,813 cf
Routed to Pond 4.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.62' @ 12.08 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.90'	**12.0" Round Culvert** L= 83.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.90' / 66.50' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.4 cfs @ 12.08 hrs HW=68.62' (Free Discharge)
1=Culvert (Inlet Controls 1.4 cfs @ 2.28 fps)

Summary for Pond 4.5P:

Inflow Area = 5,620 sf, 62.10% Impervious, Inflow Depth = 4.82" for 25-YR event
Inflow = 0.7 cfs @ 12.08 hrs, Volume= 2,257 cf
Outflow = 0.7 cfs @ 12.08 hrs, Volume= 2,257 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.08 hrs, Volume= 2,257 cf
Routed to Pond 4.6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 69.57' @ 12.08 hrs
Flood Elev= 72.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.10'	**12.0" Round Culvert** L= 122.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.10' / 66.50' S= 0.0213 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.7 cfs @ 12.08 hrs HW=69.57' (Free Discharge)
1=Culvert (Inlet Controls 0.7 cfs @ 1.84 fps)

Summary for Pond 4.6P:

Inflow Area = 25,750 sf, 80.23% Impervious, Inflow Depth = 5.17" for 25-YR event
Inflow = 3.2 cfs @ 12.08 hrs, Volume= 11,104 cf
Outflow = 3.2 cfs @ 12.08 hrs, Volume= 11,104 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.2 cfs @ 12.08 hrs, Volume= 11,104 cf
Routed to Pond 4.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.97' @ 12.08 hrs
Flood Elev= 70.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.00'	**18.0" Round Culvert** L= 77.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.00' / 64.70' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.2 cfs @ 12.08 hrs HW=66.97' (Free Discharge)
1=Culvert (Inlet Controls 3.2 cfs @ 2.64 fps)

Summary for Pond 4.7P:

Inflow Area = 31,770 sf, 83.98% Impervious, Inflow Depth = 5.25" for 25-YR event
Inflow = 4.0 cfs @ 12.08 hrs, Volume= 13,894 cf
Outflow = 4.0 cfs @ 12.08 hrs, Volume= 13,894 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.0 cfs @ 12.08 hrs, Volume= 13,894 cf
Routed to Pond 4.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.94' @ 12.08 hrs
Flood Elev= 69.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	64.20'	**18.0" Round Culvert X 2.00** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 64.20' / 63.70' S= 0.0227 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.0 cfs @ 12.08 hrs HW=64.93' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.0 cfs @ 2.30 fps)

Summary for Pond 4.81P:

Inflow Area = 66,110 sf, 85.55% Impervious, Inflow Depth = 5.29" for 25-YR event
Inflow = 8.3 cfs @ 12.08 hrs, Volume= 29,152 cf
Outflow = 8.3 cfs @ 12.08 hrs, Volume= 29,152 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.3 cfs @ 12.08 hrs, Volume= 29,152 cf
Routed to Pond 3.32P : WQ DET & SF-2

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.70' @ 12.08 hrs
Flood Elev= 69.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.20'	**24.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.20' / 62.80' S= 0.0267 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.3 cfs @ 12.08 hrs HW=64.70' (Free Discharge)
└**1=Culvert** (Inlet Controls 8.3 cfs @ 3.29 fps)

Summary for Pond 4.8P:

Inflow Area = 34,340 sf, 87.00% Impervious, Inflow Depth = 5.33" for 25-YR event
Inflow = 4.3 cfs @ 12.08 hrs, Volume= 15,258 cf
Outflow = 4.3 cfs @ 12.08 hrs, Volume= 15,258 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.3 cfs @ 12.08 hrs, Volume= 15,258 cf
Routed to Pond 4.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 64.67' @ 12.08 hrs
Flood Elev= 68.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.65'	**24.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.65' / 63.30' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.3 cfs @ 12.08 hrs HW=64.67' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.3 cfs @ 2.71 fps)

Summary for Pond 4P: B-32A (CB-8323)

Inflow Area = 445,070 sf, 79.79% Impervious, Inflow Depth = 5.19" for 25-YR event
Inflow = 19.8 cfs @ 12.18 hrs, Volume= 192,599 cf
Outflow = 19.8 cfs @ 12.18 hrs, Volume= 192,599 cf, Atten= 0%, Lag= 0.0 min
Primary = 19.8 cfs @ 12.18 hrs, Volume= 192,599 cf
Routed to Link POA-1 : B-30
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA-1 : B-30

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 59.27' @ 12.18 hrs
Flood Elev= 59.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.52'	**24.0" Round Culvert** L= 115.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.52' / 54.90' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	59.39'	**15.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=19.8 cfs @ 12.18 hrs HW=59.27' (Free Discharge)
1=Culvert (Inlet Controls 19.8 cfs @ 6.30 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=55.52' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond 5P:

Inflow Area = 20,660 sf, 50.80% Impervious, Inflow Depth = 4.80" for 25-YR event
Inflow = 2.5 cfs @ 12.08 hrs, Volume= 8,261 cf
Outflow = 2.5 cfs @ 12.08 hrs, Volume= 8,261 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.5 cfs @ 12.08 hrs, Volume= 8,261 cf
Routed to Link POA-2 :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 60.91' @ 12.08 hrs
Flood Elev= 66.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 59.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.4 cfs @ 12.08 hrs HW=60.91' (Free Discharge)
1=Culvert (Inlet Controls 2.4 cfs @ 2.56 fps)

Summary for Pond 6P:

Inflow Area = 64,300 sf, 76.42% Impervious, Inflow Depth = 5.11" for 25-YR event
Inflow = 5.9 cfs @ 12.16 hrs, Volume= 27,403 cf
Outflow = 5.9 cfs @ 12.16 hrs, Volume= 27,403 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.9 cfs @ 12.16 hrs, Volume= 27,403 cf
Routed to Pond 2P : B-34
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 2P : B-34

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.61' @ 12.16 hrs
Flood Elev= 71.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.08'	**12.0" Round Culvert** L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.08' / 57.67' S= 0.0147 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	70.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=5.9 cfs @ 12.16 hrs HW=68.60' (Free Discharge)
1=Culvert (Barrel Controls 5.9 cfs @ 7.52 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=62.08' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond 7P:

Inflow Area = 45,290 sf, 74.03% Impervious, Inflow Depth = 5.03" for 25-YR event
Inflow = 4.6 cfs @ 12.15 hrs, Volume= 18,973 cf
Outflow = 4.6 cfs @ 12.15 hrs, Volume= 18,973 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.6 cfs @ 12.15 hrs, Volume= 18,973 cf
Routed to Link POA-4 :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.89' @ 12.15 hrs
Flood Elev= 69.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.00'	**12.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.00' / 64.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.6 cfs @ 12.15 hrs HW=67.88' (Free Discharge)
1=Culvert (Inlet Controls 4.6 cfs @ 5.87 fps)

Summary for Pond 8.10P:

Inflow Area = 8,440 sf, 92.00% Impervious, Inflow Depth = 5.41" for 25-YR event
Inflow = 1.1 cfs @ 12.08 hrs, Volume= 3,802 cf
Outflow = 1.1 cfs @ 12.08 hrs, Volume= 3,802 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.1 cfs @ 12.08 hrs, Volume= 3,802 cf
Routed to Pond 8.9P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.92' @ 12.08 hrs
Flood Elev= 72.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.30'	**12.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.30' / 68.75' S= 0.0367 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.1 cfs @ 12.08 hrs HW=69.92' (Free Discharge)
1=Culvert (Inlet Controls 1.1 cfs @ 2.11 fps)

Summary for Pond 8.111P:

Inflow Area = 29,240 sf, 88.61% Impervious, Inflow Depth = 5.34" for 25-YR event
Inflow = 3.7 cfs @ 12.08 hrs, Volume= 13,009 cf
Outflow = 3.7 cfs @ 12.08 hrs, Volume= 13,009 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.7 cfs @ 12.08 hrs, Volume= 13,009 cf
Routed to Pond 8.82P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.01' @ 12.08 hrs
Flood Elev= 74.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.95'	**18.0" Round Culvert** L= 160.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 67.95' / 66.30' S= 0.0103 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.7 cfs @ 12.08 hrs HW=69.01' (Free Discharge)
1=Culvert (Inlet Controls 3.7 cfs @ 2.77 fps)

Summary for Pond 8.11P:

Inflow Area = 26,900 sf, 87.62% Impervious, Inflow Depth = 5.32" for 25-YR event
Inflow = 3.4 cfs @ 12.08 hrs, Volume= 11,924 cf
Outflow = 3.4 cfs @ 12.08 hrs, Volume= 11,924 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.4 cfs @ 12.08 hrs, Volume= 11,924 cf
Routed to Pond 8.111P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 71.10' @ 12.08 hrs
Flood Elev= 73.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.95'	**15.0" Round Culvert** L= 144.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.95' / 68.20' S= 0.0122 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.4 cfs @ 12.08 hrs HW=71.10' (Free Discharge)
↑**1=Culvert** (Inlet Controls 3.4 cfs @ 2.88 fps)

Summary for Pond 8.12P:

Inflow Area = 2,340 sf,100.00% Impervious, Inflow Depth = 5.56" for 25-YR event
Inflow = 0.3 cfs @ 12.08 hrs, Volume= 1,085 cf
Outflow = 0.3 cfs @ 12.08 hrs, Volume= 1,085 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.08 hrs, Volume= 1,085 cf
Routed to Pond 8.111P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.06' @ 12.08 hrs
Flood Elev= 74.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.75'	**12.0" Round Culvert** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.75' / 69.30' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.3 cfs @ 12.08 hrs HW=71.06' (Free Discharge)
↑**1=Culvert** (Inlet Controls 0.3 cfs @ 1.49 fps)

Summary for Pond 8.21P:

Inflow Area = 19,350 sf, 84.44% Impervious, Inflow Depth = 5.26" for 25-YR event
Inflow = 2.4 cfs @ 12.08 hrs, Volume= 8,477 cf
Outflow = 2.4 cfs @ 12.08 hrs, Volume= 8,477 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.4 cfs @ 12.08 hrs, Volume= 8,477 cf
Routed to Pond 8.22P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.74' @ 12.08 hrs
Flood Elev= 76.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.00'	**24.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.00' / 68.60' S= 0.0240 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.4 cfs @ 12.08 hrs HW=71.74' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.4 cfs @ 2.31 fps)

Summary for Pond 8.22P:

Inflow Area = 41,770 sf, 81.04% Impervious, Inflow Depth = 5.19" for 25-YR event
Inflow = 5.2 cfs @ 12.08 hrs, Volume= 18,067 cf
Outflow = 5.2 cfs @ 12.08 hrs, Volume= 18,067 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.2 cfs @ 12.08 hrs, Volume= 18,067 cf
Routed to Pond 8.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.62' @ 12.08 hrs
Flood Elev= 75.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.50'	**24.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.50' / 68.10' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.2 cfs @ 12.08 hrs HW=69.62' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.2 cfs @ 2.85 fps)

Summary for Pond 8.2P:

Inflow Area = 19,350 sf, 84.44% Impervious, Inflow Depth = 5.26" for 25-YR event
Inflow = 2.4 cfs @ 12.08 hrs, Volume= 8,477 cf
Outflow = 2.4 cfs @ 12.08 hrs, Volume= 8,477 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.4 cfs @ 12.08 hrs, Volume= 8,477 cf
Routed to Pond 8.21P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 74.52' @ 12.08 hrs
Flood Elev= 79.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.70'	**18.0" Round Culvert** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.70' / 71.50' S= 0.0183 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.4 cfs @ 12.08 hrs HW=74.52' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.4 cfs @ 2.44 fps)

Summary for Pond 8.3P:

Inflow Area = 99,100 sf, 78.48% Impervious, Inflow Depth = 5.14" for 25-YR event
Inflow = 12.2 cfs @ 12.08 hrs, Volume= 42,448 cf
Outflow = 12.2 cfs @ 12.08 hrs, Volume= 42,448 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.2 cfs @ 12.08 hrs, Volume= 42,448 cf
Routed to Pond 8.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.04' @ 12.08 hrs
Flood Elev= 74.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.00'	**24.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 68.00' / 67.20' S= 0.0178 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.2 cfs @ 12.08 hrs HW=70.04' (Free Discharge)
1=Culvert (Inlet Controls 12.2 cfs @ 3.88 fps)

Summary for Pond 8.4P:

Inflow Area = 22,420 sf, 78.10% Impervious, Inflow Depth = 5.13" for 25-YR event
Inflow = 2.8 cfs @ 12.08 hrs, Volume= 9,590 cf
Outflow = 2.8 cfs @ 12.08 hrs, Volume= 9,590 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.8 cfs @ 12.08 hrs, Volume= 9,590 cf
Routed to Pond 8.22P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.98' @ 12.08 hrs
Flood Elev= 75.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**15.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.00' / 69.35' S= 0.0163 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.8 cfs @ 12.08 hrs HW=70.98' (Free Discharge)
1=Culvert (Inlet Controls 2.8 cfs @ 2.66 fps)

Summary for Pond 8.5P:

Inflow Area = 9,090 sf, 0.00% Impervious, Inflow Depth = 3.60" for 25-YR event
Inflow = 0.9 cfs @ 12.09 hrs, Volume= 2,728 cf
Outflow = 0.9 cfs @ 12.09 hrs, Volume= 2,728 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.9 cfs @ 12.09 hrs, Volume= 2,728 cf
Routed to Pond 8.3P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 75.00' @ 12.09 hrs
Flood Elev= 77.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.45'	**12.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 74.45' / 73.35' S= 0.0220 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.9 cfs @ 12.09 hrs HW=75.00' (Free Discharge)
1=Culvert (Inlet Controls 0.9 cfs @ 1.99 fps)

Summary for Pond 8.6P:

Inflow Area = 11,120 sf, 70.91% Impervious, Inflow Depth = 4.99" for 25-YR event
Inflow = 1.3 cfs @ 12.08 hrs, Volume= 4,626 cf
Outflow = 1.3 cfs @ 12.08 hrs, Volume= 4,626 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.3 cfs @ 12.08 hrs, Volume= 4,626 cf
Routed to Pond 8.7P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.93' @ 12.08 hrs
Flood Elev= 75.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	71.30'	**15.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.30' / 70.10' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.3 cfs @ 12.08 hrs HW=71.93' (Free Discharge)
1=Culvert (Inlet Controls 1.3 cfs @ 2.14 fps)

Summary for Pond 8.7P:

Inflow Area = 115,300 sf, 75.85% Impervious, Inflow Depth = 5.09" for 25-YR event
Inflow = 14.1 cfs @ 12.08 hrs, Volume= 48,892 cf
Outflow = 14.1 cfs @ 12.08 hrs, Volume= 48,892 cf, Atten= 0%, Lag= 0.0 min
Primary = 14.1 cfs @ 12.08 hrs, Volume= 48,892 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.74' @ 12.08 hrs
Flood Elev= 73.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.90'	**30.0" Round Culvert** L= 57.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.90' / 66.25' S= 0.0114 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=14.1 cfs @ 12.08 hrs HW=68.74' (Free Discharge)
└**1=Culvert** (Inlet Controls 14.1 cfs @ 3.64 fps)

Summary for Pond 8.81P:

Inflow Area = 150,970 sf, 79.60% Impervious, Inflow Depth = 5.16" for 25-YR event
Inflow = 18.6 cfs @ 12.08 hrs, Volume= 64,942 cf
Outflow = 18.6 cfs @ 12.08 hrs, Volume= 64,942 cf, Atten= 0%, Lag= 0.0 min
Primary = 18.6 cfs @ 12.08 hrs, Volume= 64,942 cf
Routed to Pond 8.82P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.34' @ 12.08 hrs
Flood Elev= 74.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	66.25'	**36.0" Round Culvert** L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 66.25' / 66.00' S= 0.0192 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=18.6 cfs @ 12.08 hrs HW=68.34' (Free Discharge)
└**1=Culvert** (Barrel Controls 18.6 cfs @ 4.99 fps)

Summary for Pond 8.82P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 5.19" for 25-YR event
Inflow = 22.4 cfs @ 12.08 hrs, Volume= 77,951 cf
Outflow = 22.4 cfs @ 12.08 hrs, Volume= 77,951 cf, Atten= 0%, Lag= 0.0 min
Primary = 22.4 cfs @ 12.08 hrs, Volume= 77,951 cf
Routed to Pond 8.83P : WQ DET & SF-1

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 67.67' @ 12.08 hrs
Flood Elev= 75.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.25'	**36.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.25' / 65.10' S= 0.0214 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=22.3 cfs @ 12.08 hrs HW=67.67' (Free Discharge)
└**1=Culvert** (Barrel Controls 22.3 cfs @ 5.00 fps)

Summary for Pond 8.83P: WQ DET & SF-1

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 5.19" for 25-YR event
Inflow = 22.4 cfs @ 12.08 hrs, Volume= 77,951 cf
Outflow = 22.3 cfs @ 12.09 hrs, Volume= 77,951 cf, Atten= 0%, Lag= 0.3 min
Primary = 0.5 cfs @ 12.09 hrs, Volume= 31,184 cf
Routed to Pond 8.85P :
Secondary = 21.8 cfs @ 12.09 hrs, Volume= 46,767 cf
Routed to Pond 8.84P : Peak DET-1

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 69.63' @ 12.09 hrs Surf.Area= 1,115 sf Storage= 5,179 cf

Plug-Flow detention time= 48.9 min calculated for 77,938 cf (100% of inflow)
Center-of-Mass det. time= 48.9 min (803.7 - 754.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	62.50'	0 cf	**10.00'W x 111.50'L x 8.00'H Field A** 8,920 cf Overall - 5,504 cf Embedded = 3,416 cf x 0.0% Voids
#2A	62.50'	5,504 cf	**CMP Round 96** x 5 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L Row Length Adjustment= +1.50' x 50.27 sf x 1 rows 8.00' Header x 50.27 sf x 1 = 402.1 cf Inside
		5,504 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	62.50'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 62.50' / 62.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 3	60.60'	**Tube/Siphon/Float Valve X 18.00** 0.586" Diameter, C= 0.600, 0.263" Trickle Diameter Starts@63.35'
#3	Primary	60.60'	**12.0" Round 12" Stormfilter Outlet** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.60' / 60.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Secondary	68.58'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 6.08 6.16 6.24 6.32 6.40 6.48 6.56 6.64 6.72 6.80 6.88 6.96 7.04 7.12 7.20 7.28 7.36 7.44 7.52 7.60 7.68 7.76 7.84 7.92 8.00 Width (feet) 6.83 6.73 6.63 6.52 6.40 6.28 6.15 6.01 5.87 5.71 5.55 5.38 5.20 5.01 4.80 4.58 4.34 4.08 3.80 3.49 3.14 2.73 2.24 1.59 0.00

Primary OutFlow Max=0.5 cfs @ 12.09 hrs HW=69.63' (Free Discharge)
└**3=12" Stormfilter Outlet** (Passes 0.5 cfs of 8.7 cfs potential flow)
└**2=Tube/Siphon/Float Valve** (Orifice Controls 0.5 cfs @ 14.47 fps)
└**1=Culvert** (Passes 0.5 cfs of 9.7 cfs potential flow)

Secondary OutFlow Max=21.8 cfs @ 12.09 hrs HW=69.63' (Free Discharge)
└**4=Custom Weir/Orifice** (Weir Controls 21.8 cfs @ 3.46 fps)

Summary for Pond 8.84P: Peak DET-1

Inflow = 21.8 cfs @ 12.09 hrs, Volume= 46,767 cf
Outflow = 7.5 cfs @ 12.35 hrs, Volume= 46,766 cf, Atten= 66%, Lag= 15.6 min
Primary = 7.5 cfs @ 12.35 hrs, Volume= 46,766 cf
Routed to Pond 8.85P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.56' @ 12.35 hrs Surf.Area= 10,780 sf Storage= 25,516 cf

Plug-Flow detention time= 265.4 min calculated for 46,759 cf (100% of inflow)
Center-of-Mass det. time= 265.7 min (1,008.4 - 742.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	62.50'	0 cf	**98.00'W x 110.00'L x 8.00'H Field A** 86,240 cf Overall - 50,064 cf Embedded = 36,176 cf x 0.0% Voids
#2A	62.50'	50,064 cf	**CMP Round 96** x 45 Inside #1 Effective Size= 96.0"W x 96.0"H => 50.27 sf x 20.00'L = 1,005.3 cf Overall Size= 96.0"W x 96.0"H x 20.00'L 45 Chambers in 9 Rows 96.00' Header x 50.27 sf x 1 = 4,825.5 cf Inside
		50,064 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	70.00'	**6.0' 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
#2	Primary	66.00'	**36.0" W x 12.0" H Vert. OVERFLOW ORIFICE** C= 0.600 Limited to weir flow at low heads
#3	Primary	62.50'	**2.0" Vert. DRAINDOWN ORIFICE** C= 0.600 Limited to weir flow at low heads
#4	Primary	64.50'	**6.0" W x 6.0" H Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.5 cfs @ 12.35 hrs HW=66.56' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)
└**2=OVERFLOW ORIFICE** (Orifice Controls 4.0 cfs @ 2.40 fps)
└**3=DRAINDOWN ORIFICE** (Orifice Controls 0.2 cfs @ 9.60 fps)
└**4=Orifice/Grate** (Orifice Controls 3.2 cfs @ 6.47 fps)

Summary for Pond 8.85P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 5.19" for 25-YR event
Inflow = 8.0 cfs @ 12.35 hrs, Volume= 77,951 cf
Outflow = 8.0 cfs @ 12.35 hrs, Volume= 77,951 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.0 cfs @ 12.35 hrs, Volume= 77,951 cf
Routed to Pond 8.96P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 62.66' @ 12.35 hrs
Flood Elev= 73.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.50'	**18.0" Round Culvert** L= 226.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.50' / 58.60' S= 0.0084 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.0 cfs @ 12.35 hrs HW=62.66' (Free Discharge)
1=Culvert (Inlet Controls 8.0 cfs @ 4.51 fps)

Summary for Pond 8.8P:

Inflow Area = 9,920 sf, 83.06% Impervious, Inflow Depth = 5.23" for 25-YR event
Inflow = 1.2 cfs @ 12.08 hrs, Volume= 4,323 cf
Outflow = 1.2 cfs @ 12.08 hrs, Volume= 4,323 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.08 hrs, Volume= 4,323 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.11' @ 12.08 hrs
Flood Elev= 75.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.50'	**15.0" Round Culvert** L= 23.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 70.50' / 70.00' S= 0.0217 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.2 cfs @ 12.08 hrs HW=71.11' (Free Discharge)
1=Culvert (Inlet Controls 1.2 cfs @ 2.09 fps)

Summary for Pond 8.96P:

Inflow Area = 180,210 sf, 81.06% Impervious, Inflow Depth = 5.19" for 25-YR event
Inflow = 8.0 cfs @ 12.35 hrs, Volume= 77,951 cf
Outflow = 8.0 cfs @ 12.35 hrs, Volume= 77,951 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.0 cfs @ 12.35 hrs, Volume= 77,951 cf
Routed to Pond 2.1P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Peak Elev= 60.66' @ 12.35 hrs
Flood Elev= 68.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	58.50'	**18.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 58.50' / 56.01' S= 0.0311 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.0 cfs @ 12.35 hrs HW=60.66' (Free Discharge)
1=Culvert (Inlet Controls 8.0 cfs @ 4.51 fps)

Summary for Pond 8.9P:

Inflow Area = 25,750 sf, 95.03% Impervious, Inflow Depth = 5.46" for 25-YR event
Inflow = 3.3 cfs @ 12.08 hrs, Volume= 11,726 cf
Outflow = 3.3 cfs @ 12.08 hrs, Volume= 11,726 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.3 cfs @ 12.08 hrs, Volume= 11,726 cf
Routed to Pond 8.81P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 71.13' @ 12.08 hrs
Flood Elev= 73.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	69.40'	**12.0" Round Culvert** L= 18.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 69.40' / 68.75' S= 0.0361 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.3 cfs @ 12.08 hrs HW=71.13' (Free Discharge)
1=Culvert (Inlet Controls 3.3 cfs @ 4.21 fps)

Summary for Pond 8P:

Inflow Area = 13,930 sf, 49.61% Impervious, Inflow Depth = 4.46" for 25-YR event
Inflow = 1.5 cfs @ 12.09 hrs, Volume= 5,180 cf
Outflow = 1.5 cfs @ 12.09 hrs, Volume= 5,180 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.5 cfs @ 12.09 hrs, Volume= 5,180 cf
Routed to Pond 6P :

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 61.35' @ 12.09 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.58'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.58' / 59.88' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.5 cfs @ 12.09 hrs HW=61.35' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.5 cfs @ 2.36 fps)

Summary for Link POA-1: B-30

Inflow Area = 445,070 sf, 79.79% Impervious, Inflow Depth = 5.19" for 25-YR event
Inflow = 19.8 cfs @ 12.18 hrs, Volume= 192,599 cf
Primary = 19.8 cfs @ 12.18 hrs, Volume= 192,599 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-2:

Inflow Area = 20,660 sf, 50.80% Impervious, Inflow Depth = 4.80" for 25-YR event
Inflow = 2.5 cfs @ 12.08 hrs, Volume= 8,261 cf
Primary = 2.5 cfs @ 12.08 hrs, Volume= 8,261 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-3:

Inflow Area = 6,800 sf, 0.00% Impervious, Inflow Depth = 3.82" for 25-YR event
Inflow = 0.7 cfs @ 12.09 hrs, Volume= 2,163 cf
Primary = 0.7 cfs @ 12.09 hrs, Volume= 2,163 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-4:

Inflow Area = 45,290 sf, 74.03% Impervious, Inflow Depth = 5.03" for 25-YR event
Inflow = 4.6 cfs @ 12.15 hrs, Volume= 18,973 cf
Primary = 4.6 cfs @ 12.15 hrs, Volume= 18,973 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

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100 Subcat 2.1S:
100 Subcat 3.1S:
101 Subcat 3.2S:
101 Subcat 3.3S:
101 Subcat 3.4S:
102 Subcat 3.5S:
102 Subcat 3.6S:
103 Subcat 3.7S:
103 Subcat 4.1S:
103 Subcat 4.2S:
104 Subcat 4.3S:
104 Subcat 4.4S:
105 Subcat 4.5S:
105 Subcat 4.6S:
105 Subcat 4.7S:
106 Subcat 4.8S:
106 Subcat 5.1S:
107 Subcat 6.1S:
107 Subcat 7.1S:
108 Subcat 8.10S:
108 Subcat 8.11S:
108 Subcat 8.12S:
109 Subcat 8.1S:
109 Subcat 8.2S:
110 Subcat 8.3S:
110 Subcat 8.4S:
110 Subcat 8.5S:
111 Subcat 8.6S:
111 Subcat 8.7S:
111 Subcat 8.8S:
112 Subcat 8.9S:
112 Subcat 9.1S:
113 Pond 1P: B-41
113 Pond 2.11P: 21P (CB-8436)
113 Pond 2.1P:
114 Pond 2P: B-34
114 Pond 3.11P:
115 Pond 3.1P:
115 Pond 3.2P:
116 Pond 3.31P:
116 Pond 3.32P: WQ DET & SF-2
117 Pond 3.33P: PEAK DET
118 Pond 3.34P:
119 Pond 3.35P:
119 Pond 3.3P:
119 Pond 3.4P:
120 Pond 3.5P:

120 Pond 3.6P:
121 Pond 3.7P:
121 Pond 3P: B-32 (CB-8031)
122 Pond 4.21P:
122 Pond 4.2P:
122 Pond 4.3P:
123 Pond 4.4P:
123 Pond 4.5P:
124 Pond 4.6P:
124 Pond 4.7P:
125 Pond 4.81P:
125 Pond 4.8P:
125 Pond 4P: B-32A (CB-8323)
126 Pond 5P:
126 Pond 6P:
127 Pond 7P:
127 Pond 8.10P:
128 Pond 8.111P:
128 Pond 8.11P:
129 Pond 8.12P:
129 Pond 8.21P:
130 Pond 8.22P:
130 Pond 8.2P:
130 Pond 8.3P:
131 Pond 8.4P:
131 Pond 8.5P:
132 Pond 8.6P:
132 Pond 8.7P:
133 Pond 8.81P:
133 Pond 8.82P:
133 Pond 8.83P: WQ DET & SF-1
135 Pond 8.84P: Peak DET-1
135 Pond 8.85P:
136 Pond 8.8P:
136 Pond 8.96P:
137 Pond 8.9P:
137 Pond 8P:
138 Link POA-1: B-30
138 Link POA-2:
138 Link POA-3:
138 Link POA-4:

Summary for Pond 6P:

Inflow Area = 148,505 sf, 34.60% Impervious, Inflow Depth = 4.17" for 25-YR event
Inflow = 9.5 cfs @ 12.23 hrs, Volume= 51,602 cf
Outflow = 9.5 cfs @ 12.23 hrs, Volume= 51,602 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.5 cfs @ 12.23 hrs, Volume= 48,670 cf
Secondary = 3.0 cfs @ 12.23 hrs, Volume= 2,932 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 70.69' @ 12.23 hrs
Flood Elev= 71.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	62.08'	**12.0" Round Culvert** L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 62.08' / 57.67' S= 0.0147 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	70.50'	**12.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=6.5 cfs @ 12.23 hrs HW=70.69' (Free Discharge)
└**1=Culvert** (Barrel Controls 6.5 cfs @ 8.27 fps)

Secondary OutFlow Max=2.9 cfs @ 12.23 hrs HW=70.69' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 2.9 cfs @ 1.24 fps)

Summary for Pond 7P:

Inflow Area = 71,445 sf, 40.30% Impervious, Inflow Depth = 4.55" for 25-YR event
Inflow = 5.0 cfs @ 12.34 hrs, Volume= 27,091 cf
Outflow = 5.0 cfs @ 12.34 hrs, Volume= 27,091 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.0 cfs @ 12.34 hrs, Volume= 27,091 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 68.28' @ 12.34 hrs
Flood Elev= 69.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.00'	**12.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 65.00' / 64.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=5.0 cfs @ 12.34 hrs HW=68.27' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.0 cfs @ 6.33 fps)

Summary for Pond 8P:

Inflow Area = 84,725 sf, 9.68% Impervious, Inflow Depth = 3.60" for 25-YR event
Inflow = 4.7 cfs @ 12.39 hrs, Volume= 25,399 cf
Outflow = 4.7 cfs @ 12.39 hrs, Volume= 25,399 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.7 cfs @ 12.39 hrs, Volume= 25,399 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 66.50' @ 12.39 hrs
Flood Elev= 71.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 63.50' / 62.18' S= 0.0189 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.7 cfs @ 12.39 hrs HW=66.50' (Free Discharge)
1=Culvert (Inlet Controls 4.7 cfs @ 6.00 fps)

Summary for Pond 21P: 21P (CB-8436)

Inflow Area = 206,895 sf, 48.15% Impervious, Inflow Depth = 4.49" for 25-YR event
Inflow = 14.3 cfs @ 12.12 hrs, Volume= 77,433 cf
Outflow = 14.3 cfs @ 12.12 hrs, Volume= 77,433 cf, Atten= 0%, Lag= 0.0 min
Primary = 14.3 cfs @ 12.12 hrs, Volume= 77,433 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 58.59' @ 12.12 hrs
Flood Elev= 67.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	55.88'	**24.0" Round Culvert** L= 90.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 55.88' / 55.62' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=14.3 cfs @ 12.12 hrs HW=58.59' (Free Discharge)
1=Culvert (Barrel Controls 14.3 cfs @ 4.54 fps)

Summary for Link POA-1: B-30

Inflow Area = 395,015 sf, 40.02% Impervious, Inflow Depth = 4.65" for 25-YR event
Inflow = 27.0 cfs @ 12.12 hrs, Volume= 153,175 cf
Primary = 27.0 cfs @ 12.12 hrs, Volume= 153,175 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-2:

Inflow Area = 35,560 sf, 28.26% Impervious, Inflow Depth = 5.28" for 25-YR event
Inflow = 4.5 cfs @ 12.08 hrs, Volume= 15,635 cf
Primary = 4.5 cfs @ 12.08 hrs, Volume= 15,635 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-3:

Inflow Area = 15,800 sf, 0.00% Impervious, Inflow Depth = 3.91" for 25-YR event
Inflow = 1.6 cfs @ 12.09 hrs, Volume= 5,143 cf
Primary = 1.6 cfs @ 12.09 hrs, Volume= 5,143 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-4:

Inflow Area = 71,445 sf, 40.30% Impervious, Inflow Depth = 4.55" for 25-YR event
Inflow = 5.0 cfs @ 12.34 hrs, Volume= 27,091 cf
Primary = 5.0 cfs @ 12.34 hrs, Volume= 27,091 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Appendix 3

Inspection, Maintenance and Housekeeping Plan

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

For:
Portland International Jetport (PWM) Parking Expansion
Portland, ME

By:
Sebago Technics, Inc.
75 John Roberts Road, Suite 4A
South Portland, Maine

Introduction

The following plan outlines the anticipated inspection and maintenance procedures for the erosion and sedimentation control measures as well as stormwater management facilities for the project. This plan also outlines several housekeeping requirements that shall be followed during and after construction. These procedures shall be followed in order to ensure the intended function of the designed measures and to prevent unreasonably adverse impacts to the surrounding environment.

The procedures outlined in this Inspection, Maintenance and Housekeeping Plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the Maine Department of Environmental Protection (MDEP).

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event (0.5" of rainfall), and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (0.5" of rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed

to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Sediment Barriers:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event (0.5" of rainfall). They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

C. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

D. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.
- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains

into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

E. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

F. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.

B. Groundwater protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

C. Fugitive sediment and dust: Actions must be taken to 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.

D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

E. Trench or foundation dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area

that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

Post-Construction

1. **Inspection:** After construction, it is the responsibility of the owner or assigned heirs to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. The owner shall inspect and maintain the BMPs, including but not limited to any parking areas, catch basins, drainage swales, detention basins and ponds, pipes and related structures, in accordance with all municipal and state inspection, cleaning and maintenance requirements of the approved post-construction stormwater management plan.

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction. If the BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator of the BMP shall take corrective action(s) to address the deficiency or deficiencies as soon as possible after the deficiency is discovered and shall provide a record of the deficiency and corrective action(s) to the local municipality in the annual report.

   A. Vegetated Areas:

   - Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains (>0.5") to identify active or potential erosion problems.
   - Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. Ditches, Swales and Other Open Channels:

   - Inspect ditches, swales, level spreaders and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow, and repair any erosion of the ditch lining.
   - Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
   - Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
   - If the ditch has a riprap lining, replace riprap in areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged.

C. Culverts:

- Inspect culverts in the spring, in the late fall, and after heavy rains (>0.5") to remove any obstructions to flow.
- Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
- Inspect and repair any erosion damage at the culvert's inlet and outlet.

D. Removal of Winter Sand:

- Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring.
- Accumulations on pavement may be removed by pavement sweeping.
- Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader or other acceptable method.

E. Stormfilter:

- Refer to the Contech – Stormfilter Operation Manual for guidance on required maintenance and inspection.

3. Documentation:

A. The owner or operator of a BMP or a qualified post-construction stormwater inspector hired by that person, shall, as required by the local municipality, provide a completed and signed certification on a form provided by the local municipality, certifying that the person has inspected the BMP(s) and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they required maintenance or repair, including the record of the deficiency and corrective action(s) taken.

B. A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. A sample "Stormwater Inspection and Maintenance Form" has been included as Attachment 1 of this Inspection, Maintenance, and Housekeeping Plan.

4. Duration of Maintenance: Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

ATTACHMENT 1 – STORMWATER INSPECTION AND MAINTENANCE LOG

Portland International Jetport (PWM) Parking Expansion
Portland, ME

This log is intended to accompany the Inspection, Maintenance, and Housekeeping Plan for the parking expansion at the Portland International Jetport (PWM) in Portland, Maine. The following items shall be checked, cleaned, and maintained on a regular basis as specified in the Maintenance Plan and as described in the sections below. This log shall be kept on file for a minimum of five (5) years and shall be available for review by the City of Portland and the Maine DEP. Qualified personnel familiar with the drainage systems and soils shall perform all inspections. A copy of the construction and post-construction maintenance logs are provided.

INSPECTION MAINTENANCE AND HOUSEKEEPING FORM			
General Information			
Project Name:		**Inspection Date:**	
Project Location:		**Current Weather:**	
		Date / Amount Last Precip:	
BMP Owner:		**Company conducting inspection:**	
Owner Mailing Address:		**Company Mailing Address**	
Owner Phone #:		**Company Phone #:**	
Owner Email:		**Inspector Name:**	
		Inspector Email:	
Site Element	**Suggested Maintenance (recm'd frequency)**	**Observations**	**Inspection Notes/Recommended Action**
Vegetated Areas	Inspect Slopes/Embankments for erosion (annually)		
	Replant bare areas or areas of sparse growth (annually)		
Ditches/Swales	Remove obstructions/debris/sediment (monthly)		
	Inspect for erosion/repair as needed (annually)		
	Remove woody vegetation (annually)		
	Mow vegetated ditches (annually)		
Catch Basins	Remove sediment/debris from sump (annually)		
	Remove accumulated debris from inlet grate		
Culverts	Remove sediment/debris from inlet/outlet aprons (annually)		
	Inspect inlet/outlet aprons for erosion, repair as needed (annually)		
	Inspect, repair as needed, riprap aprons for dislodged/sparse coverage (annually)		
Pipe Outlets	Remove sediment/debris from outlet aprons (annually)		
	Inspect outlet aprons for erosion, repair as needed (annually)		
	Inspect, repair as needed, riprap aprons for dislodged/sparse coverage (annually)		
Stormfilter	Inspect Anually		
Additional Notes/Observations:			

Appendix 4

Subsurface Investigations

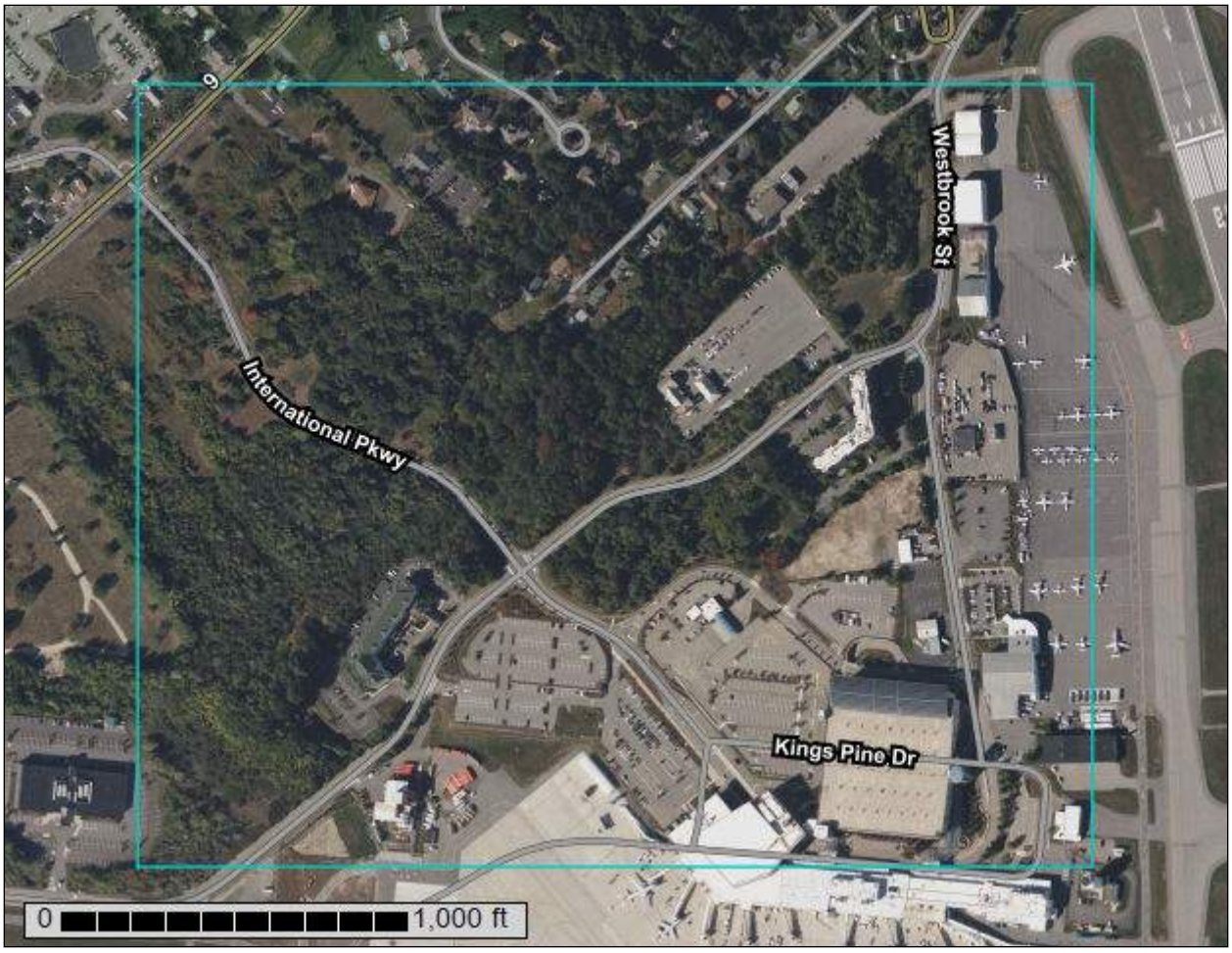
United States Department of Agriculture

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



August 14, 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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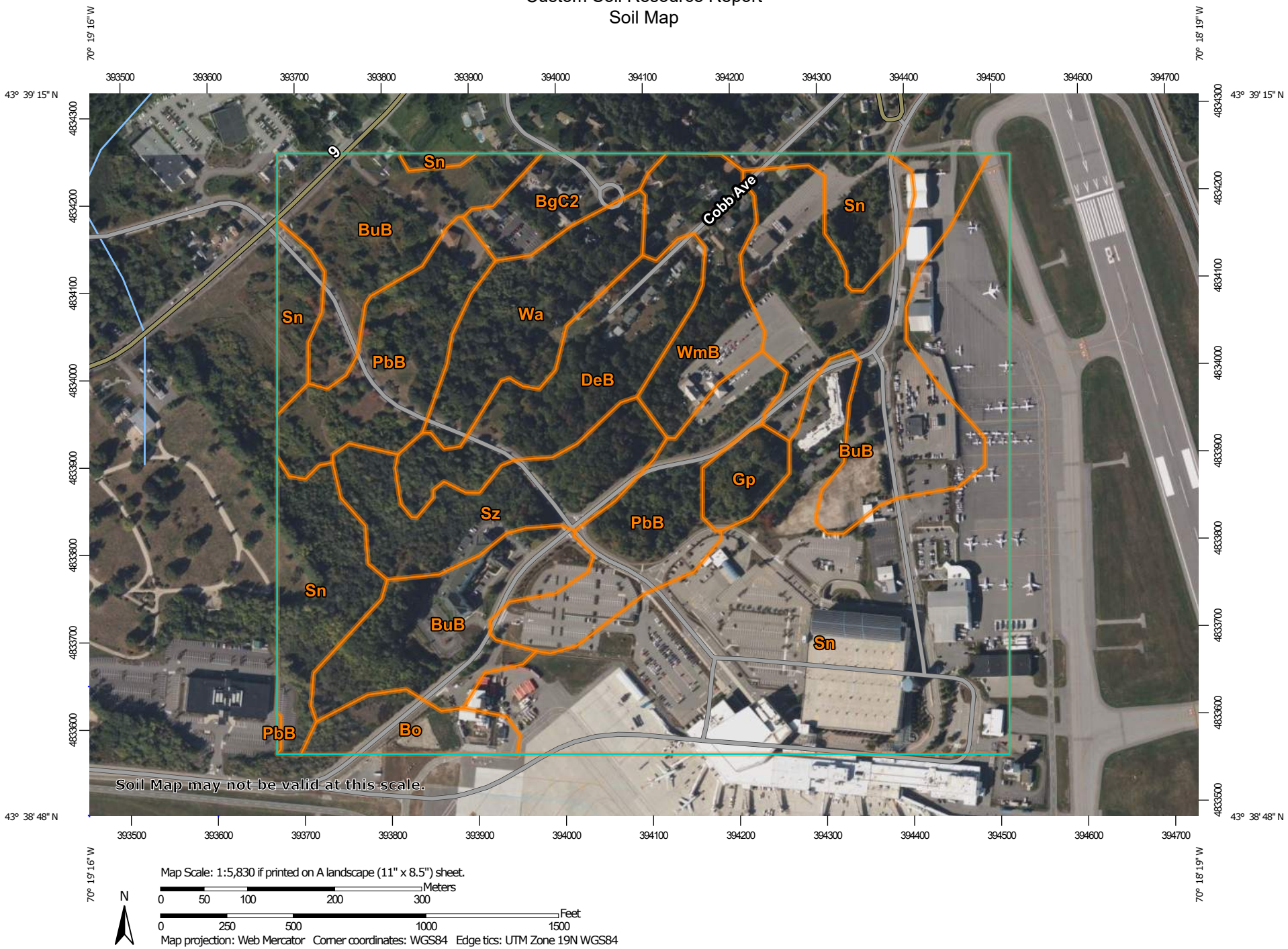
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Soil Map

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.


70° 19' 16" W
70° 18' 19" W
43° 39' 15" N
43° 38' 48" N
393500
393600
393700
393800
393900
394000
394100
394200
394300
394400
394500
394600
394700
4834300
4834200
4834100
4834000
4833900
4833800
4833700
4833600
4833500
9
Cobb Ave
Sn
BgC2
BuB
Wa
WmB
PbB
DeB
Gp
Sz
Bo
Soil Map may not be valid at this scale.
Map Scale: 1:5,830 if printed on A landscape (11" x 8.5") sheet.
Meters
0 50 100 200 300
Feet
0 250 500 1000 1500
N
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—Oct 7, 2021

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
BgC2	Nicholville very fine sandy loam, 8 to 15 percent slopes	3.6	2.5%
Bo	Biddeford mucky peat, 0 to 3 percent slopes	3.3	2.3%
BuB	Lamoine silt loam, 3 to 8 percent slopes	32.7	22.8%
DeB	Deerfield loamy fine sand, 3 to 8 percent slopes	8.9	6.2%
Gp	Gravel pits	2.0	1.4%
PbB	Paxton fine sandy loam, 3 to 8 percent slopes	16.1	11.2%
Sn	Scantic silt loam, 0 to 3 percent slopes	54.6	38.0%
Sz	Swanton fine sandy loam	8.3	5.7%
Wa	Walpole fine sandy loam	7.4	5.1%
WmB	Windsor loamy sand, 0 to 8 percent slopes	6.8	4.7%
Totals for Area of Interest		**143.6**	**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

BgC2—Nicholville very fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2yjg6
Elevation: 20 to 2,300 feet
Mean annual precipitation: 34 to 50 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Nicholville and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nicholville

Setting

Landform: Lakebeds (relict), eskers
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciomarine deposits

Typical profile

Ap - 0 to 7 inches: very fine sandy loam
Bs - 7 to 19 inches: very fine sandy loam
BC - 19 to 30 inches: very fine sandy loam
C - 30 to 65 inches: loamy very fine sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 18 to 30 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: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F144BY501ME - Loamy Slope (Northern Hardwoods)
Hydric soil rating: No

Bo—Biddeford mucky peat, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2t0jn
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

Biddeford and similar soils: 82 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Biddeford

Setting

Landform: Marine terraces, river valleys
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave, linear
Parent material: Organic material over glaciomarine deposits

Typical profile

Oe - 0 to 12 inches: mucky peat
Eg - 12 to 16 inches: silt loam
Bg - 16 to 45 inches: silty clay
Cg - 45 to 65 inches: clay

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very 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 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: D
Ecological site: F144BY002ME - Marine Terrace Depression, F144BY304ME - Wet Clay Flat
Hydric soil rating: Yes

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: Marine terraces, river valleys
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

DeB—Deerfield loamy fine sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2xfg9
Elevation: 0 to 1,190 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Deerfield and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deerfield

Setting

Landform: Kame terraces, outwash plains, outwash terraces, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy outwash derived from granite, gneiss, and/or quartzite

Typical profile

Ap - 0 to 9 inches: loamy fine sand
Bw - 9 to 25 inches: loamy fine sand
BC - 25 to 33 inches: fine sand
Cg - 33 to 60 inches: sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: About 15 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum: 11.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Gp—Gravel pits

Map Unit Composition

Gravel pits: 92 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gravel Pits

Typical profile

H1 - 0 to 6 inches: extremely gravelly sand
H2 - 6 to 60 inches: extremely gravelly sand

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Ecological site: F144BY601ME - Dry Sand
Hydric soil rating: No

PbB—Paxton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: bljf
Elevation: 0 to 930 feet
Mean annual precipitation: 48 to 50 inches
Mean annual air temperature: 45 to 46 degrees F
Frost-free period: 145 to 155 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Paxton and similar soils: 87 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Drumlinoid ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from mica schist

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 20 inches: fine sandy loam
H3 - 20 to 65 inches: fine sandy loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 18 to 40 inches to densic material
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 30 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F144BY501ME - Loamy Slope (Northern Hardwoods)
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: Marine terraces, river valleys
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

Sz—Swanton fine sandy loam

Map Unit Setting

National map unit symbol: blk4
Elevation: 10 to 900 feet
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 39 to 46 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Swanton and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swanton

Setting

Landform: Outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: fine sandy loam
H2 - 9 to 32 inches: fine sandy loam
H3 - 32 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 high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Wa—Walpole fine sandy loam

Map Unit Setting

National map unit symbol: blk7
Elevation: 0 to 540 feet
Mean annual precipitation: 48 to 49 inches
Mean annual air temperature: 45 to 46 degrees F
Frost-free period: 145 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Walpole and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Walpole

Setting

Landform: Outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 20 inches: fine sandy loam
H3 - 20 to 65 inches: gravelly loamy sand

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): High (2.00 to 6.00 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F144BY303ME - Acidic Swamp
Hydric soil rating: Yes

WmB—Windsor loamy sand, 0 to 8 percent slopes

Map Unit Setting

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

Map Unit Composition

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

Description of Windsor

Setting

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

Typical profile

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

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144BY601ME - Dry Sand
Hydric soil rating: No

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REPORT

19-0714 S

November 16, 2023

Explorations and Geotechnical Engineering Services

Proposed Parking Lot Expansion
Jetport Blvd and Loop Road
Portland, Maine

Prepared For:
Sebago Technics, Inc.
Attention: Owens McCullough, P.E., LEED AP
75 John Roberts Road
South Portland, Maine 04106

Prepared By:
S. W. Cole Engineering, Inc.
286 Portland Road
Gray, Maine
T: 207-657-2866

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19-0714 S

November 16, 2023

Sebago Technics, Inc.
Attention: Owens McCullough, P.E., LEED AP
75 Jon Roberts Road
South Portland ME 04106

Subject: Explorations and Geotechnical Engineering Services
Proposed Parking Lots
Jetport Blvd
Portland, Maine

Dear Owens:

In accordance with our revised Proposal, dated October 23, 2023, we have performed subsurface explorations for the subject project. This report summarizes our findings and geotechnical recommendations, and its contents are subject to the limitations set forth in Appendix A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our services was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to earthwork and pavement associated with the proposed construction. Our scope of services included test pit explorations, soils laboratory testing, a geotechnical analysis of the subsurface findings and preparation of this report.

1.2 Site and Proposed Construction

We understand the site consists of four parcels:

1) A large, wooded lot located on the northerly side of the Portland Jetport Terminal building and parking garage, between Loop Road and Jetport Blvd. This parcel

is approximately 300 by 800 feet in plan dimensions. Existing grades vary in elevation from approximately 72 to 87 feet.

2) A small, wooded lot located on the north side of Jetport Blvd approximately 200 by 300 feet in plan dimensions. Existing grades appear to vary from about elevation 80 to 89.
3) A gravel parking lot (Park & Jet Lot) located south of the Embassy Suites hotel and west of Westbrook Street. This parcel is approximately 175 by 400 feet in plan dimensions. Existing grades appear to vary from about elevation 68 to 77.
4) A paved parking lot (Cell Phone Lot) located adjacent to the northerly side of Loop Road. This parcel is approximately 170 by 270 feet in plan dimensions. Existing grades appear to vary from about 68 to 71 feet.

We understand development plans call for construction of new paved parking lots on each of these parcels. We understand subsurface stormwater systems are planned in some areas. Based on the plans provided, existing site grades vary from about elevation 68 to 89 feet (southeast to northwest) and finish site pavement grades will vary from about elevation 68 to 89 feet. It appears much of the proposed parking lot area(s) will require up to about 3 feet of tapered cuts and fills to establish proposed pavement grades. A portion of the site, however, located between Jetport Blvd and Loop Road will require tapered cuts varying from greater than 3 to as much as 9+/- feet to establish proposed pavement grades.

Proposed and existing site features are shown on the “Exploration Location Plan” attached in Appendix B.

2.0 EXPLORATION AND TESTING

2.1 Explorations

Twenty-four test pits (TP-1 through TP-4, TP-6 through TP-9, TP-11 through TP-13, TP-15 through TP-17, TP-19, TP-21 through TP-23, TP-25, TP-27, and TP-29 through TP-32) were made at the site on October 25 and 26, 2023 by Shaw Earthworks, Inc. As requested by STI, certain test pit locations were omitted due to exploration time constraints. The exploration locations were selected and established in the field by STI using GPS methods. The approximate exploration locations are shown on the “Exploration Location Plan” attached in Appendix B. Logs of the explorations and a key

to the notes and symbols used on the logs are attached in Appendix C. The approximate, interpolated elevations shown on the logs were estimated based on topographic information shown on the “Exploration Location Plan”.

2.2 Testing

The explorations were made using a small excavator. Soil samples obtained from the explorations were returned to our laboratory for further classification and testing. Moisture content test results are noted on the logs. The results of four soil gradation tests are attached in Appendix D.

3.0 SUBSURFACE CONDITIONS

3.1 Soil and Bedrock

The test pits were attempted to depths of either 6 feet or 10 feet (10 feet in possible subsurface stormwater management areas) as directed by STI. Below a surficial layer of forest duff and topsoil with organics or uncontrolled fill, the explorations encountered a subsurface profile generally consisting of native deposits of sand with varying amounts of silt and gravel, some cobbles, and a few small boulders as well as sandy clayey silt and stiff to medium silty clay. An uncontrolled fill consisting of mixed clayey silty sand with some organics and clayey silty sand was encountered at test pits TP-1 and TP-2 (cell phone lot) to depths of about 7 and 2.5 feet respectively. Test pits TP-3, TP-4, TP-6, and TP-7 (gravel Park & Jet lot) encountered about 18 to 30 inches of gravelly sand, some silt (uncontrolled fill) overlying about 6-inches of relic topsoil and/or soils with rootlets overlying native soils. Test pits made in wooded areas encountered tree roots to depths varying from about 1.5 to 2.5 feet below the ground surface. Practical refusal surfaces (probable boulders) were encountered at depths of about 10 and 9 feet at test pits TP-2 and TP-12, respectively.

Not all the strata were encountered at each exploration; refer to the attached logs for more detailed subsurface information.

3.2 Groundwater

The soils encountered at the test pits were moist to wet from the ground surface. Where encountered, saturated soil and groundwater seepage was observed at depths varying from about 3.5 to 9.5 feet below the existing ground surface. Groundwater likely becomes

perched on the relatively impervious clayey silt and silty clay encountered at some of the test pits. Long term groundwater information is not available. It should be anticipated that groundwater levels will fluctuate, particularly in response to periods of snowmelt and precipitation, as well as changes in site use.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations include:

- All topsoil, soils with roots and organics, buried relic topsoil, uncontrolled fill and disturbed soils must be completely removed from beneath proposed paved areas.

- The soil encountered was generally wet, becoming saturated with depth with groundwater seepage noted in some test pits. Care will need to be taken not to disturb the native soils during construction. Earthwork and grading activities should occur during drier, non-freezing weather of Spring, Summer, and Fall. Rubber tired construction equipment should not operate directly on the native soil subgrades, particularly when wet. Excavation of bearing surfaces should be completed with a smooth-edged bucket to lessen subgrade disturbance.

- Swales and subsurface drainage systems may be needed in some areas, particularly in deeper planned cut areas.

4.2 Site and Subgrade Preparation

We recommend that site preparation begin with the construction of an erosion control system to protect adjacent drainage ways and areas outside the construction limits. All topsoil, soils with roots and organics, buried relic topsoil, uncontrolled fill and disturbed soils must be completely removed from beneath proposed paved areas. The extent of removal should extend 1 foot laterally outward from outside edge of pavement for every 1-foot of excavation depth (1H:1V bearing splay). The over-excavated area should be backfilled with compacted Granular Borrow. As much vegetation as possible should remain outside the construction areas to lessen the potential for erosion and site disturbance.

Beneath pipes and utility structures with soft trench bottoms, we recommend over excavating with a smooth-edged bucket and installing at least 1 foot of Underdrain Sand below customary bedding materials wrapped in non-woven geotextile fabric. The depth of customary bedding materials for soft trench bottoms should be at least 12 inches below pipes and 24 inches below structures.

4.3 Excavation and Dewatering

Excavation work will generally encounter topsoil, soils with roots and organics, buried relic topsoil, uncontrolled fills, native granular soils, silty clay, and clayey silt soils. Wet to saturated soils and groundwater should be expected with depth. Care must be exercised during construction to limit disturbance of the subgrade soils. Earthwork and grading activities should occur during drier, non-freezing weather of Spring, Summer and Fall. Rubber tired construction equipment should not operate directly on the subgrades, particularly when wet. Low ground pressure tracked equipment may be needed and temporary haul roads overlying geotextile fabric may be necessary. Final cuts to subgrade should be performed with a smooth-edged bucket to help reduce strength loss from soil disturbance.

Sumping and pumping and/or temporary ditching dewatering techniques should be adequate to control groundwater in excavations. Controlling the water levels to at least one foot below planned excavation depths will help stabilize subgrades during construction. Excavations must be properly shored or sloped in accordance with OSHA Regulations to prevent sloughing and caving of the sidewalls during construction. Care must be taken to preclude undermining adjacent structures, utilities, and roadways. The design and planning of excavations, excavation support systems, and dewatering is the responsibility of the contractor.

4.4 Site Drainage

Surface grades should be sloped away from paved areas for positive surface water drainage. Perimeter drainage swales should be deep enough to help control water from intruding into adjacent pavement subbase/base aggregates. We recommend a deeper swale or groundwater cut-off trench drain be considered beneath the proposed swale located in the proposed deeper cut planned in the area near test pit TP-25 to help control water intrusion beneath adjacent pavemen. The trench drain should follow the MaineDOT specifications for French Drains. The underdrain pipe should consist of 6-inch diameter,

perforated foundation drainpipe bedded in Crushed Stone and wrapped in non-woven geotextile filter fabric. The underdrain pipe must have a positive gravity outlet protected from freezing, clogging and backflow.

4.5 Fill, Backfill and Compaction

We recommend the following fill and backfill materials: recycled products must also be tested in accordance with applicable environmental regulations and approved by a qualified environmental consultant.

Common Borrow: Fill to raise grades in landscape areas should be non-organic compactable earth meeting the requirements of 2020 MaineDOT Standard Specification 703.18 Common Borrow.

Granular Borrow: Fill to raise grades in paved areas, as well as to repair soft areas, should be sand or silty sand meeting the requirements of 2020 MaineDOT Standard Specification 703.19 Granular Borrow.

Underdrain Sand: Sand used beneath bedding materials in soft trench bottoms should be clean, free-draining sand meeting the requirements of 2020 MaineDOT Standard Specification 703.22 Underdrain Backfill Material Type B.

Crushed Stone: Crushed Stone, used for underdrain aggregate should be washed ¾-inch crushed stone meeting the requirements of 2020 MaineDOT Standard Specification 703.13 Crushed Stone ¾-Inch.

Reuse of Site Soils: The organic soils, soils with roots and silty clay are unsuitable for reuse as fill in paved areas but may be suitable for reuse as Common Borrow in landscape areas, provided they are at a compactable moisture content at the time of reuse. The native granular soils and granular portions of existing fills can likely be re-used as Granular Borrow provided the soil is at a compactable moisture content at the time of re-use.

Placement and Compaction: Fill should be placed in horizontal lifts and compacted such that the desired density is achieved throughout the lift thickness with 3 to 5 passes of the compaction equipment. Loose lift thicknesses for grading, fill and backfill

activities should not exceed 12 inches. We recommend that fill and backfill in paved areas be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557. Crushed Stone should be compacted with 3 to 5 passes of a vibratory plate compactor having a static weight of at least 500 pounds.

4.6 Weather Considerations

Construction activity should be limited during wet and freezing weather and the site soil may require drying or thawing before construction activities may continue. The contractor should anticipate the need for water to temper fills to facilitate compaction during dry weather. If construction takes place during cold weather, subgrades must be protected during freezing conditions.

4.7 Paved Areas

We anticipate paved areas will be subjected primarily to passenger vehicle and light delivery truck traffic. Considering the findings at the explorations and proposed usage, we offer the following pavement section for consideration.

FLEXIBLE (HMA) PAVEMENT SECTION – 2020 MaineDOT Standard Specs	
Pavement Layer	**Material Thickness**
MaineDOT 9.5 mm Hot Mix Asphalt	1 ½ inches
MaineDOT 12.5 mm Hot Mix Asphalt	2 ½ inches
MaineDOT 703.06 Aggregate Base Type A	3 inches
MaineDOT 703.06 Aggregate Subbase Type D	18 inches

The base and subbase materials should be compacted to at least 95 percent of their maximum dry density as determined by ASTM D-1557. Hot mix asphalt pavement should be compacted to 92 to 97 percent of its theoretical maximum density as determined by ASTM D-2041. A tack coat should be used between successive lifts of bituminous pavement.

Frost penetration can be on the order of 4.5 feet in this area. It should be understood that in the absence of full depth excavation of frost susceptible soils below paved areas and subsequent replacement with non-frost susceptible compacted fill, frost penetration into the subgrade will occur and some heaving and distress of pavement must be anticipated.

4.8 Design Review and Construction Testing

S.W.COLE should be retained to review the construction documents prior to bidding to determine that our earthwork and pavement recommendations have been properly interpreted and implemented.

A construction materials testing and quality assurance program should be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to observe earthwork activities, the preparation of pavement subgrades, as well as to provide laboratory and field testing of soil and asphalt construction materials.

5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the construction phase of the project.

Sincerely,

S. W. Cole Engineering, Inc.



Paul F. Kohler, P.E.
Principal Geotechnical Engineer

PFK:tjb

APPENDIX A

Limitations

This report has been prepared for the exclusive use of Sebago Technics, Inc. for specific application to the proposed parking lots at the Portland Jetport Facility in Portland, Maine. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct our services in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE's scope of services has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE.

APPENDIX B

Figures



LEGEND:

APPROXIMATE TEST PIT LOCATION

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A SCALE PLAN OF THE SITE PROVIDED SEBAGO TECHNICS, INC., RECEIVED 11/08/2023.
2. THE TEST PIT LOCATIONS WERE SELECTED AND ESTABLISHED IN THE FIELD BY SEBAGO TECHNICS, INC AND PROVIDED ON THE ABOVE REFERENCED PLAN.
3. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
4. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

0 40 80 Feet

S.W.COLE ENGINEERING, INC.

SEBAGO TECHNICS, INC.

EXPLORATION LOCATION PLAN

PROPOSED PARKING LOTS
PORTLAND JETPORT
JETPORT BLVD AND LOOP ROAD, PORTLAND, MAINE

Job No.:	19-0714	Scale:	1" = 40'
Date :	11/14/2023	Sheet:	1

APPENDIX C

Exploration Logs and Key

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Paul Kohler
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP- 1

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 67.5' Estimated **COMPLETION DEPTH (FT):** 10.0
WATER LEVEL DEPTHS (FT): Soils wet, Some seepage at 3.5'. **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Grassed Topsoil					
		1.7 Brown clayey SILT and SAND, some organics (Mixed FILL)	▽ 3.5				
5							
		7.0 Stiff brown-gray silty CLAY					
10		Bottom of Exploration at 10.0 feet					

TEST PIT TP- 2

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 71' Estimated **COMPLETION DEPTH (FT):** 10.0
WATER LEVEL DEPTHS (FT): Soils moist to wet. Free water at 9.5 ft **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Grassed Topsoil					
		1.0 Brown silty SAND, some gravel, trace clay (Mixed Fill)					
		2.5 Very stiff gray-brown silty CLAY					
5							
		8.0 Medium dark gray silty CLAY, boulder at bottom of test pit	▽ 9				
10		Bottom of Exploration at 10.0 feet					

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP- 3

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 69.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): Soils appear saturated below 5 feet **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Brown gravelly SAND some silt; occasional cobbles (Fill)					
		2.5 Buried Topsoil					
		2.6 Brown-orange gravelly SAND, some silt					
		4.0 Gray-brown gravelly silty SAND					
5							

Bottom of Exploration at 6.0 feet

TEST PIT TP- 4

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 71.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Brown gravelly SAND some silt; occasional cobbles (Fill)					
		1.5 Brown-light brown silty gravelly SAND					
		3.8 Brown-gray fine to medium SAND some gravel, some silt					
5							

Bottom of Exploration at 6.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP- 6

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 74' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Brown gravelly SAND some silt (Fill)					
		1.5 Dark brown silty fine SAND; with rootlets (Probable Fill)					
		3.0 Gray-brown SILT and CLAY					
				1S		4-5	
5							
		Bottom of Exploration at 6.0 feet					

TEST PIT TP- 7

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 73' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Brown GRAVEL and SAND, some silt (Fill)		1S		0-1	ID 23292S w =6.6 %
		1.5 Buried Topsoil with roots					
		2.0 Gray-brown SILT and CLAY					
5							
		Bottom of Exploration at 6.0 feet					

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP- 8

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 72' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Grassed Topsoil					
		1.5 Gray SILT and fine SAND with roots (probable Buried Topsoil)					
		2.0 Gray-brown fine sandy clayey SILT					
5							
		Bottom of Exploration at 6.0 feet					

TEST PIT TP- 9

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 73.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		2.0 Gray-brown clayey fine sandy SILT					
5							
		Bottom of Exploration at 6.0 feet					

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Paul Kohler
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-11

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 76.5' Estimated **COMPLETION DEPTH (FT):** 10.0
WATER LEVEL DEPTHS (FT): Soils wet to saturated below 8'+/- **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.0 Brown silty SAND with gravel, some cobbles					
		3.5 Gray-brown SILT and SAND, trace gravel					
5		6.5 Brown SILT and SAND, trace clay					
		8.0 Gray clayey SILT and SAND, some gravel, some cobbles					
10		Bottom of Exploration at 10.0 feet					

TEST PIT TP-12

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 79.5' Estimated **COMPLETION DEPTH (FT):** 9.0
WATER LEVEL DEPTHS (FT): Soils moist to wet. Saturated below 8'+/- **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Topsoil and organics					
		0.7 Brown silty SAND with gravel, some cobbles					
5		5.0 Gray-brown silty SAND, some gravel, some cobbles Small boulder at bottom of test pit					
		Bottom of Exploration at 9.0 feet					

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-13

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 79.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		0.8 Gray-brown gravelly SILT and fine SAND					
		2.5 Gray SILT and CLAY					
5							

Bottom of Exploration at 6.0 feet

TEST PIT TP-15

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 79' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Grassed Topsoil					
		1.5 Brown, gravelly silty SAND		1S	☒	3-4	ID 23293S w =11.2 %
5							

Bottom of Exploration at 6.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-16

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 77.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.0 Brown, silty SAND, some gravel					
		3.5 Gray-brown gravelly silty SAND					
5							

Bottom of Exploration at 6.0 feet

TEST PIT TP-17

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 78.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): Soils appear saturated below 5.8 feet **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		2.0 Gray-brown silty fine to medium SAND, some gravel					
5							
		5.8 Gray SILT and fine SAND					

Bottom of Exploration at 6.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-19

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 83' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		0.7 Light gray silty fine SAND, some gravel		1S		3-4	ID 23294S w =8.5 %
5							
		Bottom of Exploration at 6.0 feet					

TEST PIT TP-21

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 81' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.5 Brown gravelly silty SAND					
		3.0 Gray gravelly SILT and fine SAND					
5							
		Bottom of Exploration at 6.0 feet					

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Paul Kohler
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-22

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 80.5' Estimated **COMPLETION DEPTH (FT):** 9.5
WATER LEVEL DEPTHS (FT): Soils wet to saturated. Slight seepage at 8.5'. **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.0 Light brown layered,silty SAND and clayey SILT, some gravel, some cobbles					
5		4.5 Gray-brown clayey SILT and SAND, trace gravel, some cobbles					
		8.5 Gray-brown silty SAND with gravel, cobbles	▽ 8.5				

Bottom of Exploration at 9.5 feet

TEST PIT TP-23

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 79' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.5 Light brown-gray Silty SAND some gravel; occasional cobbles					
5		4.0 Gray, SILT and fine SAND					

Bottom of Exploration at 6.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-25

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 86.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.5 Light gray gravelly silty fine SAND					
5							
		Bottom of Exploration at 6.0 feet					

TEST PIT TP-27

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 83' Estimated **COMPLETION DEPTH (FT):** 8.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.5 Gray gravelly SILT and fine SAND					
5							
		Bottom of Exploration at 8.0 feet					

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Paul Kohler
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-29

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 83.5' Estimated **COMPLETION DEPTH (FT):** 9.5
WATER LEVEL DEPTHS (FT): Soils wet **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.0 Light brown gravelly silty SAND, some cobbles					
		2.5 Gray-brown silty SAND, trace clay					
5							
		7.0 Gray-brown silty SAND, trace clay, some gravel, some cobbles					

Bottom of Exploration at 9.5 feet

TEST PIT TP-30

DATE: 10/26/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 81' Estimated **COMPLETION DEPTH (FT):** 10.0
WATER LEVEL DEPTHS (FT): Soils moist to wet **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.0 Brown silty SAND, some gravel, some cobbles, small boulder					
		4.0 Gray-brown SAND. some silt, some gravel					
5							
		6.0 Gray-brown silty SAND, trace clay					
10							

Bottom of Exploration at 10.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

TEST PIT LOGS

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Parking Lots
LOCATION: Jetport Blvd., Portland, ME

PROJECT NO.: 19-0714
LOGGED BY: Tyler Demers
CONTRACTOR: Shaw Earthworks, Inc.
EQUIPMENT: Takeuchi TB 290

TEST PIT TP-31

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 86' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): No free water observed **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Grassed Topsoil					
		1.8 Gray Silty fine to medium SAND some gravel					
		3.0 Gray SILT and fine SAND, trace gravel		1S		4-5	ID 23295S w =17.7 %
5		5.0 Gray SILT and CLAY					

Bottom of Exploration at 6.0 feet

TEST PIT TP-32

DATE: 10/25/2023 **LOCATION:** See Exploration Location Plan **SURFACE ELEVATION (FT):** 85.5' Estimated **COMPLETION DEPTH (FT):** 6.0
WATER LEVEL DEPTHS (FT): Soils appear saturated below 4 feet **REMARKS:**

Depth (feet)	Graphic Log	Stratum Description	H_20 Depth	Sample No.	Type	Sample Depth (ft)	Field / Lab Test Data
		Forest Duff / Topsoil					
		1.5 Brown silty gravelly SAND					
		2.5 Gray-brown silty fine to medium SAND, some gravel					
5							

Bottom of Exploration at 6.0 feet

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Digging
▼ At Completion of Digging
▼ After Digging

q_p = Pocket Penetrometer Strength, kips/sq.ft.

TEST PIT 19-0714.GPJ SWCE TEMPLATE.GDT 11/16/23

KEY TO NOTES & SYMBOLS

Test Boring and Test Pit Explorations

Stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - laboratory test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. – pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight

Description of Proportions:

Trace:	0 to 5%
Some:	5 to 12%
"Y"	12 to 35%
And	35+%
With	Undifferentiated

Description of Stratified Soils

Parting:	0 to 1/16" thickness
Seam:	1/16" to 1/2" thickness
Layer:	½" to 12" thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

APPENDIX D

Laboratory Test Results

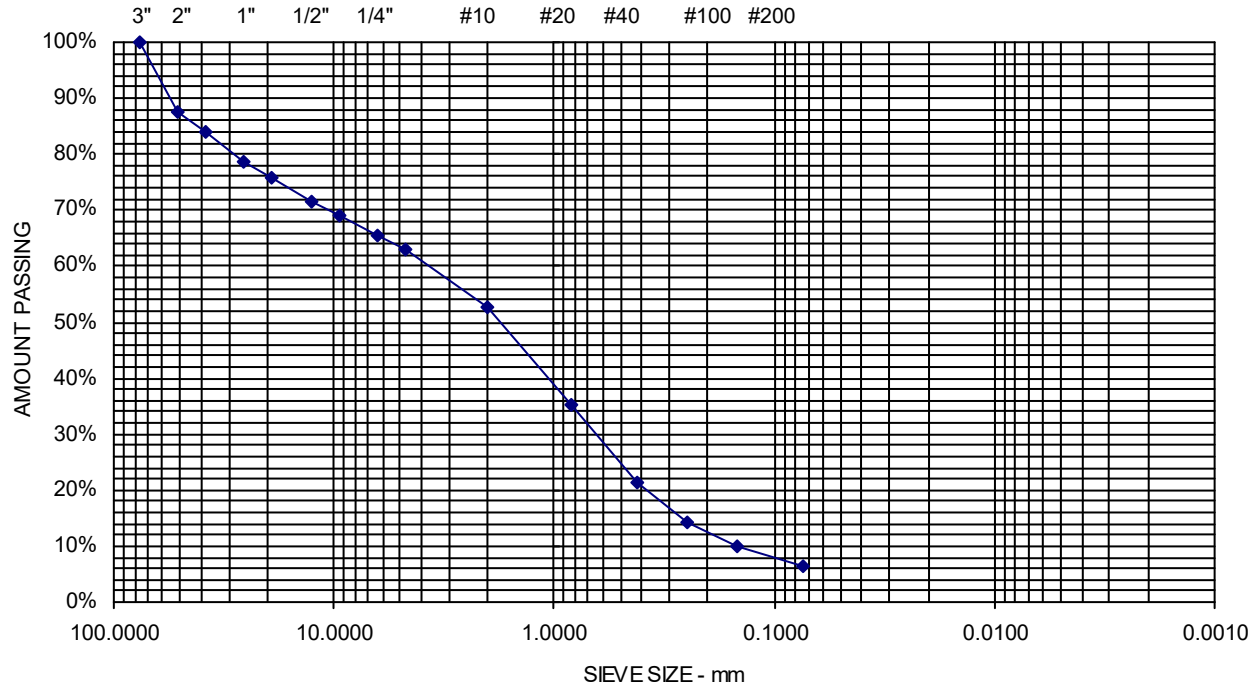
S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED JETPORT PARKING LOTS - EXPLORATIONS AND GEOTECHNICAL ENGINEERING SERVICES	Project Number	19-0714
Client	SEBAGO TECHNICS, INC.	Lab ID	23292S
		Date Received	10/31/2023
		Date Completed	11/8/2023
Material Source	**TP-7, 1S, 0.0'-1.0'**	Tested By	BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
75 mm	**3"**	**100**	
50 mm	**2"**	**87**	
38.1 mm	**1-1/2"**	**84**	
25.0 mm	**1"**	**78**	
19.0 mm	**3/4"**	**76**	
12.5 mm	**1/2"**	**72**	
9.5 mm	**3/8"**	**69**	
6.3 mm	**1/4"**	**65**	
4.75 mm	**No. 4**	**63**	37.1% Gravel
2.00 mm	**No. 10**	**53**	
850 um	**No. 20**	**35**	
425 um	**No. 40**	**21**	56.6% Sand
250 um	**No. 60**	**14**	
150 um	**No. 100**	**10**	
75 um	**No. 200**	**6.3**	6.3% Fines



Comments: Moisture Content = 6.6%

Sheet

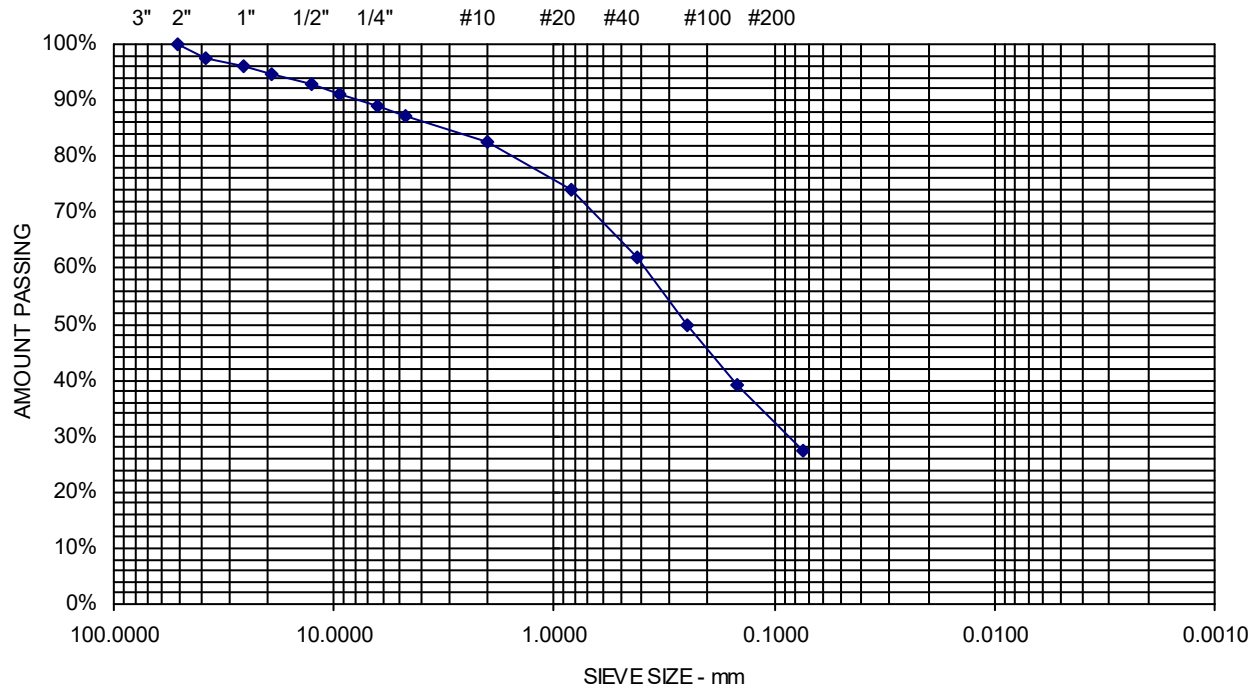
S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED JETPORT PARKING LOTS - EXPLORATIONS AND GEOTECHNICAL ENGINEERING SERVICES	Project Number	19-0714
Client	SEBAGO TECHNICS, INC.	Lab ID	23293S
		Date Received	10/31/2023
		Date Completed	11/8/2023
Material Source	**TP-15, 1S, 3.0'-4.0'**	Tested By	BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**98**	
25.0 mm	**1"**	**96**	
19.0 mm	**3/4"**	**95**	
12.5 mm	**1/2"**	**93**	
9.5 mm	**3/8"**	**91**	
6.3 mm	**1/4"**	**89**	
4.75 mm	**No. 4**	**87**	12.6% Gravel
2.00 mm	**No. 10**	**83**	
850 um	**No. 20**	**74**	
425 um	**No. 40**	**62**	59.9% Sand
250 um	**No. 60**	**50**	
150 um	**No. 100**	**39**	
75 um	**No. 200**	**27.5**	27.5% Fines



Comments: Moisture Content = 11.2%

Sheet

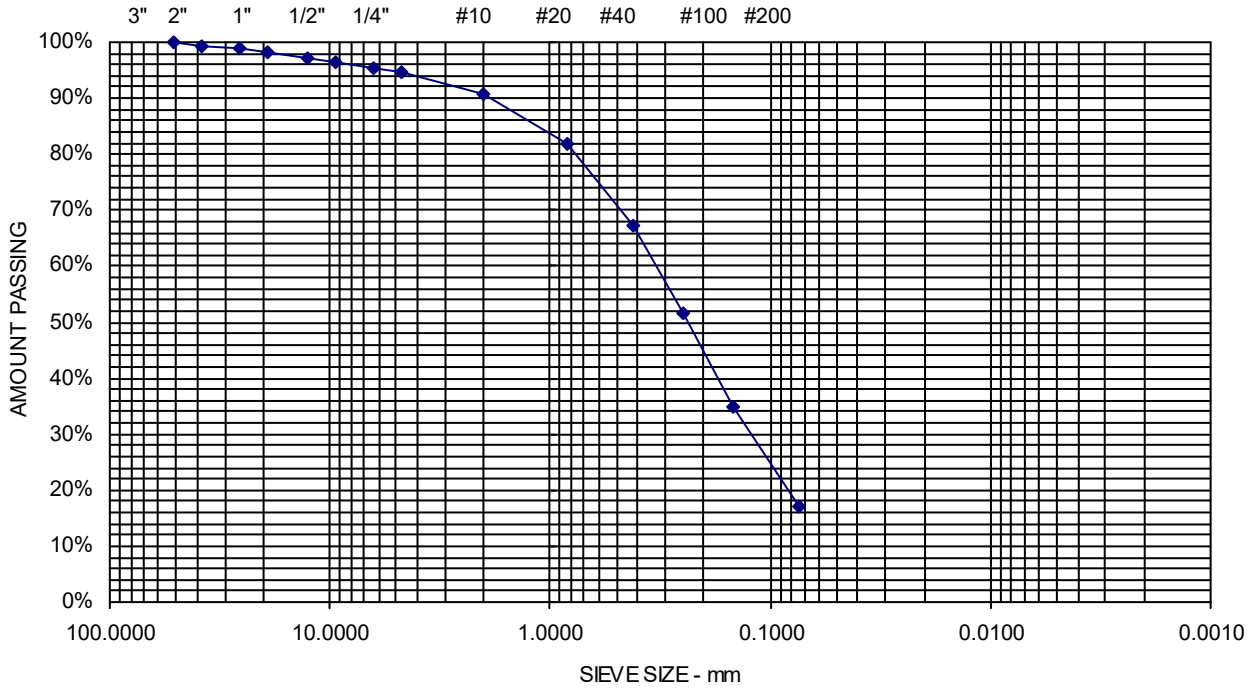
S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED JETPORT PARKING LOTS - EXPLORATIONS AND GEOTECHNICAL ENGINEERING SERVICES	Project Number	19-0714
Client	SEBAGO TECHNICS, INC.	Lab ID	23294S
		Date Received	10/31/2023
		Date Completed	11/8/2023
Material Source	**TP-19, 1S, 3.0'-4.0'**	Tested By	BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**99**	
25.0 mm	**1"**	**99**	
19.0 mm	**3/4"**	**98**	
12.5 mm	**1/2"**	**97**	
9.5 mm	**3/8"**	**96**	
6.3 mm	**1/4"**	**95**	
4.75 mm	**No. 4**	**95**	5.4% Gravel
2.00 mm	**No. 10**	**91**	
850 um	**No. 20**	**82**	
425 um	**No. 40**	**67**	77.5% Sand
250 um	**No. 60**	**52**	
150 um	**No. 100**	**35**	
75 um	**No. 200**	**17.1**	17.1% Fines



Comments: Moisture Content = 8.5%

Sheet

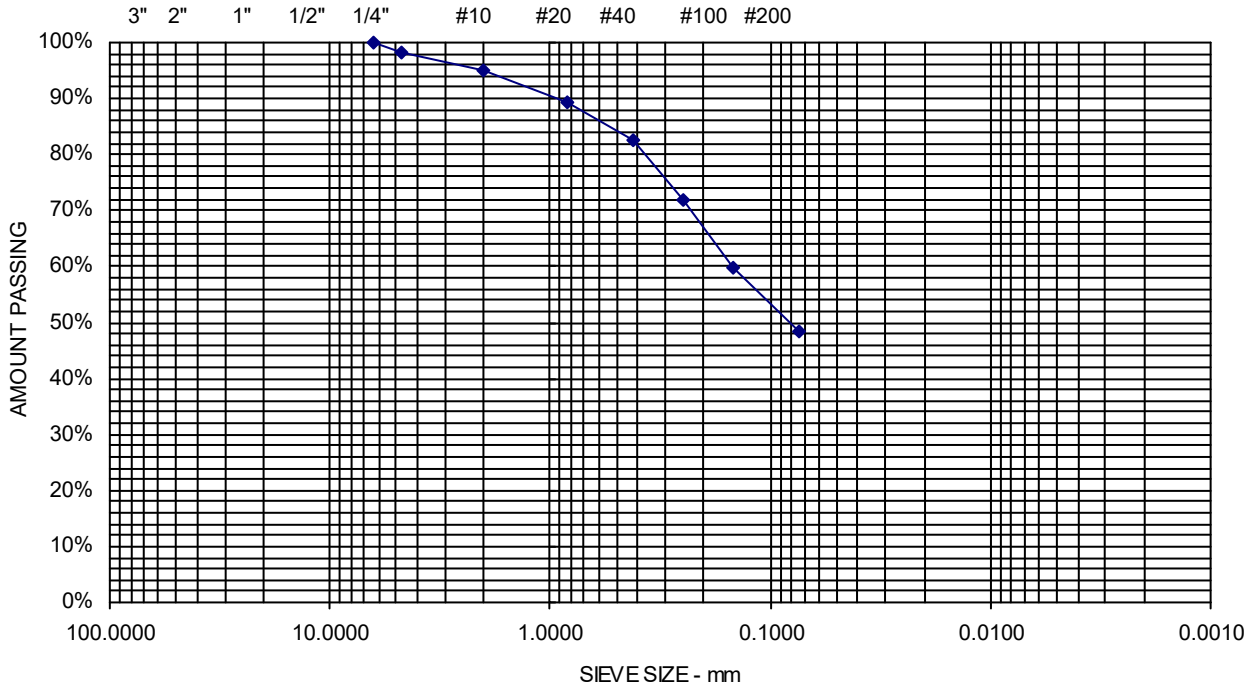
S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED JETPORT PARKING LOTS - EXPLORATIONS AND GEOTECHNICAL ENGINEERING SERVICES	Project Number	19-0714
Client	SEBAGO TECHNICS, INC.	Lab ID	23295S
		Date Received	10/31/2023
		Date Completed	11/8/2023
Material Source	**TP-31, 1S, 4.0'-5.0'**	Tested By	BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
6.3 mm	**1/4"**	**100**	
4.75 mm	**No. 4**	**98**	1.9% Gravel
2.00 mm	**No. 10**	**95**	
850 um	**No. 20**	**89**	
425 um	**No. 40**	**83**	49.6% Sand
250 um	**No. 60**	**72**	
150 um	**No. 100**	**60**	
75 um	**No. 200**	**48.5**	48.5% Fines



Comments: Moisture Content = 17.7%

Sheet

Appendix 5

Stormwater Management Plans

SOIL TYPES				
SYMBOL	SOIL TYPES	SLOPES (%)	HSG	DRAINAGE CLASS
BuB	LAMOINE SILT LOAM	3-8	C/D	SOMEWHAT POORLY DRAINED
Gp	GRAVEL PITS	-	-	-
PbB	PAXTON FINE SANDY LOAM	3-8	C	WELL DRAINED
Sn	SCANTIC SILT LOAM	0-3	D	POORLY DRAINED
Sz	SWANTON FINE SANDY LOAM	-	C/D	POORLY DRAINED
WmB	WINDSOR LOAMY SAND	0-8	A	EXCESSIVELY DRAINED

NOTES:

1. ON-SITE SOIL INFORMATION IS BASED ON THE NATURAL RESOURCES CONSERVATION SERVICE (NRCS) CUSTOM SOIL RESOURCE REPORT FOR CUMBERLAND COUNTY, MAINE, DATED AUGUST 14, 2023.
2. OFF-SITE SOIL INFORMATION FOR THE PROJECT WAS OBTAINED VIA THE USDA UNITED STATES DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES CONSERVATION SERVICE'S WEB SOIL SURVEY. THE HYDROLOGIC SOIL GROUP (HSG) OF THE SITE SOILS ARE CLASSIFIED BY TECHNICAL RELEASE TR-55 OF THE SOIL CONSERVATION SERVICE.
3. TC PATHS NOT SHOWN ARE ASSUMED TO HAVE A MINIMUM VALUE OF 6.0 MINUTES BASED ON TR-55 STANDARDS.

EXISTING CONDITIONS LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION (A, B)
- REACH
- #### SUBCATCHMENT LABEL
- #### REACH
- #### POINT OF ANALYSIS
- #### STORMWATER TREATMENT/DETENTION POND
- HSG # / HSG # SOILS BOUNDARY

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

PAUL D. OSTROWSKI PE 11175
STATE OF MAINE PAUL D. OSTROWSKI No. 11175 REGISTERED PROFESSIONAL ENGINEER 02/28/2024

REV.	BY	DATE	STATUS
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS MADE TO THIS PLAN SET BY ANY PARTY OTHER THAN SEBAGO TECHNICS, INC. WITHOUT THE WRITTEN AUTHORIZATION OF SEBAGO TECHNICS, INC. SHALL RELIEVE SEBAGO TECHNICS, INC. OF ALL RESPONSIBILITY FOR THE ALTERED PLAN. ALL ALTERATIONS TO THE PLAN SET ARE TO BE CLEARLY LABELED AS SUCH BY THE PARTY MAKING THE ALTERATIONS AND ADDITIONALLY SIGNED AND DATED BY SUCH PARTY. ANY UNAUTHORIZED ALTERATIONS, ADDITIONS OR DELETIONS TO THIS PLAN SET, OR ANY PORTION THEREOF, BY ANY PARTY WITHOUT THE WRITTEN AUTHORIZATION OF SEBAGO TECHNICS, INC. SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

EXISTING CONDITIONS WATERSHED PLAN
OF:
PORTLAND INTL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTL JETPORT - PWM
CITY OF PORTLAND
1001 WESTBROOK STREET, PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET 1 OF 2

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19059 SW Pre.dwg, TAB:Existing Conditions

SOIL TYPES

SYMBOL	SOIL TYPES	SLOPES (%)	HSG	DRAINAGE CLASS
BuB	LAMOINE SILT LOAM	3-8	C/D	SOMEWHAT POORLY DRAINED
Gp	GRAVEL PITS	-	-	-
PbB	PAXTON FINE SANDY LOAM	3-8	C	WELL DRAINED
Sn	SCANTIC SILT LOAM	0-3	D	POORLY DRAINED
Sz	SWANTON FINE SANDY LOAM	-	C/D	POORLY DRAINED
WmB	WINDSOR LOAMY SAND	0-8	A	EXCESSIVELY DRAINED

NOTES:

1. ON-SITE SOIL INFORMATION IS BASED ON THE NATURAL RESOURCES CONSERVATION SERVICE (NRCS) CUSTOM SOIL RESOURCE REPORT FOR CUMBERLAND COUNTY, MAINE. DATED AUGUST 14, 2023.
2. OFF-SITE SOIL INFORMATION FOR THE PROJECT WAS OBTAINED VIA THE USDA UNITED STATES DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES CONSERVATION SERVICE'S WEB SOIL SURVEY. THE HYDROLOGIC SOIL GROUP (HSG) OF THE SITE SOILS ARE CLASSIFIED BY TECHNICAL RELEASE TR-55 OF THE SOIL CONSERVATION SERVICE.
3. TC PATHS NOT SHOWN ARE ASSUMED TO HAVE A MINIMUM VALUE OF 6.0 MINUTES BASED ON TR-55 STANDARDS.

PROPOSED CONDITIONS LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION (A, B)
- REACH
- SUBCATCHMENT LABEL
- #### REACH
- #### POINT OF ANALYSIS
- #### STORMWATER TREATMENT/DETENTION POND
- HSG # / HSG # SOILS BOUNDARY

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

PAUL D. OSTROWSKI PE 11175
STATE OF MAINE PAUL D. OSTROWSKI No. 11175 REGISTERED PROFESSIONAL ENGINEER 02/28/2024

REV.	BY	DATE:	STATUS:
A	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS MADE TO THIS PLAN SET BY ANY PARTY OTHER THAN SEBAGO TECHNICS, INC. SHALL BE DONE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

PROPOSED CONDITIONS WATERSHED PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT - PWM
CITY OF PORTLAND
1001 WESTBROOK STREET, PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	08/14/2023
SCALE	1" = 50'
PROJECT	19059

SHEET 2 OF 2

F:\Projects\19000\19059\DWG\Design\19059 SW Post.dwg 2/28/2024 12:32 PM TANNER F. GOODINE

19059 SW Post.dwg, TAB:Overall Proposed Conditions

Att. Q1

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

For:
Portland International Jetport (PWM) Parking Expansion
Portland, ME

By:
Sebago Technics, Inc.
75 John Roberts Road, Suite 4A
South Portland, Maine

Introduction

The following plan outlines the anticipated inspection and maintenance procedures for the erosion and sedimentation control measures as well as stormwater management facilities for the project. This plan also outlines several housekeeping requirements that shall be followed during and after construction. These procedures shall be followed in order to ensure the intended function of the designed measures and to prevent unreasonably adverse impacts to the surrounding environment.

The procedures outlined in this Inspection, Maintenance and Housekeeping Plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the Maine Department of Environmental Protection (MDEP).

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event (0.5" of rainfall), and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (0.5" of rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed

to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Sediment Barriers:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event (0.5" of rainfall). They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

C. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

D. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.
- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains

into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

E. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

F. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.

B. Groundwater protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

C. Fugitive sediment and dust: Actions must be taken to 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.

D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

E. Trench or foundation dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area

that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

Post-Construction

1. **Inspection:** After construction, it is the responsibility of the owner or assigned heirs to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. The owner shall inspect and maintain the BMPs, including but not limited to any parking areas, catch basins, drainage swales, detention basins and ponds, pipes and related structures, in accordance with all municipal and state inspection, cleaning and maintenance requirements of the approved post-construction stormwater management plan.

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction. If the BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator of the BMP shall take corrective action(s) to address the deficiency or deficiencies as soon as possible after the deficiency is discovered and shall provide a record of the deficiency and corrective action(s) to the local municipality in the annual report.

   A. Vegetated Areas:

   - Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains (>0.5") to identify active or potential erosion problems.
   - Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. Ditches, Swales and Other Open Channels:

   - Inspect ditches, swales, level spreaders and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow, and repair any erosion of the ditch lining.
   - Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
   - Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
   - If the ditch has a riprap lining, replace riprap in areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged.

C. Culverts:

- Inspect culverts in the spring, in the late fall, and after heavy rains (>0.5") to remove any obstructions to flow.
- Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
- Inspect and repair any erosion damage at the culvert's inlet and outlet.

D. Removal of Winter Sand:

- Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring.
- Accumulations on pavement may be removed by pavement sweeping.
- Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader or other acceptable method.

E. Stormfilter:

- Refer to the Contech – Stormfilter Operation Manual for guidance on required maintenance and inspection.

F. CMP Detention:

- Inspect systems at least annually, preferably in the spring during dry weather.
- Clear accumulation of winter sand in pipes at least once a year, preferably in the spring using the proposed inspection risers.

3. Documentation:

A. The owner or operator of a BMP or a qualified post-construction stormwater inspector hired by that person, shall, as required by the local municipality, provide a completed and signed certification on a form provided by the local municipality, certifying that the person has inspected the BMP(s) and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they required maintenance or repair, including the record of the deficiency and corrective action(s) taken.

B. A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. A sample "Stormwater Inspection and Maintenance Form" has been included as Attachment 1 of this Inspection, Maintenance, and Housekeeping Plan.

4. Duration of Maintenance: Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

ATTACHMENT 1 – STORMWATER INSPECTION AND MAINTENANCE LOG

Portland International Jetport (PWM) Parking Expansion
Portland, ME

This log is intended to accompany the Inspection, Maintenance, and Housekeeping Plan for the parking expansion at the Portland International Jetport (PWM) in Portland, Maine. The following items shall be checked, cleaned, and maintained on a regular basis as specified in the Maintenance Plan and as described in the sections below. This log shall be kept on file for a minimum of five (5) years and shall be available for review by the City of Portland and the Maine DEP. Qualified personnel familiar with the drainage systems and soils shall perform all inspections. A copy of the construction and post-construction maintenance logs are provided.

Consistency with City Master Plans 14-14.6.3 (A)

1. The proposed project has been designed to be consistent with the City Master Plans. The proposed improvements involve two surface lots for long-term parking on the Jetport campus. The Portland International Jetport has an existing approved Master Plan that outlines growth within the airport campus. The need for additional parking and the proposed location for new lots is outlined within the Master Plan.

2. There is no existing off premises public infrastructure that requires easements across the property.

Please see the plan set and the Master Plan for additional information.

Public Safety and Fire Prevention 14-14.6.3 (B)

1. The proposed project has been designed following public safety principles for Crime Prevention through Environmental Design:

    a. The proposed parking lots have been designed to be well lit and visible to the existing surveillance systems in place on the Jetport campus.

    b. The parking lots have both a gated entrance and exit to ensure only customers of the lots have vehicular access.

    c. The site has been designed with the appropriate territorial reinforcements to promote a sense of ownership and responsibility. The parking area is gated and there is landscaping and hardscape that denotes the limits of the parking area and its purpose.

2. The proposed project has been designed to provide adequate emergency vehicle access to the site as outlined in the Technical Manual. All gated points are equipped with a knox box to allow emergency vehicles to access the site.

Please see the plan set for the site plans and landscape plans detailing the site features related to this subject.

Att. T

Availability and Adequacy of Public Utilities 14-14.6.3 (C)

1. The development will not overburden sanitary sewers and storm drains, water lines, or other public infrastructure and utilities.

   The proposed project does not include improvements requiring additional water or sewer capacity.

   Included in the application is a Stormwater Management Plan detailing the proposed site drainage improvements and stormwater treatment proposed.

2. Electrical service is to be provided underground, from existing service lines at the Jetport. Please see the utility plans.

3. All proposed sanitary sewers, storm drains, water lines or other utilities are designed and are to be constructed in accordance with the applicable provisions of the City Technical manual. No changes to existing water or sewer lines are proposed as part of this project. Please see the utility plan and details for project utility information.

4. The proposed development will be connected to the exiting public sanitary system per City requirements. Please see the utility plan.

5. The proposed project has been designed to provide additional trash receptacles along the new sidewalks. Receptacles will be emptied regularly. Please refer to the site plans.

Please see the site plans for additional information.

Massing, Ventilations and Wind Impact 14-14.6.4 (A)

Not applicable. The proposed project involves the construction of a parking lot. No buildings or significant structures that might result in massing, ventilation, or wind impacts are proposed. Please see the plan set.

Shadows 14-14.6.4 (B)

Not applicable. The proposed project involves the construction of a parking lot and will not result in the generation of shadows that impact surrounding properties.

Snow and Ice Loading 14-14.6.4 (C)

The proposed project does not include structures that could result in snow or ice fall hazards. Snow will be removed from the lot and sidewalks in accordance with the Jetport maintenance plan.

Att. X

View Corridor 14-14.6.4 (D)

Not applicable. The proposed project involves the construction of two parking lots at the Portland International Jetport.

Att. Y

Historic Resources 14-14.6.4 (E)

1. The proposed project is not located in a designated historic district.

2. The proposed development is located on the Jetport campus and is consistent with airport masterplan.

3. The proposed project area previously developed (partially) site with no known historic or archaeological resources.

Please see the attached review letter from the Maine Historic Preservation Commission.

SEBAGO TECHNICS

RECEIVED
AUG 18 2023
By 1227-23

August 18, 2023
19059

Mr. Kirk F. Mohney, Director, and State Historic Preservation Officer
Maine Historic Preservation Commission
65 State House Station
Augusta, Maine 04333

mhpcprojectreview@maine.gov

Re: Portland International Airport
Parking Lot Expansion and Runway Improvements
1001 Westbrook Street, Portland

Dear Mr. Mohney:

On behalf of our client, Sebago Technics respectfully requests a site review for the proposed improvements at the Portland International Airport in Portland/South Portland. The proposed improvements include the expansion of an existing parking lot (see figure for Project Area A) and the reconfiguration of an existing taxiway (see figure for Project Area B). As part of the site review for permitting and design, we request a review by the Maine Historic Preservation Commission for any properties or structures of historical significance in the proposed site's vicinity.

Improvements to the Project A area include the expansion of an existing surface lot to provide greatly needed additional parking spaces. Improvements in Project Area B will include reconstruction of Taxiways A and F with new taxiway and shoulder pavement and select electrical component replacement/addition including in-pavement taxiway centerline lights, runway guard lights, signs and wiring for the associated taxiways. The taxiway segments to be reconstructed are 75 feet wide and wider at radii leading onto the Runway, with up to 15-foot-wide shoulders which will be widened to up to 30 feet to meet current FAA standards. A new taxiway stub near the mid-point of the existing taxiway stubs E and D is also proposed. All improvements will occure on the existing Jetport campus. Improvements to the taxiway will improve movement within and functionality of the Jetport. There are no proposed additional runways or extensions.

A review of the National Register of Historic Places identified the Stroudwater Neighborhood as being in the vicinity of the Jetport. Included with this neighborhood is the Tate House which was constructed in 1755. The Brooklawn Memorial Cemetary (not listed) which was opened in 1935 is located in the vicinity of the Jetport. Neither of these sites are within the viewshed of the project or are abutters to the proposed improvement areas. Review of the City of Portland/South Portland property records found no abutting or viewshed properties with structures 50+ years of age.

Please see the attached aerial which illustrates the two project areas. If you have any questions, please do not hesitate to contact me at rgabryszewski@sebagotechnics.com or (207) 200-2065. I look forward to hearing from you.

Sincerely,

SEBAGO TECHNICS, INC.

Rebecca Gabryszewski
Senior Team Leader, Entitlements Group

enc.

Based on the information submitted, I have concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

Kirk F. Mohney — 8/29/23

Kirk F. Mohney,
State Historic Preservation Officer
Maine Historic Preservation Commission
Date

MHPC # 1227-23

75 John Roberts Road – Suite 1A, South Portland, ME 04106-6903 • 207-200-2100 • Fax: 207-856-2206

Exterior Lighting 14-14.6.4 (F)

1. Site lighting. All proposed lighting will conform to the lighting standards of the zone and the Technical Manual.

2. Architectural and specialty lighting. Any proposed architectural or specialty lighting will conform to the lighting standards of the Technical Manual.

3. Street lighting. The proposed improvements are within an established airport with existing lighting. Any lighting proposed to replace or enhance the existing lighting will conform to the lighting standards of the Technical Manual.

Please see attached photometric plans for the project site.

NLS LIGHTING

NV-1

AREA, SITE & ROADWAY



LED WATTAGE CHART

	16L	32L	48L	64L
400 milliamps	21w	-	-	-
530 milliamps	28w	-	-	-
700 milliamps	36w	71w	104w	136w
1050 milliamps	56w	106w	156w	205w

FORM AND FUNCTION

- Sleek, low profile housing
- Spec grade performance
- Engineered for optimum thermal management
- Low depreciation rate
- Reduces energy consumption and costs up to 65%
- Exceeds IES foot candle levels utilizing the least number of poles and fixtures per project
- Optical system designed for:
  - Parking Lots
  - Auto Dealerships
  - General Area Lighting

CONSTRUCTION

- Die Cast Aluminum
- External cooling fins
- Corrosion resistant external hardware
- One-piece silicone gasket ensures IP65 seal for electronics compartment
- One-piece Optics Plate™ mounting silicone Micro Optics
- Two-piece silicone Micro Optic system ensures IP67 level seal around each PCB
- Grade 2 Clear Anodized Optics Plate™ standard

FINISH

- 3-5 mils electrostatic powder coat.
- NLS' standard high-quality finishes prevent corrosion, protects against extreme environmental conditions

WARRANTY

Five-year limited warranty for drivers and LEDs.

BUY AMERICAN

To ensure the latest BAA/TAA/BABA Standards are being met, please select BAA, TAA, or BABA in the options section. Please contact the factory before placing an order for any NLS products requesting BAA (Buy American Act), TAA (Trade American Act), or BABA (Build America, Buy America).

Project Name:	Type:

NV-1 ORDERING GUIDE

Cat#

NV-1
(NV-1)

Light Dist.

Type 2
(T2)

Type 3
(T3)

Type 4
(T4)

Type 5
(T5)

Type 5 Wide
(T5W)

Nema 3
30o Narrow Beam
(N3)

Corner Distribution Left
(CDL)

Corner Distribution Right
(CDR)

of LEDs

16
(16L)

32
(32L) [15]

48
(48L) [15]

64
(64L) [15]

Miliamps

400
(40)

530
(53)

700
(7)

1050
(1)

Kelvin

Amber 586-600nM
(AMBER) [10, 12, 13]

2700K, 70 CRI
(27K7) [6]

2700K, 80 CRI
(27K8) [1, 6]

3000K, 70 CRI
(30K7) [6]

3000K, 80 CRI
(30K8) [1, 6]

3500K, 80 CRI
(35K8) [1]

4000K, 70 CRI
(40K7)

4000K, 80 CRI
(40K8) [1]

5000K, 70 CRI
(50K7)

5000K, 80 CRI
(50K8) [1]

Volts

120-277
(UNV)

347-480
(HV)

Mounting

Architectural Sweep Arm
(ASA)

Direct Pole 3" Arm Single D180
(DPS3) [2]

Direct Pole 7" Arm D180, D90, T90, T120, Quad
(DPS7) [2]

Knuckle Mount
(KM)

Wall Mount
(WM)

Trunnion Mount
(TM) [3]

Tennis Arm Mount
(TA)

Mast Arm Mount
(MA)

Color

Bronze Textured
(BRZ)

White Textured
(WHT)

Smooth White Gloss
(SWT)

Silver Metallic
(SVR)

Black Textured
(BLK)

Smooth Black Gloss
(SBK)

Graphite Textured
(GPH)

Grey Textured
(GRY)

Green Textured
(GRN)

Hunter Green Textured
(HGN)

Custom
(CS)

Controls Options

Nema 7-Pin Receptacle
(PE7)

Photocell + Receptacle
(PCR)

Receptacle + Shorting Cap
(PER)

FSP-211 with Motion Sensor/Photocell 9'-20' Heights
(FSP211-20) [4, 16]

21'-40' Heights
(FSP211-40) [4, 16]

FSP-221 with Motion Sensor/Photocell 9'-20' Heights
(FSP221-20) [17]

21'-40' Heights
(FSP221-40) [17]

Custom Controls Integration
(CCI) [9]

Button Type Photocell
(PC) [4]

Options

Bird Spikes
(BS)

Marine Grade Finish
(MGF)

Optic Plate Painted to Match Fixture
(OPP)

Quick Mount Bracket
(QMB)

Retrofit Mount Bracket
(RQMB)

Round Pole Adaptor 3"-4" Pole
(RPA4)

Round Pole Adaptor 5"-6" Pole
(RPA5)

Rotated Optic Left
(ROL)

Rotated Optic Right
(ROR)

House Side Shield
(HSS) [5]

Black Hardware
(BH)

Black Optic Frame
(BOF)

Buy American Act
(BAA) [11]

Trade Agreement Act
(TAA) [11]

Build America Buy American
(BABA) [11]

Lens Options

Glass Lens
(GL) [7, 14]

HAL Lens
(HAL) [8, 14]

NOTES:

1. Consult Factory for Lead Time. Consult Factory for 90 CRI Requests.
2. For Round Pole Specify RPA4 or RPA5
3. Standard finish is stainless steel. Can be painted to match fixture.
4. Universal Voltage 120-277
5. HSS not applicable with Nema 2.
6. 3000K or lower, with fixed mounting options only, must be selected to meet International Dark-Sky Association certification.
7. Glass Lens: Low iron glass, fully tempered per ANSI C1047 (QCH-2201-37)
8. HAL Lens: Yellow Polycarbonate Lens – less than 2% Blue Light Content
9. Please contact Factory for Custom Control Integration requests (nLight, NX, WaveLinx, Crestron, DMX/RDM, Synapse, Casambi, Dali II, Avi-On, or other control systems)
10. Turtle Safe
11. Consult factory for all BAA/TAA/BABA requests
12. Consult Factory for Lead Time
13. Not Available above 700mA
14. Contact Factory
15. Available only in 700mA and 1050mA
16. FSP-211, 120V/277V, 230-240VAC (single phase), 50/60Hz
17. FSP-221, 100–347VAC (single phase) or 208/230/480VAC (phase-to-phase)

PRODUCT SPECIFICATIONS

ELECTRICAL

- 120-277 Volts (UNV) or 347-480 Volts (HV)
- 0-10V dimming driver
- Driver power factor at maximum load is ≥ .95, THD maximum load is 15%
- LED Drivers Ambient Temp. Min is -40°C and Ambient Temp. Max ranges from 50°C to 55°C and, in some cases, even higher. Consult the factory for revalidation by providing the fixture catalog string before quoting and specifying it
- All internal wiring UL certified for 600 VAC and 105°C
- All drivers, controls, and sensors housed in enclosed IP65 compartment
- CRI 70, 80 or 90 (Contact factory for 90 CRI)
- Color temperatures: Amber, 2700K, 3000K, 3500K, 4000K, 5000K
- Surge Protection: 20KVA supplied as standard

CONSTRUCTION

- Die Cast Aluminum
- External cooling fins
- Corrosion resistant external hardware
- One-piece silicone gasket ensures IP65 seal for electronics compartment
- One-piece Optics Plate™ mounting silicone Micro Optics
- Two-piece silicone Micro Optic system ensures IP67 level seal around each PCB
- Grade 2 Clear Anodized Optics Plate™ standard

OPTIONS

- BIRD SPIKES (BS) - Offers a practical and humane deterrent for larger bird species and provides a cost-effective long-term solution to nuisance bird infestations and protects your property
- MARINE GRADE FINISH (MGF) - A multi-step process creating protective finishing coat against harsh environments. Chemically washed in a 5 stage cleaning system. Pre-baked, Powder coated 3-5 mils of Zinc Rich Super Durable Polyester Primer. Oven Baked. Finished Powder Coating of Super Durable Polyester Powder Coat 3-5 mil thickness
- OPTIC PLATE PAINTED TO MATCH FIXTURE (OPP) - Optic plate is clear anodized as standard. The optic plate can be powder coated to match the finish of the fixture.
- QUICK MOUNT BRACKET (QMB) - Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures. Has a 2"x4" Drill Pattern
- RETROFIT MOUNT BRACKET - Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures. Drill Pattern is adjustable from 2"x4" to 2"x6"
- ROUND POLE ADAPTER (RPA) - When using round poles, specify Round Pole Adapter (RPA). Specify RPA4 when installing on 3"-4" round poles, and RPA5 when installing on 5"-6" round poles
- ROTATED OPTICS (ROL) (ROR) - Rotated optics are designed for perimeter lighting for auto dealerships
- HOUSE SIDE SHIELD (HSS) Designed for full property line cut-off
- BLACK HARDWARE (BH) - Optional black, zinc coated steel hardware
- BLACK OPTIC FRAME (BOF) - Optional black optic frame. Standard is white
- GLASS LENS (GL) - Low Iron Glass, fully tempered
- High performance amber lens (hal)

CONTROL OPTIONS

- FSP-211 (FSP-X) - Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution
- All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles
- FSP-20 mounting heights 9-20 feet
- FSP-40 mounting heights 21-40 feet
- Includes 5 dimming event cycles, 0-10V dimming with motion sensing, re-programmable in the field
- FSIR-100 commissioning remote is required to change sensor settings. Please contact factory for ordering
- NEMA 7-PIN RECEPTACLE (PE7)—An ANSI C136.41-2013 receptacle provides electrical and mechanical interconnection between photo control cell and luminaire. Dimming receptacle available two or four dimming contacts supports 0-10 VDC dimming methods or Digital Addressable Lighting Interface (DALI), providing reliable power interconnect
- PHOTOCELL + RECEPTACLE (PCR)–7-Pin Receptacle and Electronic Twist Lock Photocell for dusk to dawn operation
- RECEPTACLE + SHORTING CAP (PER)–7-Pin Receptacle and Shorting Cap
- Controls Agnostic: Please contact factory for your preferred controls option. (nLight, NX, WaveLinx, Crestron, DMX/RDM, Synapse, Casambi, DALI II, Avi-On, or other control systems)

FINISH

- 3-5 mils electrostatic powder coat
- NLS Light's standard high-quality finishes prevent corrosion protects against and extreme environmental conditions

WARRANTY

Five-year limited warranty for drivers and LEDs.

OPTICS

Silicone optics high thermal stability and light output provide higher powered LEDs with minimized lumen depreciation. UV stability with scratch resistance increases exterior application durability. Silicone optics do not yellow, crack or brittle over time

LISTINGS

- Certified to UL 1598
- UL 8750
- CSA C22.2 No. 250.0
- DesignLights Consortium® (DLC)
- DesignLights Consortium Premium® (DLCP)
- IP65/ IP67 Rated
- 3G Vibration Rated per ANSI C136.31-2010
- IDA Dark Sky Approved
- IK10 Rated

BUY AMERICAN OPTION

While all of the NLS Lighting products listed in this document qualify for the Buy America(n) Act of 1933, we reserve the right to change our listings without notice.

The information provided above is for general informational purposes only. We encourage you to consult legal professionals for advice particular to your projects concerning BAA, TAA, BABA or Buy America.

Additional NLS Products that meet BAA, TAA standards can be found at the following link:

https://nlslighting.com/buy-american/

The information and specifications on this document are subject to change without any notification. All values are design, nominal, typical or prorated values when measured under internal and external laboratory conditions.

LUMENS CHART 16L, 32L, & 48L

CAT#	N3	LM/W	T2	LM/W	T3	LM/W	T4	LM/W	T5	LM/W	T5W	LM/W	W
NV-1-16L-40-27K7	1,749	83	2,324	111	2,342	112	2,307	110	2,360	112	2,309	110	21
NV-1-16L-40-30K7	2,037	97	2,333	111	2,532	121	2,316	110	2,552	122	2,497	119	21
NV-1-16L-40-40K7	2,436	116	2,715	129	2,736	130	2,695	128	2,757	131	2,698	128	21
NV-1-16L-40-50K7	2,520	120	2,715	129	2,736	130	2,695	128	2,757	131	2,698	128	21
NV-1-16L-53-27K7	2,543	91	2,588	92	3,015	108	2,920	104	3,041	109	3,060	109	28
NV-1-16L-53-30K7	3,136	112	3,192	114	3,220	115	3,119	111	3,248	116	3,308	118	28
NV-1-16L-53-40K7	3,248	116	3,472	124	3,472	124	3,444	123	3,500	125	3,574	128	28
NV-1-16L-53-50K7	3,360	120	3,612	129	3,640	130	3,584	128	3,668	131	3,574	128	28
NV-1-16L-7-27K7	3,269	91	3,327	92	3,876	108	3,755	104	3,910	109	4,041	109	36
NV-1-16L-7-30K7	4,032	112	3,960	110	3,960	110	3,973	110	3,996	111	4,369	118	36
NV-1-16L-7-40K7	4,176	116	4,428	123	4,284	119	4,212	117	4,320	120	4,721	128	36
NV-1-16L-7-50K7	4,320	120	4,644	129	4,500	125	4,428	123	4,500	125	4,721	128	36
NV-1-16L-1-27K7	5,085	91	5,176	92	6,030	108	5,841	104	6,082	109	6,061	108	56
NV-1-16L-1-30K7	6,272	112	6,160	110	6,384	114	6,232	111	6,440	115	6,553	117	56
NV-1-16L-1-40K7	6,496	116	6,832	122	6,888	123	6,776	121	6,944	124	7,081	126	56
NV-1-16L-1-50K7	6,720	120	7,168	128	7,224	129	7,112	127	7,280	130	7,081	126	56
NV-1-32L-7-27K7	6,447	91	7,313	103	7,313	103	7,246	102	7,379	104	7,863	111	71
NV-1-32L-7-30K7	7,952	112	7,810	110	7,810	110	7,739	109	7,881	111	8,501	120	71
NV-1-32L-7-40K7	8,236	116	9,017	127	8,449	119	8,307	117	8,520	120	9,185	129	71
NV-1-32L-7-50K7	8,520	120	9,159	129	8,875	125	8,733	123	8,946	126	9,185	129	71
NV-1-32L-1-27K7	11,116	105	10,917	103	11,314	107	11,067	104	11,414	108	11,794	111	106
NV-1-32L-1-30K7	11,872	112	11,660	110	12,084	114	11,820	112	12,190	115	12,752	120	106
NV-1-32L-1-40K7	12,296	116	12,932	122	13,038	123	12,826	121	13,144	124	13,778	130	106
NV-1-32L-1-50K7	12,720	120	13,568	128	13,674	129	13,462	127	13,780	130	13,778	130	106
NV-1-48L-7-27K7	10,906	105	10,711	103	10,711	103	10,614	102	10,809	104	11,321	109	104
NV-1-48L-7-30K7	11,648	112	11,440	110	11,440	110	11,336	109	11,544	111	12,240	118	104
NV-1-48L-7-40K7	12,064	116	13,208	127	12,376	119	12,168	117	12,480	120	13,225	127	104
NV-1-48L-7-50K7	12,480	120	13,520	130	13,000	125	12,792	123	13,104	126	13,225	127	104
NV-1-48L-1-27K7	16,359	105	16,067	103	16,651	107	16,359	105	16,798	108	16,981	109	156
NV-1-48L-1-30K7	17,472	112	17,160	110	17,784	114	17,472	112	17,940	115	18,360	118	156
NV-1-48L-1-40K7	18,096	116	19,032	122	19,188	123	18,876	121	19,344	124	19,838	127	156
NV-1-48L-1-50K7	18,720	120	19,968	128	20,124	129	19,812	127	20,280	130	19,838	127	156

3000K or lower, with fixed mounting options only, must be selected to meet International Dark-Sky Association certification.

LUMENS CHART 64L ONLY

CAT#	N3	LM/W	T2	LM/W	T3	LM/W	T4	LM/W	T5	LM/W	T5W	LM/W	CDL*	LM/W	CDR*	LM/W	W
NV-1-64L-7-27K7	14,262	105	14,007	103	14,007	103	13,880	102	14,135	104	15,044	109	5,797	43	5,725	42	136
NV-1-64L-7-30K7	15,232	112	14,960	110	14,960	110	14,824	109	15,096	111	16,266	118	6,191	46	6,190	46	136
NV-1-64L-7-40K7	15,776	116	17,272	127	16,184	119	15,912	117	16,320	120	17,575	127	6,689	49	6,689	49	136
NV-1-64L-7-50K7	16,320	120	17,680	130	17,000	125	16,728	123	17,136	126	17,575	127	7,013	52	6,689	49	136
NV-1-64L-1-27K7	21,252	106	21,114	106	21,882	109	21,498	107	22,074	110	22,567	109	8,695	43	8,588	43	200
NV-1-64L-1-30K7	22,960	115	22,550	113	23,370	117	22,960	115	23,575	118	24,399	118	9,286	46	9,286	46	200
NV-1-64L-1-40K7	23,780	119	25,010	125	25,215	126	24,805	124	25,420	127	26,363	127	10,034	50	10,033	50	200
NV-1-64L-1-50K7	24,600	123	26,240	131	26,445	132	26,035	130	26,650	133	26,363	127	10,519	53	10,033	50	200

3000K or lower, with fixed mounting options only, must be selected to meet International Dark-Sky Association certification.

LUMEN MAINTENANCE DATA

Ambient Temperature	Drive Current	L90 Hours*	L70 Hours**	30,000 Hours*	50,000 Hours*	60,00 Hours*	100,000 Hours**
25°C	Up to 700mA	58,000	173,000	95.7%	91.6%	89.6%	82.1%
	1050mA	48,000	143,000	94.3%	89.5%	87.2%	78.5%

*Reported extrapolations per IESNA TM-21 **Projected extrapolations per IESNA TM-21

MULTILPLIERS FOR 70/80 CRI (Scaling Factor of 5000K 70 CRI)

CRI	70 CRI	80 CRI
2700K	0.8560	0.8015
3000K	-	0.8594
3500K	-	0.8594
4000K	-	0.9255
5000K	-	0.9255

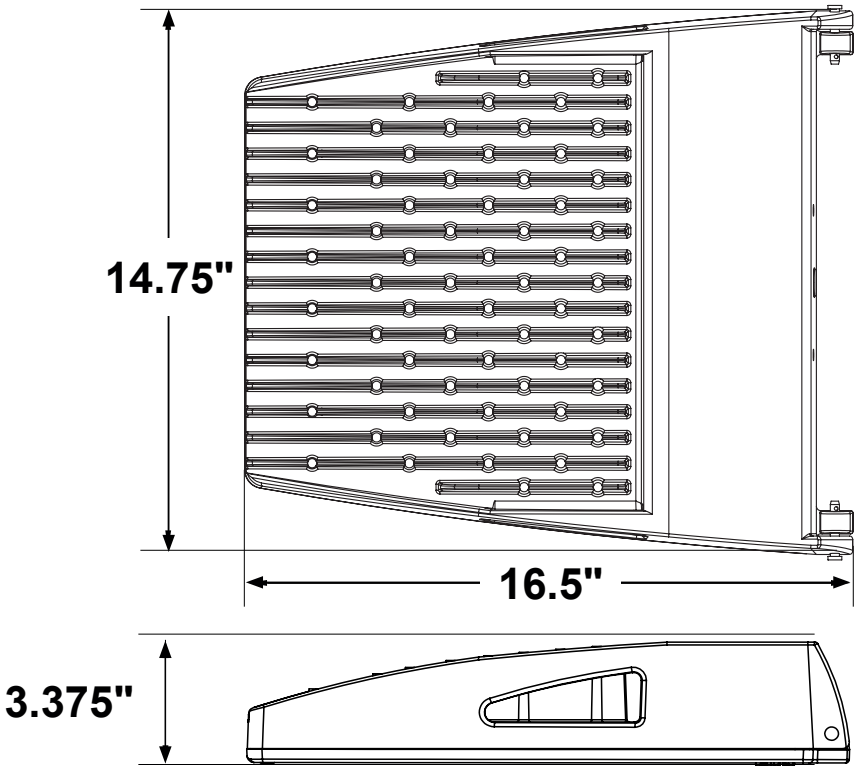
BUG RATINGS 16L, 32L, & 48L				
CAT#	**T2**	**T3**	**T4**	**T5**
NV-1-16L-40-27K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G0
NV-1-16L-40-30K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G0
NV-1-16L-40-40K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G1
NV-1-16L-40-50K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G1
NV-1-16L-53-27K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G1
NV-1-16L-53-30K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G1
NV-1-16L-53-40K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G1
NV-1-16L-53-50K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G1
NV-1-16L-7-27K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B3-U0-G1
NV-1-16L-7-30K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B3-U0-G1
NV-1-16L-7-40K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B3-U0-G1
NV-1-16L-7-50K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B3-U0-G1
NV-1-16L-1-27K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B3-U0-G1
NV-1-16L-1-30K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B3-U0-G1
NV-1-16L-1-40K7	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2
NV-1-16L-1-50K7	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2
NV-1-32L-7-27K7	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2
NV-1-32L-7-30K7	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2
NV-1-32L-7-40K7	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2
NV-1-32L-7-50K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2
NV-1-32L-1-27K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	B4-U0-G2
NV-1-32L-1-30K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	B4-U0-G2
NV-1-32L-1-40K7	B2-U0-G2	B2-U0-G2	B3-U0-G2	B4-U0-G2
NV-1-32L-1-50K7	B2-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G2
NV-1-48L-7-27K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	B4-U0-G2
NV-1-48L-7-30K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	B4-U0-G2
NV-1-48L-7-40K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	B4-U0-G2
NV-1-48L-7-50K7	B2-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G2
NV-1-48L-1-27K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G2
NV-1-48L-1-30K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G2
NV-1-48L-1-40K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B5-U0-G3
NV-1-48L-1-50K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B5-U0-G3
3000K or lower, with fixed mounting options only, must be selected to meet International Dark-Sky Association certification.				

BUG RATINGS 64L						
CAT#	**T2**	**T3**	**T4**	**T5**	**CDL***	**CDR***
NV-1-64L-7-27K7	B2-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G2	B1-U0-G2	B1-U0-G2
NV-1-64L-7-30K7	B2-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G2	B1-U0-G2	B1-U0-G2
NV-1-64L-7-40K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G2	B1-U0-G2	B1-U0-G2
NV-1-64L-7-50K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G2	B1-U0-G2	B1-U0-G2
NV-1-64L-1-27K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B5-U0-G3	B1-U0-G2	B1-U0-G2
NV-1-64L-1-30K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B5-U0-G3	B1-U0-G2	B1-U0-G2
NV-1-64L-1-40K7	B3-U0-G3	B3-U0-G3	B3-U0-G4	B5-U0-G3	B1-U0-G2	B1-U0-G2
NV-1-64L-1-50K7	B3-U0-G3	B3-U0-G3	B3-U0-G4	B5-U0-G3	B1-U0-G2	B1-U0-G2
3000K or lower, with fixed mounting options only, must be selected to meet International Dark-Sky Association certification.						

*64L Only

LUMEN HSS										
PART NUMBER	**T2 HSS**	**LM/W**	**BUG**	**T3 HSS**	**LM/W**	**BUG**	**T4 HSS**	**LM/W**	**BUG**	**W**
NV-1-16L-40-27K7	1386	66	B0-U0-G0	1336	64	B0-U0-G0	1343	64	B0-U0-G0	21
NV-1-16L-40-30K7	1499	71	B0-U0-G0	1445	69	B0-U0-G0	1452	69	B0-U0-G0	21
NV-1-16L-40-40K7	1620	77	B0-U0-G0	1561	74	B0-U0-G0	1569	75	B0-U0-G0	21
NV-1-16L-40-50K7	1620	77	B0-U0-G0	1561	74	B0-U0-G0	1569	75	B0-U0-G0	21
NV-1-16L-530-27K7	1837	66	B0-U0-G0	1771	63	B0-U0-G0	1780	64	B0-U0-G1	28
NV-1-16L-530-30K7	1986	71	B0-U0-G0	1914	68	B0-U0-G1	1924	69	B0-U0-G1	28
NV-1-16L-530-40K7	2146	77	B0-U0-G0	2068	74	B0-U0-G1	2079	74	B0-U0-G1	28
NV-1-16L-530-50K7	2146	77	B0-U0-G0	2068	74	B0-U0-G1	2079	74	B0-U0-G1	28
NV-1-16L-700-27K7	2426	67	B0-U0-G1	2338	65	B0-U0-G1	2350	65	B0-U0-G1	36
NV-1-16L-700-30K7	2623	73	B0-U0-G1	2528	70	B0-U0-G1	2541	71	B0-U0-G1	36
NV-1-16L-700-40K7	2835	79	B0-U0-G1	2732	76	B0-U0-G1	2746	76	B0-U0-G1	36
NV-1-16L-700-50K7	2835	79	B0-U0-G1	2732	76	B0-U0-G1	2746	76	B0-U0-G1	36
NV-1-16L-1050-27K7	3639	65	B0-U0-G1	3508	63	B0-U0-G1	3526	63	B0-U0-G1	56
NV-1-16L-1050-30K7	3935	70	B1-U0-G1	3792	68	B0-U0-G1	3812	68	B0-U0-G1	56
NV-1-16L-1050-40K7	4252	76	B1-U0-G1	4098	73	B0-U0-G1	4119	74	B0-U0-G1	56
NV-1-16L-1050-50K7	4252	76	B1-U0-G1	4098	73	B0-U0-G1	4119	74	B0-U0-G1	56
NV-1-32L-700-27K7	4853	68	B1-U0-G1	4677	66	B0-U0-G1	4701	66	B0-U0-G1	71
NV-1-32L-700-30K7	5247	74	B1-U0-G1	5057	71	B0-U0-G1	5083	72	B1-U0-G2	71
NV-1-32L-700-40K7	5669	80	B1-U0-G1	5464	77	B0-U0-G2	5492	77	B1-U0-G2	71
NV-1-32L-700-50K7	5669	80	B1-U0-G1	5464	77	B0-U0-G2	5492	77	B1-U0-G2	71
NV-1-32L-1050-27K7	7279	69	B1-U0-G2	7015	66	B1-U0-G2	7051	67	B1-U0-G2	106
NV-1-32L-1050-30K7	7870	74	B1-U0-G2	7585	72	B1-U0-G2	7624	72	B1-U0-G2	106
NV-1-32L-1050-40K7	8504	80	B1-U0-G2	8196	77	B1-U0-G2	8238	78	B1-U0-G2	106
NV-1-32L-1050-50K7	8504	80	B1-U0-G2	8196	77	B1-U0-G2	8238	78	B1-U0-G2	106
NV-1-48L-700-27K7	7279	70	B1-U0-G2	7015	67	B1-U0-G2	7051	68	B1-U0-G2	104
NV-1-48L-700-30K7	7870	76	B1-U0-G2	7585	73	B1-U0-G2	7624	73	B1-U0-G2	104
NV-1-48L-700-40K7	8504	82	B1-U0-G2	8196	79	B1-U0-G2	8238	79	B1-U0-G2	104
NV-1-48L-700-50K7	8504	82	B1-U0-G2	8196	79	B1-U0-G2	8238	79	B1-U0-G2	104
NV-1-48L-1050-27K7	10918	70	B1-U0-G2	10523	67	B1-U0-G2	10577	68	B1-U0-G2	156
NV-1-48L-1050-30K7	11805	76	B1-U0-G2	11377	73	B1-U0-G2	11436	73	B1-U0-G2	156
NV-1-48L-1050-40K7	12755	82	B1-U0-G2	12293	79	B1-U0-G2	12356	79	B1-U0-G2	156
NV-1-48L-1050-50K7	12755	82	B1-U0-G2	12293	79	B1-U0-G2	12356	79	B1-U0-G2	156
NV-1-64L-700-27K7	9705	71	B1-U0-G2	9354	69	B1-U0-G2	9402	69	B1-U0-G2	136
NV-1-64L-700-30K7	10493	77	B1-U0-G2	10113	74	B1-U0-G2	10165	75	B1-U0-G2	136
NV-1-64L-700-40K7	11338	83	B1-U0-G2	10927	80	B1-U0-G2	10983	81	B1-U0-G2	136
NV-1-64L-700-50K7	11338	83	B1-U0-G2	10927	80	B1-U0-G2	10983	81	B1-U0-G2	136
NV-1-64L-1050-27K7	14558	71	B1-U0-G2	14031	68	B1-U0-G2	14103	69	B1-U0-G3	205
NV-1-64L-1050-30K7	15740	77	B1-U0-G2	15170	74	B1-U0-G3	15248	74	B1-U0-G3	205
NV-1-64L-1050-40K7	17007	83	B2-U0-G2	16391	80	B1-U0-G3	16475	80	B1-U0-G3	205
NV-1-64L-1050-50K7	17007	83	B2-U0-G2	16391	80	B1-U0-G3	16475	80	B1-U0-G3	205

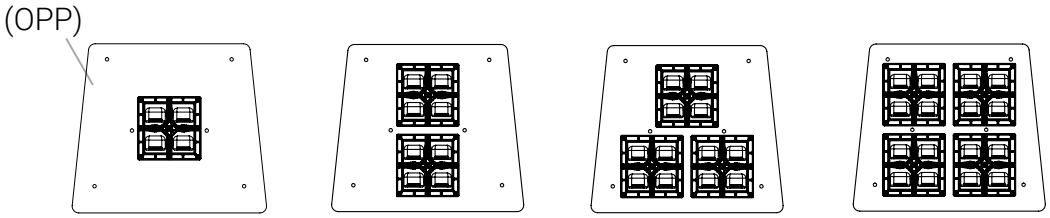
3000K or lower, with fixed mounting options only, must be selected to meet International Dark-Sky Association certification.



Weight: 24 lbs

OPTICAL CONFIGURATIONS

Rotatable Optics (ROR) Rotated Right, (ROL) Rotated Left options available. Optics field and factory rotatable.



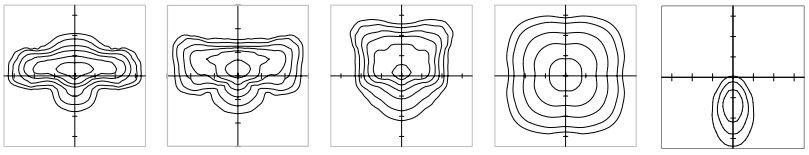
NV-1 / 16L **NV-1 / 32L** **NV-1 / 48L** **NV-1 / 64L**

* OPTIC PLATE PAINTED TO MATCH FIXTURE FINISH (OPP)– Optic Plate standard clear anodized, Grade 2. When (OPP) specified, Optic Plate finish will match fixture finish.

OPTICS

Silicone optics high photothermal stability and light output provides higher powered LEDs with minimized lumen depreciation LED life. UV and thermal stability with scratch resistance increases exterior application durability.

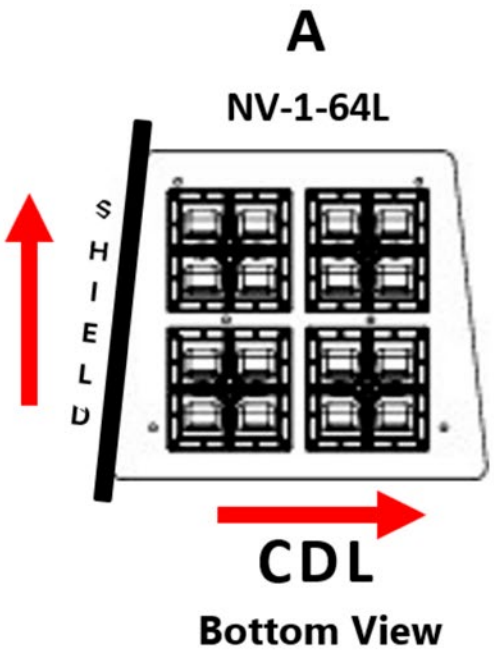
IES Types



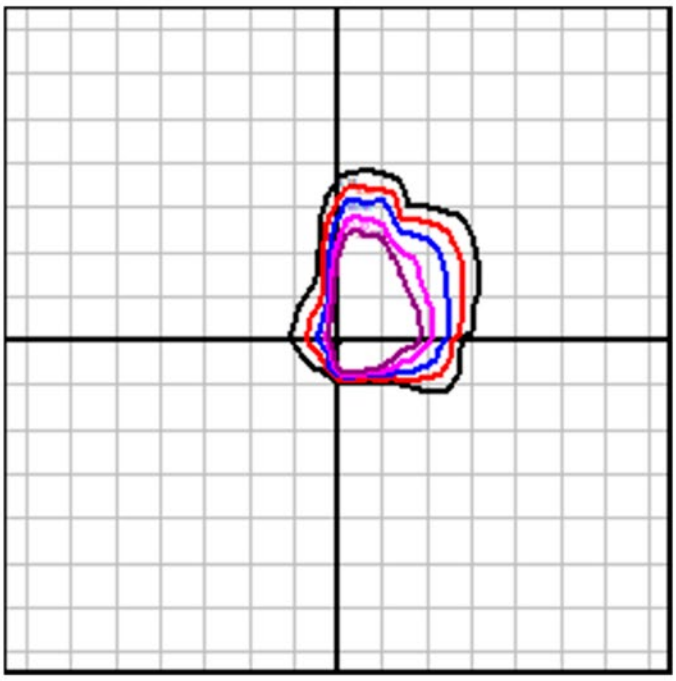
TYPE II (T2) TYPE III (T3) TYPE IV (T4) TYPE V (T5) NEMA 3 (N3)

OPTICAL CONFIGURATIONS (CONTINUED) - Corner Optics (CDL/CDR)

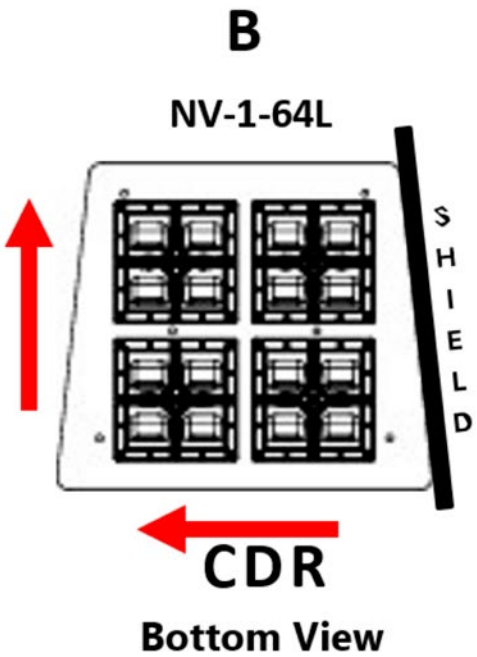
Blended optical distributions include a HSS over the optic and are aimed forward. Fixtures also feature an external side mounted shield.



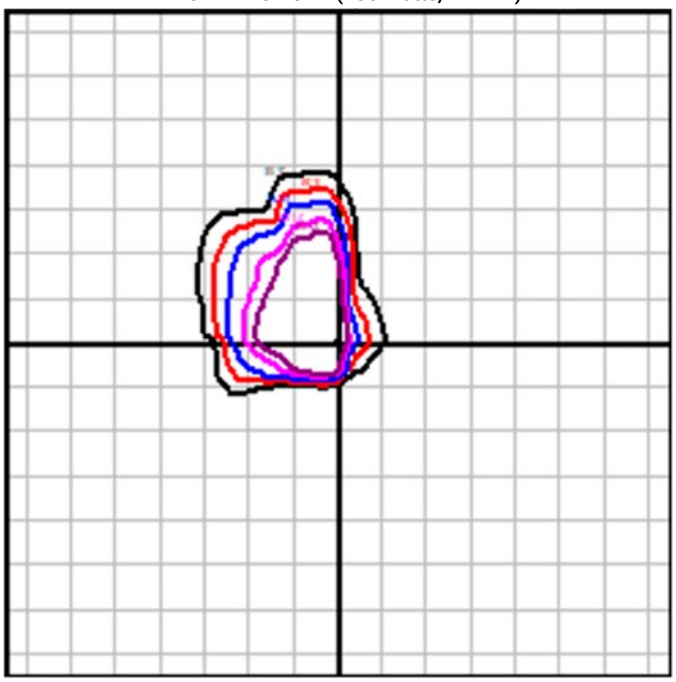
NV-64L-1-40K-CDL (205 Watts, 49LPW)



Mounting Height is 15ft, each sq equals 1 mounting height.



NV-64L-1-40K-CDR (205 Watts, 49LPW)

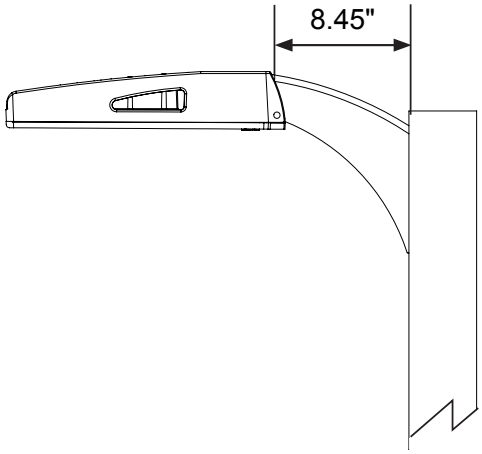


Mounting Height is 15ft, each sq equals 1 mounting height.

MOUNTING OPTIONS

ARCHITECTURAL SWEEP ARM (ASA)

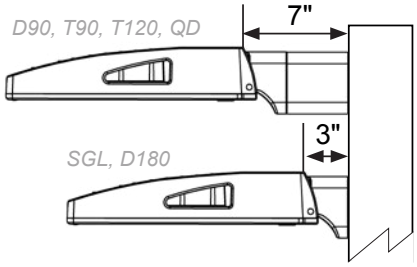
Cast Sweep Arm includes (as standard)
Internal Quick Mount Bracket.



DIRECT POLE (DP)

Standard mounting arm is extruded aluminum in lengths of 3" and 7".

**Arm lengths may vary depending on configuration*

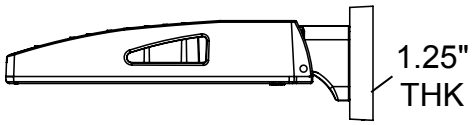


DPX ARM LENGTH

DPX ARM LENGTH	SGL	D90	D180	D180	T90	T120	QD
NV-1	3"	7"	3"	7"	7"	7"	7"

WALL MOUNT (WM)

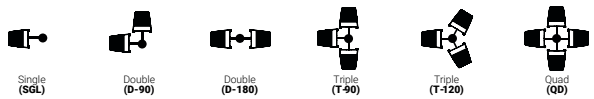
Cast Aluminum Plate for direct wall mount.
3" extruded aluminum arm mounts directly to a cast wall mount box.



EPA

EPA	SGL	D90	D180	T90	T120	QD
NV-1-DP3	0.46	-	0.92	-	-	-
NV-1-DP7	-	1.14	1.05	1.34	1.37	1.34
NV-1-KM	0.54	N/A	1.08	N/A	N/A	N/A
NV-1-ASA	0.75	1.29	1.50	1.99	2.05	1.99

MOUNTING CONFIGURATION

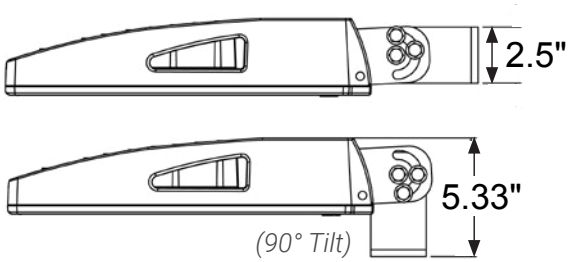


MOUNTING OPTIONS

TRUNNION MOUNT (TM)

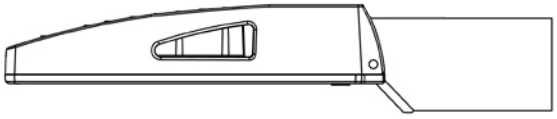
Steel, bolt-on-mounting for adjustable installation with a maximum uplift of 90 degrees.

**Unpainted stainless steel is standard*



TENNIS ARM (TA)

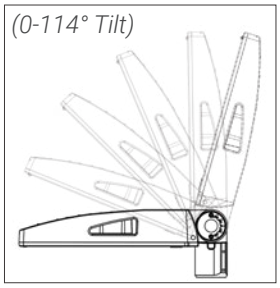
Steel fitter slips over 3.5" x 1.5" rectangular arm. *See Tennis Arm Spec Sheet for details

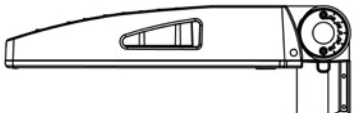


KNUCKLE MOUNT (KM)

Die Cast Knuckle great for adjustable installation on 2-3/8" OD vertical or horizontal tenon.

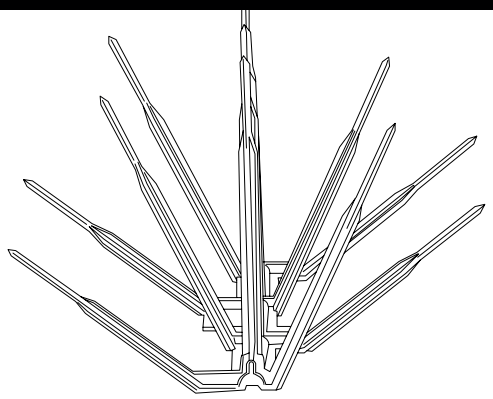
- Max Up-tilt of 90 degrees
- Adjustable in 6 degree increments
- 1.5G Vibration Rated per ANSI C136.31-2010





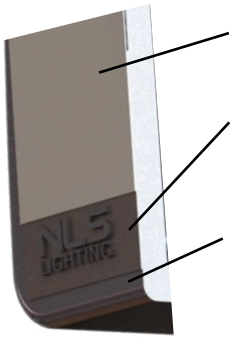
BIRD SPIKES (BS)

Bird Spikes offers effective and humane deterrent for larger bird species and provides cost-effective long-term solution to nuisance bird infestations and protect your property.



MARINE GRADE FINISH (MGF)

The **(MGF)** is a multi step process. Chemically washed in a 5 stage cleaning system. Pre-baked. Powder coated 3-5 mils of Zinc Rich Super Durable Polyester Primer. Oven Baked. Finished Powder Coating of Super Durable Polyester Powder Coat 3-5 mil thickness.



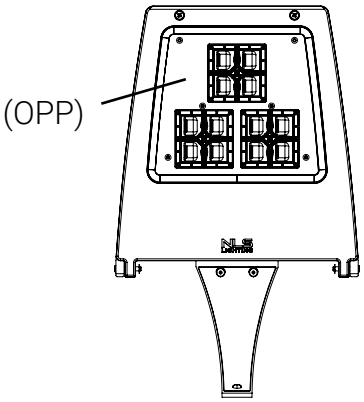
Powder Coat Finish
3-5 mil Powder Coat

Primer Layer
3-5 mil Zinc Rich Super Durable Polyester Primer

Prepared Casting
Chemically washed in multi Step 5 stage cleaning process

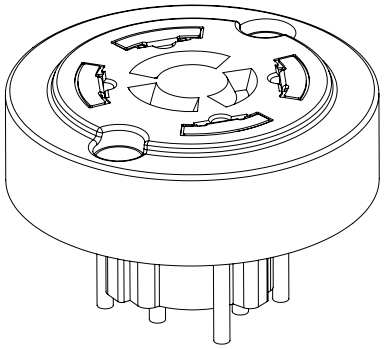
OPTIC PLATE PAINTED TO MATCH (OPP)

Optic plate is clear anodized as standard. The optic plate can be powder coated to match the finish of the fixture.



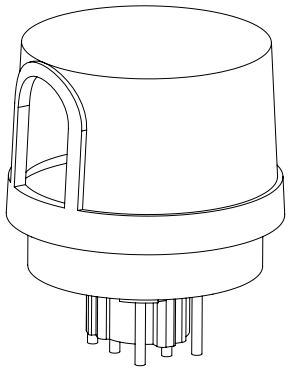
NEMA 7-PIN RECEPTACLE (PE7)

An ANSI C136.41-2013 receptacle provides electrical and mechanical interconnection between photo control cell and luminaire. Dimming receptacle available two or four dimming contacts supports 0-10 VDC dimming methods or Digital Addressable Lighting Interface (DALI), providing reliable power interconnect.



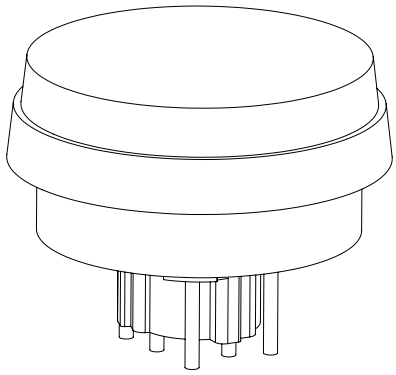
PHOTOCELL + RECEPTACLE (PCR)

7-Pin Receptacle and Electronic Twist Lock Photocell for dusk to dawn operation.



RECEPTACLE + SHORTING CAP (PER)

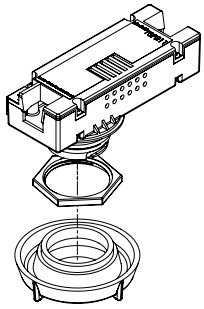
7-Pin Receptacle and Shorting Cap.



FSP-211 WITH MOTION SENSOR (FSP-XX)

- FSP-211 (FSP-X)—Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution
- All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles
- FSP-20 mounting heights 9-20 feet
- FSP-40 mounting heights 21-40 feet
- Includes 5 dimming event cycles, 0-10V dimming with motion sensing, re-programmable in the field

FSP-211



QUICK MOUNT BRACKET (QMB)

Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures. Has a 2”x4” Drill Pattern.



RETROFIT MOUNT BRACKET (RQMB)

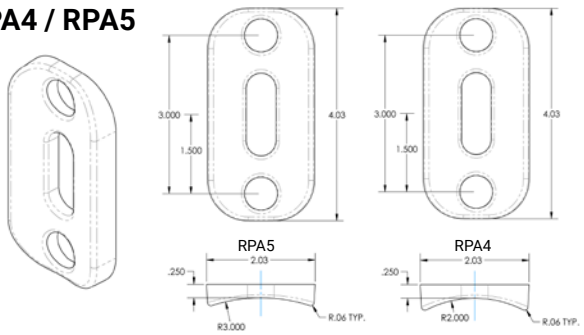
Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures. Drill Pattern is adjustable from 2”x4” to 2”x6”.



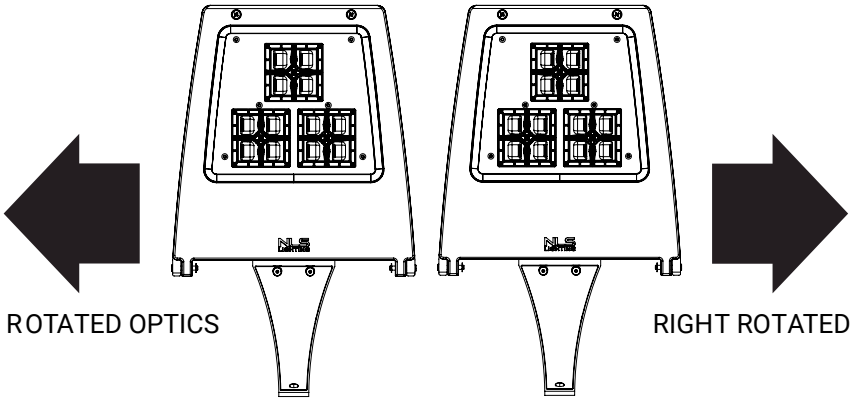
ROUND POLE ADAPTER OPTIONS (RPA4) (RPA5)

When using round poles, specify Round Pole Adapter (RPA). Specify RPA4 when installing on 3”-4” round poles, and RPA5 when installing on 5”-6” round poles.

RPA4 / RPA5



ROTATED OPTICS (ROL) (ROR)



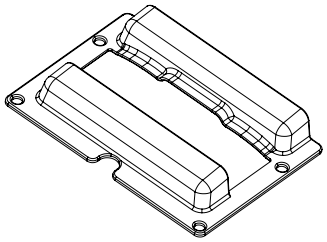
LEFT ROTATED OPTICS

RIGHT ROTATED OPTICS

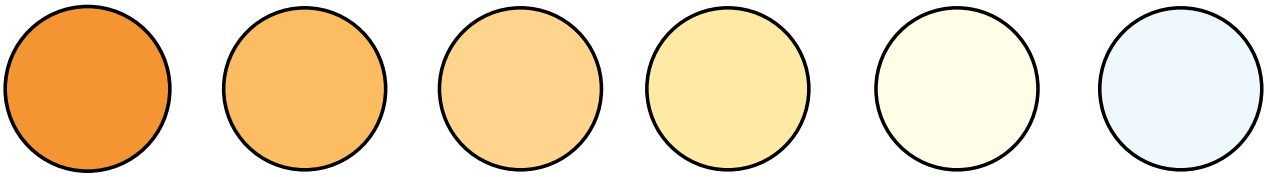
SHIELDING OPTIONS (AHS) (HSS)

SHIELDS (HSS, AHS)—House Side Shield (HSS) is designed for full property line cut-off.

HOUSE SIDE SHIELD



LED KELVIN RANGE



AMBER
585-600 nm

2700K 70 CRI

3000K 70 CRI

3500K 80 CRI

4000K 70 CRI

5000K 70 CRI

Color	Dominant or Peak Wavelength Range (nm)	
	Minimum	Maximum
Amber	585	600

BLACK HARDWARE

Optional black, zinc coated steel hardware.

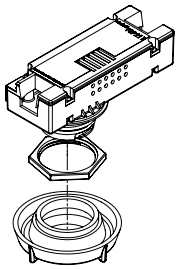


BLACK OPTIC FRAME

Optional Black Optic Frame.
Standard is white.

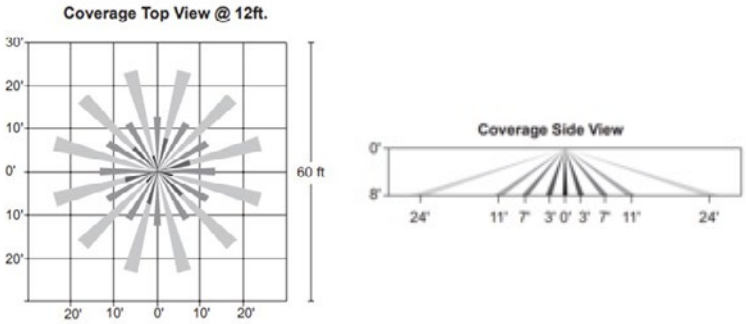


CONTROLS

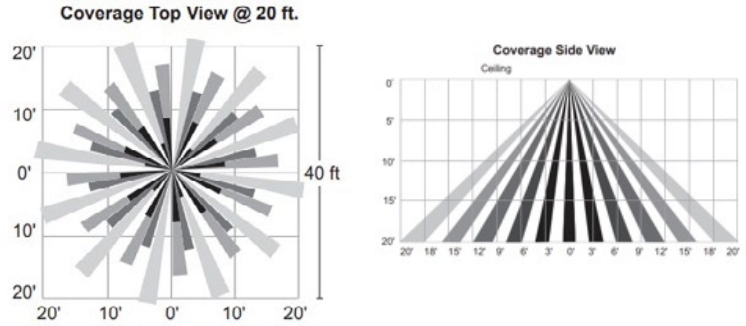


- DIMMING CONTROL (FSP)—Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution
- All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles
- FSP-8 mounting heights 8 feet and below
- FSP-20 mounting heights 9-20 feet
- FSP-40 mounting heights 21-40 feet
- Includes 5 dimming event cycles, 0-10V dimming with motion sensing, re-programmable in the field

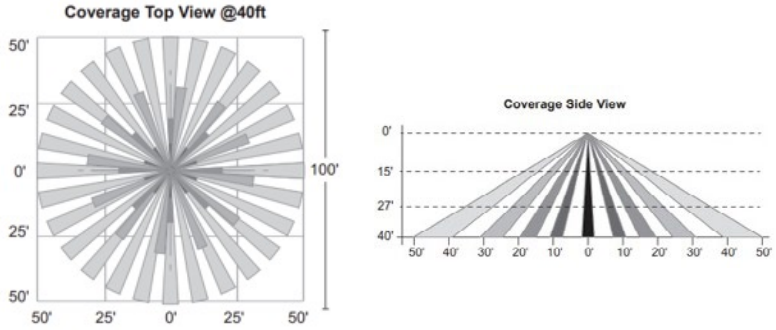
FSP-8



FSP-20



FSP-40



Zachary Powell <zpowell@portlandmaine.gov>

Fwd: question around airport parking project

jmy <jmy@portlandmaine.gov> Wed, Nov 27, 2024 at 9:11 AM
To: Zachary Powell <zpowell@portlandmaine.gov>

Hi Zach, this was received during the meeting last night.

---------- Forwarded message ---------
From: Emily Bernhard <emilybernhard@gmail.com>
Date: Tuesday, November 26, 2024 at 6:20:24 PM UTC-5
Subject: question around airport parking project
To: planning@portlandmaine.gov <planning@portlandmaine.gov>

Hello,
I'm wondering why they are paving more land rather than building a garage? Was that considered? Isn't it better to build up rather than out?
Many thanks,
Emily Bernhard
28 Cumberland Ave
Portland ME

Maggie Stanley ,
Portland Planning board ,
Portland City Hall.
Portland , Maine.
January 6 2025 .

Carter Waldren
40 Garrison Street Portland,, Maine, 04102
Re jetport parking expansion proposal.

Maggie Stanley ,

I spoke at the Planning Board meeting about the vernal pond 5273 Wood Frog Pond, which the airport and Sabeo claim doesn't exist. It does exist and is home to over 150 egg masses of wood frogs and tree frogs, along with woodpeckers and other wildlife. Either my neighbors and I, who have lived here since 1990, are wrong, or the airport's assessment is incorrect. The assessment was done by Sabego tech and was not independently verified. I have sent in an assessment to the state as a citizen that actually has photos and movies and underwater movies that proves that the vernal pond is a valid wildlife habitat. .

The pond's location, across from Jetport Blvd, is important because it's connected to the wetlands on the upper Toye property, which should still be considered when considering the 250-foot setback. The development on this property needs careful review, as it affects the entire watershed.

I understand the airport needs more parking, but the PWM master plan already includes a detailed strategy for this, with plans for a phased parking garage. A surface lot, especially one that harms wetlands, is a short-term fix and won't meet long-term goals. The proposed 13-acre parking lot would destroy important wetlands and a 20-foot high wooded buffer that helps protect the neighborhood from noise and pollution.

For the past two years, I've suggested that the airport use the lower dirt space that has the cell lot and add 400 parking spots . This area is mostly empty and is a waste. Enplanement levels are over the intermediate planning levels of 1.1 million and the garage should have already been built. This is all outlined in the master plan executive summary. The taking of the wetland hill is unnecessary and will lead to environmental damage and devaluing the Stroudwater neighborhood. That hill functions like the hill for the new stroudwater preserve housing development and the highway traffic noise and pollution.

Please consider these concerns when reviewing the parking expansion waivers. The environmental impacts on light, air, noise, heat sinks and the ecosystem are significant and unnecessary. Mr. Bradbury was unable to explain how this project fits with the master plan because it does not and the master plan outlines the protection of the northern buffers and protection of the environment and close neighborhoods.

Carter Waldren

Carter Waldren

40 Garrison Street,
Portland, Maine, 04102

Problems with vernal pond 5273 assessment and location to proposed parking expansion at Pwm.

Assessment of Pond 5273

Vernal pond # 5273 is located North of Jetport Blvd but its protection of a 250 foot buffer as a wood frog habitat should be enforced related to the parking expansion proposal. The States approval of the assessment as being not significant is false. The vernal pond does in fact contain the requisite amounts of wood frog egg masses(more than 40) and is not permanent hydric. It is a natural feature that the neighborhood has known about for decades. The dates for the assessment are not consistent with other relevant documents that have been submitted to the Maine dep and the city of Portland planning department. This oversight is damaging to the environment and will impact the greater area wildlife and environmental resources.

1. Discrepancies in the Assessment Dates

- There are conflicting dates on various documents concerning the assessment of Vernal Pond #5273. The assessment performed by Mr. Cole Peters states the pond is a "permanent hydric pond," but I disagree with this finding and it is not permanent and should be classified as a wood frog habitat. See photos.
- The MDEP submission documents (e.g., MSVPAF form) contain inconsistent dates compared to other documents like the Site Location of Development Application (SLODA), emails, and site visit reports. This raises concerns about when the assessment was actually submitted and whether it was disclosed to the public, especially considering it was not presented at the public meeting on December 12, 2023. No wetlands were presented as being impacted at the Dec 12th, 2023, Dep meeting at Pwm north of Jetport Blvd. The proposed cell phone lot would have been adjacent to vernal pond # 5273. The proposed cell lot was subsequently removed from the proposed project. However the classification as a wildlife habitat and its protection by the 250 foot barrier would impact future development to the South of Jetport blvd as well. The vernal pond 5273 is an active woodfrog and tree frog habitat and should be afforded the appropriate state and federal setbacks.

2. Inaccurate Classification of Vernal Pond

- The MDEP assessment classifies Vernal Pond #5273 as a permanent hydric pond, however this is false. The active wood frog habitat does in fact dry out seasonally, and therefore, it does not meet the criteria for permanent hydric wetlands.

- I request the pond be re assessed and suggest that the pond should be classified as a wildlife habitat, which would warrant a 250-foot protective boundary under state law and federal law . Due to the estimated 150 egg masses of wood frogs and the non- hydric assessment and the incompatible dates for the assessment .
- Also the lack of disclosure of the wetlands to the public at the Dec 12th 2023 PWM meeting.

3. Failure to Disclose Wetland Habitat at Public Meeting

- During the public meeting on December 12, 2023, which had significant public attendance (80 people), no wetlands or frog ponds were disclosed by Jetport management or Sebago Technics north of Jetport, due to this oversight I had requested the dep start the process over with the applicant but that request was not granted. However public comments highlighted the existence of frog ponds at the location of Pond 5273, which were not acknowledged in subsequent Sloda applications as community concerns.
- Additionally, no wetlands were disclosed north of Jetport Blvd., including the upper Toye wetlands, which are also relevant to the overall environmental condition of the area.

4. Damaged Wetlands and Mapping Issues

- The wetland mapping in Exhibit A of the SLODA application has been flagged for missing or inaccurate information. It excludes certain wetland ponds and shows evidence of damage from bulldozer paths that were made on the Upper Toye and northern wetlands prior to the submission of the application to the MDEP.
- This damage was observed during a site visit by MDEP staff, including Mr. Bradbury, in the presence of representatives from Sebago Technics. The implications are that the wetland conditions may have been altered or degraded before the site location application was submitted, potentially affecting the validity of the assessment.

5. Lack of Transparency Regarding Previous Permits

- The issue of the permit for the upper Toye land wetlands is brought into question. Pwm indicated at the Dec 12th Meeting that a permit existed for the property, but it in fact had expired before the City of Portland acquired it in 2020. However, no wetlands were disclosed on the property at the December 12 meeting, despite the public's insistence that frog ponds existed at the site north of Jetport Blvd. and on the upper Toye wetlands.
- Tree frogs were noted on the upper Toye area and this finding was relayed to the Maine Dep, Mr. Samuel Sheppard and Allison Sirous..

6. Wildlife Habitat Status

- The pond in question is home to several species of amphibians, including wood frogs, peepers, and tree frogs. Additionally, a variety of birds and other wildlife utilize the area.

This further supports the argument that Vernal Pond #5273 should be protected as a wildlife habitat with the appropriate 250-foot setback.

Evidence and backup documents related to the incomplete assessment of vernal pond 5273 .

Here is the pond with cat- tails and no water taken on Friday November 15th at 3.51 pm. There is no water. It is not a permanent hydric vernal pond. This is a fact. The claim on the pond assessment is incorrect; there is no date given by Mr. Peters on the assessment form.



Pictures of the wood frog eggs from April 21 st. 2024 . Water was cold , clear and about 3 feet deep. I have underwater movies as well. These were taken by me and I had a witness there who can testify that they were taken at pond 5273. The photos were taken in about 3 feet of water. I estimated by counting by hand that there were around 150 egg masses. The masses are on top of each other so there are many more below the surface as well. These were confirmed as wood frog eggs by the fish and wildlife from my photos. .




Sage Cobb









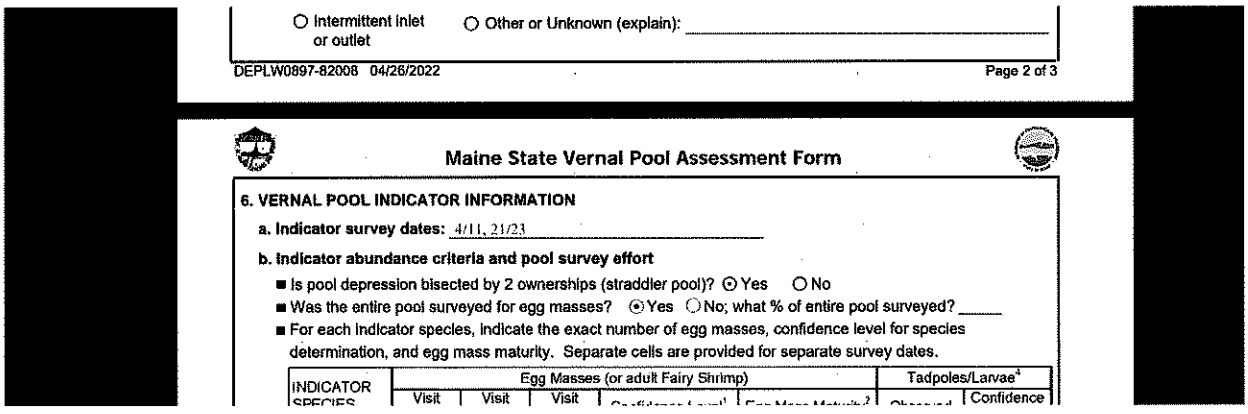
I have submitted a Freedom of Information (FOI) request to the Maine Department of Environmental Protection (MDEP) and involved parties to determine the exact date that the MSVPAF form for Vernal Pond #5273 was submitted to the Maine DEP . The only information I have received so far comes from a meeting between Mr. Philip De Mayner, Cole Peters, and Ciara Wentworth of Fish and Wildlife, which suggests the date might be January 5, 2023. However, I am unsure if this date is accurate and have received no defining information on this point. If the assessment was in fact turned in after the Dec 12th Meeting then that indicates that the applicant did not disclose the wetlands to the public at the Dec 12th meeting. If it was turned in prior to the Dec 12th meeting then that establishes that the applicant did not disclose the wetlands to the public and in fact denied the vernal pond existed.

I also will reference an email related to this meeting, which highlights the issue of conflicting dates regarding the assessment.

I argue that Vernal Pond #5273 qualifies for a 250-foot protective setback under federal and state regulations for vernal ponds. This is because the pond has the required wood frog egg masses and does not meet the criteria for a "permanent hydric" wetland. It is a naturally occurring pond. It does dry out.

The MSVPAF form lists the assessment dates as 4/11, 21/23 . This could be interpreted as having been observed from 2021 to 2023. However, other documents mention different dates. Additionally, the SLODA wetlands survey describes the pond as "ponded water," not as Vernal Pond #5273, further contributing to the confusion about its proper classification. I interpreted that 21/23 meant 2021 to 2023 .

But the 21 appears to be from April 11th and April 21 of 2023 . What is the requisite spacing for a vernal pond visit? Can a pond only be assessed for one short window and have it be valid?



○ Intermittent inlet or outlet ○ Other or Unknown (explain): _____

DEPLW0897-82008 04/26/2022 Page 2 of 3

Maine State Vernal Pool Assessment Form

6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 4/11, 21/23

b. Indicator abundance criteria and pool survey effort

- Is pool depression bisected by 2 ownerships (straddler pool)? ⊙ Yes ○ No
- Was the entire pool surveyed for egg masses? ⊙ Yes ○ No; what % of entire pool surveyed? _____
- For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)					Tadpoles/Larvae[4]	
	Visit	Visit	Visit	[illegible][3]	[illegible]	[illegible]	Confidence

IFW Recommendations for Significant Vernal Pool Determinations

The following is a list of pools and IFW's recommendations for whether or not they qualify as Significant Vernal Pools, one of Maine's Significant Wildlife Habitats.

Data current as of: Friday, February 09, 2024

IFW's Pool ID: 5273 Twp: Portland
Observer's ID: VP-1
UTM Coordinates of Pool Center: 394121 E, 4833920 N
ProjectType: 19059-PWM parking

Landowner: Paul Bradbury - Portland International Jetport
1001 Westbrook Street
Portland, ME 04102
(207) 756-8029 phb@portlandmaine.gov

Contact: Cole Peters - Sebago Technics, Inc
75 John Roberts Road,Suite 4A
South Portland, ME 04106
(207) 200-2100 Cpeters@sebagotechnics.com

Survey Date: 4/11/2023 Additional Survey Dates: 04/21/2023
IFW's Recommendation: RED: NOT SIGNIFICANT, does not meet the vernal pool definition
IFW Comments:

Different date from the PWM Site location application says wetland survey April 11th and April 21 of 2023. There is no mention of any wetland assessments however the photo is vernal pond # 5273 . Lists the area as ponded water. If these are visit dates then there is no mention of the pond being # 5273 only ponded water. The frog egg masses were located in the sunnyer section almost in front of the blue thumb on April 21 of 2024.

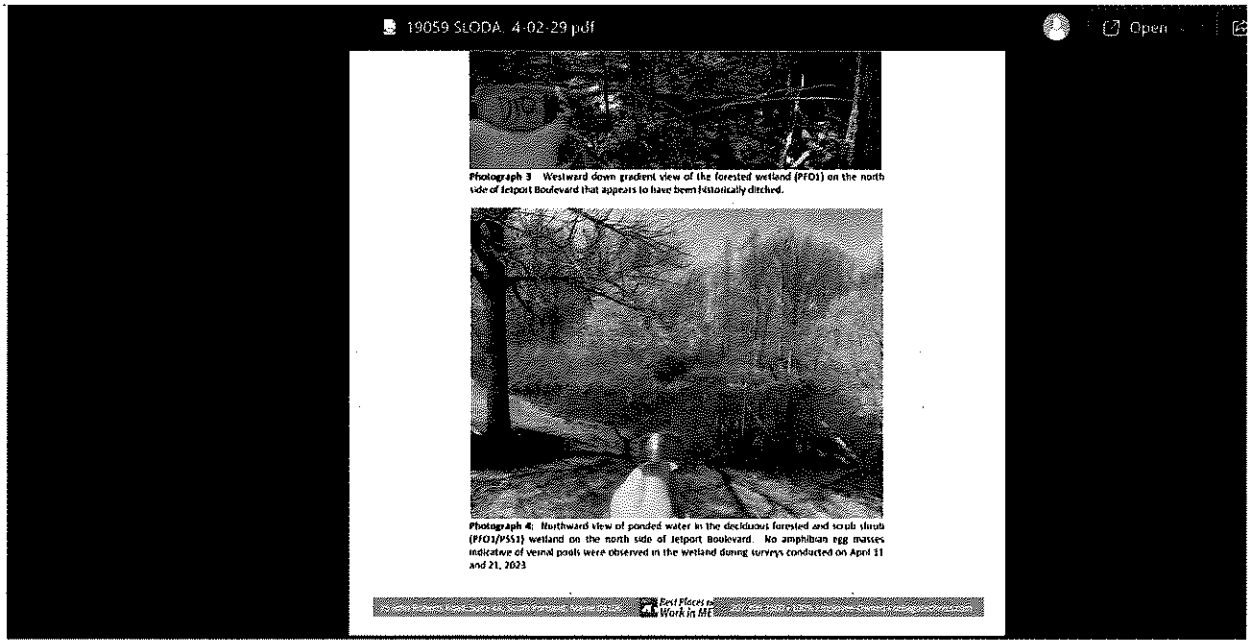
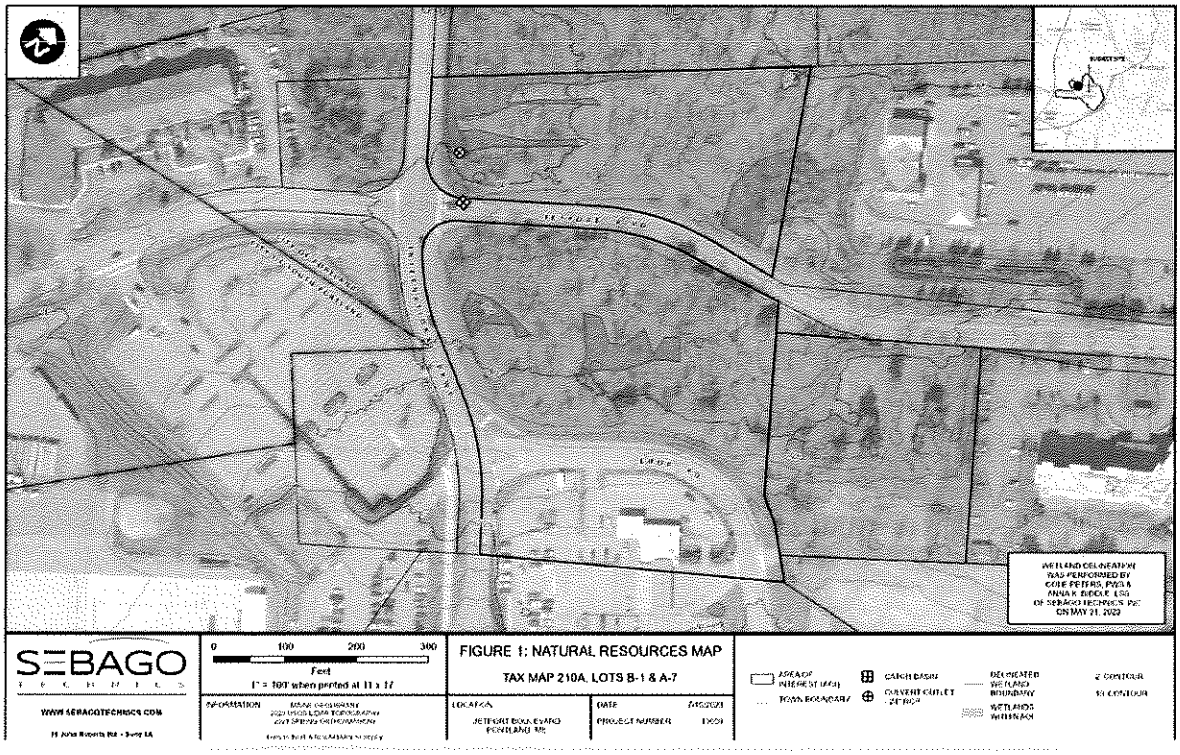


Exhibit A mapping . Date from mapping by Sabego tech Says May 31st 2023 . This mapping was not disclosed to the public on Dec 12th of 2023 and the area north of Jetport was the location of the original plan for a cell phone lot north or Jetport Blvd. The vernal pond is much larger but is partially owned by the adjacent property owner. It is outlined in green at the right of the northern land across jetport BLVD. The wetlands south of jetport blvd , Upper Toye were eventually added to the SLODA application after site visits by the Maine dep and Fish and wildlife. Not shown on this mapping. Says , Spring, Ornithography and lidar. I have disputed the wetland mapping as it appears to lack actual bore testing results and misses a fairly large vernal pond at the northern edge between the other wetlands north of jetport blvd and does not disclose the wetlands on the upper Toye lot as well .



Mapping that was shown at the Dec 12th meeting . Pwm management and the engineers for Sabego claimed that in fact the wetlands were disclosed at that meeting and that they were the dashed lines under the mapping. However this is not supported by the public that attended the meeting or the transcript. . The applicant denied any wetlands north of Jetport blvd.

International Pkwy.
Cell Phone Parking
Residential 1 Zone
Airport Business Zone
Jetport Blvd.
Long Term

Letter to Mr. Bradbury from Mr. Stebbins of the Maine dep. Feb 9th 2024 .
When I spoke to Mr. Stebbins he indicated that the state did not do the survey and in fact used the assessment from Mr. Cole Peters who is an employee of Sabego tech. To establish the status as not being significant. The assessment is included in this document. Stating that with 100% confidence that there are zero wood frog egg masses. "Says after conducting a field survey at your request." That field study is the one by Mr. Cole Peters of Sabego tech and not done independently by the state. Who requested a field study? Where is the documentation of that request?

19059 SLODA...4-02-29.pdf

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JANET T. MILLS
GOVERNOR

MELANIE LOYZIM
COMMISSIONER

February 9, 2024

Paul Bradbury
Portland International Jetport
1001 Westbrook Street
Portland, ME 04102

Re: Vernal Pool Significance Determination, Pool ID # 5273–Portland

Dear Paul Bradbury:

Vernal pools are temporary to semi-permanent wetlands occurring in shallow depressions that typically fill during the spring and dry during the summer or in drought years. They provide important breeding and foraging habitat for a wide variety of specialized wildlife species including several rare, threatened, and endangered species.

After conducting a field survey at your request, it has been determined that the vernal pool identified above on your property is NOT SIGNIFICANT because either: 1. the feature does not meet the definition of a vernal pool under the Significant Wildlife Habitat rules, 06-096 CMR 335(9) or 2. the vernal pool does not meet the biological standards for exceptional wildlife use of the Significant Wildlife Habitat rules, 06-096 CMR 335(9)(B). Therefore, activities within 250 feet of the pool are not regulated under the Natural Resources Protection Act (NRPA) unless there are other protected natural resources nearby such as streams or freshwater wetlands. I have attached a copy of the database printout that verifies the State's findings with respect to your survey.

I want to also advise you that the pool area on your property can be considered a freshwater wetland and therefore direct pool alterations may require permitting under the NRPA.

If you have any questions or need further clarification, please contact Mark Stebbins at 207-592-4810 or email at: Mark.N.Stebbins@maine.gov

Sincerely,

Robert Wood
Director, Bureau of Land Resources

cc. town file

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826

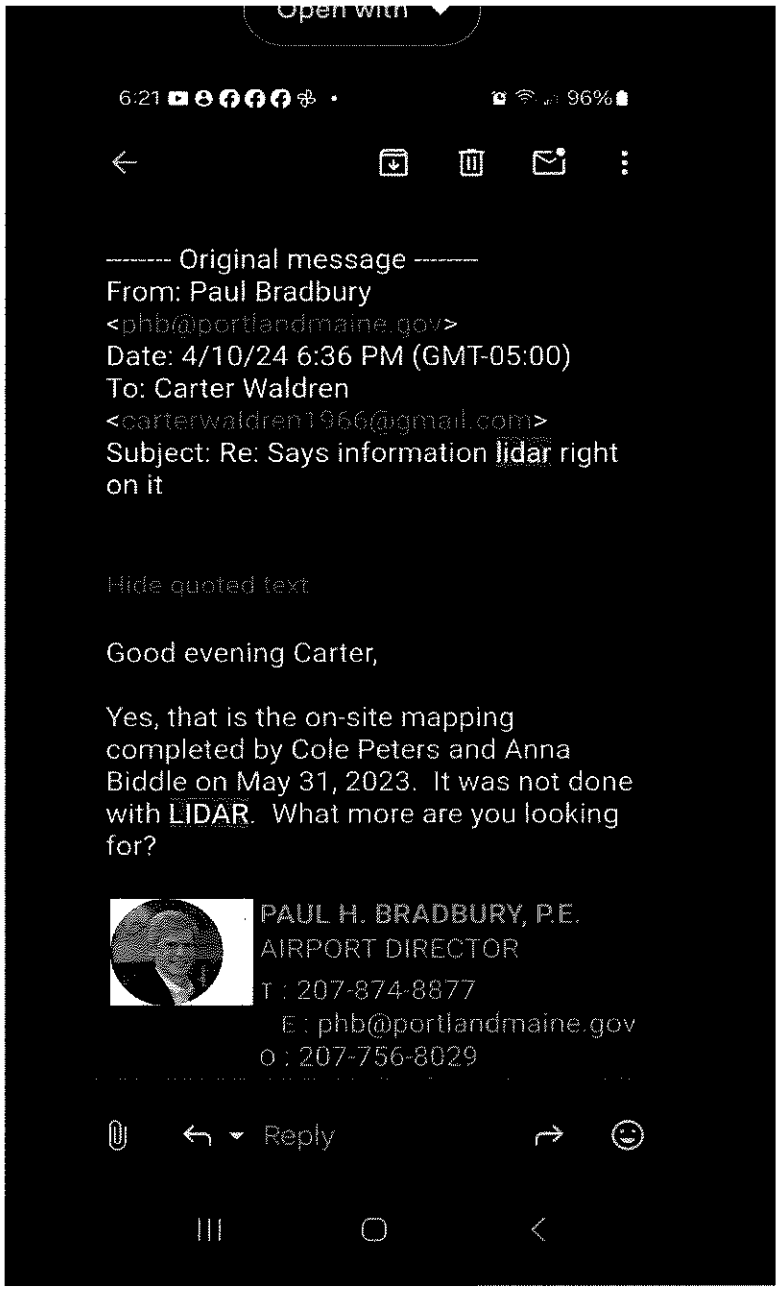
BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
207-941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
(207) 764-0477 FAX: (207) 760-3143

WEBSITE: www.maine.gov/dep

Email from Mr Bradbury to me. Related to the exhibit A. Sabego mapping. States the mapping for wetlands was from May 31 2023. I disputed the wetland survey because it did not have soil samples or descriptions of wetland samples and it appeared the mapping was outlines of previous mapping dashed lines under previous mapping and missed the vernal ponds. etc. Has a date as May 31st of 2023 . My response was, " it says Lidar on the mapping."



From the transcript of Dec 12th DEP Meeting with the public. Andrea Hawks disputes the mapping shown at the Dec 12th meeting. Mr. Bradbury insisted there were no wetlands across jetport blvd and denied the existence of the vernal pond 5273. Mr. Bradbury pointed out the wetlands south of Jetport Blvd and denied any wetlands north of Jetport Blvd.

1181 Westbrook Street. And I've walked this whole area you're talking about for about 20 years now, so I know it intimately. And when you were talking about, well, first of all, I watched what's happening.

andrea hawks?
with the trees on this area, however it happened, they all got taken down long before we had a chance to talk to them. That's one thing that we saw. The second thing is... She's going to be better than you.

andrea hawks?
It's just not for him, but for everybody else. Oh, okay. My voice carries anyway. But I noticed when you were giving us a little pointer about the vernal pool, You are very careful not to go across the street.

andrea hawks?
There could be vernal pools. There are tiny vernal pools, perhaps on the Amos Street. But where that cell phone parking lot is one of the biggest vernal pools around. Oh, yes. No, there's actually, there's no, where.

Key points: vernal pool oh yes

andrea hawks?
No, no, let me finish. I've walked that and I think I have people can confirm that. That is one of the largest peeper sections in the spring I have ever heard. I've taken videos of it. It is beautiful.

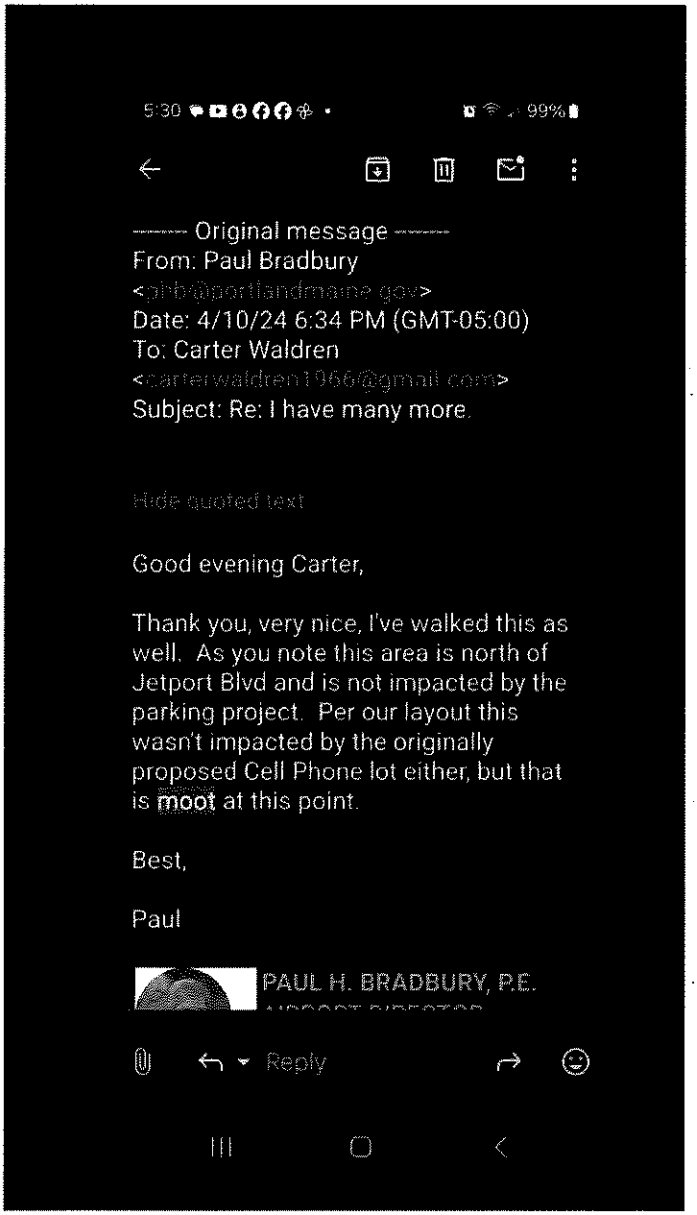
andrea hawks?
And for you to turn it into cell phone parking is really criminal, Paul. Thank you. Thank you. Thank you. Thank you. So I agree. And we're not touching the wetlands with the cell phone lot. So those wetlands are actually right here.

Key points: turn it into cell phone parking

Paul Bradbury
No, they're here. They are not. So I have, and so has Owens, and so has our wetlands mapping. Obviously not. What's in there? It's a safe one. I'll flip. I don't think you can see it on this one. But we can show you the wetlands mapping.

Moot point Mr. Bradbury email to Me. Dated April 11th 2024
Establishes that Mr. Bradbury knew about the pond but denied that it would be impacted by the cell lot location. This assessment was because he had secured the non wildlife impact letter from Mr. Stebbins in February. But had not disclosed the wetlands to the public on Dec 12th.

The cell phone lot was outlined by the pond in the original cell location and the upper section of the cell lot would have been almost directly on an undisclosed vernal peeper pond.



5:30 99%

------ Original message ------
From: Paul Bradbury
<pbrb@portlandmaine.gov>
Date: 4/10/24 6:34 PM (GMT-05:00)
To: Carter Waldren
<carterwaldren1966@gmail.com>
Subject: Re: I have many more.

Hide quoted text

Good evening Carter,

Thank you, very nice, I've walked this as well. As you note this area is north of Jetport Blvd and is not impacted by the parking project. Per our layout this wasn't impacted by the originally proposed Cell Phone lot either, but that is moot at this point.

Best,

Paul

PAUL H. BRADBURY, P.E.

Reply

Different date listed as May 31 of 2023 in the Sloda application.

part of the area reviewed is subject to the City's Shoreland Zoning Ordinance.

Wetland Delineation:

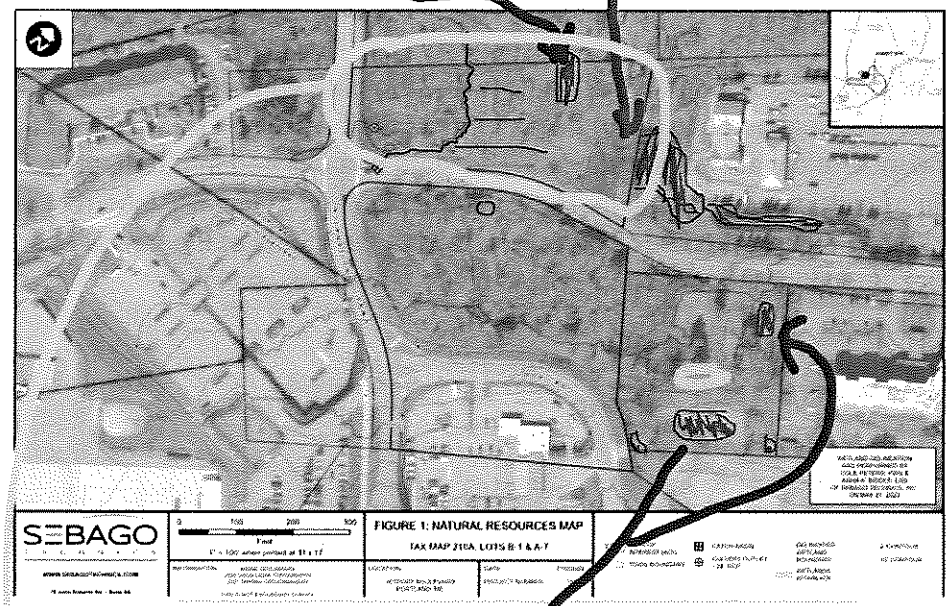
Wetland boundaries were delineated at the Site by Cole Peters, PWS, and Anna Biddle, LSS, on May 31, 2023 with sequentially numbered pink flagging. The flagging was then located with a sub-meter accuracy global position system (GPS) unit to depict these boundaries on Figure 1.

Evidence indicative of wetland from three parameters – vegetation, soils and hydrology – was used to

Drawing added by me to the Sabego tech mapping , Exhibit A showing location of pond 5273 and the other vernal ponds and missing wetlands in the Upper Toye area that were later added to the SLODA application with a note that they were previously permitted . But it does not say that the permit is expired.

vernal pond

frog pond 5272

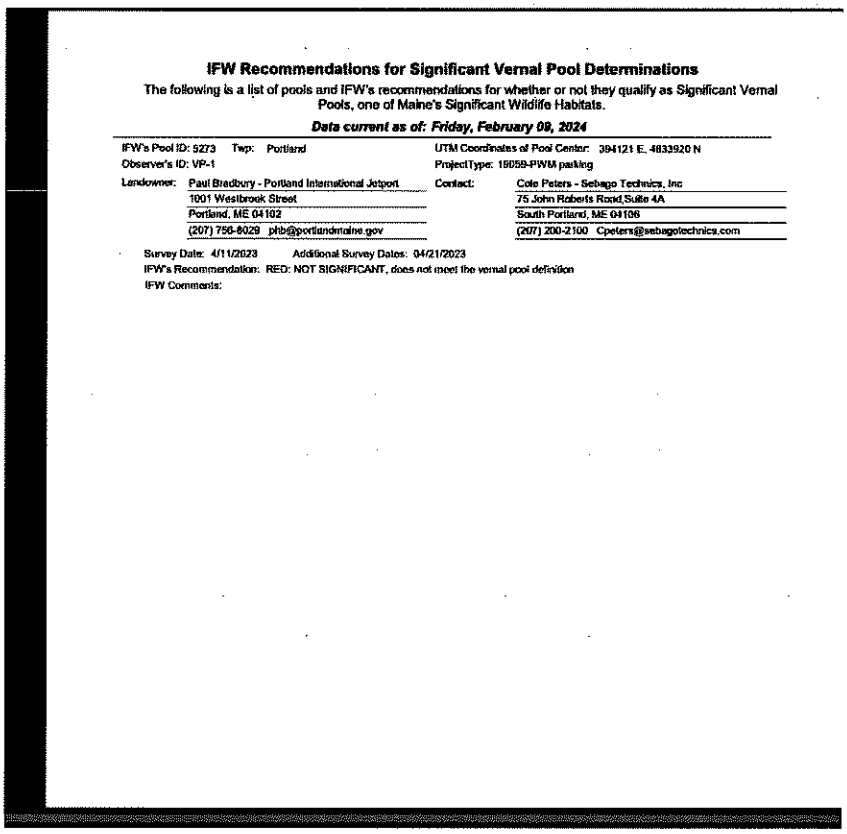


Undisclosed wetlands Dec 12th Public meeting at Pwm airport 6pm .

Undisclosed expired permit Toye wetlands

Light green mapping submitted around feb18th for parking expansion DEP permit. Added wetlands in the section to the north of Jetport Blvd . Not disclosed at the DEC 12th DEP meeting at Pwm. Mr. Bradbury and Mr Mc Cullough of Sabego tech denied there were any wetlands above Jetport BLVD .

Assessment that was turned into the Maine dep Says date current as of Friday , Feb 09 , 2024
But there is no indication as to when it was turned into the Maine DEP. Only that the status was established incorrectly as not significant. The state has claimed that the applicant had followed the rules in turning in the application. However the assessment is still incorrect.
The state lacked sufficient data to correctly establish the status of the vernal pond and the dates on other documents do not match the dates given on the application.



IFW Recommendations for Significant Vernal Pool Determinations

The following is a list of pools and IFW's recommendations for whether or not they qualify as Significant Vernal Pools, one of Maine's Significant Wildlife Habitats.

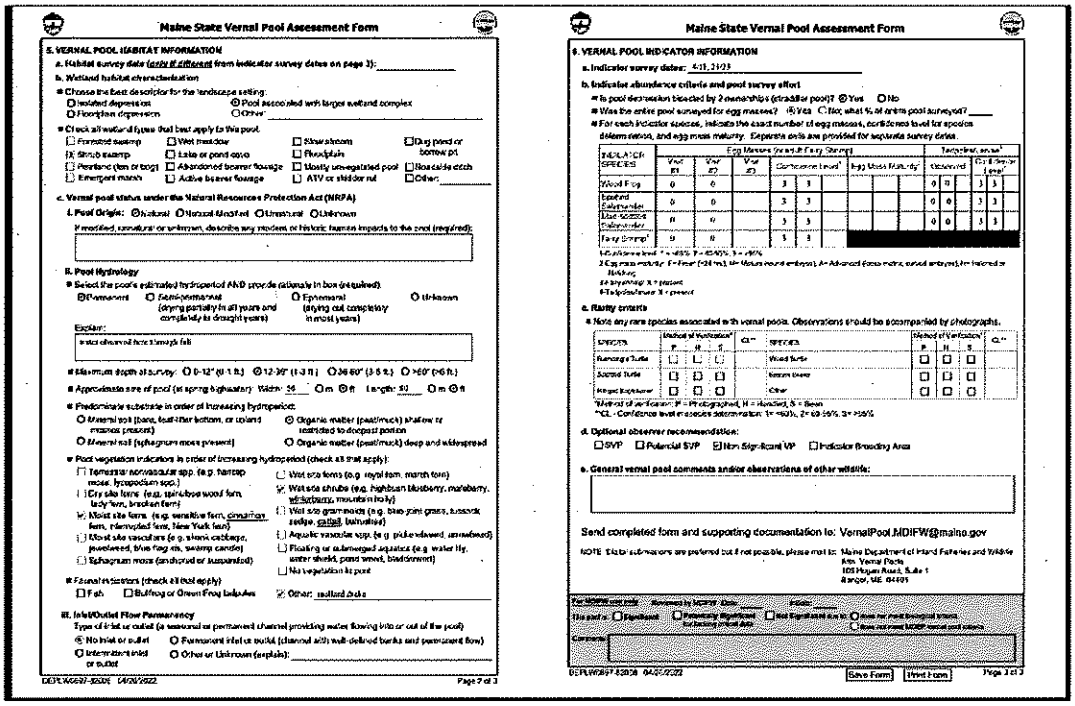
Data current as of: Friday, February 09, 2024

IFW's Pool ID: 5273 Twp: Portland UTM Coordinates of Pool Center: 394121 E, 4833920 N
Observer's ID: VP-1 ProjectType: 19059-PWM parking

Landowner: Paul Bradbury - Portland International Jetport
1001 Westbrook Street
Portland, ME 04102
(207) 756-8029 pbb@portlandmaine.gov

Contact: Cole Peters - Sebago Technics, Inc
75 John Roberts Road,Suite 4A
South Portland, ME 04106
(207) 200-2100 Cpeters@sebagotechnics.com

Survey Date: 4/11/2023 Additional Survey Dates: 04/21/2023
IFW's Recommendation: RED: NOT SIGNIFICANT, does not meet the vernal pool definition
IFW Comments:



Maine State Vernal Pool Assessment Form

5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3):

b. Wetland habitat characterization

Choose the best descriptor for the landscape setting:
- ☐ Isolated depression
- ☐ Floodplain depression
- ☑ Pool associated with larger wetland complex
- ☐ Other:

Check all wetland types that best apply to this pool:
- ☐ Forested swamp
- ☐ Shrub swamp
- ☐ Peatland (bog or fen)
- ☐ Emergent marsh
- ☐ Wet meadow
- ☐ Lake or pond cove
- ☐ Abandoned beaver flowage
- ☐ Active beaver flowage
- ☐ Stream/stream
- ☐ Floodplain
- ☐ Newly unvegetated pool
- ☐ ATV or skidder rut
- ☐ Dug pond or borrow pit
- ☐ Roadside ditch
- ☐ Other:

c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin: ☑ Natural ☐ Natural-Modified ☐ Unnatural ☐ Unknown

If modified, unnatural or unknown, describe any incident or historic human impacts to the pool (required):

II. Pool Hydrology

Select the pool's estimated hydroperiod AND provide rationale in box (required):
- ☑ Permanent
- ☐ Semi-permanent (drying partially in all years and completely in drought years)
- ☐ Ephemeral (drying out completely in most years)
- ☐ Unknown

Explain:

Water observed here through fall

Maximum depth at survey: ☐ 0-12" (0-1 ft.) ☑ 12-36" (1-3 ft.) ☐ 36-60" (3-5 ft.) ☐ >60" (>5 ft.)

Approximate size of pool (at spring hydroperiod): Width: 56 ☐ m ☑ ft Length: 80 ☐ m ☑ ft

Predominate substrate in order of increasing hydroperiod:
- ☐ Mineral soil (sand, loam, silt, clay)
- ☐ Mineral soil (hydric soils present)
- ☐ Organic matter (peat/muck) shallow or restricted to deepest portion
- ☐ Organic matter (peat/muck) deep and widespread

Pool vegetation indicators in order of increasing hydroperiod (check all that apply):
- ☐ Terrestrial nonvascular spp. (e.g. haircap moss, hypnoid moss spp.)
- ☐ Dry site forbs (e.g. starflower, wood fern, lady fern, bracken fern)
- ☑ Moist site forbs (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)
- ☐ Moist site vasculars (e.g. skunk cabbage, pickerelweed, blue flag iris, swamp candle)
- ☐ Sphagnum moss (anchored or suspended)
- ☐ Wet site forbs (e.g. royal fern, marsh fern)
- ☑ Wet site shrubs (e.g. highbush blueberry, meadowsweet, winterberry, mountain holly)
- ☐ Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)
- ☐ Aquatic vascular spp. (e.g. pickerelweed, arrowhead)
- ☐ Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)
- ☐ No vegetation in pool

Faunal indicators (check all that apply):
- ☐ Fish
- ☐ Bullfrog or Green Frog tadpoles
- ☑ Other: wetland birds

III. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):
- ◉ No inlet or outlet
- ○ Intermittent inlet or outlet
- ○ Permanent inlet or outlet (channel with well-defined banks and permanent flow)
- ○ Other or Unknown (explain):

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Maine State Vernal Pool Assessment Form

6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 4.11.2022

b. Indicator abundance criteria and pool survey effort

- Is pool electrocution bisected by 2 meandships (shoulder pool)? ◉ Yes ○ No
- Was the entire pool surveyed for egg masses? ◉ Yes ○ No; what % of entire pool surveyed? ____
- For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (round) or Fairy Shrimp								Tadpoles, or adults			
	Visit #1	Visit #2	Visit #3	Confidence Level		Egg Mass Maturity			Observed		Count Range (one)	
Wood Frog	0	0		3	3				0	0	3	3
Spotted Salamander	0	0		3	3				0	0	3	3
Blue-spotted Salamander	N	N		3	3				0	0	4	4
Fairy Shrimp	0	0		3	3							

Confidence level: 1 = <85%, 2 = 85-95%, 3 = >95%

Egg mass maturity: F = Fresh (<24 hrs), M= Mature (round embryo), A= Advanced (loose matrix, coiled embryo), H= Hatched or Hatching

Tadpole/Adult: X = present

c. Rarity criteria

- Note any rare species associated with vernal pools. Observations should be accompanied by photographs.

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	☐	☐	☐		Wood Turtle	☐	☐	☐	
Spotted Turtle	☐	☐	☐		Eastern Ribbon Snake	☐	☐	☐	
Eastern Hognose Snake	☐	☐	☐		Other	☐	☐	☐	

*Method of verification: P = Photographed, H = Handled, S = Seen

**CL - Confidence level of species determination: 1= <85%, 2= 85-95%, 3= >95%

d. Optional observer recommendation:

☐ SVP ☐ Potential SVP ☑ Non-Significant VP ☐ Indicator Breeding Area

e. General vernal pool comments and/or observations of other wildlife:

Send completed form and supporting documentation to: VernalPool.MDIFW@maine.gov

NOTE: Digital submissions are preferred but if not possible, please mail to: Maine Department of Inland Fisheries and Wildlife, Attn: Vernal Pools, 106 Hogan Road, Suite 1, Bangor, ME 04401

For MDIFW use only: Assigned by MDIFW: Date: Initials:

This pool is: ☐ Significant ☐ Potentially Significant ☐ Non-Significant ☐ Is in ☐ Does not meet threshold criteria ☐ Does not meet MDIFW vernal pool criteria

Comments:

DEPLW0897-B2008 04/26/2022 Save Form Print Form Page 3 of 3

Maine State Vernal Pool Assessment Form

INSTRUCTIONS:

- **Complete all 3 pages of form thoroughly. Most fields are required for pool registration.**
- **Clear photographs of a) the pool AND b) the indicators (one example of each species egg mass) are required for all observers.**

Observer's Pool ID: VP-1 **MDIFW Pool ID:**

1. PRIMARY OBSERVER INFORMATION

a. Observer name: Cole Peters

b. Contact and credentials previously provided? ○ No (submit Addendum 1) ◉ Yes

2. PROJECT CONTACT INFORMATION

a. Contact name: ◉ same as observer ○ other

b. Contact and credentials previously provided? ○ No (submit Addendum 1) ◉ Yes

c. Project Name: 19059-PWM parking

3. LANDOWNER CONTACT INFORMATION

a. Are you the landowner? ○ Yes ◉ No If no, was landowner permission obtained for survey? ◉ Yes ○ No

b. Landowner's contact information (required)

Name: Paul Bradbury, Portland Int'l Jetport Phone: 207.756.8029 E-mail: pbb@portlandmaine.gov

Street Address: 1001 Westbrook Street City: Portland State: ME Zip: 04102

c. ☐ Large Projects: check if separate project landowner data file submitted

The Maine Department of Environmental Protection will e-mail official status letters to the project contact and landowner. Please check those data for completeness and accuracy to prevent delay in mailings. E-mail is the preferred method of notification; please provide e-mail addresses for the project contact and the landowner when available.

4. VERNAL POOL LOCATION INFORMATION

a. Location Township: Portland

Brief site directions to the pool (using mapped landmarks):

From Congress Street, enter Portland Jetport on International Drive and turn left on Jetport Boulevard where wetland is on the left approximately 500 ft from the intersection.

b. Mapping Requirements

i. USGS topographic map OR aerial photograph with pool clearly marked.

ii. GPS location of vernal pool (use Datum NAD83 / WGS84)

Longitude/Easting: -70.312933 Latitude/Northing: 43.650737

Coordinate system:

Check one: ◉ GIS shapefile (Best)
- send to VernalPool.MDIFW@maine.gov; observer has reviewed shape accuracy

○ The pool perimeter is delineated by multiple GPS points. (Excellent)
- Include map or spreadsheet with coordinates.

○ The above GPS point is at the center of the pool. (Good)

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Description from the Dec 12th meeting at PWM Says the assessment was done in, "April and May right? Says there are no vernal ponds, this is untrue because vernal pond 5273 was in the state database it just had not been assessed. The pond assessment by Mr. Peters was the first formal assessment but it's turning in after the Dec 12th meeting is problematic. Because it establishes that the applicant did not in fact do the assessment over the stated time frame listed in the assessment.

Paul Bradbury
So. To tee up why, and we'll do, most of this will be question and answer, it's not me talking, so there'll be plenty of time because I want all of you to be able to ask us questions. So why, and I know there's been some out there, so in terms of impacts of existing impervious, we will be, we're looking at 3 .5 acres that will be impacted.

Paul Bradbury
So it's not what may have been, you know, in the media, it would make you believe that we're putting in 800 new parking spaces and it will all be impacting old growth forest. It's not the case. We're correcting a lot of, we're making a lot of improvements to the stormwater system.

Paul Bradbury
That water gets treated and Owens can even speak to that and that's part of where the DEP, and then the other, you know, kind of misleading is that it's also impacting 800 spaces worth of wetlands and the wetlands impact and Owens can review this a little more or we can discuss it.

Paul Bradbury
But there's roughly 8 ,000 square feet, less than the space you're sitting in right now, in the space of wetlands here. It's not, it's pretty low grade. There were no, we did have to investigate it to make sure there's no vernal pools.

Paul Bradbury
And we do that, it can only be done in May, right? April May? April and May. April and May. So, and we did that earlier this year and there are no vernal pools. And you'll say, well what is one of the indicators of vernal pools?

Paul Bradbury
One is amphibians, right? It's a concern and we have issues environmentally with the destruction of the amphibian population. So that's partly where that has come around to protect these vernal pools.

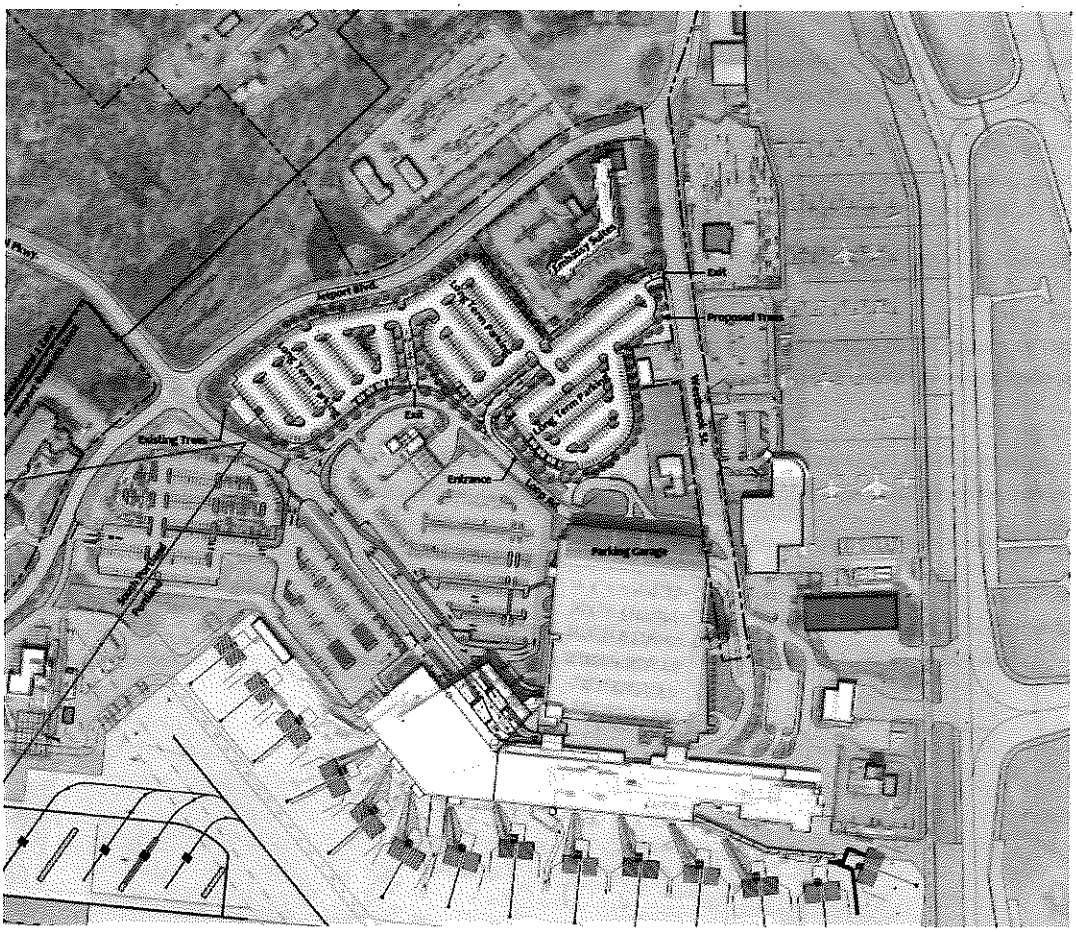
Paul Bradbury
There were no vernal pools here. So it is a small section right in here that is, that we would be impacting wet. In the cell phone lot, we'd be doing pervious pavement and in here we'd do under, under treatment which more, Owens can speak to that more in just a minute.

Unknown speaker
So with that, I think I will go ahead, this is just a larger overview. So let me go to the next slide. Zoomed in one of these sites. So now you can see, so what has happened now? So we've made long term, we've taken the cell phone lot and it's just right here as impervious.

Paul Bradbury
We've moved it up here. We've corrected the big open expanse of gravel in all of the impacted area that's been a trouble for our stormwater system for some time, but prior to now it was owned by a private entity and we just had to deal with it.

Paul Bradbury
So that all gets corrected. And then this lot over here gets built. We will be putting in, you know, the new zoning, right, requires the new planning, requires that we cable for 50% electric vehicles that we put in conduit and we'll be putting in 20% in a mix of the existing parking garage down here and within this lot.

Project as it was proposed with the cell lot removed but the location of the vernal pond 5273 is seen as a green area above Jetport blvd well within the 250 protected barrier that the pond should be afforded.



Discussion by the public that establishes that the pond is well known to the residents and was denied its existence by Mr. Bradbury at the Dec 12th meeting. This establishes that the vernal pond either was not known about and not disclosed or not known about and the assessment was created after and turned into the state in January.

1181 Westbrook Street. And I've walked this whole area you're talking about for about 20 years now, so I know it intimately. And when you were talking about, well, first of all, I watched what's happening.

andrea hawks?
with the trees on this area, however it happened, they all got taken down long before we had a chance to talk to them. That's one thing that we saw. The second thing is... She's going to be better than you.

andrea hawks?
It's just not for him, but for everybody else. Oh, okay. My voice carries anyway. But I noticed when you were giving us a little pointer about the vernal pool, You are very careful not to go across the street.

andrea hawks?
There could be vernal pools. There are tiny vernal pools, perhaps on the Amos Street. But where that cell phone parking lot is one of the biggest vernal pools around. Oh, yes. No, there's actually, there's no, where.

Key points: vernal pool oh yes

andrea hawks?
No, no, let me finish. I've walked that and I think I have people can confirm that. That is one of the largest peeper sections in the spring I have ever heard. I've taken videos of it. It is beautiful.

andrea hawks?
And for you to turn it into cell phone parking is really criminal, Paul. Thank you. Thank you. Thank you. Thank you. So I agree. And we're not touching the wetlands with the cell phone lot. So those wetlands are actually right here.

Key points: turn it into cell phone parking

Paul Bradbury
No, they're here. They are not. So I have, and so has Owens, and so has our wetlands mapping. Obviously not. What's in there? It's a safe one. I'll flip. I don't think you can see it on this one. But we can show you the wetlands mapping.

Paul Bradbury
Because I can't argue with the soil scientists that that's what they do. I don't. Yeah, we have. You want to hear? Go ahead, pull it up, Owens. Let's see if I can. Do you like me to speak to it? Yeah.

Paul Bradbury
So Owens can walk you through. I have to move. Yeah. I'm running out of cord. Thank you. That's like Dylan in Colorado. It's a big wetland. Yeah, that's like Dylan. It dries up in Colorado from time to time.

Owne Mc cullouh
I grew up out there. Uh oh. Can I put it on a thumb drive? That's my screen, sir. Okay. Um, let my P .U. is off. Okay. Yeah. Gotcha. Thank you. Oh, there you go. Duplicate. There we go. Great. There we go.

Key points:

Owne Mc cullouh
And now let's go to the system. There we go. Now turn that back on. We had some double. All right. So in the spring of 2023, this is the the wetlands report with the photos that was completed by Cole Peters, a professional wetland scientist who walked the site, flagged and mapped the wetlands, prepared a wetlands report, evaluated the site in April for vernal pools, including photos and pictures of the site, and mapped it, and that's the result of the wetland mapping that will all be provided to the, as part of the permitting process.

Owne Mc cullouh
Cole's been doing this for over 30 plus years, so I will rely on what his wetland is. I appreciate what others are saying. The green is the wetlands, correct? So that's the 8 ,000 square feet of wetland in the parking lot, and then this is where the cell phone lot will go in this upland area.

Pond 5273 location relative to Jetport Blvd. Shown as a dark area on Google mapping .Tree frogs noted south of Jetport blvd. It is not a permanent hydric pond. The permanent hydric pond would disqualify it as a vernal pond. That assessment is false.
This pond 5273 is a wildlife habitat and does contain the requisite number of wood frog egg masses . It should be reassessed due to the inconsistencies with the dates, the incorrect hydric assessment, the non disclosure by the applicant and the possible damage that adjacent development will do to this wildlife habitat. The state seems unwilling to see actual evidence Such as movies, or photos or underwater videos of the frogs and instead has chosen to Move forward with an incomplete, incorrect and unsubstantiated pond assessment. The neighborhood has known about this pond and in fact the frogs can be heard all the way down to the parking garages and airport in the spring. Mr. Bradbury is well aware of this as a frog pond and its non disclosure at the Dec 12th meeting and then subsequent assessment as having no wildlife value is disheartening and does not put the environment first or the needs of the neighbors and community.



Carter Waldren
40 Garrison street.
Portland , Maine, 04102

For consideration of the Portland planning board and the Maine DEP.

https://portlandjetport.org/sites/default/files/files/PWM%20Master%20Plan%20Executive%20Summary.pdf

The PWM Master Plan plan of 2018 executive summary does not outline or include the proposed surface parking expansion.

Intermediate term planning should have already been implemented per total enplanements and recommendations in the 2018 Sustainable master plan. The construction of the Phase 3 parking garage is supposed to take place once intermediate planning levels are exceeded starting in 2022.

Short term, Intermediate and long term projections are discussed in the executive forecast and will be discussed in relation to the actual enplanements for 2022 and 2023 as well as cargo operations. As well as how this relates to building a parking garage expansion phase 3.

If the planning board or Dep is struggling to justify the parking expansion project related to the 2018 Sustainable master plan it is because it was not included in the planning process. The mapping shown by the applicant is unsigned and reflects prior attempts , the city did not own the land and is not a long term approved planning document. The surface parking is not outlined, in short term, intermediate term and long term planning mapping of the 2018 SAMP. The attempt by Pwm management to include the unsigned prior mapping is an end run around the 2018 PWM Sustainable Master plan.

Summary

The planning board and Maine DEP are reviewing whether the surface parking proposal is included in the Master Plan. Upon examining the executive summary, it becomes clear that the surface parking proposal is not referenced. The property in question is marked as a property acquisition and does not include the parcel south of Jetport Blvd, as shown in Exhibit 10 and 7 shown below . The (Toye) property was acquired in 2020 two years after the SAMP was approved. The dep permit had expired before the city bought it. The Master Plan instead recommends a parking garage, specifically outlined in the body of the 2018 -SAMP (on page 348), with a phased construction schedule that includes a Phase 3 parking garage to be completed when intermediate enplanement levels are reached starting in 2022. However, given that the 2018 Master Plan is now beyond the intermediate planning period for total enplanements, operations, and cargo totals, planning for the long term projections should be implemented and considered related to building phase 4 of the parking garage.

1. **Surface Parking Expansion: The executive summary does not reference the surface parking expansion. While there is mention of a property acquisition, the property was privately owned and was not included in the 2018 Sustainable Master Plan planning mapping.**
2. **Phase 3 Parking Garage: The Phase 3 parking garage was scheduled for completion starting in 2022 per the SAMP , we are now in intermediate planning. According to the CIP project plan.**
3. **Enplanements and Operations: The current enplanements and total operations data are outlined as projections , but the projections indicate the enplanements are beyond the intermediate planning period and long term planning should be considered as well.**
4. **Master Planning Period: The planning horizon for the 2018 Master Plan ends in 2035, and current trends in operations and passenger numbers suggest the plan's objectives have moved beyond the intermediate planning period .**

Review of the Projections in the executive summary related to total enplanements , Cargo and itinerant operations by the Short term , intermediate and long term planning periods. From the executive summary.

Base is 2018 enplanements of 843,944 up to 971, 324 to 2020 that is short term planning.

Enplanement totals in the forecast up to 1,010,139 from 2020 to 2025 define the intermediate planning period . This total has been exceeded in 2023 .

From 2025 to 2035 is the long term planning range . Enplanements up to 1,187, 969 in 2035. That is the upper limit of the planning period. The airport is 177,830 enplanements short of that for the long term range planning.

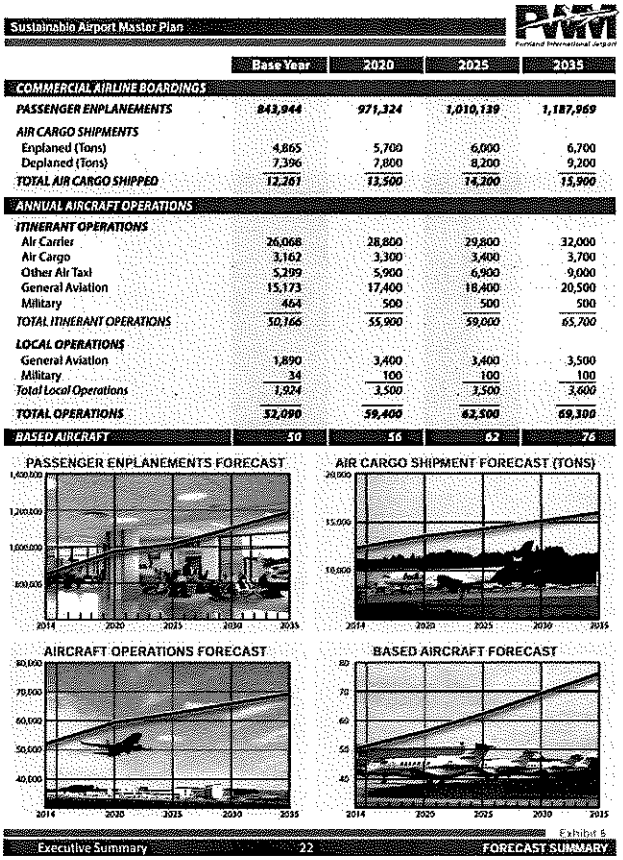
Current totals (An enplanement is boarding or leaving from PWM.)

Cargo operations 2023 is 11,876 tons. Listed as 23,753,470 lbs at Pwm.com

Itinerant operations not listed.

2023 total enplanements 1,109,037 Total passengers 2,218,441
2022 total enplanements 987,151 Total passengers 1,986,281

Forecast executive summary by base year.



Sustainable Airport Master Plan

PWM Portland International Jetport

	Base Year	2020	2025	2035
COMMERCIAL AIRLINE BOARDINGS				
PASSENGER ENPLANEMENTS	*843,944*	*971,324*	*1,010,139*	*1,187,969*
AIR CARGO SHIPMENTS				
Enplaned (Tons)	4,865	5,700	6,000	6,700
Deplaned (Tons)	7,396	7,800	8,200	9,200
TOTAL AIR CARGO SHIPPED	*12,261*	*13,500*	*14,200*	*15,900*
ANNUAL AIRCRAFT OPERATIONS				
ITINERANT OPERATIONS				
Air Carrier	26,068	28,800	29,800	32,000
Air Cargo	3,162	3,300	3,400	3,700
Other Air Taxi	5,299	5,900	6,900	9,000
General Aviation	15,173	17,400	18,400	20,500
Military	464	500	500	500
TOTAL ITINERANT OPERATIONS	*50,166*	*55,900*	*59,000*	*65,700*
LOCAL OPERATIONS				
General Aviation	1,890	3,400	3,400	3,500
Military	34	100	100	100
Total Local Operations	*1,924*	*3,500*	*3,500*	*3,600*
TOTAL OPERATIONS	*52,090*	*59,400*	*62,500*	*69,300*
BASED AIRCRAFT	*50*	*56*	*62*	*76*

Exhibit 6

What does short term, intermediate and long term planning mean anyway . (see mapping below)

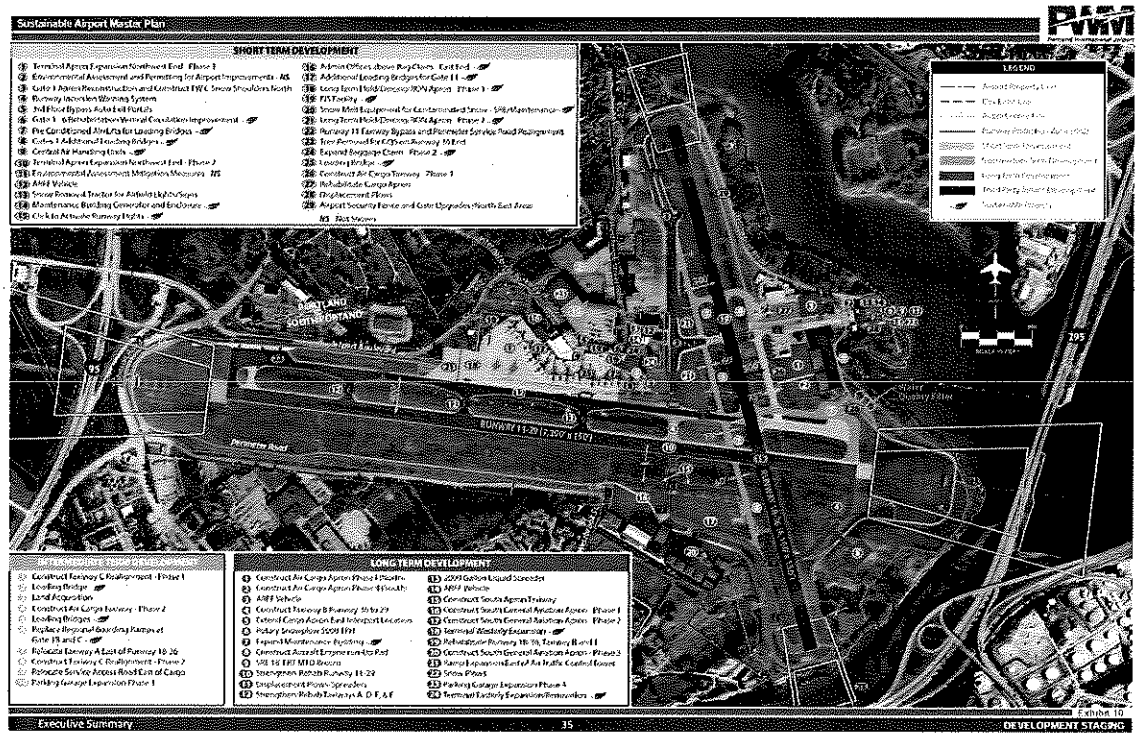
Exhibit 7 outlines the mapping sequence of the Capital Improvement projects in terms of short term, intermediate and long term planning. The orange hashed area where the proposed parking is proposed is noted as property acquisition. No description of adding any surface parking is in the executive summary . The sustainability airport management plan will also be discussed in terms of sustainability goals that were outlined in the executive summary.

Number 10 on Exhibit 10 mapping is phase 3 of the parking garage due to be built in Intermediate planning of 2022+. We are three years past that and have reached the enplanement levels past the intermediate planning horizon. .

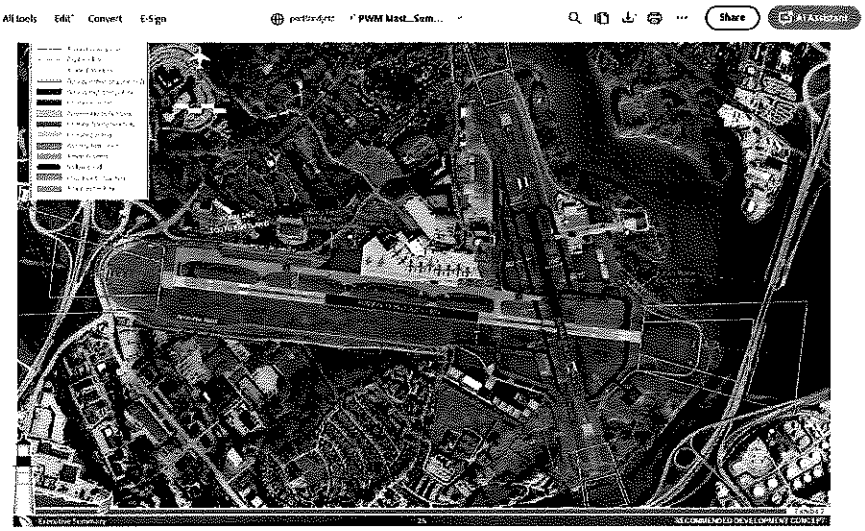
Number 23 is phase 4 of the parking garage expansion. Note it is on the long term lot in front of the parking garage. The

The city did not take ownership of the Toye property until 2020 so the attempt to claim the surface parking plan as part of the 2018 master plan is not supported.

Development staging Pwm SAMP master plan executive summary. Page 35



Labeled recommended development plan. Again the surface parking expansion is not listed. The parking garage expansion is listed for both phases. The green outlined area that shows the Toye property is simply listed as property acquisition. There is no description of taking the wetland buffer South of Jetport Blvd. Exhibit 7 Recommended Development plan. Shows the parking garage expansion in yellow and does not support the surface parking project.



Capital improvement projects were supposed to have been done relative to the short term, intermediate and long term planning. Now we can see that we have exceeded the total enplanements for intermediate planning. The phase 3 parking expansion was already supposed to be done as intermediate planning enplanements have been exceeded. Planning should be taking place for the long term projections and operations as well. Just doing a short term surface parking expansion is not recommended or outlined in the 2018 sustainable master plan.

Subtotal 2022		*$7,055*	*$8,230*	*$7,407*	*$412*	*$0*	*$412*
TOTAL SHORT TERM		*$51,665*	*$56,827*	*$28,076*	*$1,512*	*$21,180*	*$6,058*
INTERMEDIATE TERM							
1	Construct Taxiway C Realignment - Phase 1	$6,080	$7,524	$6,772	$376	$0	$376
2	Loading Bridge	538	666	0	0	666	0
3	Land Acquisition	1,948	2,476	2,228	124	0	124
4	Construct Air Cargo Taxiway - Phase 2	2,400	3,050	2,745	153	0	153
5	Loading Bridges	2,186	2,778	0	0	2,778	0
6	Replace Regional Boarding Ramps at Gate 1B and C	350	445	0	0	445	0
7	Relocate Taxiway A East of Runway 18-36	5,200	6,788	6,109	339	0	339
8	Construct Taxiway C Realignment - Phase 2	3,000	4,022	3,619	201	0	201
9	Relocate Service Access Road East of Cargo	600	804	724	40	0	40
10	Parking Garage Expansion Phase 3	15,000	20,108	0	0	0	20,108
TOTAL INTERMEDIATE TERM		*$37,302*	*$48,661*	*$22,197*	*$1,233*	*$3,889*	*$21,341*
LONG TERM							
1	Construct Air Cargo Apron Phase II (North)	$4,300	$5,920	$5,328	$296	$0	$296
2	Construct Air Cargo Apron Phase I (South)	3,000	4,130	3,717	207	0	207
3	ARFF Vehicle	1,500	2,065	1,859	103	0	103
4	Construct Taxiway B Runway 36 to 29	2,800	3,959	3,563	198	0	198
5	Extend Cargo Apron East Interport Location	1,900	2,686	2,418	134	0	134
6	Rotary Snowplow 5000 TPH	550	778	700	39	0	39
7	Expand Maintenance Building	3,750	5,445	4,901	272	0	272
8	Construct Aircraft Engine run-Up Pad	1,600	2,323	2,091	116	0	116
9	SRE 18' FRT MTD Broom	950	1,379	1,241	69	0	69
10	Strengthen/Rehab Runway 11-29	8,200	12,228	11,006	611	0	611
11	Displacement Plows/Spreaders	650	969	872	48	0	48
12	Strengthen/Rehab Taxiways A, D, E, & F	5,900	9,036	8,132	452	0	452
13	2000 Gallon Liquid Spreader	250	383	345	19	0	19
14	ARFF Vehicle	125	191	172	10	0	10
15	Construct South Apron Taxiway	2,830	4,451	4,006	223	0	223
16	Construct South General Aviation Apron - Phase 1	2,300	3,618	3,256	181	0	181
17	Construct South General Aviation Apron - Phase 2	2,300	3,715	3,344	186	0	186
18	Terminal Westerly Expansion	16,000	25,846	0	0	24,553	1,292
19	Rehabilitate Runway 18-36, Taxiway B and J	3,600	5,972	5,375	299	0	299
20	Construct South General Aviation Apron - Phase 3	3,000	4,977	4,479	249	0	249
21	Ramp Expansion East of Air Traffic Control Tower	7,200	12,267	11,040	613	0	613
22	Snow Plows	650	1,107	997	55	0	55
23	Parking Garage Expansion Phase 4	20,000	34,075	0	0	0	34,075
24	Terminal Easterly Expansion/Renovation	11,000	18,741	0	0	17,804	937
TOTAL LONG TERM		*$104,355*	*$166,264*	*$78,842*	*$4,380*	*$42,358*	*$40,685*
TOTAL CIP		*$193,322*	*$271,752*	*$129,116*	*$7,126*	*$67,426*	*$68,084*
PLUS: CAPITAL OUTLAY		*$30,738*	*$40,498*	*$0*	*$0*	*$0*	*$40,498*

Note number 10 is parking garage phase 3 and we are beyond intermediate levels of enplanements for 2023 .

The noise contour mapping should be redone to reflect fleet changes and total operations. The parking garage should have already been built. There is no mention of surface parking expansions in the Master plan executive summary.

Total passengers for 2022, 2023 Enplanements and Deplanements and cargo are listed in the below charts. Please reference the forecast summary to understand where the totals are in terms of Short term, Intermediate and long term planning horizons.
Pwm has exceeded intermediate planning and a garage should be built. It is included in the CIP planning document.

Cargo totals from 2004 to 2023 , 2023 is 23, 753,470 lbs



Cargo

YEAR	CARGO (LBS.)
2004	33,622,563
2005	34,039,601
2006	34,895,067
2007	40,257,808
2008	35,295,151
2009	26,279,198
2010	22,673,881
2011	22,011,670
2012	22,405,912
2013	24,520,880
2014	24,070,425
2015	25,819,083
2016	20,172,829
2017	18,037,883
2018	19,449,627
2019	17,676,526*
2020	23,301,927
2021	26,307,131
2022	18,436,297
2023	23,753,470

Total passengers in 2022 1,986,281 total passengers. Enplanements is 999,130 (that's leaving)



2022

MONTH	ENPLANEMENTS	DEPLANEMENTS	TOTAL PASSENGERS
January	43,509	42,192	85,701
February	53,468	49,148	102,616
March	66,297	68,320	134,617
April	70,956	66,436	137,392
May	69,086	73,916	143,002
June	100,972	108,362	209,334
July	120,710	122,295	243,005
August	123,339	117,067	240,406
September	111,386	110,807	222,193
October	115,679	104,420	220,099
November	65,757	65,077	130,834
December	57,971	59,111	117,082
TOTAL	999,130	987,151	1,986,281

Total for 2023 , total passengers is 2,218,441 . Total enplanements 1,109,037



2023

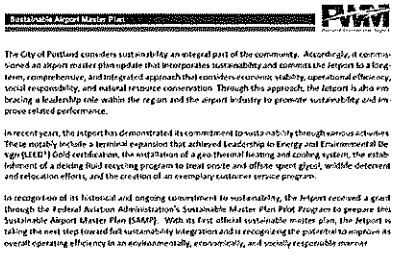
MONTH	ENPLANEMENTS	DEPLANEMENTS	TOTAL PASSENGERS
January	50,858	47,869	98,727
February	53,356	51,774	105,130
March	64,199	66,292	130,491
April	67,148	69,014	136,162
May	79,938	85,653	165,591
June	115,579	124,829	240,408
July	137,002	138,513	275,515
August	143,021	136,950	279,971
September	124,579	122,228	246,807
October	127,249	119,195	246,444
November	78,570	75,220	153,790
December	67,538	71,867	139,405
TOTAL	1,109,037	1,109,404	2,218,441

Here is an outline of why the 2019 Sustainable master plan was created and who paid for it.

"Its purpose is to Incorporate sustainability and commit the Jetport to a long term, comprehensive, and integrated approach that considers economic viability, operational efficiency , social responsibility, and natural resource conservation. " SAMP 2019 page 40 Executive summary.

Mission statement of PWM;

"The mission statement for Portland International Jetport (PWM) is to be a premier New England airport that is safe, convenient, and environmentally conscious"



Sustainable Airport Master Plan PWM

The City of Portland considers sustainability an integral part of the community. Accordingly, it commissioned an airport master plan update that incorporates sustainability and commits the Jetport to a long-term, comprehensive, and integrated approach that considers economic viability, operational efficiency, social responsibility, and natural resource conservation. Through this approach, the Jetport is also embracing a leadership role within the region and the airport industry to promote sustainability and improve related performance.

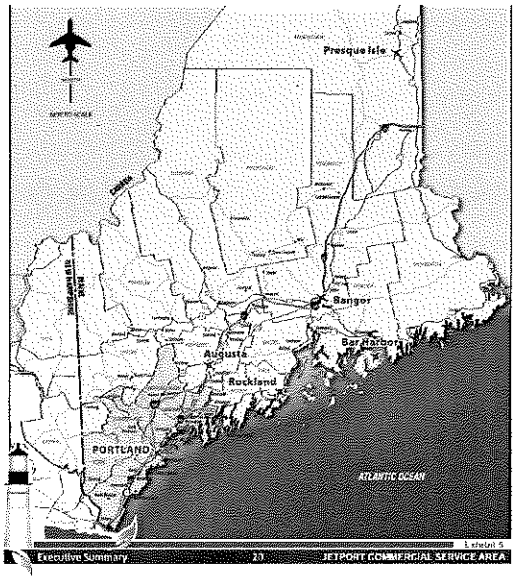
In recent years, the Jetport has demonstrated its commitment to sustainability through various activities. These notably include a terminal expansion that achieved Leadership in Energy and Environmental Design (LEED®) Gold certification, the installation of a geo-thermal heating and cooling system, the establishment of a deicing fluid recycling program to treat onsite and offsite spent glycol, wildlife deterrent and relocation efforts, and the creation of an exemplary customer service program.

In recognition of its historical and ongoing commitment to sustainability, the Jetport received a grant through the Federal Aviation Administration's Sustainable Master Plan Pilot Program to prepare this Sustainable Airport Master Plan (SAMP). With its first official sustainable master plan, the Jetport is taking the next step toward full sustainability integration and is recognizing the potential to improve its overall operating efficiency in an environmentally, economically, and socially responsible manner

4

40

Mapping of the catchment area of Pwm from the Pwm executive summary page 22.



22

40

Sustainable master plan goals objectives , actions and targets. From the 2018 SAMP executive summary.

Note providing alternatives for CIP projects, and the creation of a sustainable working group. As well as improving ground access.

Analysis;

If the planning board or Dep is struggling to justify the parking expansion project in the 2018 SAMP Master plan it is because it was not included in the planning process. The mapping shown by the applicant is unsigned and reflects prior attempts and is not a long term approved planning document. The executive master plan summary recommends a parking garage phase 3 expansion be undertaken once the intermediate levels have been reached. They have been reached. To manage the displaced cars for the construction phase 3 garage expansion , the lower Toye dirt area and cell lot should be utilized to manage the displaced 350 cars and construction could be done in the slower months when there is less demand for long term parking. Any wetlands that are disturbed should be restored per the PWM 2000 parking plan developed by the Portland department of transportation. No surface parking expansion is outlined in the SAMP.

Sustainable Airport Master Plan

GOALS	OBJECTIVES	ACTIONS	TARGETS
GREENHOUSE GAS EMISSIONS • Become a national airport leader in climate change mitigation by supporting the reduction of greenhouse gas emissions generated from Jetport-controlled and influenced sources	1. Reduce greenhouse gas emissions associated with Jetport-operated mobile and stationary sources on a per enplanement basis 2. Encourage greenhouse gas emission reduction strategies among the Jetport's employees, tenants, and customers	• Provide pre-conditioned air (PCA) at all commercial service aircraft gates • Encourage tenants to procure alternative fuel and/or fuel-efficient ground support equipment • Install public charging stations in the garage to accommodate electric vehicles • Prepare an annual Jetport-wide greenhouse gas emissions inventory, and voluntarily report the Jetport's carbon performance	• Install pre-conditioned air at 100 percent of all loading bridges by 2018 • Reduce Jetport-owned and controlled GHG emissions • Work with the tenants to develop a baseline of the Jetport's scope 3 GHG emissions by 2018
ENERGY • Become a national airport leader in energy conservation, while considering opportunities for on-site renewable energy generation	1. Reduce the energy intensity of Jetport-owned facilities 2. Pursue on-site generation of renewable energy, where feasible	• Upgrade the building envelope of the Old Terminal • Continue to upgrade lighting within the parking garage to LEDs • Install a pilot-controlled airfield lighting system • Retro-commission the building systems at the Old Terminal	• Begin to measure percent of energy generated from renewable sources by 2018 • Reduce the Jetport's energy use intensity below 2013 levels five percent by 2025 and 15 percent by 2035
WASTE MANAGEMENT AND RECYCLING • Augment the Jetport's existing waste management practices to reduce waste generation and land disposal, and continuously improve its exemplary deicing recovery and recycling program	1. Reduce the amount of Jetport-generated municipal solid waste on a per enplanement basis 2. Increase the percentage of Jetport-generated municipal solid waste diverted from regional landfills 3. Continue to recycle and reuse construction and demolition waste to the greatest extent practicable 4. Prioritize the purchase and use of environmentally preferable products and materials in both Jetport and tenant operations 5. Provide the resources necessary to support continuous improvement of tenant waste management practices	• Design and implement a recycling awareness campaign for employees and passengers • Make permanent the existing composting pilot program, and expand it beyond the Jetport's back-of-house food preparation to include the passenger/public organic waste stream • Increase the number of recycling bins and strategically co-locate them with standard trash receptacles throughout the Jetport's facilities and exterior spaces to maximize use	• Begin to measure the Jetport's composting rate by 2017 • Increase the Jetport's municipal solid waste recycling rate to 30 percent by 2020 • Continuously divert at least 90 percent of construction and demolition waste from landfills • Recapture and recycle at least 70 percent of deicing fluid • Reduce deicing fluid recycling operations cost
GROUND ACCESS AND TRANSPORTATION • Enhance the efficiency of regional and local access to and from the Jetport with an emphasis on high-occupancy modes of transportation and parking infrastructure that meets the needs of the Jetport's users	1. Provide choice to the Jetport's passengers by encouraging high-occupancy modes of transportation and the provision of adequate parking 2. Encourage the use of high-occupancy modes of transport among employees commuting to and from the Jetport 3. Leverage regional partners to enhance and promote bicycle, pedestrian, and high-occupancy modes of transportation available to Jetport employees, customers, and visitors	• Promote ridesharing for employee commutes • Administer an employee transportation survey • Continue to work with regional entities to enhance/expand public transportation service to the Jetport, and establish connections to local points of interest	• Appoint a transportation coordinator by 2017 • Identify the mode distributions of Jetport employees by 2018 • Identify the mode distributions of Jetport passengers by 2020
SOCIAL RESPONSIBILITY • Promote the well-being of the Jetport's employees and customers, while reflecting and supporting the social, economic, and cultural assets of the local community and greater region	1. Expand or enhance existing programs that support employee health and satisfaction 2. Continuously improve the Jetport's customer service experience 3. Foster a "sense of place" by incorporating regional representative elements into the Jetport's public facing facilities 4. Increase opportunities for employee, customer, and community engagement 5. Continue the Jetport's support of the regional economy, and promote its economic impact	• Increase local collaborations by participating in local and regional partnerships and working groups • Create indoor landscaped areas that celebrate and display flora of Maine • Conduct regular employee satisfaction surveys	• Increase the number of Jetport employees participating in Jetport-sponsored health and wellness programs to 60 percent by 2020 • Hold three employee appreciation events per year beginning in 2016 • Continuously improve Airport Service Quality rankings, as applicable and where possible
GOVERNANCE • Integrate sustainability throughout the Jetport's organizational framework	1. Integrate sustainability criteria into the Jetport's decision-making processes 2. Promote sustainability considerations in the daily activities of Jetport employees 3. Drive accountability throughout all levels of the organization 4. Enhance internal and external transparency of operations	• Include a requirement on all capital improvement applications to identify a proposed project's sustainability elements and any known alternatives that serve the same purpose with greater efficiency and/or environmental/social performance • Incorporate sustainability guidelines into future tenant and vendor contracts, and provide training on these guidelines, as needed • Publish an annual "scorecard" to report on the Jetport's ongoing sustainability performance	• Present two sustainability-based employee recognition awards per year beginning in 2016 • Establish an internal Sustainability Working Group by 2017 • Ensure that 100 percent of capital projects are evaluated using sustainability criteria by 2017 • Engage three local organizations per year on the Jetport's sustainability program beginning 2017 • Participate in or establish a regional task force focused on sustainability by 2018

Exhibit 9

Sustainable master plan from executive summary exhibit 9.

Stroudwater neighborhood association for consideration.

Acronyms: *PWM Sustainable Master plan or SAMP of 2019 . CIP is capital improvement budget items listed in the executive summary.*

The process related to the City of Portland and PWM management attempts to gain a permit for a surface parking expansion at PWM raise significant concerns about transparency, public participation, environmental protection, and adherence to planning documents and regulations and actions taken by the city. Explanation of each of the concerns.

1. What grants the city the authority to withhold information about wetlands on the expired Toye property and to not properly describe the wetland impacts of the project as a whole to the public as was described to the public on Dec 12th 2023 and subsequent planning board meetings. Or to only disclose some wetlands after the public meeting and withhold other wetland impacts or descriptions of the total impact from the public.

- **Right to Withhold Information**: The city should not have a legitimate right to withhold critical information about wetlands that were previously impacted and the permit has expired. The public has a right to know about such resources if they are involved in land use or development processes. If the property is in violation of filling wetlands without proper permits, the city could be liable to enforcement actions.
- **Expired Permit**: The permit for the Toye lot with a detention pond has expired, The project was for a gravel parking lot . The project was a failure and the wetlands still remain. The city should be required to follow the original terms of the project or reapply for a new permit. Withholding such information could potentially be an issue, especially if the public's right to comment or participate in environmental review processes is being curtailed.

2. What gives the city the authority to create a project that is not outlined in the 2019 Sustainable Master Plan (SAMP) capital improvement outline for expenditures ?

- **Planning Compliance**: The city has a legal obligation to comply with the policies outlined in the 2019 PWM ,SAMP, especially if it was adopted through a formal planning process that reflects community input. The CIP (Capital Improvement Plan) for 2018 -2035 does not include the $8 million expenditure for surface parking and instead outlines a parking garage phase 3 when enplanements reach 2025 totals. This is clearly stated in the master plan executive outline. The city should not have the right to simply ignore this. There is a strong presumption in planning law that public policy documents like SAMP should guide development decisions unless there are exceptional, well-justified reasons for deviation. The city received a 620 thousand dollar grant from the FAA to create the 2019 sustainable master plan. Reimbursed in 2015.

3. What gives the city the authority to transform Mr. Paul Bradbury's letter to John Jennings into an agenda for the current parking proposal parking expansion?

- **Council's Discretion**: The city council may choose to adopt proposals that are presented to them, but they should provide a clear, transparent process that includes public engagement and discussion. If a letter from an individual (Paul Bradbury) serves as the basis for a policy decision without broader public involvement or proper review, it could be seen as undermining public trust and transparency. The right to influence city policies generally belongs to elected officials, but this must be done within a framework that ensures public participation and adherence to established plans like the SAMP.

4. What gives the city the authority to conceal the existence of Vernal Pond 5273?

- **Public Disclosure**: Wetlands, including vernal ponds, are subject to protections under the Clean Water Act, state wetland regulations, and other environmental laws. Concealing the existence of such features from the public or not disclosing them during meetings could violate public transparency requirements. Environmental assessments, such as wetlands delineations, should be made available to the public, especially if the project could impact such areas. The airport's vernal pond assessment has no evidence to support it and there is strong evidence that outlines a contrary viewpoint that the pond is in fact a wood frog habitat, witnesses, photos, videos, photos of egg masses and audio recordings . The pond does dry out and was mis-classified as being permanent hydric. The pond should be afforded the federal 250 foot setback.

5. What gives the city the authority to withhold parking and environmental data from the public?

- **Right to Withhold Data**: The city is obligated to provide environmental data and information about parking in public planning processes. If this data is being withheld, it could violate public records laws and the principles of open government. The withholding of such information could be seen as an attempt to circumvent public scrutiny. The parking data is incomplete and lacks basic information.

6. What gives the city the authority to bulldoze wetlands or vernal ponds before a permit is granted?

- **Pre-Permitting Activities**: The city does not have the right to perform activities like bulldozing wetlands or vernal ponds without first obtaining the necessary

permits. Wetlands and vernal ponds are protected by federal, state, and local laws, and altering these areas without proper environmental review, mitigation, or permits is illegal. If the city has done this, it could face significant penalties from regulatory authorities, including the EPA and DEP. This has happened and the Dep has seen it. There are photos to prove it.

7. What gives the city the authority to engage in a project not aligned with the 2019 SAMP or other city goals?

- **Deviation from Planning Documents**: If the city is undertaking a project that is not consistent with the SAMP or other sustainable planning documents (like the 2017 Sustainable Development Plan, or South Portland's Sustainability goals, the 2030 plan, it may be in violation of its own planning framework. Public planning documents like the SAMP are legally significant, and deviations must be justified by clear, compelling reasons and should follow a transparent process that involves public consultation. Hiding or purposely not disclosing information that outlines a clear pathway forward in terms of parking is deceptive. Excluding the public from further planning board meetings and communication is not in alignment with FAA regulations , and city planning documents.

8. What gives the city the authority to avoid creating a sustainability committee outlined in the SAMP to review CIP proposals?

- **Committee Formation**: The creation of specific committees (like a sustainability committee) recommended in the 2019 PWM SAMP is a decision for the city council or mayor. If the city has failed to implement the recommendations from the SAMP (like forming a sustainability committee to review the CIP funding projects , it could be seen as failing to follow through on its planning commitments. The formation of such a committee is outlined in a chart in the executive summary.

9. What gives the city authority to present waivers for actions outside the master plan?

- **Waivers and Variances**: Cities have the authority to grant waivers or variances from planning documents and regulations in certain circumstances. However, these decisions should be based on clear criteria and public input. Waivers should not be used to circumvent the overall goals and intentions of the master plan without proper justification. Misrepresenting a project as being in alignment with the SAMP when it clearly isn't could be seen as a form of miscommunication or even deceptive practice. The creation of the waivers in relation to the process has not been defined and lacks public oversight.

10. What gives the city the authority to undermine community relations and avoid working with neighbors as outlined by the FAA ?

- **Community Engagement**: A key tenet of FAA documents and city planning documents is public involvement and community engagement. The city does not have the right to exclude neighbors or the public from the decision-making process, especially if the project could impact them. If the city is not adequately engaging with the public, or removing public comments from records, it could undermine public trust and violate open government principles.

11. What gives the city the authority to exclude public comments or remove them from public meetings?

- **Public Records and Open Meetings**: Excluding public comments or removing them from meeting records could be a violation of public records laws and open meeting laws, depending on local and state rules. Public input is an essential part of the planning process, and the city is obligated to provide a forum for citizens to voice their concerns and to include their comments in the official record.

12. What gives the city the immunity from conducting a proper environmental impact study?

- **Environmental Impact Assessments**: Cities are generally required to conduct environmental assessments when a project could significantly impact the environment. The requirement for an Environmental Impact Statement (EIS) or Environmental Impact Report (EIR) depends on the scope and impact of the project. If the city is avoiding a thorough environmental impact study, this could be seen as a failure to meet regulatory obligations. The city is attempting to use an environmental impact study for a runway expansion that is unrelated to this removal of a buffer and wetlands to claim it is assessing the negative impacts of the buffer removal. .

13. What gives the city the authority to avoid appointing a Noise Advisory Committee head?

- **Regulatory Requirements for Noise**: If the city is required by FAA rules or local ordinances to have a Noise Advisory Committee and is not appointing one, this could be a violation of those regulations. The FAA, in particular, has strict rules about noise around airports, and a Noise Advisory Committee is typically part of the process for ensuring compliance with those standards.

14. What gives the city the authority to enforce stormwater runoff rules to the public while disregarding their own practices?

- **Enforcement of Regulations**: The city must adhere to stormwater runoff regulations and cannot violate those standards by dumping runoff into rivers or streams without proper permits. . If the city is not enforcing its own rules or is engaging in practices that contradict its enforcement policies, it could be in violation of environmental protection laws.

15. What gives the city the right to hide or remove communication with the DEP as it relates to the surface parking proposal ?

- **Public Records and Transparency**: Communication between the city and the Maine Department of Environmental Protection (DEP) should be public if it pertains to a project that affects the environment. The city does not have the right to hide or remove these communications from public and the planning board records unless there is a legally recognized exemption.

16. What gives the city the authority to create a chart of its own criteria while excluding the public?

- **Transparency and Public Involvement**: The city has an obligation to engage with the public and ensure transparency when evaluating projects. If the city is creating its own criteria without input from the public or relevant stakeholders, it could be violating the principles of good governance and public participation.

17. What gives the city the authority and Pwm management a waiver to not explore other alternatives. None are noted in the application. This is part of the Dep process related to taking of wetlands.

Conclusion:

The city appears to be engaging in several actions that could be seen as violations of environmental laws, public transparency requirements, and principles of good governance. If these actions are as described, there could be legal and administrative consequences for non-compliance with environmental protections, public participation laws, and city planning documents. Residents or concerned parties may consult with legal professionals, environmental advocacy groups, or government oversight bodies to explore avenues for redress.

Portland Planning board Member, Sean Murphy
Portland City Hall.
Portland , Maine.
January 6 2025 .

Carter Waldren
40 Garrison Street Portland,, Maine, 04102
Re jetport parking expansion proposal.

Planning board member,

I spoke at the Planning Board meeting about the vernal pond 5273 Wood Frog Pond, which the airport and Sabeo claim doesn't exist. It does exist and is home to over 150 egg masses of wood frogs and tree frogs, along with woodpeckers and other wildlife. Either my neighbors and I, who have lived here since 1990, are wrong, or the airport's assessment is incorrect. The assessment was done by Sabego tech and was not independently verified. I have sent in an assessment to the state as a citizen that actually has photos and movies and underwater movies that proves that the vernal pond is a valid wildlife habitat. .

The pond's location, across from Jetport Blvd, is important because it's connected to the wetlands on the upper Toye property, which should still be considered when considering the 250-foot setback. The development on this property needs careful review, as it affects the entire watershed.

I understand the airport needs more parking, but the PWM master plan already includes a detailed strategy for this, with plans for a phased parking garage. A surface lot, especially one that harms wetlands, is a short-term fix and won't meet long-term goals. The proposed 13-acre parking lot would destroy important wetlands and a 20-foot high wooded buffer that helps protect the neighborhood from noise and pollution.

For the past two years, I've suggested that the airport use the lower dirt space that has the cell lot and add 400 parking spots . This area is mostly empty and is a waste. Enplanement levels are over the intermediate planning levels of 1.1 million and the garage should have already been built. This is all outlined in the master plan executive summary. The taking of the wetland hill is unnecessary and will lead to environmental damage and devaluing the Stroudwater neighborhood. That hill functions like the hill for the new stroudwater preserve housing development and the highway traffic noise and pollution.

Please consider these concerns when reviewing the parking expansion waivers. The environmental impacts on light, air, noise, heat sinks and the ecosystem are significant and unnecessary. Mr. Bradbury was unable to explain how this project fits with the master plan because it does not and the master plan outlines the protection of the northern buffers and protection of the environment and close neighborhoods.



Carter Waldren
40 Garrison street.
Portland , Maine, 04102

Sean Murphy.

For consideration of the Portland planning board and the Maine DEP.

https://portlandjetport.org/sites/default/files/files/PWM%20Master%20Plan%20Executive%20Summary.pdf

The PWM Master Plan plan of 2018 executive summary does not outline or include the proposed surface parking expansion.

Intermediate term planning should have already been implemented per total enplanements and recommendations in the 2018 Sustainable master plan. The construction of the Phase 3 parking garage is supposed to take place once intermediate planning levels are exceeded starting in 2022.

Short term, Intermediate and long term projections are discussed in the executive forecast and will be discussed in relation to the actual enplanements for 2022 and 2023 as well as cargo operations. As well as how this relates to building a parking garage expansion phase 3.

If the planning board or Dep is struggling to justify the parking expansion project related to the 2018 Sustainable master plan it is because it was not included in the planning process. The mapping shown by the applicant is unsigned and reflects prior attempts , the city did not own the land and is not a long term approved planning document. The surface parking is not outlined, in short term, intermediate term and long term planning mapping of the 2018 SAMP. The attempt by Pwm management to include the unsigned prior mapping is an end run around the 2018 PWM Sustainable Master plan.

Summary

The planning board and Maine DEP are reviewing whether the surface parking proposal is included in the Master Plan. Upon examining the executive summary, it becomes clear that the surface parking proposal is not referenced. The property in question is marked as a property acquisition and does not include the parcel south of Jetport Blvd, as shown in Exhibit 10 and 7 shown below . The (Toye) property was acquired in 2020 two years after the SAMP was approved. The dep permit had expired before the city bought it. The Master Plan instead recommends a parking garage, specifically outlined in the body of the 2018 -SAMP (on page 348), with a phased construction schedule that includes a Phase 3 parking garage to be completed when intermediate enplanement levels are reached starting in 2022. However, given that the 2018 Master Plan is now beyond the intermediate planning period for total enplanements, operations, and cargo totals, planning for the long term projections should be implemented and considered related to building phase 4 of the parking garage.

1. **Surface Parking Expansion: The executive summary does not reference the surface parking expansion. While there is mention of a property acquisition, the property was privately owned and was not included in the 2018 Sustainable Master Plan planning mapping.**
2. **Phase 3 Parking Garage: The Phase 3 parking garage was scheduled for completion starting in 2022 per the SAMP , we are now in intermediate planning. According to the CIP project plan.**
3. **Enplanements and Operations: The current enplanements and total operations data are outlined as projections , but the projections indicate the enplanements are beyond the intermediate planning period and long term planning should be considered as well.**
4. **Master Planning Period: The planning horizon for the 2018 Master Plan ends in 2035, and current trends in operations and passenger numbers suggest the plan's objectives have moved beyond the intermediate planning period .**

Review of the Projections in the executive summary related to total enplanements , Cargo and itinerant operations by the Short term , intermediate and long term planning periods. From the executive summary.

Base is 2018 enplanements of 843,944 up to 971, 324 to 2020 that is short term planning.

Enplanement totals in the forecast up to 1,010,139 from 2020 to 2025 define the intermediate planning period . This total has been exceeded in 2023 .

From 2025 to 2035 is the long term planning range . Enplanements up to 1,187, 969 in 2035. That is the upper limit of the planning period. The airport is 177,830 enplanements short of that for the long term range planning.

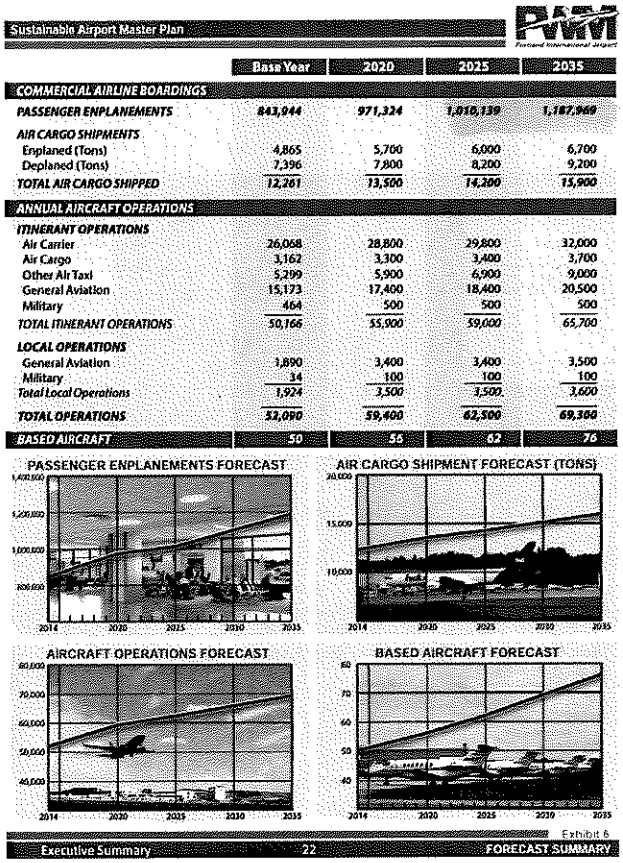
Current totals (An enplanement is boarding or leaving from PWM.)

Cargo operations 2023 is 11,876 tons. Listed as 23,753,470 lbs at Pwm.com

Itinerant operations not listed.

2023 total enplanements 1,109,037 Total passengers 2,218,441
2022 total enplanements 987,151 Total passengers 1,986,281

Forecast executive summary by base year.



Sustainable Airport Master Plan — PWM Portland International Jetport

	Base Year	2020	2025	2035
COMMERCIAL AIRLINE BOARDINGS				
PASSENGER ENPLANEMENTS	843,944	971,324	1,010,139	1,187,969
AIR CARGO SHIPMENTS				
Enplaned (Tons)	4,865	5,700	6,000	6,700
Deplaned (Tons)	7,396	7,800	8,200	9,200
TOTAL AIR CARGO SHIPPED	12,261	13,500	14,200	15,900
ANNUAL AIRCRAFT OPERATIONS				
ITINERANT OPERATIONS				
Air Carrier	26,068	28,800	29,800	32,000
Air Cargo	3,162	3,300	3,400	3,700
Other Air Taxi	5,299	5,900	6,900	9,000
General Aviation	15,173	17,400	18,400	20,500
Military	464	500	500	500
TOTAL ITINERANT OPERATIONS	50,166	55,900	59,000	65,700
LOCAL OPERATIONS				
General Aviation	1,890	3,400	3,400	3,500
Military	34	100	100	100
Total Local Operations	1,924	3,500	3,500	3,600
TOTAL OPERATIONS	52,090	59,400	62,500	69,300
BASED AIRCRAFT	50	55	62	70

Exhibit 6

Executive Summary 22 FORECAST SUMMARY

2024
1,146,495

What does short term, intermediate and long term planning mean anyway . (see mapping below)

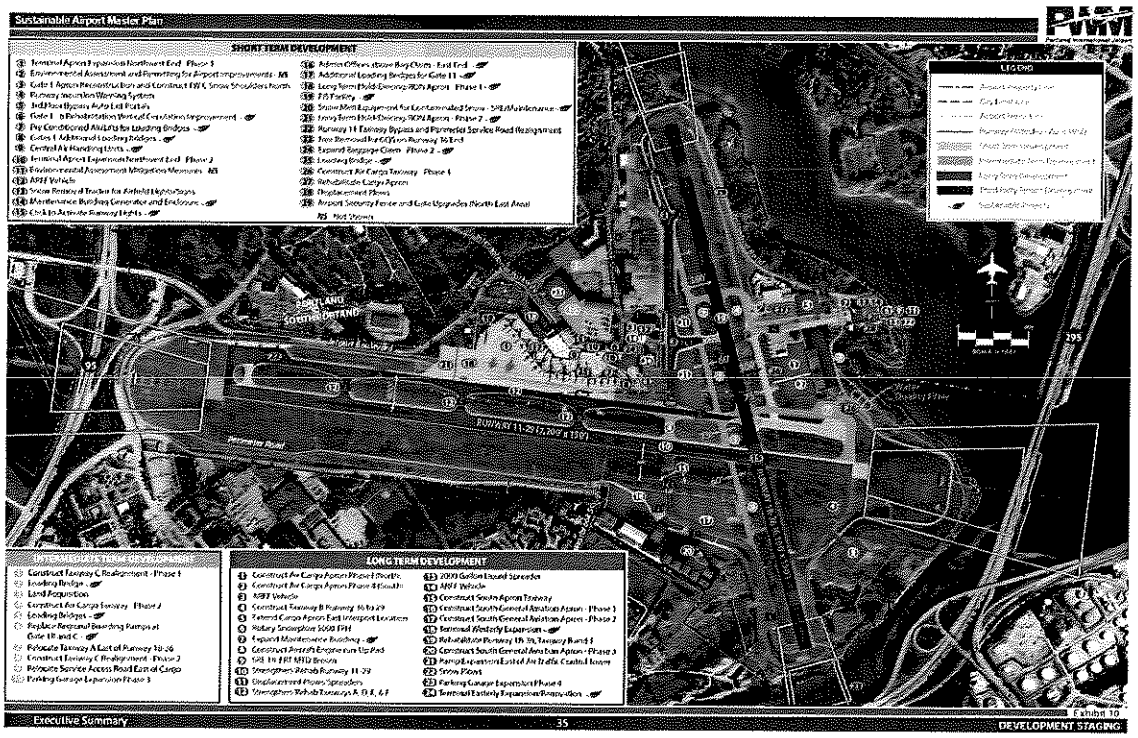
Exhibit 7 outlines the mapping sequence of the Capital Improvement projects in terms of short term, intermediate and long term planning. The orange hashed area where the proposed parking is proposed is noted as property acquisition. No description of adding any surface parking is in the executive summary . The sustainability airport management plan will also be discussed in terms of sustainability goals that were outlined in the executive summary.

Number 10 on Exhibit 10 mapping is phase 3 of the parking garage due to be built in Intermediate planning of 2022+. We are three years past that and have reached the enplanement levels past the intermediate planning horizon. .

Number 23 is phase 4 of the parking garage expansion. Note it is on the long term lot in front of the parking garage. The

The city did not take ownership of the Toye property until 2020 so the attempt to claim the surface parking plan as part of the 2018 master plan is not supported.

Development staging Pwm SAMP master plan executive summary. Page 35



Labeled recommended development plan. Again the surface parking expansion is not listed. The parking garage expansion is listed for both phases. The green outlined area that shows the Toye property is simply listed as property acquisition. There is no description of taking the wetland buffer South of Jetport Blvd. Exhibit 7 Recommended Development plan. Shows the parking garage expansion in yellow and does not support the surface parking project.



Capital improvement projects were supposed to have been done relative to the short term, intermediate and long term planning. Now we can see that we have exceeded the total enplanements for intermediate planning. The phase 3 parking expansion was already supposed to be done as intermediate planning enplanements have been exceeded. Planning should be taking place for the long term projections and operations as well. Just doing a short term surface parking expansion is not recommended or outlined in the 2018 sustainable master plan.

Subtotal 2022		*$7,095*	*$8,230*	*$7,407*	*$412*	*$0*	*$412*
TOTAL SHORT TERM		*$51,665*	*$56,827*	*$28,076*	*$1,512*	*$21,180*	*$6,058*
INTERMEDIATE TERM							
1	Construct Taxiway C Realignment - Phase 1	$6,080	$7,524	$6,772	$376	$0	$376
2	Loading Bridge	538	666	0	0	666	0
3	Land Acquisition	1,948	2,476	2,228	124	0	124
4	Construct Air Cargo Taxiway - Phase 2	2,400	3,050	2,745	153	0	153
5	Loading Bridges	2,186	2,778	0	0	2,778	0
6	Replace Regional Boarding Ramps at Gate 1B and C	350	445	0	0	445	0
7	Relocate Taxiway A East of Runway 18-36	5,200	6,788	6,109	339	0	339
8	Construct Taxiway C Realignment - Phase 2	3,000	4,022	3,619	201	0	201
9	Relocate Service Access Road East of Cargo	600	804	724	40	0	40
10	Parking Garage Expansion Phase 3	15,000	20,108	0	0	0	20,108
TOTAL INTERMEDIATE TERM		*$37,302*	*$48,661*	*$22,197*	*$1,233*	*$3,889*	*$21,341*
LONG TERM							
1	Construct Air Cargo Apron Phase II (North)	$4,300	$5,920	$5,328	$296	$0	$296
2	Construct Air Cargo Apron Phase I (South)	3,000	4,130	3,717	207	0	207
3	ARFF Vehicle	1,500	2,065	1,859	103	0	103
4	Construct Taxiway B Runway 36 to 29	2,800	3,959	3,563	198	0	198
5	Extend Cargo Apron East Interport Location	1,900	2,686	2,418	134	0	134
6	Rotary Snowplow 5000 TPH	550	778	700	39	0	39
7	Expand Maintenance Building	3,750	5,445	4,901	272	0	272
8	Construct Aircraft Engine run-Up Pad	1,600	2,323	2,091	116	0	116
9	SRE 18' FRT MTD Broom	950	1,379	1,241	69	0	69
10	Strengthen/Rehab Runway 11-29	8,200	12,228	11,006	611	0	611
11	Displacement Plows/Spreaders	650	969	872	48	0	48
12	Strengthen/Rehab Taxiways A, D, E, & F	5,900	9,036	8,132	452	0	452
13	2000 Gallon Liquid Spreader	250	383	345	19	0	19
14	ARFF Vehicle	125	191	172	10	0	10
15	Construct South Apron Taxiway	2,830	4,451	4,006	223	0	223
16	Construct South General Aviation Apron - Phase 1	2,300	3,618	3,256	181	0	181
17	Construct South General Aviation Apron - Phase 2	2,300	3,715	3,344	186	0	186
18	Terminal Westerly Expansion	16,000	25,846	0	0	24,553	1,292
19	Rehabilitate Runway 18-36, Taxiway B and J	3,600	5,972	5,375	299	0	299
20	Construct South General Aviation Apron - Phase 3	3,000	4,977	4,479	249	0	249
21	Ramp Expansion East of Air Traffic Control Tower	7,200	12,267	11,040	613	0	613
22	Snow Plows	650	1,107	997	55	0	55
23	Parking Garage Expansion Phase 4	20,000	34,075	0	0	0	34,075
24	Terminal Easterly Expansion/Renovation	11,000	18,741	0	0	17,804	937
TOTAL LONG TERM		*$104,355*	*$166,264*	*$78,842*	*$4,380*	*$42,358*	*$40,685*
TOTAL CIP		*$193,322*	*$271,752*	*$129,116*	*$7,126*	*$67,426*	*$68,084*
PLUS: CAPITAL OUTLAY		*$30,738*	*$40,498*	*$0*	*$0*	*$0*	*$40,498*

Note number 10 is parking garage phase 3 and we are beyond intermediate levels of enplanements for 2023 .

The noise contour mapping should be redone to reflect fleet changes and total operations. The parking garage should have already been built. There is no mention of surface parking expansions in the Master plan executive summary.

Total passengers for 2022, 2023 Enplanements and Deplanements and cargo are listed in the below charts. Please reference the forecast summary to understand where the totals are in terms of Short term, Intermediate and long term planning horizons.
Pwm has exceeded intermediate planning and a garage should be built. It is included in the CIP planning document.

Cargo totals from 2004 to 2023 , 2023 is 23, 753,470 lbs

Cargo

YEAR	CARGO (LBS.)
2004	33,622,563
2005	34,039,601
2006	34,895,067
2007	40,257,808
2008	35,295,151
2009	26,279,198
2010	22,673,881
2011	22,011,670
2012	22,405,912
2013	24,520,880
2014	24,070,425
2015	25,819,083
2016	20,172,829
2017	18,037,883
2018	19,449,627
2019	17,676,526*
2020	23,301,927
2021	26,307,131
2022	18,436,297
2023	23,753,470

Total passengers in 2022 1,986,281 total passengers. Enplanements is 999,130 (that's leaving)



2022

MONTH	ENPLANEMENTS	DEPLANEMENTS	TOTAL PASSENGERS
January	43,509	42,192	85,701
February	53,468	49,148	102,616
March	66,297	68,320	134,617
April	70,956	66,436	137,392
May	69,086	73,916	143,002
June	100,972	108,362	209,334
July	120,710	122,295	243,005
August	123,339	117,067	240,406
September	111,386	110,807	222,193
October	115,679	104,420	220,099
November	65,757	65,077	130,834
December	57,971	59,111	117,082
TOTAL	999,130	987,151	1,986,281

Total for 2023 , total passengers is 2,218,441 . Total enplanements 1,109,037



2023

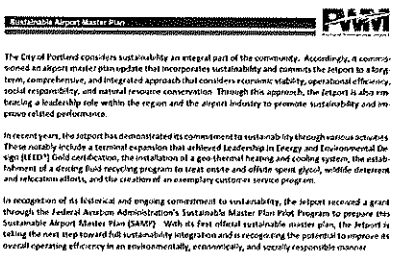
MONTH	ENPLANEMENTS	DEPLANEMENTS	TOTAL PASSENGERS
January	50,858	47,869	98,727
February	53,356	51,774	105,130
March	64,199	66,292	130,491
April	67,148	69,014	136,162
May	79,938	85,653	165,591
June	115,579	124,829	240,408
July	137,002	138,513	275,515
August	143,021	136,950	279,971
September	124,579	122,228	246,807
October	127,249	119,195	246,444
November	78,570	75,220	153,790
December	67,538	71,867	139,405
TOTAL	1,109,037	1,109,404	2,218,441

Here is an outline of why the 2019 Sustainable master plan was created and who paid for it.

"Its purpose is to Incorporate sustainability and commit the Jetport to a long term, comprehensive, and integrated approach that considers economic viability, operational efficiency , social responsibility, and natural resource conservation. " SAMP 2019 page 40 Executive summary.

Mission statement of PWM;

"The mission statement for Portland International Jetport (PWM) is to be a premier New England airport that is safe, convenient, and environmentally conscious"


Sustainable Airport Master Plan

PWM

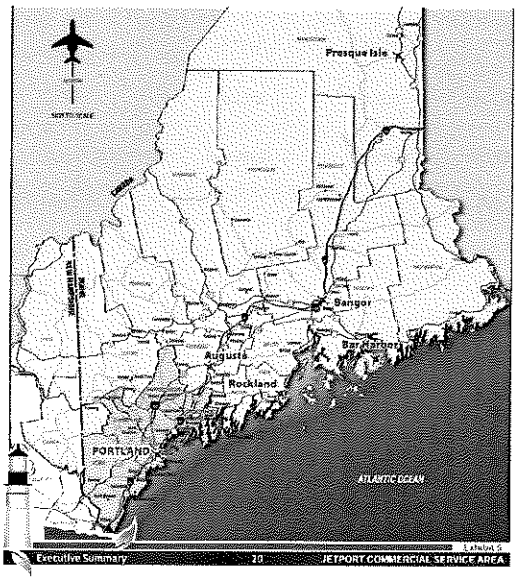
The City of Portland considers sustainability an integral part of the community. Accordingly, a commissioned an airport master plan update that incorporates sustainability and commits the Jetport to a long-term, comprehensive, and integrated approach that considers economic viability, operational efficiency, social responsibility, and natural resource conservation. Through this approach, the Jetport is also embracing a leadership role within the region and the airport industry to promote sustainability and improve related performance.

In recent years, the Jetport has demonstrated its commitment to sustainability through various activities These notably include a terminal expansion that achieved Leadership in Energy and Environmental Design (LEED®) Gold certification, the installation of a geo-thermal heating and cooling system, the establishment of a deicing fluid recycling program to treat onsite and offsite spent glycol, wildlife deterrent and relocation efforts, and the creation of an exemplary customer service program.

In recognition of its historical and ongoing commitment to sustainability, the Jetport received a grant through the Federal Aviation Administration's Sustainable Master Plan Pilot Program to prepare this Sustainable Airport Master Plan (SAMP). With its first official sustainable master plan, the Jetport is taking the next step toward full sustainability integration and is recognizing the potential to improve its overall operating efficiency in an environmentally, economically, and socially responsible manner

4
40

Mapping of the catchment area of Pwm from the Pwm executive summary page 22.



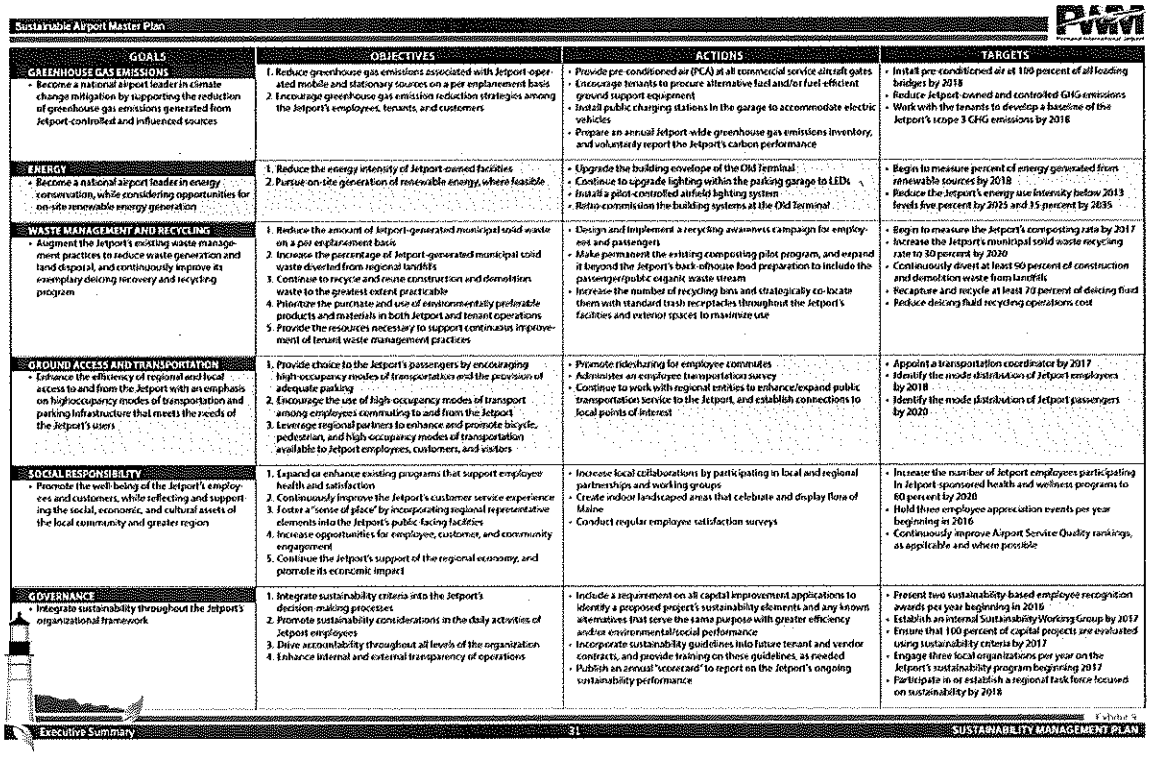
22
40

Sustainable master plan goals objectives , actions and targets. From the 2018 SAMP executive summary.

Note providing alternatives for CIP projects, and the creation of a sustainable working group. As well as improving ground access.

Analysis;

If the planning board or Dep is struggling to justify the parking expansion project in the 2018 SAMP Master plan it is because it was not included in the planning process. The mapping shown by the applicant is unsigned and reflects prior attempts and is not a long term approved planning document. The executive master plan summary recommends a parking garage phase 3 expansion be undertaken once the intermediate levels have been reached. They have been reached. To manage the displaced cars for the construction phase 3 garage expansion , the lower Toye dirt area and cell lot should be utilized to manage the displaced 350 cars and construction could be done in the slower months when there is less demand for long term parking. Any wetlands that are disturbed should be restored per the PWM 2000 parking plan developed by the Portland department of transportation. No surface parking expansion is outlined in the SAMP.



Sustainable Airport Master Plan

GOALS	OBJECTIVES	ACTIONS	TARGETS
GREENHOUSE GAS EMISSIONS • Become a national airport leader in climate change mitigation by supporting the reduction of greenhouse gas emissions generated from Jetport-controlled and influenced sources	1. Reduce greenhouse gas emissions associated with Jetport operated mobile and stationary sources on a per enplanement basis 2. Encourage greenhouse gas emission reduction strategies among the Jetport's employees, tenants, and customers	• Provide pre-conditioned air (PCA) at all commercial service aircraft gates • Encourage tenants to procure alternative fuel and/or fuel-efficient ground support equipment • Install public charging stations in the garage to accommodate electric vehicles • Prepare an annual Jetport-wide greenhouse gas emissions inventory, and voluntarily report the Jetport's carbon performance	• Install pre-conditioned air at 100 percent of all loading bridges by 2018 • Reduce Jetport-owned and controlled GHG emissions • Work with the tenants to develop a baseline of the Jetport's scope 3 GHG emissions by 2018
ENERGY • Become a national airport leader in energy conservation, while considering opportunities for on-site renewable energy generation	1. Reduce the energy intensity of Jetport-owned facilities 2. Pursue on-site generation of renewable energy, where feasible	• Upgrade the building envelope of the Old Terminal • Continue to upgrade lighting within the parking garage to LEDs • Install a pilot-controlled airfield lighting system • Retro-commission the building systems at the Old Terminal	• Begin to measure percent of energy generated from renewable sources by 2018 • Reduce the Jetport's energy use intensity below 2013 levels five percent by 2025 and 15 percent by 2035
WASTE MANAGEMENT AND RECYCLING • Augment the Jetport's existing waste management practices to reduce waste generation and land disposal, and continuously improve its exemplary deicing recovery and recycling program	1. Reduce the amount of Jetport-generated municipal solid waste on a per enplanement basis 2. Increase the percentage of Jetport-generated municipal solid waste diverted from regional landfills 3. Continue to recycle and reuse construction and demolition waste to the greatest extent practicable 4. Prioritize the purchase and use of environmentally preferable products and materials in both Jetport and tenant operations 5. Provide the resources necessary to support continuous improvement of tenant waste management practices	• Design and implement a recycling awareness campaign for employees and passengers • Make permanent the existing composting pilot program, and expand it beyond the Jetport's back-of-house food preparation to include the passenger/public organic waste stream • Increase the number of recycling bins and strategically co-locate them with standard trash receptacles throughout the Jetport's facilities and exterior spaces to maximize use	• Begin to measure the Jetport's composting rate by 2017 • Increase the Jetport's municipal solid waste recycling rate to 30 percent by 2020 • Continuously divert at least 50 percent of construction and demolition waste from landfills • Recapture and recycle at least 70 percent of deicing fluid • Reduce deicing fluid recycling operations cost
GROUND ACCESS AND TRANSPORTATION • Enhance the efficiency of regional and local access to and from the Jetport with an emphasis on high-occupancy modes of transportation and parking infrastructure that meets the needs of the Jetport's users	1. Provide choice to the Jetport's passengers by encouraging high-occupancy modes of transportation and the provision of adequate parking 2. Encourage the use of high-occupancy modes of transport among employees commuting to and from the Jetport 3. Leverage regional partners to enhance and promote bicycle, pedestrian, and high-occupancy modes of transportation available to Jetport employees, customers, and visitors	• Promote ridesharing for employee commutes • Administer an employee transportation survey • Continue to work with regional entities to enhance/expand public transportation service to the Jetport, and establish connections to local points of interest	• Appoint a transportation coordinator by 2017 • Identify the mode distribution of Jetport employees by 2018 • Identify the mode distribution of Jetport passengers by 2020
SOCIAL RESPONSIBILITY • Promote the well-being of the Jetport's employees and customers, while reflecting and supporting the social, economic, and cultural assets of the local community and greater region	1. Expand or enhance existing programs that support employee health and satisfaction 2. Continuously improve the Jetport's customer service experience 3. Foster a "sense of place" by incorporating regional representative elements into the Jetport's public-facing facilities 4. Increase opportunities for employee, customer, and community engagement 5. Continue the Jetport's support of the regional economy, and promote its economic impact	• Increase local collaborations by participating in local and regional partnerships and working groups • Create indoor landscaped areas that celebrate and display flora of Maine • Conduct regular employee satisfaction surveys	• Increase the number of Jetport employees participating in Jetport sponsored health and wellness programs to 60 percent by 2020 • Hold three employee appreciation events per year beginning in 2016 • Continuously improve Airport Service Quality rankings, as applicable and when possible
GOVERNANCE • Integrate sustainability throughout the Jetport's organizational framework	1. Integrate sustainability criteria into the Jetport's decision-making processes 2. Promote sustainability considerations in the daily activities of Jetport employees 3. Drive accountability throughout all levels of the organization 4. Enhance internal and external transparency of operations	• Include a requirement on all capital improvement applications to identify a proposed project's sustainability elements and any known alternatives that serve the same purpose with greater efficiency and/or environmental/social performance • Incorporate sustainability guidelines into future tenant and vendor contracts, and provide training on these guidelines, as needed • Publish an annual "scorecard" to report on the Jetport's ongoing sustainability performance	• Present two sustainability based employee recognition awards per year beginning in 2016 • Establish an internal Sustainability Working Group by 2017 • Ensure that 100 percent of capital projects are evaluated using sustainability criteria by 2017 • Engage three local organizations per year on the Jetport's sustainability program beginning 2017 • Participate in or establish a regional task force focused on sustainability by 2018

Exhibit 9

Executive Summary 31 SUSTAINABILITY MANAGEMENT PLAN

Sustainable master plan from executive summary exhibit 9.

Sean Murphy

For the attention and consideration of the Portland City Planning Board, City Council, Mayor, City Manager, Maine DEP, Army Corps of Engineers, State Level DEP, and the NDEP. Maine fish and wildlife department.

General Statement of Objections:

Community support is **crucial** for PWM airport's sustainable growth. The proposed long-term parking project at PWM is a short-term fix for a larger issue. Approving it won't fix the airport's future challenges and might worsen public perception, leading to lasting negative environmental repercussions for the city and its residents. The current 5 acre wooded wetland buffer plays a crucial role in mitigating noise and pollution, but replacing it with surface parking would amplify these issues, creating more noise, heat, air light pollution, trash, point pollution, runoff, trash , heat sinks, and contributing to global warming and encouraging a car-dependent culture.

List of objections and corresponding evidence:

1. The current surface parking expansion is not outlined or described in the PWM sustainable master plan 2018 .

Evidence

"Automobile parking alternatives are straightforward, following the plan set in place a decade ago. The plan includes expansion of the parking garage to the west/northwest where the long-term surface lot parking currently exists. The proposed plan would also allow for additional rental car spaces and will be designed to offer improved access between the rental car return area and the terminal building. The proposed parking expansion will more than accommodate the proposed increased need in automobile parking through the planning period. " As stated in the PWM master plan 2018.

2. The Faa requires the neighborhood to be major stakeholders in the process and the city has purposefully excluded the neighborhood. No objections to the project are noted in the Dep application or the planning board outline of the project.

Evidence

Objections are absent from the SLODA permit application, City of Portland planning notification, and DEP disclosures related to public input and the application process that were not followed are all key documents indicating the exclusion of the neighborhood in the planning process.

3. There are 6 negative outcomes per the FAA that will result in not including the immediate neighbors as major stakeholders in the process.

Evidence

Per the FAA advisory circular 150/5190-4B, Airport land use compatibility planning document .

Consequences of incompatible development per the FAA.

- Lead to delays in airport development or require redevelopment
- Constrain capacity expansion
- Restrict airport operations
- Result in more stringent environmental requirements (including greater environmental impact analysis and mitigation requirements
- Increase public outreach requirements
- In some cases litigation.

4. No environmental studies have been conducted to assess whether the proposed parking expansion project meets the "Do no harm" criteria outlined by DEP requirements or the standards of Maine DEP , SLODA, NERPA, and DEP application processes.

Evidence

No documented environmental studies cover sound, light, air pollution, increased runoff, or the effects of adding 11 acres of surface parking. Community objections are absent in DEP, SLODA permit, stormwater runoff, or Nerpa applications. The airport director's quotes in local media minimize environmental impacts (PPH, Maine Public Radio). The city's project description to the planning board lacks objections and underestimates wetland or impervious surface impacts. Purposeful nondisclosure of wetlands and environmental concerns is evident. Undisclosed wetland impacts and improper procedures are noted. The project is proposed on an illegally filled wetland with an expired permit, described as impervious in the current SLODA application.

5. The northern buffer is recommended in the 2018 PWM master plan to be retained.

Evidence

Pwm master plan

Environmental sensitivities mapping

Airport wetland mapping

6. The FAA and EPA noise standards of 55 decibels, must align, prioritizing community well-being. Future planning should aim for lower noise and pollution exposure, not an increase. The city must map noise contours and mitigate impacts accordingly. The Faa has indicated the 65 decibel noise level threshold may no longer be valid and has acknowledged that it is highly annoying. Large sections of the Stroudwater neighborhood fall within the 60 -65 range. Future planning must take this into consideration.

Evidence

FAA documents, EPA documents, documentation on health impacts of living near airports, and other relevant documents provide valuable insights into various aspects of airport operations, environmental concerns, and health effects.

7. Ground operations, not monitored by the FAAor the Pwm airport management , cause significant community noise and pollution. (Takeoffs and landings) The city, as airport owner, must enforce its noise ordinances. Mitigating harm to its citizens is the city's moral and fiscal responsibility.

Evidence

Emails describing the lack of ground operations in airport noise calculations from the FAA and Mr. Bradbury, Documents that outline the FAA's role in terms of owners responsibilities. FAA documents that outline community involvement . The PWM , FAA 150 noise study in 2005, city noise ordinance, and incomplete data on community impacts are all relevant to understanding the issue .

8. Enhance city council oversight of night-time flight scheduling to reduce the current 23% volume between 10pm and 7 am. Implement recommendations from the 2005 study on night flights to alleviate parking congestion. Require city council approval for flight schedules, as recommended in the 2005 , 150 FAA sound study plan.

Evidence

Original FAA 150 sound document, advisory notes, NAC meeting charts, letters in the PWM master plan, national sleep studies, and environmental effects of living near the airport are all pertinent sources of information.

9. The increase in plane size doesn't reduce noise or air pollution due to larger engines. Bigger planes operating during quiet night hours (10pm-7am) exacerbate the issues.

Evidence, 1.

Lack of recent sound studies and compliance paperwork, along with unapproved scheduling changes, show negligence. Evidence from Mr. Bradbury's documents outline the issue, absence of sound studies since 2005, unfiled paperwork, and NAC limitations support this.

Evidence, 2.

Mr. Bradbury's documents highlight the operation of larger planes during nighttime hours. There have been no sound studies since the FAA 150 report in 2005 . Compliance paperwork or changes to the original 150 plan have not been filed. Scheduling changes adding flights during nighttime hours lack city council approval. The total number of night flights is not disclosed to the NAC. The Noise Advisory Council's role is limited, with suggestions regarding community impacts on the Stroudwater Neighborhood are often ignored by airport management.

10. The proposed surface parking is a short term solution and will cause community harm and environmental harm. The mapping in the PWM master plan does not support the parking expansion.

Evidence

Mr. Philips Bogden's parking analysis document, city documents in the 2018 master plan, mapping from the 2018 master plan, environmental sensitivities mapping, short-term mapping, intermediate mapping, and long-term planning maps all fail to depict the Surface parking expansion.

11. The current parking proposal differs significantly from the 2020 plan presented for exploration by the city council in 2020. The Toye lot acquisition and use of the northern buffer were not part of the original discussion outlined in Mr. Bradbury's letter.

Evidence

- See letter

12. The proposed parking expansion contradicts Portland's planning documents and isn't recommended. Converting an urban forested wetland buffer into surface parking goes against environmental principles, contributing to global warming.

Evidence

Portland 2030, Portland Sustainable 2017 Report The Paris Agreement, the reduction of CO2 goals city wide , The Portland South Portland Sustainable documents, FAA recommendations, EPA community recommendations, Charlotte's Witts document, global warming, coastal damage, damage to the Fore River ecosystem, and the lack of environmental oversight contribute to a comprehensive lack of understanding of environmental sustainability efforts, goals, and impacts on the community and ecosystems.

13. Portland's city government isn't considering neighborhood concerns in the airport management process. There's no comprehensive airport development plan addressing negative impacts to the community. The 2018 Sustainable Master Plan, created with community input, isn't being followed. Stakeholders must be involved in future plans.

Evidence

There's no existing airport development plan addressing negative issues and constraints with stakeholder input. The PWM master plan lacks nodal transportation concepts and fails to address expansion-related challenges and solutions. If the 2018 master plan isn't being adhered to regarding expansion, a new airport development plan should be created, incorporating community involvement and adherence to its directives. The airport's mission statement should guide this process.

14. Portland's government neglects environmental impacts on neighborhoods from airport management. One solution would be to form a community committee to collaborate with airport management on best practices. . Proceeding with the expansion as proposed could lead to property devaluation, legal issues, and costly mitigation efforts in the future.

Evidence

Total wetlands taken are not disclosed. ,Total impervious surfaces are not disclosed , total CO2 production is not disclosed , chemical input to the Fore River, pollution in various forms, carbon production, wetland damage totals, forested wetlands removed for surface Surface parking , previous impacts and removal of forested wetlands , total runoff outflow to the Fore River, downplaying environmental concerns, and non adherence to the airport's mission statement should all be considered when evaluating the environmental impact and sustainability of airport operations and expansion plans into the future.

15. Examples of not involving the community as major stakeholders: Non-disclosure of impacted wetlands at public meetings, exclusion of objections in permit applications, failure to disclose wetland impacts and inaccuracies in applications, justification of the project using a misrepresented proposal, downplaying environmental impact, damage to urban forest and buffer contrary to the master plan, lack of project description in the master plan, then using it to justify the project, statements in applications lacking environmental impact studies, unwillingness to address neighborhood concerns and rushing the process, and master plan contradictions regarding parking expansion mapping are all indications of inadequate environmental consideration and community engagement in the project.

Evidence, 1.

The proposed parking expansion isn't depicted in the master plan's mapping for short, intermediate, or long-term development. Despite this, the process is portrayed as straightforward for building the expansion by the Airport management and described as "called out for in the DEP sloda application" . This is false. There is no justification for this project outlined in the 2018 master plan.

Evidence, 2.

The PWM 2018 sustainable plan encompasses short-term, intermediate, and long-term planning along with recommended development and sensitivities mapping. It includes wetland mapping and recommendations for sustainable development in line with environmental sensitivities.

16. Portland city governance is not taking into consideration community planning issues related to the negative aspects of the airport growth such as traffic on congress, transportation inadequacies, Enforcement of EPA standards related to water and pollution, FAA recommendations related to community input. The airport seems to exist in a vacuum unrelated to environmental concerns or community input.

Evidence

FAA documents, EPA documents, DEP documents, documents on chemical exposure near airports, the Airport 150 sound plan, point pollution documents, airport chemical and health exposure documents, sleep studies, and the airport's mission statement are all crucial for understanding environmental and health impacts, as well as compliance and mitigation measures related to airport operations

17. No alternatives to the Parking expansion plan have been explored by the city. The city and airport have put forth zero alternatives to this project and the justification for this project is not based on data for parking needs or impact. No alternatives have been explored in the DEP application or the Portland planning documents.

Potential alternatives:

- Utilize existing offsite locations for long-term parking.
- Improve the parking pay system for enhanced efficiency.
- Maximize the use of existing parking spaces.
- Upgrade the lower Toye area to accommodate an additional 300 parking spaces.

- Implement cell phone pay options for convenience.
- Enhance tracking mechanisms for better management of parking availability
- Improve online reservation systems to streamline parking access.
- Install covers on existing parking garages for weather protection.
- Expand parking garage infrastructure to meet growing demand.
- Making efficient use of existing resources to optimize parking solutions.

We recommend improving city council involvement in night-time flight scheduling to reduce the current 23% volume, thereby addressing parking issues promptly. Adhere to scheduling recommendations outlined in the 2005 Airport 150 plan regarding night flights. Require city council approval for flight schedules, as advised in the 2005 150 plan, ensuring community input and oversight.

18. Acknowledge community harm by the airport. Start to work with the community to find solutions. This will be very costly to mitigate in the future. The airport is causing harm and the city needs to acknowledge this . Air pollution , noise pollution, water pollution - this parking expansion conflicts with the airports *own mission statement.*

Evidence

PWM Mission statement

"The Portland International Jetport commits to be a premier New England Airport. We will provide a convenient, safe , and environmentally conscious gateway that exceeds our travelers expectations while reflecting the essence of the Maine experience. "

19. The proposed parking project lacks nodal transportation planning and is a short-term, environmentally harmful solution. Instead, explore creative, comprehensive transportation solutions like raised garages to improve citywide transportation, as outlined in the City Sustainable Plan 2017 and addressing broader transportation issues.

Evidence

Transcripts of initial DEP meetings and community objections related to transportation issues and non-disclosure of illegally filled wetlands sets a negative environmental precedent and makes future enforcement challenging. Profiting from this practice undermines environmental leadership and misleads the public. The city's approval of this approach will have lasting negative impacts and shouldn't be acceptable for wetland acquisition permits.

Future Transportation Planning Proposals:

Consider incorporating the following elements into future transportation planning:

- City Sustainable Plan 2017: Align transportation initiatives with the sustainability goals outlined in the city's plan, prioritizing eco-friendly modes of transportation and reducing carbon emissions.
- COG Planning: Collaborate with regional Councils of Governments (COGs) to coordinate transportation planning efforts across municipalities and address broader regional transportation challenges.
- Bus Service: Invest in the expansion and improvement of bus services to enhance public transportation accessibility and encourage modal shift away from single-occupancy vehicles.
- Larger Transportation Issues: Address larger transportation issues such as traffic congestion, infrastructure maintenance, and accessibility to ensure a comprehensive and integrated approach to transportation planning.

By integrating these elements into transportation planning efforts, the city can work towards creating more sustainable, efficient, and accessible transportation systems that benefit both residents and the environment.

Key Evidence regarding the non disclosure of impacted wetlands.

1. Non-disclosure of a vernal pond (pond 5273) despite its importance for local ecosystems.
2. Lack of information or disclosure about the impacts of the development on the surrounding environment.
3. Incorrect disclosures regarding impervious areas in the SLODA permit application, which could affect assessments of environmental impact.
4. Failure to disclose the presence of wetlands on the Toye property and the illegal filling of these wetlands during the initial DEP meeting.
5. Incomplete mapping and non-disclosure of wetland impacts, further obscuring the true environmental consequences of the project.
6. Incomplete mapping and non disclosure of wetland impacts related to the original cell phone location and non disclosure of public input in the subsequent Dep application. .

Conclusion

Community support is integral to the sustainable growth of the PWM airport. While the proposed long-term parking project may seem like a quick solution, it fails to address the larger issues at hand. Its approval risks exacerbating public perception and leading to lasting negative environmental consequences for our city and its residents. The importance of preserving the current 5-acre wooded wetland buffer cannot be overstated, as it serves as a vital safeguard against noise and pollution. Replacing it with surface parking would only amplify these issues, contributing to a car-dependent culture and undermining our efforts towards a greener, more sustainable future.

S

Carter Waldren
40 Garrison Street
Portland, Maine 04102 ,January 15, 2025

Subject: Comprehensive Response to PWM Parking Expansion Proposal (PL-002853-2024)

Dear Planning board members, City council members, Maine DEP,

I am writing to express my concerns regarding the proposed surface parking expansion at Portland International Jetport (PWM). After careful review, I believe that this proposal is not only insufficient in addressing the airport's long-term parking needs but is also environmentally detrimental. I urge the City Council, Planning Board, and the Maine Department of Environmental Protection to prioritize a sustainable, long-term solution that aligns with PWM's growing demands.

The Need for Long-Term Parking Solutions

The proposed surface parking expansion is environmentally damaging and will fail to meet both current and future parking demands. Furthermore, it risks long-term harm to the surrounding environment, including pollution, runoff, and noise, all of which will negatively impact the nearby Stroudwater neighborhood and the Fore River.

The total cost of the project, which includes $8 million for the surface parking expansion and $4.5 million for the acquisition of the Toye land, is a significant financial investment. Additionally, since the Toye property was purchased in 2020, parking utilization has been poor, resulting in lost revenue. In 2019, Mr. Bradbury's justification for prioritizing surface parking over a parking garage was based on the belief that parking demand would decrease. However, current trends show that demand has only increased, highlighting the need for a permanent solution.

Critical Update: Five Years Later

The conditions that justified the 2019 parking proposal have significantly changed. Below are key points demonstrating the discrepancies between the assumptions made at the time and the current realities:

- **Passenger Growth**: Passenger enplanements in 2024 have reached 1,221,192, far exceeding the projections made in 2019. This growth underscores the need for more robust parking infrastructure to meet current demand. Rental car companies have indicated that they could utilize up to 400–500+ additional parking spaces in a garage.
- **Technology and Ridesharing Impact**: Contrary to earlier expectations that autonomous vehicles and ridesharing services like Uber and Lyft would reduce parking demand, physical parking demand has only grown. This further emphasizes the need for expanded parking capacity.

- **COVID-19 Impact**: Although the pandemic temporarily reduced passenger numbers, enplanements have rebounded to pre-COVID levels and are expected to continue growing. This reinforces the need for expanded parking infrastructure.
- **Master Plan Alignment**: The 2019 PWM Sustainable Master Plan called for parking garage expansion once enplanements surpassed 1.1 million. With 2024 passenger numbers at 1.22 million, we are beyond the threshold for Phase 3 and Phase 4 of the garage expansion. The need for a parking garage is now urgent, and the surface parking proposal does not align with long-term needs.

Parking Capacity Deficiency

PWM's existing parking infrastructure is insufficient to meet current demand. Based on the industry standard of 1.25 parking spaces per 1,000 passengers, PWM's long-term parking requirement for 2.4 million total passengers is 3,037 spaces. However, PWM currently has 2,784 spaces, including 2,325 on-campus spaces and 459 spaces in the District Road discount lot. At peak times, especially during busy travel seasons, the airport often operates at or above capacity.

Here is a breakdown of parking capacity calculations:

Year	Total Passengers	Required Parking	Existing Capacity	Shortfall
2019	2,180,154	2,725	2,784	98% cap
2020 (COVID)	792,571	990	2,784	36% cap
2021	1,707,818	2,135	2,784	77% cap
2022	1,986,281	2,483	2,784	90% cap
2023	2,218,441	2,773	2,784	97% cap
2024	2,429,697	3,037	2,784	-253 short

As of 2024, PWM's parking capacity is already **253** spaces short, and this deficit is likely to grow, especially during peak travel times. The proposed surface parking expansion would add only **265** new spaces—just enough to cover this shortfall, leaving only a 13-space buffer, which is inadequate for long-term needs.

Surface Parking Proposal

The proposed surface parking expansion aims to create 265 new spaces by eliminating the northern sloped wetland buffer. While this might seem like a short-term solution, it raises significant environmental concerns. The removal of the buffer would disrupt the surrounding neighborhoods and increase pollution runoff into the Stroudwater neighborhood and the Fore River.

Additionally, this expansion only adds a minimal number of parking spaces relative to the growing demand, and is not a sustainable or long-term solution. Rather than sacrificing valuable land and environmental integrity for more surface parking, the airport should focus on expanding the existing parking garage.

The Need for a Parking Garage Expansion

The proposed surface parking expansion is neither a sufficient nor sustainable solution. The 2019 PWM Sustainable Master Plan calls for the construction of Parking Garages 3 and 4 to meet long-term needs. The current proposal will only provide a temporary fix and could ultimately damage the environment and the surrounding community.

A more viable alternative is to convert the lower lot, cell phone lot, and park-and-ride lot into 405 additional parking spaces. This would allow for the construction of the garage expansion while improving overall parking infrastructure. A scaled-back surface parking expansion, as initially proposed by Mr. Bradbury, would free up resources to focus on a permanent solution.

Call to Action

Given the rapid growth in passengers at PWM, it is imperative that the airport prioritize the construction of Parking Garages 3 and 4, as outlined in the 2019 PWM Sustainable Master Plan. The surface parking expansion is insufficient and environmentally harmful. A parking garage would provide a permanent, sustainable solution to meet the airport's parking needs, as well as those of rental car companies, aligning with long-term growth projections.

I strongly urge the City Council to take immediate action to fund and develop Phase 3 and Phase 4 of the parking garage expansion. Only then can PWM effectively meet the increasing demand for parking and rental spaces.

Conclusion

The growing parking shortage at PWM requires immediate attention. The proposed surface parking expansion is a temporary, environmentally harmful measure that fails to address the airport’s long-term needs. A parking garage, as outlined in the PWM Sustainable Master Plan, is the only viable solution to accommodate future demand.

I urge the City Council, Planning Board, and Maine DEP to prioritize the construction of a sustainable environmentally sound comprehensive parking structure that will serve the public, rental companies, and the city's future transportation needs.

Thank you for your time and consideration.

Sincerely,
Carter Waldren

To the Planning Board Members, City of Portland

Regarding the proposed expansion of surface parking at the Portland Jetport:

I am a resident of the Stroudwater neighborhood. I am president of the Stroudwater Neighborhood Association (SNA), but the following thoughts are an expression of my own opinions and do not speak for the Association. Because of my membership in SNA, I have been working for about two years on a subcommittee taking a deep dive into all things Jetport and that research informs the following.

1) The current proposal before you for expansion of surface parking stands outside the Jetport's own schedule for parking development as laid out in its 2018 Masterplan. Parking expansion is keyed to enplanements. The current enplanements are far ahead of the Jetport's estimates and thus the schedule for parking expansion. The parking GARAGE expansion recommended in the Masterplan is already overdue. This expansion is recommended to happen before any further surface parking lot expansion. By its own calculator, the Jetport was 253 spaces short for 2024 passenger totals. The proposed expansion yields 265 new spaces. The Jetport will gain 405 spaces by regularly using the existing lower dirt lot and the Park 'n Jet lot They have already been in intermittent use. Building this new surface lot is a VERY short-term solution.

2) This current request is not in keeping with environmental priorities set out in the Plan 2030 for the City of Portland, your primary guide in considering submissions. We have tried to get clear, straight answers from the DEP as to why all the work already done to the Toye lot is O.K., why post-dated permits are O.K., why clear visual and auditory proof of a vernal pond in the area of planned development is not a game changer, all to no avail. Sebago Technics continues to repeat things from their point of view as initially offered a year ago and without offering an opportunity to walk us through the areas of disagreement. Suggestions for alternative ideas for solving the need are ignored or brushed aside by Jetport staff. We do not understand why this City owned entity operates in this way.

3) The Jetport is not in any major way a burden on the taxpayers of Portland. It brings money into the City in various ways and is itself mostly funded by fees for enplanements and parking incomes of various types. There is no reason for short-term thinking at the Jetport in terms of parking. If any part of Portland's infrastructure can create a state-of-the-art improvement that speaks to the 2030 Plan it is the Jetport. The Jetport could do this in an exemplary way while not taking tax dollars away from bread-and-butter issues supported by tax dollars.

4) At a recent meeting with Enterprise Car Rental Co. concerning their planned expansion and improvement of their washing facility, we learned that they currently have @ 95 spaces in the current parking garage. Avis and Hertz have spaces as well. This is part of the income source for the Jetport. They clearly said that if the garage were expanded or, better, a new state of the art garage designed and built, they would be delighted to have as many as 300 to 400 spaces. This would mean more income. They also said that the idea of having a remote garage, where the pink lot is now for example, would also be an attractive idea where customers could be shuttled to pick up their rentals. A large facility just for rental cars from all the different companies off the Jetport campus seemed entirely acceptable to these Enterprise representatives, including a company vice president who was present.

5) Finally, it seems troubling that the City may grant waivers to itself for this project to proceed. That might make enforcement of similar regulations in future from private sector applicants asking for Planning Board approval to be somewhat complicated. If waivers were denied in such cases could not applicants infer that a double standard exists?

Sincerely,

Woody Howard
28 Roundabout Lane, Portland

Carter Waldren

40 Garrison Street

Portland , Maine, 04102

Portland Maine, City planning department staff and planning board members

Pwm surface parking expansion plan PL-002853-2024 waivers and justification

The environmental waiver being asked for by Pwm as representatives of the city of Portland should not be approved by the planning board. Referenced Land use code 14.6.2. The consistency with the Master plan has no references and neither does the request for the waiver. There is no reference to the city ordinances or technical manual citations. What is referenced in the master plan is to preserve the northern buffer.

Consistency with City Master Plans 14-14.6.3 (A)

1. The proposed project has been designed to be consistent with the City Master Plans. The proposed improvements involve two surface lots for long-term parking on the Jetport campus. The Portland International Jetport has an existing approved Master Plan that outlines growth within the airport campus. The need for additional parking and the proposed location for new lots is outlined within the Master Plan.

2. There is no existing off premises public infrastructure that requires easements across the property.

Please see the plan set and the Master Plan for additional information.

Submitted by the City and Sabego Tech to the Planning department .

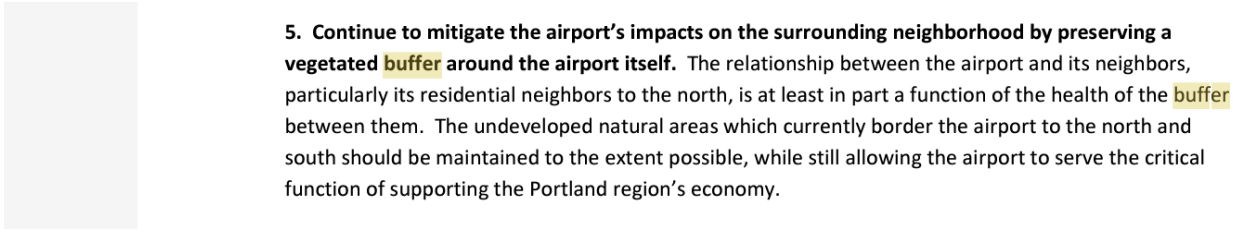
The proposed project is not consistent or supported in either the 2018 PWM Sustainable Master plan or the Portland 2030 planning documents.

The waivers and justifications used by Sabego and PWM management are not consistent with the 2018 Master plan either for environmental concerns or as a

solution to the parking needs. The 2018 PWM master plan clearly outlines the preservation of the northern buffer and any damage to it should be taken very seriously. Especially the disregard for the recommendations in the master plan for preserving the northern buffer. The removal of the 20 foot physical hill that acts as buffer for sound and pollution for ground level noise and emissions is not recommended and any attempt to say it is in there is not supported. The removal of the buffer would allow direct access of noise, light, air pollution and heat sink effects to the immediate Stroudwater houses on Cobb Avenue and into the Stroudwater neighborhood. By travelling across the two subsequent parking lots for Hertz and Enterprise.

In fact the PWM Sustainable Master plan calls for more vegetation to be added not removed. A garage is called for in the 2018 PWM, SAMP. Here are the quotes from the Samp to preserve the buffer and its role in protecting the neighborhood. The city's attempt at removing it and replacing it with a surface parking lot with the potential to devalue and degrade the quality of life for the environment and the citizens who live in Stroudwater is troubling .

Examples from the 2018 Pwm sustainable master plan .



5. Continue to mitigate the airport's impacts on the surrounding neighborhood by preserving a vegetated buffer around the airport itself. The relationship between the airport and its neighbors, particularly its residential neighbors to the north, is at least in part a function of the health of the buffer between them. The undeveloped natural areas which currently border the airport to the north and south should be maintained to the extent possible, while still allowing the airport to serve the critical function of supporting the Portland region's economy.

PWM Samp 2018 pg. 569

There is a mention of the balancing of the priorities but the current surface parking proposal has made no attempt to study any alternatives.

Adding more vegetative buffers. Not reducing it.

If the potential for lighting or visual impacts is determined to be associated with the planned development, consultation with local residents and the owners of light-sensitive sites may be needed to determine possible alternatives to minimize these effects without risking aviation safety or efficiency. Measures such as shielding guidance lighting so that they are only visible to pilots or using vegetative buffers could be used to reduce the effects of airport-related light emissions. Additional coordination with state, regional, or local art or architecture councils, tribes, or other organizations having an interest in Jetport-associated visual effects may be necessary.

WATER RESOURCES

PWM Samp 2018 pg. 534

"Continue to mitigate the airport's impacts on the surrounding neighborhood preserving a vegetated buffer around the airport itself . "

in Stroudwater proper.

5. Continue to mitigate the airport's impacts on the surrounding neighborhood by preserving a vegetated buffer around the airport itself.

6. Emphasize transit, bicycle, and pedestrian connections; context-sensitive site planning; and high quality design to minimize development impacts.

Grant Assurance 20, *Hazard Removal and Mitigation*, states that the airport sponsor "will take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) will be adequately cleared and protected

397

689

Create and enhance the existing buffer and the reasons to preserve it are clear. There is no mention of removing the buffer. .

POTENTIAL OPPORTUNITIES FOR PERFORMANCE IMPROVEMENT

Based on the findings of this Baseline Assessment, the following represents a preliminary list of potential opportunities for performance improvement under Noise. The Jetport will evaluate the applicability and feasibility of these opportunities moving forward. In addition to these opportunities, the Jetport should continue its already successful programs and initiatives such as support for the NAC and Fly Quiet Program.

- Update the Jetport's noise exposure maps, when appropriate.
- Work with local entities and property owners, as applicable, to increase landscaped areas around and adjacent to the Jetport to create a buffer between it and surrounding communities.
- Identify any noise-generating mechanical systems and relocate them away from residential areas, where feasible, and consider residential communities in the positioning of new on-site noise generating mechanical equipment.
- Require all construction contractors working on the Jetport to mitigate unwanted noise and vibration to the greatest extent practicable.

PWM Samp 2018 page pg. 397

The proposed surface parking project is not consistent with the SAMP Master plan either in Capital improvement funding tables and additionally it has not been studied for impacts of noise by the Noise Advisory Committee; neither has an environmental impact study been completed. It is not outlined or discussed in the 2018 SAMP , the project has not been studied by the requisite PWM airport sustainable committee for airport CIP projects for any sustainable factors because the airport has failed to create or implement a sustainable committee. This action was requested in the 2018 Master plan executive summary and its failure to be implemented is a violation of the master plan by not following its recommendations.

Clarification of Concerns Regarding the Northern Buffer Zone

The northern buffer zone, as outlined in the master plan, is explicitly designated for protection. However, the proposed surface parking project seems to overlook the critical need to safeguard this area. The wording of the master plan emphasizes the necessity of carefully considering the impacts on sound, pollution, and the delicate balance of environmental needs. Simply flattening out the hill and removing the buffer zone without addressing the potential environmental consequences is not only irresponsible but also negligent.

There has been no comprehensive Environmental Impact Study (EIS) conducted to evaluate the specific effects of removing or altering the buffer. The city's disregard for the clear risks related to pollution, noise, heat islands, wetland degradation, waste accumulation, and disruptions to the watershed is alarming. Additionally, the potential harm to upland habitats, vernal ponds, and the creation of an excessive noise corridor are significant concerns that have not been properly addressed.

This project lacks a well-supported justification when weighed against the likely environmental consequences. Without a proper evaluation of these issues, proceeding with the project could result in irreversible damage to the local ecosystem.

Environmental waivers being requested, should not be approved.

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.
Land Use Code14.6.2 (A) (1) Environmental Quality Standards A. Preservation of significant natural features	All development shall preserve and protect significant natural features by incorporating them into site design.	The applicant seeks a waiver to allow for impacts to two small wetlands located within the project area.	Steps taken to minimize wetland impacts included removing the cell phone lot development area originally planned for the westerly side of Jetport Boulevard responsive to public input. During the city review process, the Jetport further modified the parking lot
Land Use Code 14.6.2 (B)(4) Landscape Preservation 4. Waiver	Where the applicant can demonstrate that preservation of existing vegetation would compromise development [...].	The applicant seeks a waiver for removal of vegetation within the parking lot area.	The vegetation removal required for the parking lot is within the area designated in the approved Master Plan for parking lot expansion. The plan has been revised to preserve vegetation near the intersection of International Parkway and

The legitimacy and transparency of the justification provided for the waiver by the applicant is called into question because there are no page numbers or actual dialogue that relates to the surface parking application related to environmental concerns. .

. The key points of contention are as follows:

1. **Waiver Justification Not Supported by the Community:**
    - The waiver for the project, which claims to preserve natural areas, has been questioned because the community does not support this justification. The assertion that the project will preserve natural features by avoiding the use of wetlands is misleading.
2. **Undisclosed Wetlands:**
    - At the December 12th, 2024 public meeting, it was not disclosed that there are wetlands on the upper Toye property, north of Jetport Boulevard, which could potentially be affected by the project. This lack of disclosure raises concerns about the full extent of the environmental impact of the project.
    - Furthermore, the permit for the upper Toye property had expired in 2020 before the city purchased the land from Mr. Toye, and a subsequent community member meeting with Portland DEP staff confirmed that the expired permit was deemed invalid.
    - This failure to disclose the existence of wetlands north of Jetport Boulevard during the meeting is significant because it would change the assessment of the project's overall environmental impact, particularly the assertion that the project avoids wetlands or vernal ponds.
3. **Discrepancy in Wetland Impacts:**
    - The wetlands north of Jetport Boulevard have not been included in the project's total wetland impact assessment, which is seen as a critical omission. By not factoring these wetlands into the overall environmental impact, the project's claim to avoid wetland disturbance and its justification for the waiver become questionable.
4. **Deceptiveness of the Waiver Request:**
    - The use of the cell lot as a reason for the preservation of natural features is challenged because the wetlands both North and South of Jetport Boulevard have not been fully disclosed and in some cases hidden from the public. This raises concerns about the city's intentions and the transparency of the environmental review process.
    - Seeking a waiver under these conditions is deceptive because it rests on incomplete or misleading information.
5. **Vernal Pond 5273 as a Valid Wildlife Habitat:**

- The vernal pond designated as 5273 should be recognized as a valid wildlife habitat, supporting the presence of wood frog eggs, which is a key ecological feature of the pond. The project's impact on this pond, as well as its failure to account for its existence in the waiver justification, is another point of concern.

Conclusion:

The request for a waiver is strongly refuted because it is based on incomplete or misleading information about the project's environmental impacts, particularly with respect to wetlands and vernal ponds. The failure to disclose critical wetland areas, both North and South of Jetport Boulevard, undermines the claim that the project preserves natural features, and the request for a waiver under these conditions is seen as deceptive. Furthermore, the project's impacts on vernal pond 5273, which supports wildlife, further complicate the justification for the waiver. Therefore, I argue that the waiver should not be granted for obvious reasons.

Clarification of Concerns:

The project in question does not align with the planning outlined in the 2018 Sustainable *Master Plan* or *Portland 2030*. I urge members of the planning board

to carefully review the *Master Plan Executive Summary* and specifically search for sections discussing parking needs..

The Master Plan calls for the construction of a parking garage, which was intended to be built by the end of the intermediate planning period. We are beyond that based on enplanements and total passenger calculations. A "half solution," such as expanding the surface lots, is inadequate to meet the current and future parking demand. The argument that a surface lot was identified in the Master Plan is unsupported , especially when the Master Plan clearly specifies the need for a phase 3 parking garage expansion and does not mention expanding surface parking and outlines the preservation of the northern buffer.

Additionally, the city's attempt to rely on unsigned drawings in the appendix—drawings associated with illegal wetland filling operations in 2016 when the city did not even own the property —**raises serious ethical concerns.** These documents lack official authorization and credibility. The *Master Plan's* Table of CIP (Capital Improvement Program) funding requests clearly outlines the construction of a parking garage to meet the needs as enplanements reach certain thresholds. There is zero mention of a surface parking expansion into the northern buffer that is called out to be protected in the Master plan .

In 2019, the justification from Airport management for expanding surface parking rather than a garage was that the need for parking was expected to decrease. However, the current argument from Pwm management —that the demand is now so great that a surface parking expansion will suffice—is inconsistent with the previous analysis and the larger strategic goals set in the Master Plan.

The northern buffer zone, as outlined in the master plan, is explicitly designated for protection. However, the proposed project seems to overlook the critical need to safeguard this area. The wording of the master plan emphasizes the necessity of carefully considering the impacts on sound, pollution, and the delicate balance of environmental needs. Simply taking the buffer zone without addressing the potential environmental consequences is not only irresponsible but also negligent.

There has been no comprehensive Environmental Impact Study (EIS) conducted to evaluate the specific effects of removing or altering the buffer. The city’s

disregard for the clear risks related to pollution, noise, heat islands, wetland degradation, waste accumulation, and disruptions to the watershed is alarming. Additionally, the potential harm to upland habitats, vernal ponds, and the creation of an excessive noise corridor are significant concerns that have not been properly addressed.

This project lacks a well-supported justification when weighed against the likely environmental consequences. Without a proper evaluation of these issues, proceeding with the project could result in irreversible damage to the local ecosystem.

Conclusion:

The request for a waiver by Sabego and PWM Management for the City of Portland is fundamentally flawed and lacks the necessary transparency and environmental justification. It is clear that the waiver's, which claim to preserve natural areas, is based on incomplete and misleading information, particularly with regard to wetlands, vernal ponds, and the northern buffer zone. The failure to disclose critical wetland areas—both north and south of Jetport Boulevard—calls into question the legitimacy of the waiver request. This omission undermines the assertion that the project is designed to avoid ecological impacts, particularly the disturbance of important wildlife habitats like vernal pond 5273. There is nothing sustainable or ecologically protective about removing 5 acres of a wetland buffer and installing 11 acres of paved surface parking .

Furthermore, the reliance on outdated and complete lack of supporting documents to request the waivers related to environmental concerns raises significant issues credibility and transparency of the city's environmental review process. The use of the northern buffer zone, explicitly designated for protection in the 2018 Master Plan, as a site for surface parking expansion is not only inconsistent with the Master Plan's vision but also negligent in considering the broader environmental and ecological consequences. The potential impacts on wetlands, wildlife, water quality, noise pollution, and local habitats have not been adequately studied, and the lack of a comprehensive Environmental Impact Study (EIS) means that many potential dangers remain unaddressed. A waiver would simply be negligent.

In addition, the arguments presented by the city regarding parking needs are weak and inconsistent with the long-term goals outlined in the Master Plan. The focus on expanding surface lots, rather than following through on the Master Plan’s recommendation for expansion of the parking garage, represents a short-term "half solution" that will not meet future demands and will come at the expense of valuable environmental resources and the overall lack of trust .

Given these significant concerns, it is clear that the environmental waiver requests should not be granted. The project, as proposed, lacks a solid environmental foundation and contradicts both the spirit and the specifics of the 2018 Master Plan. I urge the Planning Board to carefully consider these issues, reject the waiver request, and prioritize the preservation of natural areas, sound environmental planning, and the long-term sustainability of the community.

January 24, 2025

TO: Members of the Portland Planning Board
planning@portlandmaine.gov
Cc: Mayor Dion and the Portland City Council, Portland City Manager, Danielle West

RE: Jan. 28, 2025 PB meeting: Jetport Parking Expansion

Dear Planning Board Members:

As a 36-year resident of Portland and Vice President of the Stroudwater Neighborhood Association, I respectfully urge the Planning Board to deny the current request from the Jetport's director and engineering team for parking expansion. Instead, I encourage the board to consider adhering to the guidelines set forth in the Jetport Master Plan for the construction of an expanded parking garage. Additionally, I request that this letter be added to the official materials in the Planning Board's file for the discussed topic.

Over the years, we have watched the Portland Jetport grow into a leading regional airport. With growth, comes the need for additional parking. We do not dispute this need but believe there are more sound ways to go about it rather than taking more land and unnecessarily destroying the environment. We have observed how the growth over the years has had detrimental effects on the environment and greatly increased noise levels in the local neighborhoods, including Stroudwater, Redbank, the West End, Peaks Island, the East End, Willard Beach, South Portland, Cape Elizabeth, and beyond.

Our growing concern centers around the lack of oversight in recent development plans for the airport, which lead to environmental degradation, increased noise pollution, irreversible destruction of wetlands, the reckless removal of sound-buffering and environmentally-protective trees, and the encroachment upon green spaces. Particularly troubling are the public statements made by the Jetport manager in recent meetings, where he expressed intentions to build on "every square inch" of remaining green space on Jetport grounds.

Though the Jetport is financially self-sufficient, it is a city-owned entity, which means that the Mayor, City Council, Planning Board, and City Manager have an obligation to ensure that the allocation of its resources is scrutinized and reviewed thoroughly by the city. Decisions regarding the Jetport's expansion should prioritize the best interests of Portland's residents and taxpayers, and the guidelines set forth in the Jetport Master Plan must be adhered to. Unfortunately, there is significant concern that proper oversight by city officials has been lacking. As a result, the directives outlined in the Master Plan have not been followed or executed, leading to ongoing issues.[1]

In response to these concerns, the Stroudwater Neighborhood Association formed a sub-committee over the past two years to review the Jetport Master Plan—developed and published between the years 2016-2018; the Portland 2030 Plan; the recently approved Portland Recode Plan; and the policies governing decision-making relating to the Jetport's growth plans by the City Manager, Planning Board, City Council, and the Maine DEP. Our review has led to grave

concerns regarding the Jetport's current proposal for additional surface parking, a project projected to cost around $8 million (plus $4.5M paid for the Toye lot property in Nov. 2021, which is part of this project but is not being included in the costs), to add approximately 265 parking spaces. Below is a summary of our concerns and some of the pertinent findings from our research:

1. **High Cost for Limited Parking Expansion**
   - **Total projected cost:** $8 million
   - **Additional net spaces gained:** 265 (including build-out of the Toye property)
   - **Cost per space:** $30,189. ($47,170 including the Toye lot purchase)
   - **Cushion above current needs:** 12 spaces[2]

This small cushion suggests that the expansion will quickly become inadequate, likely within months of completion.

2. **Environmental Impact**
   The environmental damage that will be caused should this project move forward is irreversible. The added pollution, destruction of wetlands, and loss of green space make this expansion not only illogical but ethically and financially unsound—particularly in the context of the current environmental crises facing our country.

3. **Concerns Over Policy Waivers**
   The Jetport is requesting four waivers in order to move forward with its temporary surface parking plan. The current status of the application asks, "Does the Application as currently drafted comply with all relevant zoning and policy requirements?" Without granting the requested waivers, the Planning Board and staff would have to conclude that the application does not meet all state and municipal prerequisites. The Jetport manager and engineering team has been asked to submit an amended application before the January 28, 2025 Planning Board meeting.

4. **Waivers and Their Implications**
   Approval of an amended application would require the Planning Board to waive key provisions, including:
   - The newly enacted City Recode for zoning and construction
   - The Portland 2030 Plan's environmental policies
   - The Jetport's own Master Plan, which was approved by both the City and the FAA (who funded its development to the tune of approximately $600,000)
   - The City's Sustainability Plan, as well as the sustainability requirements embedded in the Jetport's Master Plan
   - Provisions of the Portland/South Portland joint sustainability agreement (relevant because two-thirds of the Jetport lies within South Portland)
   - The Planning Board's own standards of review[3]:

Granting these waivers would place the city in a precarious position, as it could set a precedent for future development projects by private developers seeking similar exceptions.

5. Lack of Consideration for Public's Input & Alternative Solutions

At the November 26, 2024, Planning Board meeting, it appeared that some board members overlooked or did not thoroughly review the input from the public. Instead, they relied on misleading and inaccurate statements from Mr. Bradbury and his engineering team that had been clearly contradicted in public comments and written documentation with supporting evidence. We strongly urge the board to give more careful attention to the public's input.

6. Immediate Solutions for Additional Parking

Many alternatives have been proposed by the public and the SNA Board members, yet none have been given proper consideration. Below are a few of the most easily implemented suggestions. We urge the Planning Board to thoroughly review these before allowing any actions that could lead to unnecessary irreversible environmental damage, especially when such outcomes can be easily avoided.

- **Implement an Automated Parking Guidance System (APGS):**
  An APGS, which utilizes sensors such as ultrasonic, magnetic, radar, or video-based systems, can detect occupied parking spaces. By providing real-time data on available spots through dynamic signage, mobile apps, or websites, this system can efficiently guide drivers to open spaces. Implementing this technology could uncover dozens of currently undetected available spaces.
- **Adjust Parking Rates to Encourage Alternative Transportation:**
  Increasing the cost of parking on the airport grounds could serve as an incentive for passengers to consider alternative transportation options, such as taxis, rideshare services (e.g., Uber, Lyft), buses, and drop-offs. This could help alleviate demand for more parking spaces and reduce congestion on-site.
- **Relocate Employee Parking Off-Site:**
  Moving employee parking to off-site locations, with transportation provided by the airport's existing shuttle services, would free up more than 100 parking spaces in the main lot, easing pressure on current parking availability.
- **Move Rental Car Operations Off-Site:**
  Relocating rental car services to off-site locations could significantly free up space in the airport garage. This would not only create more room for passenger parking but could also increase revenue for the Jetport. Recent discussions with Enterprise Car Rental management confirm interest in this option, with a request for 300-500 additional spaces.

7. Conclusion:

We urge the Planning Board and city officials to carefully reconsider the proposed plan for additional surface parking and instead support alternatives while following the

Jetport's Master Plan, which clearly outlines the need for long-term parking be met by expanding the parking garage.[4]

A thoughtfully designed parking garage expansion that incorporates the latest building technologies and design principles would not only address the parking shortage for years to come, but also offer a significant sound barrier for nearby neighborhoods. By integrating solar power and other energy-efficient strategies, it could serve as a model for the city, demonstrating leadership in sustainable development. This approach would meet both current and future parking demands while preserving the environment and reinforcing Portland's commitment to sustainability. Permanent decisions made hastily can result in projects that cause irreversible harm to our city, as seen with the destruction of the historic Portland Union Station. The entrance to our Jetport is a beautiful and unique feature, setting it apart from airport entrances nationwide. Replacing it with pavement and parking as proposed is not only unnecessary but also financially, ethically, and environmentally irresponsible.

If a reduction in car usage occurs in the future, a state-of-the-art parking garage could be repurposed for other uses that address broader intermodal transportation systems within the city.

FOOTNOTES

1. Sustainable Airport Master Plan, Executive Summary P.1

> The master plan is intended to be a proactive document which identifies and then plans for future facility needs well in advance of the actual need for the improvements. This is done to ensure that the City of Portland and airport administration can coordinate environmental reviews, project approvals, design, financing, and construction to minimize the detrimental effects of maintaining and operating inadequate or inefficient facilities.

2. Portland Jetport Website; Airport Statistics

Year	Total Passengers	Required Parking	Existing Capacity	Shortfall
2019	2,180,154	2,725	2,784	98% cap
2020 (COVID)	792,571	990	2,784	36% cap
2021	1,707,818	2,135	2,784	77% cap

2022	1,986,281	2,483	2,784	90% cap
2023	2,218,441	2,773	2,784	97% cap
2024	2,429,697	3,037	2,784	-253 short

As of 2024, PWM's parking capacity is 253 spaces short. This deficit is likely to grow, especially during peak travel times. The proposed surface parking expansion would net only 265 new spaces—just enough to cover this shortfall, leaving a **12-space buffer.**

3. Planning Board Plan Review Standards (14.6.2) Environmental Standards
e. Waterbodies including wetlands, watercourses, significant vernal pools and floodlands.

4. Sustainable Airport Master Plan Executive Summary Brochure
Capital Improvement Plan Brochure, Page 3:
From the specific needs and improvements that have been established for the Jetport, a realistic schedule and the associated costs for implementing the plan were determined. The implementation plan considers the interrelationships among the projects in the recommended plan in order to establish a logical master schedule that minimizes conflicts.

The capital improvement plan (CIP) covers the same years as the forecasts in the planning effort. The Short Term is programmed annually through the first six years of the plan. The remaining projects are grouped into Intermediate (years 7-11) and Long Term (years 12-20) planning horizons. By utilizing planning horizons instead of specific years for Intermediate and Long Term development, the Jetport will have greater flexibility to adjust capital needs as demand dictates.



LONG TERM DEVELOPMENT

1. Construct Air Cargo Apron Phase I (North) *
2. Construct Air Cargo Apron Phase II (South) *
3. ARFF Vehicle
4. Construct Taxiway B Runway 36 to 29
5. Extend Cargo Apron East Interport Location *
6. Rotary Snowplow 5000 TPH
7. Expand Maintenance Building
8. Construct Aircraft Engine Run-Up Pad *
9. SRE 18' FRT MTD Broom
10. Strengthen/Rehab Runway 11-29
11. Displacement Plows/Spreaders
12. Strengthen/Rehab Taxiways A, D, E, & F
13. 2000 Gallon Liquid Spreader
14. ARFF Vehicle
15. Construct South Apron Taxiway
16. Construct South General Aviation Apron - Phase 1 *
17. Construct South General Aviation Apron - Phase 2 *
18. Terminal Westerly Expansion
19. Rehabilitate Runway 18-36, Taxiways B and J
20. Construct South General Aviation Apron - Phase 3
21. Ramp Expansion East of Air Traffic Control Tower
22. Snow Plows
23. Parking Garage Expansion Phase 4 *
24. Terminal Easterly Expansion/Renovation *

PORTLAND INTERNATIONAL JETPORT
PARKING EXPANSION

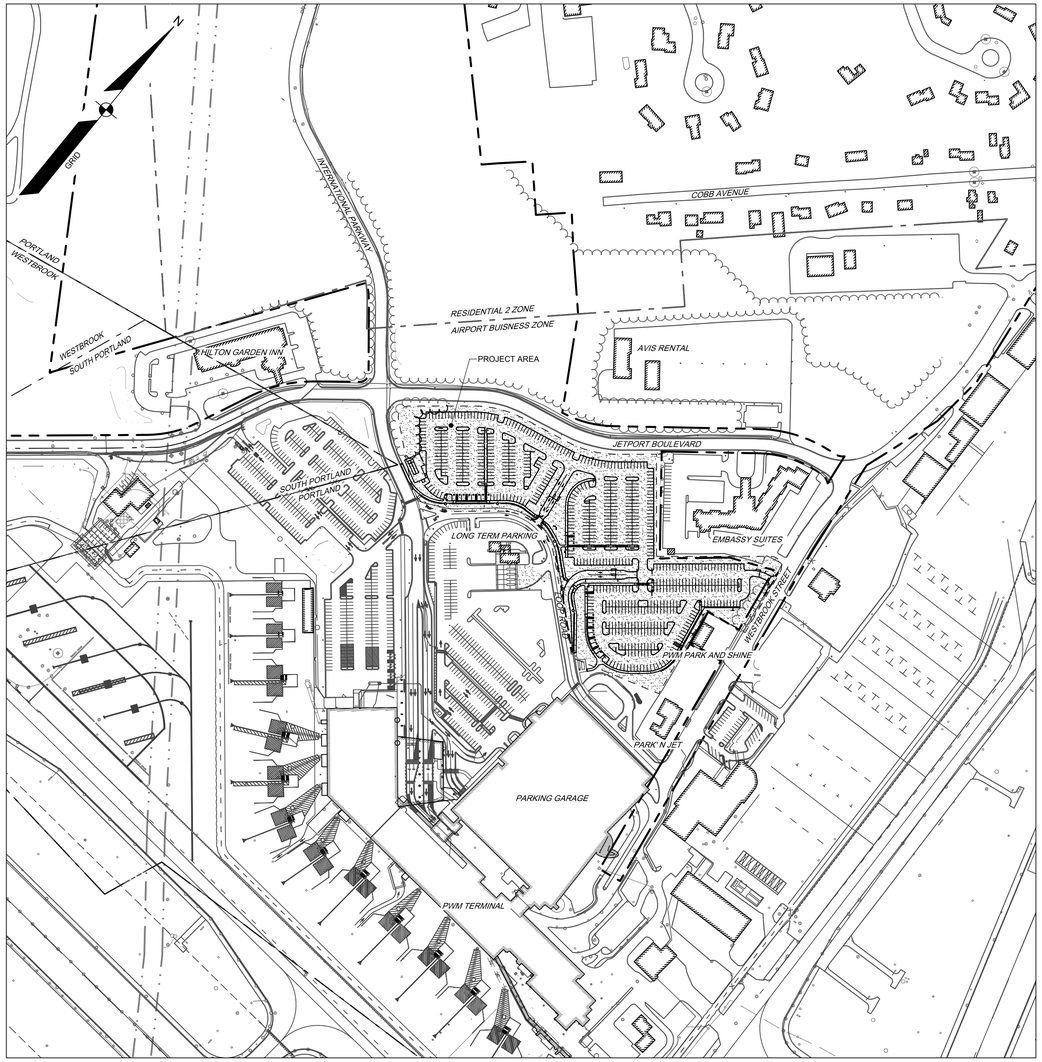
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

APPLICANT:

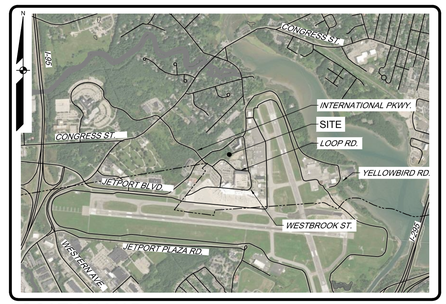
PORTLAND INTERNATIONAL JETPORT
PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

ENGINEER/SURVEYOR/
LANDSCAPE ARCHITECT:

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100



GRAPHIC SCALE
200 0 100 200 400
(IN FEET)
1 INCH = 200FT.



LOCATION MAP NTS

Sheet List Table

SHEET	TITLE
G-001	COVER SHEET
G-002	NOTES & LEGEND
C-003	DEMOLITION PLAN
C-100	OVERALL SITE PLAN
C-101	SITE PLAN
C-102	SITE PLAN
C-103	SITE PLAN
C-200	OVERALL GRADING PLAN
C-201	GRADING PLAN
C-202	GRADING PLAN
C-203	GRADING PLAN
C-300	OVERALL UTILITY PLAN
C-301	UTILITY PLAN
C-302	UTILITY PLAN
C-303	UTILITY PLAN
C-304	PIPE AND STRUCTURE DATA TABLES
L-100	OVERALL LANDSCAPE PLAN
L-101	TREE REMOVAL & PRESERVATION PLAN
L-102	LANDSCAPE PLAN
L-103	LANDSCAPE PLAN
L-104	LANDSCAPE PLAN
C-400	CONSTRUCTION SEQUENCE PLAN
C-500	EROSION CONTROL NOTES
C-501	EROSION CONTROL DETAILS
C-502	SITE DETAILS
C-503	SITE DETAILS
C-504	SITE DETAILS
C-505	SITE DETAILS
C-506	SITE DETAILS
C-507	SITE DETAILS
1 OF 5	BOUNDARY SURVEY
2 OF 5	BOUNDARY SURVEY
3 OF 5	BOUNDARY SURVEY
4 OF 5	BOUNDARY SURVEY
5 OF 5	BOUNDARY SURVEY
1 OF 1	SITE PHOTOMETRICS PLAN

2024-11-21

OWENS A. MCCULLOUGH PE 7122
AMY BELL SEGAL RLA 2265

STATE OF MAINE
OWENS A. MCCULLOUGH
No. 7122
REGISTERED PROFESSIONAL ENGINEER

REV.	BY:	DATE:	STATUS:
F.	OAM	11/15/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/19/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

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COVER SHEET
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 200'
PROJECT	19059

SHEET G-001

F:\Projects\19000\19059\DWG\Design\19059 C.dwg - 11/15/2024 4:42 PM - EBEN ROBICHAUD

19059 C.dwg, TAB:G-001 Cover

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	DEED LINE/R.O.W.	
	TIE LINE	
	SETBACK	
	EASEMENT	
	BUFFER	
	FLOODPLAIN	
	FLOODWAY	
	CENTERLINE	
⊡	MONUMENT	■
◎	IRON PIPE/ROD	●
◎	DRILL HOLE	◉
C1/L1	DEED CALL	
C1/L1	CURVE/LINE NO.	C1/L1
	SOILS	
	ZONE LINE	
	ZONE LINE ON PL	
BENCHMARK DESCRIPTION WITH ELEVATION	BENCHMARK	
△	SURVEY CONTROL	
TP-1	TEST PIT	
MW-1	MONITORING WELL	
B-1	BORING	
	BUILDING	
	DECK/STEPS/ OVERHANG	
	EDGE WETLAND	
	WETLANDS	
	UPLANDS	
	STREAM	
	LEDGE	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
120 118	CONTOURS	120
×120.00	SPOT GRADE	+120.00
	CHAIN LINK FENCE	
X	BARB WIRE FENCE	X
	STOCKADE FENCE	
	GUARD RAIL	
	STONE WALL	
	RETAINING WALL	
	DECIDUOUS TREE	X
	CONIFEROUS TREE	X
	MULCH LINE	
	BOLLARD	●
	SIGN	
	RAILROAD	
G	GAS	G
GV	GAS GATE VALVE	GV
GM	GAS METER	
G	GAS MANHOLE	
W	WATER	W
WV	WATER GATE VALVE	WV
	WATER SHUT OFF	
	HYDRANT	
W	WATER MANHOLE	
W	WELL	W
S	SANITARY SEWER	S
FM	FORCE MAIN	FM
S	SANITARY MANHOLE	
	SEWER CLEAN OUT	
SD	STORM DRAIN	SD
UD	UNDER DRAIN	UD
D	DRAINAGE MANHOLE	
	CATCH BASIN	
OHU	OVERHEAD UTILITY	OHU
UGU	UNDERGROUND UTILITY	UGU
T	TRANSFORMER PAD	T
E	ELECTRICAL MANHOLE	E
EM	ELECTRIC METER	
H	HVAC UNIT	
T	TELEPHONE MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	
	DRAINAGE DITCH	
	EROSION CONTROL BLANKET	
	FILTER BARRIER	FB
	RIPRAP	
	CHECK DAM	
	INLET PROTECTION	
	BOULDER	

GENERAL NOTES

1. BOOK AND PAGE CITATIONS SHOWN HEREON REFER TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. NO MONUMENTS WERE SET AS OF THE DATE OF THIS PLAN.
3. A WRITTEN REPORT OF FINDINGS AND OPINIONS AS REQUIRED BY SECTION 10.A.3.D OF THE TECHNICAL STANDARDS OF PRACTICE OF THE STATE OF MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS WAS NOT PREPARED.
4. THE PURPOSE OF THIS SURVEY WAS TO DEFINE THE PERIMETER BOUNDARY OF THE PORTLAND INTERNATIONAL JETPORT PARCEL AND ACCESSORY PARCELS IN THE VICINITY OF THE JETPORT. INTERIOR PARCEL BOUNDARIES WERE NOT RESEARCHED OR DEFINED EXCEPT WHERE REQUIRED TO DEFINE THE PERIMETER BOUNDARY. EASEMENTS DEPICTED ON THIS PLAN WERE NOT COMPLETELY RESEARCHED OR LOCATED IN THE FIELD BUT SHOW THEIR GENERAL LOCATION RELATIVE TO THE PERIMETER BOUNDARY.
5. CURRENT OWNER:

   CITY OF PORTLAND
   389 CONGRESS ST.
   PORTLAND, MAINE 04101
6. ALL WORK SHALL CONFORM TO THE APPLICABLE CODES AND ORDINANCES.
7. CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIM OR HERSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIM OR HERSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
8. CONTRACTOR SHALL NOTIFY ENGINEER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND IN THE FIELD.
9. PROVIDE ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND OWNER'S REQUIREMENTS UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
10. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
11. CONTRACTOR SHALL CLEAN AND REMOVE DEBRIS AND SEDIMENT DEPOSITED ON PUBLIC STREETS, SIDEWALKS, ADJACENT AREAS, OR OTHER PUBLIC WAYS DUE TO CONSTRUCTION.
12. CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN CONSTRUCTION TO PROTECT EXISTING STRUCTURES, PHYSICAL FEATURES, AND MAINTAIN SITE STABILITY DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE ALL AREAS TO ORIGINAL CONDITION AND AS DIRECTED BY DESIGN DRAWINGS.
13. SITE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.
14. ALL PAVEMENT MARKINGS AND DIRECTIONAL SIGNAGE SHOWN ON THE PLAN SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS.
15. ALL PAVEMENT JOINTS SHALL BE SAWCUT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
16. NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.
17. IMMEDIATELY UPON COMPLETION OF CUTS/FILLS, THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH EROSION CONTROL NOTES AND AS SPECIFIED ON PLANS.
18. THE CONTRACTOR SHALL BE FULLY AND SOLELY RESPONSIBLE FOR THE REMOVAL, REPLACEMENT AND RECTIFICATION OF ALL DAMAGED AND DEFECTIVE MATERIAL AND WORKMANSHIP IN CONNECTION WITH THE CONTRACT WORK. THE CONTRACTOR SHALL REPLACE OR REPAIR AS DIRECTED BY THE ENGINEER ALL SUCH DAMAGED OR DEFECTIVE MATERIALS WHICH APPEAR WITHIN A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.
19. ALL WORK PERFORMED BY THE GENERAL CONTRACTOR AND/OR TRADE SUBCONTRACTOR SHALL CONFORM TO THE REQUIREMENTS OF LOCAL, STATE OR FEDERAL LAWS, AS WELL AS ANY OTHER GOVERNING REQUIREMENTS, WHETHER OR NOT SPECIFIED ON THE DRAWINGS.
20. WHERE THE TERMS "APPROVED EQUAL", "OTHER APPROVED", "EQUAL TO", "ACCEPTABLE" OR OTHER GENERAL QUALIFYING TERMS ARE USED IN THESE NOTES, IT SHALL BE UNDERSTOOD THAT REFERENCE IS MADE TO THE RULING AND JUDGEMENT OF SEBAGO TECHNICS, INC.
21. THE GENERAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PROTECTION FOR THE WORK UNTIL TURNED OVER TO THE OWNER.
22. THE GENERAL CONTRACTOR SHALL MAINTAIN A CURRENT AND COMPLETE SET OF CONSTRUCTION DRAWINGS ON SITE DURING ALL PHASES OF CONSTRUCTION FOR USE OF ALL TRADES.
23. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.
24. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. ANY MODIFICATION TO SUIT FIELD DIMENSION AND CONDITION SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ANY WORK.
25. BEFORE THE FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL REMOVE ALL EQUIPMENT AND MATERIALS, REPAIR OR REPLACE PRIVATE OR PUBLIC PROPERTY WHICH MAY HAVE BEEN DAMAGED OR DESTROYED DURING CONSTRUCTION, CLEAN THE AREAS WITHIN AND ADJACENT TO THE PROJECT WHICH HAVE BEEN OBSTRUCTED BY HIS/HER OPERATIONS, AND LEAVE THE PROJECT AREA NEAT AND PRESENTABLE.
26. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING FLOW THROUGH THE EXISTING CLOSED STORM DRAINAGE SYSTEM DURING CONSTRUCTION AND SHALL SUBMIT A WORK PLAN FOR APPROVAL BY THE DESIGN ENGINEER.
27. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE MAY OF 2023 BY COLE PETERS, PROFESSIONAL WETLAND SCIENTIST OF SEBAGO TECHNICS, INC. AND LOCATED BY GROUND SURVEY. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND NORTHEAST REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS.

UTILITY DEMOLITION NOTES

1. PROTECT EXISTING BOUNDARY LINE MONUMENTATION. IF DISTURBED, EXISTING MONUMENTATION TO BE RESET BY A PROFESSIONAL LAND SURVEYOR.
2. DEMOLITION OF UTILITIES REQUIRING TREE REMOVAL SHALL BE COORDINATED WITH THE OWNER AND IN ACCORDANCE WITH PROJECT PLANS.
3. UTILITY DEMOLITION SHALL BE COMPLETED IN COORDINATION WITH NEW INFRASTRUCTURE. CONTRACTOR SHALL ENSURE EXISTING SURFACE DRAINAGE IS MAINTAINED DURING CONSTRUCTION.
4. EXISTING SEWER AND STORM DRAINAGE INFRASTRUCTURE TO REMAIN ACTIVE DURING CONSTRUCTION AND UPON COMPLETION OF PROJECT. DEMOLITION/CONSTRUCTION ACTIVITIES SHALL NOT INTERFERE OR IMPEDE EXISTING FLOWS. CONTRACTOR SHALL PROVIDE BYPASS PUMPING AS REQUIRED DURING SEWER AND STORM DEMOLITION AND NEW CONSTRUCTION. DAMAGE TO EXISTING SEWER INFRASTRUCTURE SHALL BE REPAIRED BY CONTRACTOR AT THEIR EXPENSE.
5. DEMOLITION SHOWN IS FOR MAJOR SITE ELEMENTS TO BE DEMOLISHED. OTHER MINOR DEMOLITION MAY BE REQUIRED AS PART OF CONSTRUCTION AND SHALL BE CONSIDERED INCIDENTAL TO THE COST OF CONSTRUCTION. COORDINATE ALL DEMOLITION WORK WITH SITE AND BUILDING DRAWINGS.
6. PRIOR TO ANY DEMOLITION, THE CONTRACTOR SHALL SUBMIT A SEQUENCE OF DEMOLITION PLANS TO THE OWNER. THIS PLAN SHALL DEPICT LOCATIONS OF PROPOSED TERMINATIONS AND ANY TEMPORARY SERVICES THAT WILL BE NEEDED.
7. CONTRACTOR REQUIRED TO CONFIRM/MAINTAIN BENCHMARKS. IF IMPACTED CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION/RELOCATION AND COORDINATION WITH PROJECT TEAM.

GRADING & EROSION NOTES

1. SIDESLOPES SHALL NOT BE STEEPER THAN 3:1 (H:V) EXCEPT AS OTHERWISE IDENTIFIED ON THIS PLAN. ALL SIDESLOPES STEEPER THAN 3:1 (H: V) SHALL BE LINED WITH EROSION CONTROL BLANKET, OR ADDITIONAL MEASURES AS INDICATED.
2. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENT CONTROL BMPS" MANUAL PUBLISHED BY BUREAU OF LAND AND WATER QUALITY MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
3. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE LOAM AND SEED PER DETAIL.
4. SEE UTILITY DRAWINGS FOR PIPE AND STRUCTURE DATA TABLES.

CONSTRUCTION PLAN

1. PROVIDE EROSION CONTROL MEASURES PRIOR TO SITE DISTURBANCE.
2. WETLANDS, ASSOCIATED SETBACKS AND STREAM SETBACKS TO BE STAKED BY OWNER PRIOR TO SITE DISTURBANCE.
3. GRADING AND CLEARING LIMITS SHALL NOT ENCROACH ON ADJACENT PROPERTIES UNLESS NOTED OTHERWISE ON THE PLANS.
4. OPEN AREAS SHALL BE LIMITED TO AREAS BEING WORKED IN. THE AREA STRIPPED OF EXISTING VEGETATION AT ANY GIVEN TIME SHALL BE MINIMIZED AND BE PHASED WHERE PRACTICAL SO THAT AREAS ARE REVEGETATED AND PERMANENTLY STABILIZED BEFORE ADDITIONAL AREAS ARE STRIPPED OF EXISTING VEGETATION. STABILIZE CONSTRUCTION AREAS BY USE OF RIPRAP, SEED, MULCH, OR OTHER GROUND COVER WITHIN ONE WEEK FROM THE TIME IT WAS ACTIVELY WORKED. SURFACES SHALL BE STABILIZED PRIOR TO DIRECTING STORMWATER RUNOFF TOWARD STORMWATER BMPS. PLEASE REFER TO DRAINAGE PLANS FOR WATERSHED AREAS.

LANDSCAPE NOTES

1. PLANT QUANTITIES SHOWN ON PLANT LISTS ARE FOR CONVENIENCE TO THE CONTRACTOR ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ALL PLANT MATERIAL INSTALLATION AS SHOWN ON PLANS.
2. SIZE AND GRADING STANDARDS OF PLANT MATERIALS SHALL CONFORM TO THE LATEST EDITION OF "U.S.A. STANDARD FOR NURSERY STOCK," BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
3. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
4. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING, STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE BY THE OWNER.
5. PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR BY THE CONTRACTOR AND A PERIOD OF TWO YEARS THEREAFTER BY THE OWNER FROM DATE OF INSTALLATION. DURING THE ONE YEAR GUARANTEE PERIOD, DEAD PLANT MATERIAL SHALL BE REPLACED AT NO COST TO THE OWNER. AT THE END OF THE ONE YEAR PERIOD, THE CONTRACTOR SHALL OBTAIN FINAL ACCEPTANCE FROM THE OWNER.
6. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
7. EXISTING TREES TO BE PRESERVED WILL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
8. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF THE UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER.
9. ALL SHRUB BEDS SHALL BE MULCHED WITH 3" CLEAN SHREDDED DARK BROWN BARK MULCH.
10. THE CONTRACTOR SHALL PROVIDE 4" LOAM FOR ALL AREAS TO BE SODDED OR SEEDED. PLANTING AREAS SHALL RECEIVE 12" ROLLED THICKNESS OF LOAM. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
11. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT (AND MUNICIPAL AUTHORITY, IF APPLICABLE) PRIOR TO INSTALLATION ON SITE.
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR PERENNIAL AND ANNUAL FLOWER BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
13. DURING CLEANING OF SITE AND PRIOR TO TREE AND SHRUB INSTALLATION, CONTRACTOR SHALL REMOVE INVASIVE PLANTS. AREAS WHERE INVASIVE PLANTS ARE REMOVED AND NO OTHER PLANTING IS PROPOSED, AREA SHALL BE LOAM AND SEEDED.

UTILITY NOTES

1. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION. PROTECT EXISTING ONSITE SEWER PIPE AND ADJUST MANHOLE RIMS TO GRADE WHERE APPLICABLE.
2. ALL GRAVITY CONDUIT PIPES SHALL BE INSTALLED USING A PIPE LASER AND TARGET SYSTEM THROUGH THE PIPE. ON PIPE RUNS 50 FEET OR LESS, THE CONTRACTOR SHALL REQUEST ENGINEER'S APPROVAL TO USE OR NOT USE A GROUND LASER.
3. MAINTAIN MINIMUM 5'-6" OF COVER ABOVE TOP OF WATER SERVICE PIPE.
4. MAINTAIN MINIMUM 10 FEET HORIZONTAL SEPARATION BETWEEN WATER SERVICES AND OTHER UTILITIES. MAINTAIN MINIMUM 18 INCHES VERTICAL SEPARATION BETWEEN WATER SERVICES AND OTHER UTILITIES.
5. LOWER OR RAISE WATER SERVICES AS REQUIRED TO MAINTAIN MINIMUM 12 INCH VERTICAL SEPARATION FROM OTHER UTILITIES. WATER SERVICES CROSSING SEWERS SHALL MAINTAIN 12 INCH MINIMUM SEPARATION BETWEEN THE BOTTOM OF WATER LINE AND TOP OF SEWER UNLESS NOTED OTHERWISE ON THE PLANS.
6. PIPE:
   - SEWER PIPE SHALL BE SDR 35 PVC OR APPROVED EQUAL.
   - STORMDRAIN SHALL BE ADS N-12 DUAL WALL HDPE PIPE WITH SMOOTH-WALLED INTERIOR OR APPROVED EQUAL UNLESS NOTED OTHERWISE ON THE UTILITY PLANS.
   - WATER PIPE AND FITTINGS SHALL CONFORM TO THE DISTRICT HAVING JURISDICTION'S SPECIFICATIONS. MAIN WATER SERVICE PIPE SHALL BE DUCTILE IRON, CLASS 52 PUSH-ON PIPE MEETING THE REQUIREMENTS OF AWWA/ANSI C-111/A21.11 (LATEST REVISION). PIPE SHALL BE CEMENT-LINED AWWA/ANSI C104/A21.4 WITH LINING TWICE THE THICKNESS SPECIFIED, AND COATED TWICE WITH A BITUMINOUS SEAL COATING. PROVIDE THRUST BLOCKS AT ALL WATER SERVICE BENDS.
7. COORDINATE ALL UTILITY LOCATIONS AND INVERTS AT BUILDING WITH ARCHITECTURAL, STRUCTURAL AND PLUMBING DRAWINGS.
8. WATER SERVICE ENTRANCE DESIGNS TO INCLUDE METERS AND BACKFLOW PREVENTERS TO MEET ALL STANDARDS AND REQUIREMENTS OF THE DISTRICT HAVING JURISDICTION.
9. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY GRADE CHANGES THAT WILL IMPACT STORM DRAINAGE INFRASTRUCTURE OR OTHER UTILITIES.
10. UTILITIES WITHIN 5 FEET FROM FACE OF BUILDING ARE COORDINATED ON RELEVANT M.E.P. DRAWINGS. CONTRACTOR SHALL COORDINATE INVERTS, CONNECTIONS AND MATERIALS WITH ALL DRAWINGS.
11. CONTRACTOR SHALL FURNISH AND INSTALL TRENCHING, MATERIALS AND BACKFILL FOR ALL UTILITIES. ELECTRICAL AND TELECOM/DATA PROVIDERS WILL PULL PRIMARY SERVICE TO TRANSFORMER AND PANEL. CONTRACTOR RESPONSIBLE FOR TIMING AND COORDINATION WITH UTILITIES AND DRAWINGS. COORDINATE WITH ELECTRICAL DRAWINGS FOR CONDUIT SCHEDULE, TYPE AND SIZES.
12. COORDINATE ALL WATER RELATED WORK WITH DISTRICT HAVING JURISDICTION.
13. THE CONTRACTOR IS HEREBY CAUTIONED THAT ALL SITE FEATURES SHOWN HEREON ARE BASED ON FIELD OBSERVATIONS BY THE SURVEYOR AND BY INFORMATION PROVIDED BY UTILITY COMPANIES. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT DIG SAFE (811) AT LEAST THREE (3) BUT NOT MORE THAN THIRTY (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES.
14. CONTRACTOR SHALL BE AWARE THAT DIG SAFE ONLY NOTIFIES ITS "MEMBER" UTILITIES ABOUT THE DIG. WHEN NOTIFIED, DIG SAFE WILL ADVISE CONTRACTOR OF MEMBER UTILITIES IN THE AREA. CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND CONTACTING NON-MEMBER UTILITIES DIRECTLY. NON-MEMBER UTILITIES MAY INCLUDE TOWN OR CITY WATER AND SEWER DISTRICTS AND SMALL LOCAL UTILITIES, AS WELL AS USG PUBLIC WORKS SYSTEMS.
15. CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF 23 MRSA 3360-A. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITIES TO OBTAIN AUTHORIZATION PRIOR TO RELOCATION OF ANY EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS. IF A UTILITY CONFLICT ARISES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER, THE MUNICIPALITY AND APPROPRIATE UTILITY COMPANY PRIOR TO PROCEEDING WITH ANY RELOCATION.

TYPICAL ABBREVIATIONS

AC	ACRE
AFG	ABOVE FINISH GRADE
APPROX.	APPROXIMATELY
BC	BOTTOM OF CURB
BCC	BITUMINOUS CONCRETE CURB
BIT	BITUMINOUS
BLDG	BUILDING
BW	BOTTOM OF WALL
CB	CATCH BASIN
CONC	CONCRETE
CONT	CONTINUOUS
DI	DUCTILE IRON
DIA	DIAMETER
DMH	DRAIN MANHOLE
E.W.	EACH WAY
ELEV	ELEVATION
FFE	FINISH FLOOR ELEVATION
FIN. GR.	FINISH GRADE
FTG	FOOTING
HDPE	HIGH DENSITY POLYETHYLENE
HGT	HEIGHT
HMA	HOT MIX ASPHALT
INV	INVERT
LF	LINEAR FEET
OC	ON CENTER
PVC	POLYVINYL CHLORIDE
PWD	PORTLAND WATER DISTRICT
R	RADIUS
R.O.W.	RIGHT OF WAY
S.F.	SQUARE FEET
SCH	SCHEDULE
SCSC	SLIPFORM CONCRETE SLOPED CURB
SCVC	SLIPFORM CONCRETE VERTICAL CURB
SD	STORM DRAIN
SGC	SLOPED GRANITE CURB
SMH	SEWER MANHOLE SPECS SPECIFICATIONS
SS	SANITARY SEWER
SSGC	SALVAGED SLOPED GRANITE CURB
SVGC	SALVAGED VERTICAL GRANITE CURB
TC	TOP OF CURB
TW	TOP OF WALL
TYP	TYPICAL
VGC	VERTICAL GRANITE CURB
VIF	VERIFY IN FIELD

OWENS A. MCCULLOUGH PE 7122 — AMY BELL SEGAL RLA 2265

STATE OF MAINE — OWENS A. MCCULLOUGH — No. 7122 — REGISTERED PROFESSIONAL ENGINEER

REV.	BY	DATE	STATUS
F.	OAM	11/15/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/18/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

NOTES & LEGEND

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET G-002

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19059 NL.dwg - TAB:G-002 Notes & Legend

NOTE: FOR INDIVIDUAL TREE REMOVAL AND PRESERVATION, PLEASE REFER TO THE TREE PRESERVATION & REMOVAL PLAN

CB 9437
RIM=74.87
INV IN=69.07, 6" HDPE, 2
INV OUT=68.86, 12" HDPE, 5
SUMP=65.77

AVIS RENTAL

JETPORT BLVD.

INTERNATIONAL PKWY.

LONG TERM PARKING

JETPORT ACCESS ROAD

PARKING GARAGE

EMBASSY SUITES

PWM PARK AND SHINE

WESTBROOK ST.

PARK' N JET

DEMOLITION PLAN KEY NOTES

1. REMOVE VEHICULAR ASPHALT PAVING
2. REMOVE PEDESTRIAN ASPHALT PAVING
3. REMOVE GRANITE CURB
4. REMOVE TREES & REMOVE STUMPS
5. REMOVE GRAVEL SURFACE
6. REMOVE LIGHT POLE & BASE
7. REMOVE SIGN
8. REMOVE CONCRETE ENTRY ISLAND & ENTRY/EXIT GATE EQUIPMENT
9. REMOVE INDIVIDUAL TREE & STUMP
10. REMOVE DRAINAGE STRUCTURE
11. REMOVE DRAINAGE STRUCTURE COVER
12. REMOVE STORM DRAIN PIPE
13. REMOVE SCULPTURE AND STORE AT LOCATION SPECIFIED BY OWNER
14. REMOVE & SALVAGE WAYFINDING SIGN FOR REINSTALLATION
15. REMOVE OVERHEAD UTILITY LINE
16. REMOVE CHAINLINK FENCE
17. REMOVE EXISTING UTILITY POLE

DEMOLITION LEGEND

DEMO PAVEMENT

DEMO GRAVEL

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

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19059 DEMO.dwg, TAB:C-002 DEMO PLAN 1

OWENS A. MCCULLOUGH PE 7122
AMY BELL SEGAL RLA 2265

STATE OF MAINE
OWENS A. MCCULLOUGH
No. 7122
REGISTERED PROFESSIONAL ENGINEER

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SEBAGO TECHNICS
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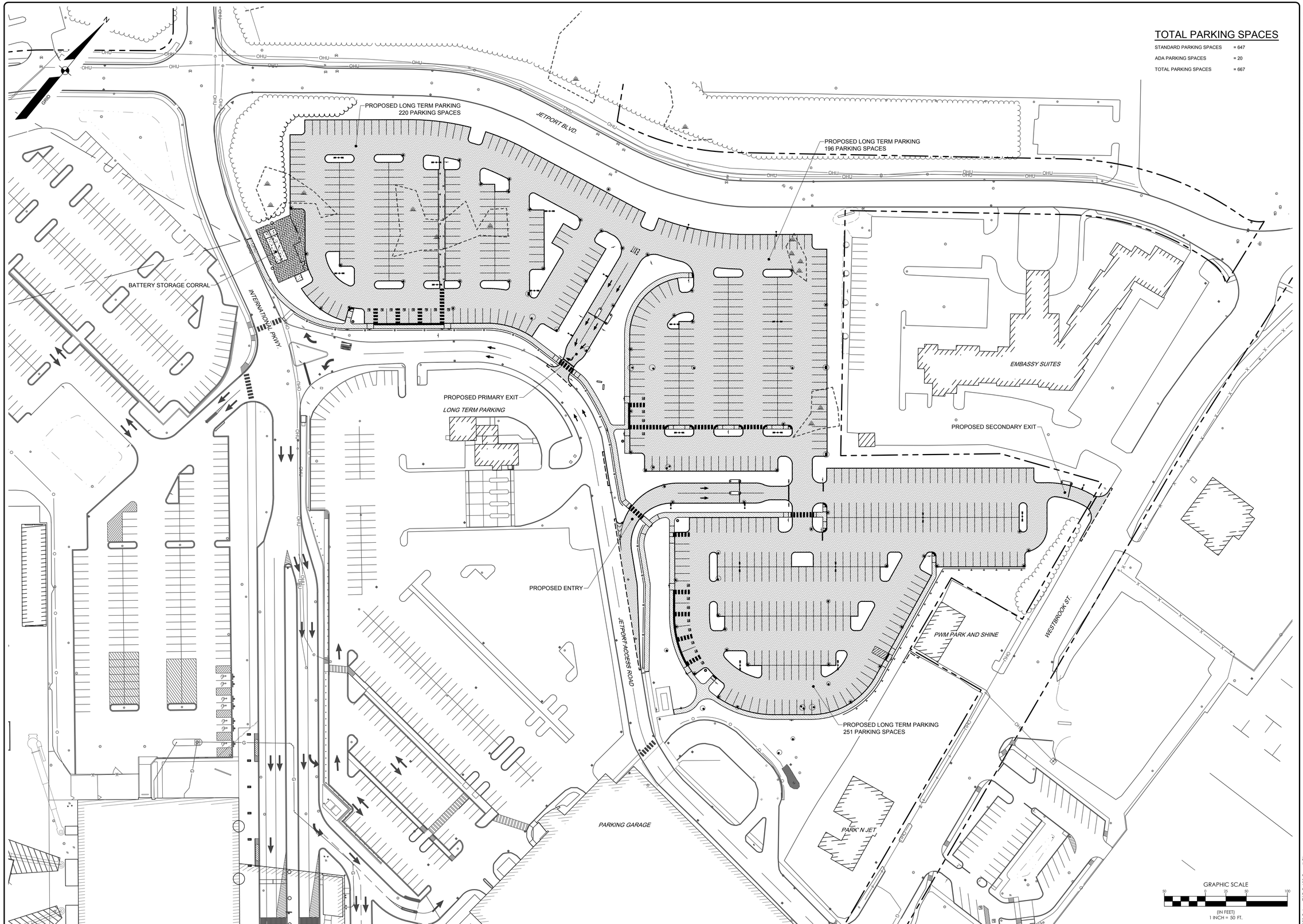
DEMOLITION PLAN

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET C-003



AMY BELL SEGAL, RLA 2265

REGISTERED LANDSCAPE ARCHITECT STATE OF MAINE AMY BELL SEGAL No.2265

OWENS A. MCCULLOUGH PE 7122

STATE OF MAINE OWENS A. MCCULLOUGH No. 7122 REGISTERED PROFESSIONAL ENGINEER

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SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel. 207-200-2100

OVERALL SITE PLAN

OF:

PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

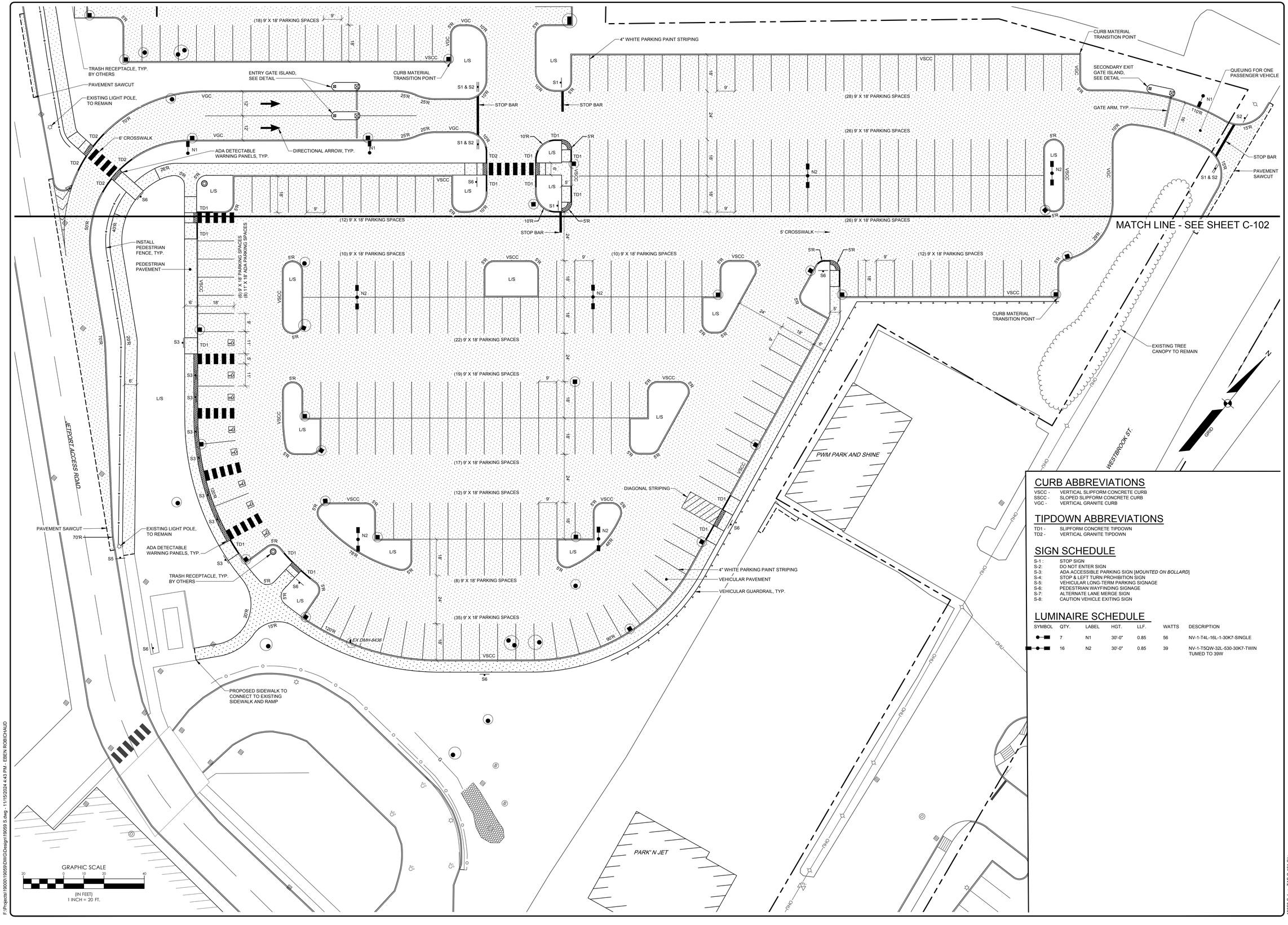
FOR:

PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET C-100

19059 S.dwg, TAB:C-100 Overall Site



CURB ABBREVIATIONS

VSCC - VERTICAL SLIPFORM CONCRETE CURB
SSCC - SLOPED SLIPFORM CONCRETE CURB
VGC - VERTICAL GRANITE CURB

TIPDOWN ABBREVIATIONS

TD1 - SLIPFORM CONCRETE TIPDOWN
TD2 - VERTICAL GRANITE TIPDOWN

SIGN SCHEDULE

S-1 : STOP SIGN
S-2: DO NOT ENTER SIGN
S-3: ADA ACCESSIBLE PARKING SIGN [*MOUNTED ON BOLLARD*]
S-4: STOP & LEFT TURN PROHIBITION SIGN
S-5: VEHICULAR LONG-TERM PARKING SIGNAGE
S-6: PEDESTRIAN WAYFINDING SIGNAGE
S-7: ALTERNATE LANE MERGE SIGN
S-8: CAUTION VEHICLE EXITING SIGN

LUMINAIRE SCHEDULE

SYMBOL	QTY.	LABEL	HGT.	LLF.	WATTS	DESCRIPTION
	7	N1	30'-0"	0.85	56	NV-1-T4L-16L-1-30K7-SINGLE
	16	N2	30'-0"	0.85	39	NV-1-T5QW-32L-530-30K7-TWIN TUMED TO 39W

AMY BELL SEGAL, RLA 2265

REGISTERED LANDSCAPE ARCHITECT STATE OF MAINE AMY BELL SEGAL No.2265

OWENS A. MCCULLOUGH, PE 7122

STATE OF MAINE OWENS A. MCCULLOUGH No. 7122 REGISTERED PROFESSIONAL ENGINEER

REV.	BY	DATE	STATUS
F.	OAM	11/15/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/19/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

SITE PLAN

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-101

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19059 S.dwg - TAB:C-101 Site

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GRAPHIC SCALE
20 0 10 20 40
[IN FEET]
1 INCH = 20 FT.

MATCH LINE - SEE SHEET C-103

JETPORT BLVD.

7" HARDWOOD
8" HARDWOOD
13" ASH
12" ASH
12" ASH
15" ASH

EMBASSY SUITES

CURB MATERIAL TRANSITION POINT
EXIT
(21) 9' X 18' PARKING SPACES
342'R
PEDESTRIAN PAVEMENT
VEHICULAR PAVEMENT
(18) 9' X 18' PARKING SPACES
(4) 11' X 18' ADA PARKING SPACES
(13) 9' X 18' PARKING SPACES
(14) 9' X 18' PARKING SPACES
(20) 9' X 18' PARKING SPACES
(28) 9' X 18' PARKING SPACES
INSTALL PEDESTRIAN FENCE, TYP.
5' CROSSWALK
(18) 9' X 18' PARKING SPACES
TRASH RECEPTACLE, TYP. BY OTHERS
PAVEMENT SAWCUT
EXISTING LIGHT POLE, TO REMAIN
ENTRY GATE ISLAND, SEE DETAIL
CURB MATERIAL TRANSITION POINT
STOP BAR
6' CROSSWALK
ADA DETECTABLE WARNING PANELS, TYP.
DIRECTIONAL ARROW, TYP.
(12) 9' X 18' PARKING SPACES
4" WHITE PARKING PAINT STRIPING
(28) 9' X 18' PARKING SPACES
(26) 9' X 18' PARKING SPACES
SECONDARY EXIT GATE ISLAND, SEE DETAIL
QUEUING FOR ONE PASSENGER VEHICLE
GATE ARM, TYP.
MATCH LINE - SEE SHEET C-101

AMY BELL SEGAL, RLA 2265

REGISTERED LANDSCAPE ARCHITECT
STATE OF MAINE
AMY BELL SEGAL
No. 2265

OWENS A. MCCULLOUGH, PE 7122

STATE OF MAINE
OWENS A. MCCULLOUGH
No. 7122
REGISTERED PROFESSIONAL ENGINEER

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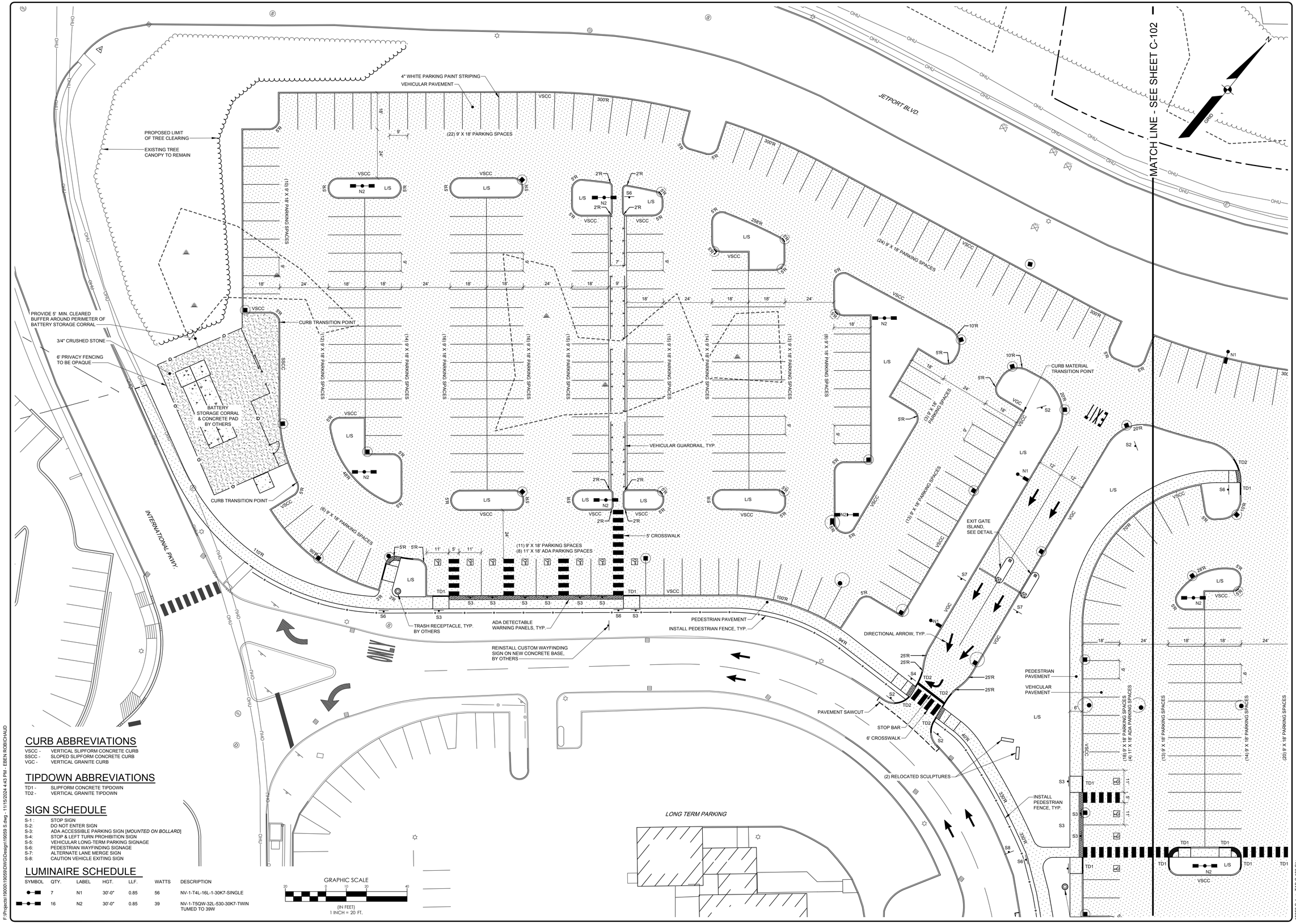
SITE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-102

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19059 S.dwg, TAB:C-102 Site



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AMY BELL SEGAL, RLA 2265

OWENS A. MCCULLOUGH, PE 7122

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel. 207-200-2100

SITE PLAN

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
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DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-103

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19059 S.dwg, TAB:C-103 Site

PROPOSED WETLAND IMPACT: 5,812 SF

PROPOSED WETLAND IMPACT: 2,806 SF

PROPOSED WETLAND IMPACT: 791 SF
(PREVIOUSLY PERMITTED BUT NOT IMPACTED WETLAND, L-26841-TC-A-N)

PREVIOUSLY PERMITTED AND IMPACTED WETLAND
(L-26841-TC-A-N)

PROPOSED WETLAND IMPACT: 1,742 SF

JETPORT BLVD.

INTERNATIONAL PKWY.

AVIS RENTAL

EMBASSY SUITES

LONG TERM PARKING

PARKING GARAGE

JETPORT ACCESS ROAD

PWM PARK AND SHINE

WESTBROOK ST.

PARK 'N JET

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

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OWENS A. MCCULLOUGH, PE 7122 AMY BELL SEGAL, RLA 2265

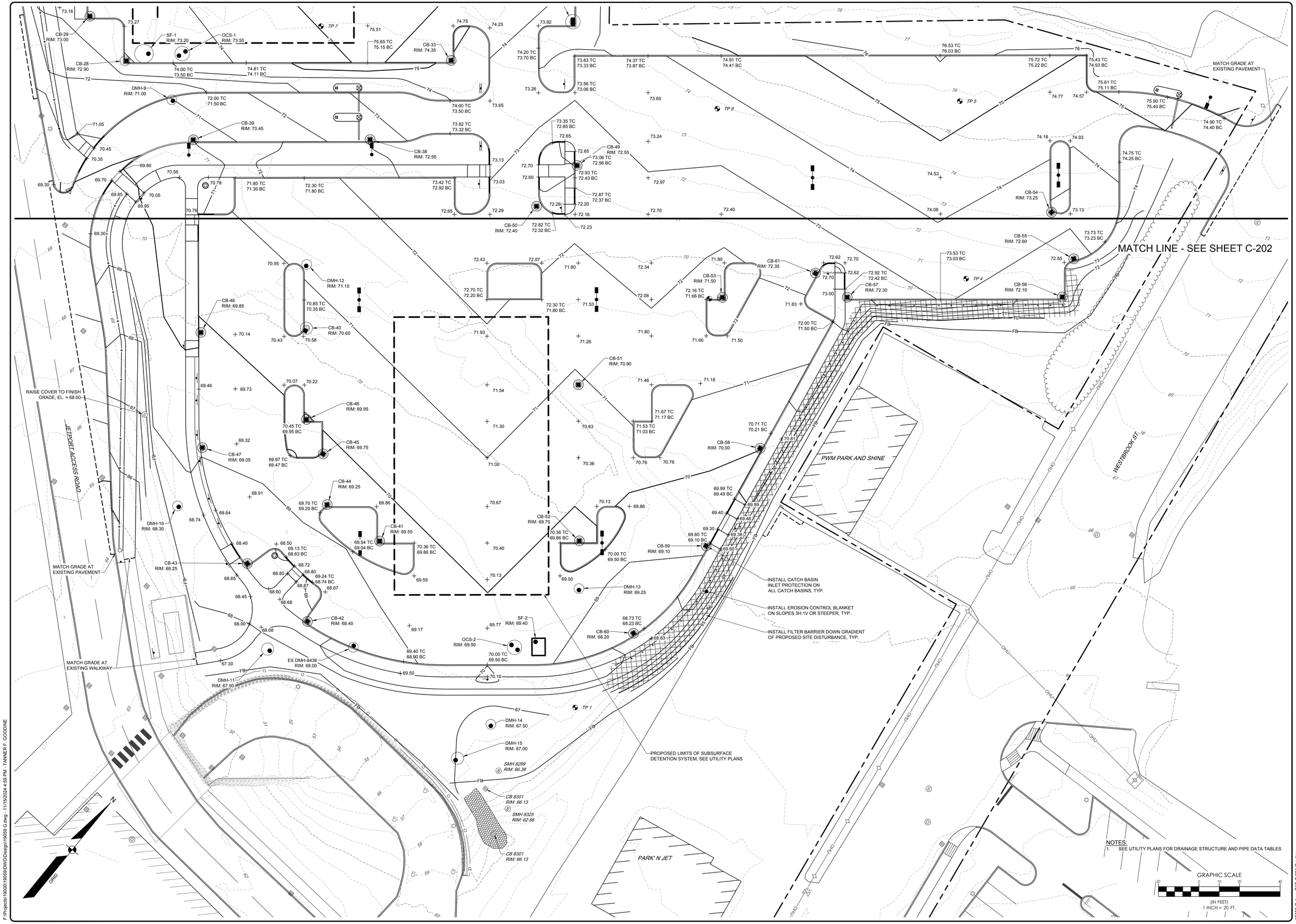
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

OVERALL GRADING PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET C-200

19059 G.dwg, TAB:C-200 Overall Grading



REV.	BY	DATE	STATUS
F.	OAM	11/15/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
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OWENS A. MCCULLOUGH PE 7122

AMY BELL SEGAL, RLA 2265

STATE OF MAINE
OWENS A. MCCULLOUGH
No. 7122
REGISTERED PROFESSIONAL ENGINEER

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

GRADING PLAN

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-201

F:\Projects\19000\19059\DWG\Design\19059 G.dwg - 11/15/2024 4:59 PM - TANNER F. GOODINE

19059 G.dwg, TAB:C-201 Grading

MATCH LINE - SEE SHEET C-203

JETPORT BLVD.

EMBASSY SUITES

GRID

PROPOSED WETLAND IMPACT: 791 SF
(PREVIOUSLY PERMITTED BUT NOT IMPACTED WETLAND, L-26841-TC-A-N)

INSTALL FILTER BARRIER DOWN GRADIENT OF PROPOSED SITE DISTURBANCE, TYP.

INSTALL EROSION CONTROL BLANKET ON SLOPES 3H:1V OR STEEPER, TYP.

PROPOSED LIMITS OF SUBSURFACE DETENTION SYSTEM, SEE UTILITY PLANS

INSTALL CATCH BASIN INLET PROTECTION ON ALL CATCH BASINS, TYP.

PREVIOUSLY PERMITTED AND IMPACTED WETLAND (L-26841-TC-A-N)

PROPOSED WETLAND IMPACT: 1,742 SF

INSTALL STONE DRIP EDGE, SEE DETAIL

MATCH GRADE AT EXISTING PAVEMENT

MATCH LINE - SEE SHEET C-201

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

OWENS A. MCCULLOUGH PE 7122

AMY BELL SEGAL, RLA 2265

STATE OF MAINE
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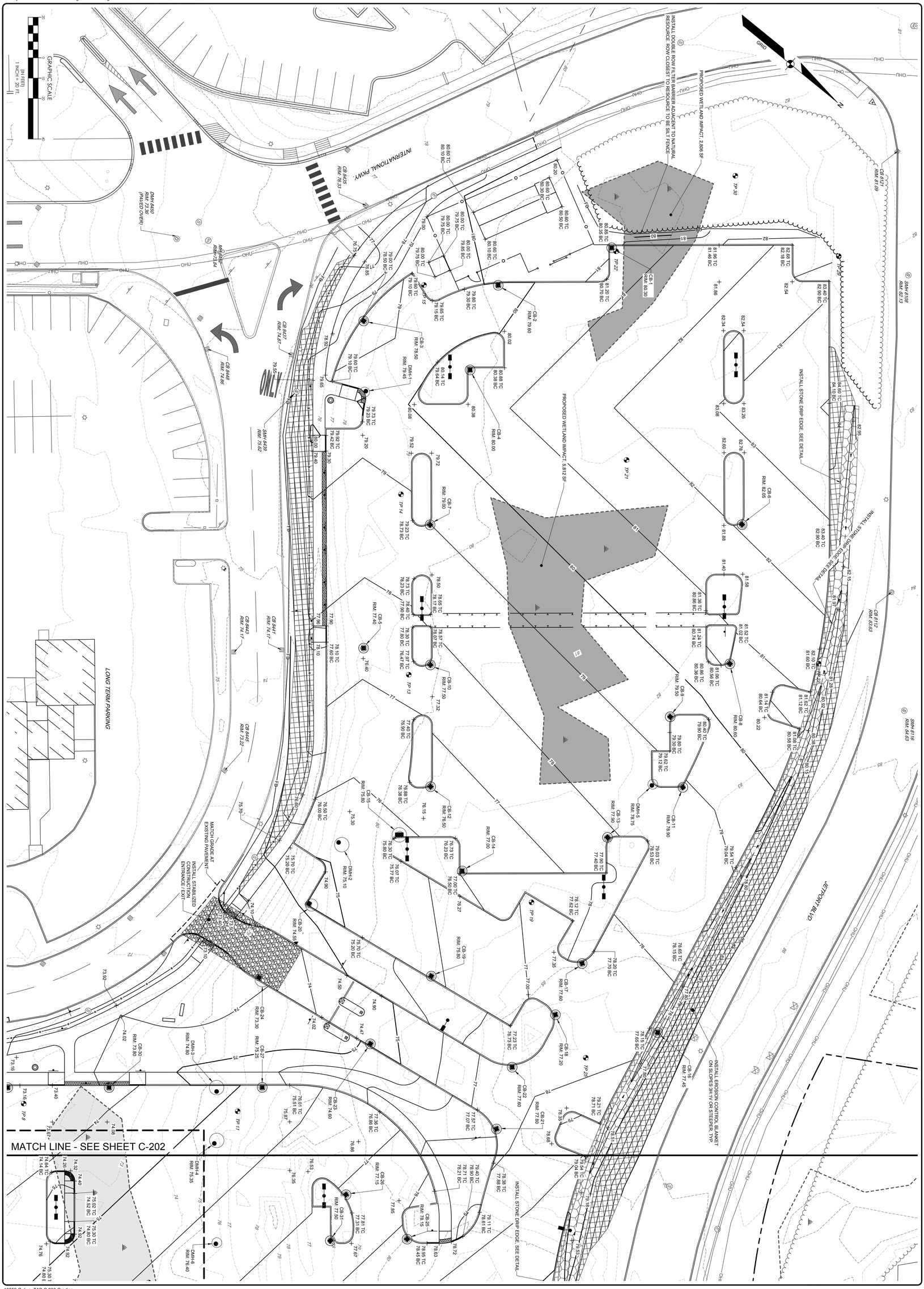
DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-202

F:\Projects\19000\19059\DWG\Design\19059 G.dwg - 11/15/2024 4:59 PM - TANNER F. GOODINE

19059 G.dwg, TAB C-202 Grading

F:\Projects\19000\19059\DWG\Design\19059 G.dwg - 11/15/2024 4:59 PM - TANNER F. GOODINE



19059 G.dwg, TAB-C-203 Grading

OWENS A. MCCULLOUGH PE 7122

AMY BELL SEGAL RLA 2265

SHEET C-203

PROJECT	19059
DATE	02/29/2024
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GRADING PLAN

OF:

PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

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CITY OF PORTLAND
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STATE OF MAINE
OWENS A. MCCULLOUGH
No. 7122
REGISTERED PROFESSIONAL ENGINEER

Page 1910

UTILITY NOTES:

1. ELECTRICAL LAYOUT SHOWN IS PRELIMINARY. ALL ELECTRICAL WORK, INCLUDING CONDUIT SIZE, TYPE, AND ROUTING TO BE COORDINATED WITH ELECTRICAL ENGINEER.
2. NUMBER OF CONDUITS REQUIRED TO PROVIDE NECESSARY SERVICES TO ENTRY/EXIT GATES, FUTURE ELECTRICAL VEHICLE (EV) CHARGING STATIONS, AND POWER TO SITE LIGHTING TO BE DETERMINED BY ELECTRICAL ENGINEER PRIOR TO CONSTRUCTION.
3. SEE SHEET C-304 FOR PIPE AND STRUCTURE DATA TABLES.

AVIS RENTAL
JETPORT BLVD.
INTERNATIONAL PKWY.
LONG TERM PARKING
SUBSURFACE DETENTION & TREATMENT SYSTEM #1 (SF-1)
EMBASSY SUITES
SUBSURFACE DETENTION & TREATMENT SYSTEM #2 (SF-2)
JETPORT ACCESS ROAD
PWM PARK AND SHINE
WESTBROOK ST.
PARKING GARAGE
PARK' N JET

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

AMY BELL SEGAL, RLA 2265

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SHEET C-300

F:\Projects\19000\19059\DWG\Design\19059 U.dwg - 11/15/2024 4:45 PM - EBEN ROBICHAUD

19059 U.dwg, TAB:C-300 Overall Utility

MATCH LINE - SEE SHEET C-302

CB-29
SD-45
SD-34
18" SD
INV=62.50
SD-47
OCS-1
CB-28
SF-1
SD-46
SD-48
INSTALL WEIR PANEL IN STRUCTURE, SEE OCS-1 DETAIL
CB-33
CAP EXISTING PIPE AND ABANDON IN PLACE
DMH-9
CB-39
CB-38
SD-52
SD-53
CB-37
CB-49
SD-67
CB-50
CB-54
SD-70
CB-53
CB-61
SD-73
CB-57
SD-72
CB-55
SD-71
CB-56
DMH-12
CAP EXISTING PIPES AND ABANDON IN PLACE
INSTALL DRAINAGE STRUCTURE WITH 4 FOOT SUMP FOR PRETREATMENT PRIOR TO ENTERING CMP DETENTION
24" CD
INV=61.30
SD-63
SD-89
CB-48
SD-62
CB-40
SD-54
CB-51
CB-46
SD-59
CB-47
SD-61
CB-45
SD-51
8'
3'
PROPOSED 96" SUBSURFACE CMP DETENTION, #2, SEE DETAILS
SD-46
CB-58
PWM PARK AND SHINE
WESTBROOK ST.
JETPORT ACCESS ROAD
CB-44
SD-50
CB-52
SD-15
CB-59
MAINTAIN MINIMUM 1' VERTICAL SEPARATION BETWEEN PROPOSED STORM DRAIN AND EXISTING SEWER PIPES.
DMH-10
SD-58
SD-60
CB-41
SD-67
24" SD
INV=62.80
CB-43
SD-55
DMH-13
SD-68
INSTALL DRAINAGE STRUCTURE WITH 4 FOOT SUMP FOR PRETREATMENT PRIOR TO ENTERING CMP DETENTION
SD-69
SD-76
SD-77
INSTALL DRAIN MANHOLE AT EXISTING 18" SD PIPE, INV. = 56.01
CB-42
DMH-11
INSTALL WEIR PANEL IN STRUCTURE, SEE OCS-1 DETAIL
SD-90
SD-78
CB-60
SD-79
OCS-2
SD-81
STORMFILTER TREATMENT UNIT #2 (SF-2)
SF-2
EX DMH-8436
REPLACE CATCH BASIN RIM
WITH SOLID DRAIN MANHOLE COVER
DMH-14
SD-82
MAINTAIN MINIMUM 1' VERTICAL SEPARATION BETWEEN PROPOSED STORM DRAIN AND EXISTING SEWER PIPES.
EXISTING 12" SEWER, TO REMAIN
SAWCUT EXISTING PIPE & CONNECT NEW STUB WITH WATERTIGHT SEAL
DMH-15
SMH 8299
RIM: 66.38
SAWCUT EXISTING PIPE & CONNECT NEW STUB WITH WATERTIGHT SEAL
INSTALL DRAIN MANHOLE AT EXISTING 24" SD PIPE, INV. = 55.67
CB 8301
RIM: 66.13
SMH 8325
RIM: 62.86
CB 8301
RIM: 66.13
PARK' N JET
GRID
N
GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

AMY BELL SEGAL, RLA 2265

OWENS A. MCCULLOUGH PE 7122

STATE OF MAINE
OWENS A. MCCULLOUGH
No. 7122
REGISTERED PROFESSIONAL ENGINEER

REV.	BY	DATE	STATUS
F.	OAM	11/15/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/19/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

UTILITY PLAN

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-301

F:\Projects\19000\19059\DWG\Design\19059 U.dwg - 11/15/2024 4:45 PM - EBEN ROBICHAUD

19059 U.dwg, TAB:C-301 Utility

MATCH LINE - SEE SHEET C-303

MATCH LINE - SEE SHEET C-301

JETPORT BLVD.

EMBASSY SUITES

CB-16
CB-18
CB-22
CB-21
CB-23
CB-24
CB-25
CB-26
CB-27
CB-28
CB-29
CB-30
CB-31
CB-32
CB-33
CB-34
CB-35
CB-36
CB-37
CB-38
CB-39
CB-49
CB-50
CB-54
CB 8267
RIM: 79.95
DMH 8265
RIM: 80.50
SMH 8139
RIM: 80.64
CB 8135
RIM: 79.95
CB 8267
RIM: 75.37
DMH 8265
RIM: 75.64
CB 8263
RIM: 75.25
DMH-3
DMH-4
DMH-6
DMH-7
DMH-9
SD-20
SD-24
SD-25
SD-26
SD-27
SD-28
SD-29
SD-30
SD-31
SD-32
SD-33
SD-34
SD-35
SD-36
SD-37
SD-38
SD-39
SD-40
SD-41
SD-42
SD-43
SD-45
SD-46
SD-47
SD-48
SD-49
SD-50
SD-51
SD-52
SD-53
UD-2
UD
OHU
W
S
SD
GRD
INSTALL STONE DRIP EDGE, SEE DETAIL
INSTALL DRAINAGE CLEANOUT
INSTALL DRAINAGE STRUCTURE WITH 4 FOOT SUMP FOR PRETREATMENT PRIOR TO ENTERING CMP DETENTION
PROPOSED SUBSURFACE CMP DETENTION, #1, SEE DETAIL
36" SD INV=65.10
12" SD INV=62.50
18" SD INV=62.50
8'
3'
INSTALL WEIR PANEL IN STRUCTURE, SEE OCS-1 DETAIL
CAP EXISTING PIPE AND ABANDON IN PLACE
OCS-1
SF-1

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

F:\Projects\19000\19059\DWG\Design\19059 U.dwg - 11/15/2024 4:45 PM - EBEN ROBICHAUD

19059 U.dwg, TAB C-302 Utility

OWENS A. MCCULLOUGH PE 7122
AMY BELL SEGAL RLA 2265

STATE OF MAINE
OWENS A. MCCULLOUGH
No. 7122
REGISTERED PROFESSIONAL ENGINEER

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UTILITY PLAN

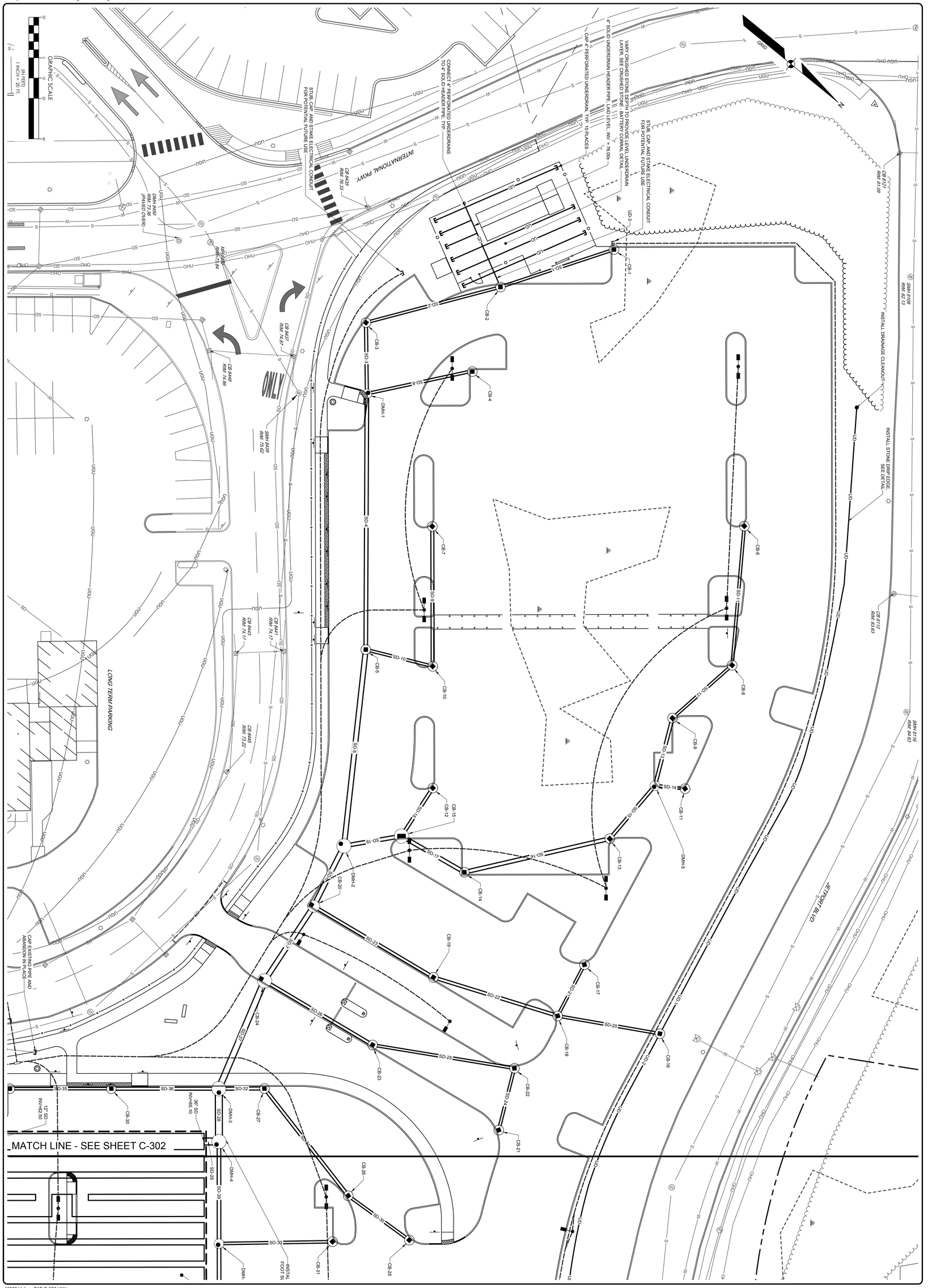
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-302

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Page 1914

19059 U.dwg, TAB-C-303 Utility

OWENS A. MCCULLOUGH PE 7122

AMY BELL SEGAL RLA 2265

SHEET C-303

PROJECT	DESIGNED
19059	TFG
SCALE	DRAWN
1" = 20'	EPR
DATE	CHECKED
02/29/2024	PDO

UTILITY PLAN

OF:

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1001 WESTBROOK STREET
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STATE OF MAINE
OWENS A. MCCULLOUGH
No. 7122
REGISTERED PROFESSIONAL ENGINEER

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-1	80.30		76.70 (SD-1)	48" DIA.
CB-2	79.60	76.00 (SD-1) 76.00 (UD-3)	75.90 (SD-2)	48" DIA.
CB-3	78.50	74.90 (SD-2)	74.65 (SD-3)	48" DIA.
CB-4	80.00		75.50 (SD-8)	48" DIA.
CB-5	77.40	72.95 (SD-10) 71.50 (SD-4)	71.00 (SD-5)	48" DIA.
CB-6	82.05		78.45 (SD-11)	48" DIA.
CB-7	79.00		75.40 (SD-9)	48" DIA.
CB-8	80.60	77.00 (SD-11)	76.80 (SD-12)	48" DIA.
CB-9	79.50	75.90 (SD-12)	75.65 (SD-13)	48" DIA.
CB-10	77.50	73.90 (SD-9)	73.80 (SD-10)	48" DIA.
CB-11	78.90		75.30 (SD-14)	48" DIA.
CB-12	76.50		72.90 (SD-18)	48" DIA.
CB-13	77.90	74.05 (SD-15)	73.90 (SD-16)	48" DIA.
CB-14	77.00	72.90 (SD-16)	72.80 (SD-17)	48" DIA.
CB-15	75.80	71.70 (SD-17) 72.20 (SD-18)	71.60 (SD-19)	72" DOUBLE GRATE
CB-16	77.45	74.45 (UD-1) 74.45 (UD-2)	74.35 (SD-20)	48" DIA.
CB-17	77.60		73.65 (SD-21)	48" DIA.
CB-18	77.20	73.35 (SD-21) 73.35 (SD-20)	73.10 (SD-22)	48" DIA.
CB-19	75.80	71.85 (SD-22)	71.75 (SD-23)	48" DIA.
CB-20	74.55	70.70 (SD-23) 68.10 (SD-6)	68.00 (SD-7)	60" DIA.
CB-21	77.80		74.00 (SD-24)	48" DIA.
CB-22	77.60	73.20 (SD-24)	73.10 (SD-25)	48" DIA.
CB-23	74.60	71.00 (SD-25)	69.30 (SD-26)	48" DIA.
CB-24	73.30	68.15 (SD-26) 67.40 (SD-7)	66.90 (SD-27)	72" DIA.
CB-25	78.15		74.55 (SD-30)	48" DIA.
CB-26	77.15	73.30 (SD-30)	73.05 (SD-31)	48" DIA.
CB-27	75.25	70.75 (SD-31)	70.50 (SD-32)	48" DIA.
CB-28	72.90		68.95 (SD-34)	48" DIA.
CB-29	73.00	68.80 (SD-34)	68.70 (SD-35)	48" DIA.

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-30	73.80	68.25 (SD-35)	68.00 (SD-36)	48" DIA.
CB-31	77.50		73.90 (SD-33)	48" DIA.
CB-32	78.90		75.30 (SD-37)	48" DIA.
CB-33	74.35		70.75 (SD-40)	48" DIA.
CB-34	75.25	70.15 (SD-40)	70.05 (SD-41)	48" DIA.
CB-35	77.10		73.50 (SD-42)	48" DIA.
CB-36	75.80	72.20 (SD-42) 68.90 (SD-43)	68.65 (SD-44)	72" DOUBLE GRATE
CB-37	73.55		69.95 (SD-43)	72" DOUBLE GRATE
CB-38	72.55		67.30 (SD-51)	48" DIA.
CB-39	70.45		66.77 (SD-52)	48" DIA.
CB-40	70.60	62.30 (SD-59) 65.50 (SD-53) 65.45 (SD-62)	61.80 (SD-54)	CB-ST-60
CB-41	69.55		65.95 (SD-60)	48" DIA.
CB-42	68.40		64.80 (SD-55)	48" DIA.
CB-43	68.25	64.40 (SD-55)	64.30 (SD-56)	48" DIA.
CB-44	69.25	65.65 (SD-60) 63.80 (SD-56)	63.55 (SD-57)	48" DIA.
CB-45	69.75	63.30 (SD-57) 64.80 (SD-61)	63.20 (SD-58)	48" DIA.
CB-46	69.95	63.05 (SD-58)	62.80 (SD-59)	48" DIA.
CB-47	69.05		65.45 (SD-61)	48" DIA.
CB-48	69.85		66.05 (SD-62)	48" DIA.
CB-49	72.55		68.95 (SD-63)	48" DIA.
CB-50	72.40	68.40 (SD-63)	68.30 (SD-65)	48" DIA.
CB-51	70.90	66.50 (SD-65) 66.50 (SD-69)	66.00 (SD-66)	48" DIA.
CB-52	69.75	64.70 (SD-66)	64.20 (SD-67)	48" DIA.
CB-53	71.50		67.90 (SD-69)	48" DIA.
CB-54	73.25		69.55 (SD-70)	48" DIA.
CB-55	72.60	69.00 (SD-70)	68.90 (SD-71)	48" DIA.
CB-56	72.10	68.30 (SD-71)	68.20 (SD-72)	48" DIA.
CB-57	72.30	67.16 (SD-72) 67.93 (SD-73)	67.05 (SD-74)	48" DIA.
CB-58	70.00	66.06 (SD-74)	65.81 (SD-75)	48" DIA.

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-59	69.10	64.81 (SD-75)	64.71 (SD-76)	48" DIA.
CB-60	68.20	64.15 (SD-76)	63.65 (SD-77)	48" DIA.
CB-61	72.35		68.50 (SD-73)	48" DIA.
DMH-1	79.45	73.70 (SD-3) 74.20 (SD-8)	73.60 (SD-4)	48" DIA.
DMH-2	75.10	71.00 (SD-19) 68.60 (SD-5)	68.50 (SD-6)	72" DIA.
DMH-3	74.80	66.25 (SD-27) 70.00 (SD-32) 67.50 (SD-36)	65.75 (SD-28)	72" DIA.
DMH-4	75.35	65.35 (SD-28) 66.30 (SD-39)	65.25 (SD-29)	72" DIA.
DMH-5	78.75	74.90 (SD-13) 75.15 (SD-14)	74.80 (SD-15)	48" DIA.
DMH-6	76.40	66.82 (SD-38) 72.50 (SD-33)	66.72 (SD-39)	48" DIA.
DMH-7	76.50	72.90 (SD-37) 69.30 (SD-41) 68.20 (SD-44)	67.95 (SD-38)	48" DIA.
DMH-9	71.00	60.30 (SD-48)	60.20 (SD-49)	48" DIA.
DMH-10	68.30	58.60 (SD-49)	58.50 (SD-50)	48" DIA.
DMH-11	67.50	56.01 (SD-50) 56.01 (EX. SD-1)	56.01 (EX. SD-2)	60" DIA.
DMH-12	71.10	65.95 (SD-51) 65.95 (SD-52)	65.85 (SD-53)	48" DIA.
DMH-13	69.25	63.70 (SD-67) 63.30 (SD-77)	63.20 (SD-68)	48" DIA.
DMH-14	67.50	57.20 (SD-81) 58.92 (GW-1)	57.10 (SD-82)	48" DIA.
DMH-15	67.00	56.87 (SD-82) 55.67 (EX. SD-3)	55.67 (EX. SD-4)	60" DIA.
EX DMH-8436	69.00			SEE SHEET C-301
OCS-1	73.55	62.50 (SD-47) 60.50 (SD-46)	60.40 (SD-48)	72" DIA.
OCS-2	69.50	57.60 (SD-79) 59.00 (SD-80)	57.50 (SD-81)	72" DIA.
SF-1	73.20	62.50 (SD-45)	60.60 (SD-46)	96" DIA.
SF-2	69.40	59.00 (SD-78)	57.70 (SD-79)	72 x 96 inch Rectangular Structure

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
EX. SD-1	18"	8'	0.40%
EX. SD-2	18"	8'	0.30%
EX. SD-3	24"	7'	0.38%
EX. SD-4	24"	6'	0.41%
GW-1	6"	28'	0.50%
SD-1	12"	55'	1.27%
SD-2	12"	65'	1.55%
SD-3	15"	31'	3.07%
SD-4	18"	122'	1.72%
SD-5	24"	93'	2.59%
SD-6	24"	28'	1.44%
SD-7	24"	39'	1.56%
SD-8	12"	49'	2.64%
SD-9	15"	67'	2.24%
SD-10	12"	30'	2.83%
SD-11	12"	69'	2.10%
SD-12	12"	37'	2.41%
SD-13	15"	30'	2.47%
SD-14	12"	11'	1.37%
SD-15	15"	32'	2.31%
SD-16	18"	74'	1.36%
SD-17	18"	33'	3.35%
SD-18	15"	25'	2.77%
SD-19	18"	23'	2.63%
SD-20	12"	47'	2.12%
SD-21	12"	25'	1.22%
SD-22	15"	60'	2.08%
SD-23	15"	64'	1.64%
SD-24	12"	29'	2.72%
SD-25	12"	67'	3.14%

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
SD-26	15"	57'	2.02%
SD-27	30"	52'	1.25%
SD-28	36"	20'	1.99%
SD-29	36"	4'	3.44%
SD-30	12"	33'	3.76%
SD-31	15"	63'	3.64%
SD-32	15"	18'	2.85%
SD-33	12"	54'	2.59%
SD-34	12"	24'	0.63%
SD-35	12"	46'	0.98%
SD-36	15"	48'	1.04%
SD-37	12"	115'	2.09%
SD-38	18"	117'	0.97%
SD-39	18"	45'	0.92%
SD-40	12"	53'	1.14%
SD-41	12"	66'	1.14%
SD-42	12"	72'	1.82%
SD-43	15"	103'	1.02%
SD-44	15"	36'	1.25%
SD-45	12"	2'	0.00%
SD-46	12"	12'	0.84%
SD-47	18"	3'	0.00%
SD-48	18"	18'	0.54%
SD-49	18"	196'	0.82%
SD-50	18"	79'	3.15%
SD-51	12"	65'	2.07%
SD-52	12"	79'	1.04%
SD-53	15"	27'	1.30%
SD-54	24"	42'	1.20%
SD-55	12"	37'	1.08%

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
SD-56	12"	45'	1.11%
SD-57	15"	23'	1.08%
SD-58	15"	15'	1.01%
SD-59	18"	41'	1.23%
SD-60	12"	28'	1.09%
SD-61	12"	56'	1.17%
SD-62	12"	50'	1.21%
SD-63	12"	24'	2.26%
SD-65	12"	86'	2.08%
SD-66	18"	77'	1.69%
SD-67	18"	22'	2.32%
SD-68	24"	14'	2.86%
SD-69	12"	83'	1.69%
SD-70	12"	21'	2.56%
SD-71	12"	18'	3.39%
SD-72	15"	104'	1.00%
SD-73	12"	20'	2.90%
SD-74	15"	82'	1.21%
SD-75	18"	51'	1.96%
SD-76	18"	54'	1.04%
SD-77	24"	33'	1.07%
SD-78	12"	23'	0.00%
SD-79	12"	6'	1.70%
SD-80	24"	24'	0.00%
SD-81	24"	35'	0.86%
SD-82	24"	19'	1.19%
UD-1	6"	34'	1.61%
UD-2	6"	26'	2.15%
UD-3	4"	6'	0.00%

AMY BELL SEGAL RLA 2265

OWENS A. MCCULLOUGH PE 7122

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PIPE AND STRUCTURE DATA TABLES
OF:
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SCALE	N/A
PROJECT	19059

SHEET C-304

19059 U.dwg, TAB C-304 Structure & Pipe Data

F:\Projects\19000\19059\DWG\Design\19059 U.dwg - 11/15/2024 4:45 PM - EBEN ROBICHAUD

PLANT TOTALS:

PROPOSED TREES	= 162
PROPOSED SHRUBS	= 473
PROPOSED PERENNIALS	= 239

SEE SHEETS L102, L103, AND L104 FOR THE PLANT SCHEDULE.

JETPORT BLVD.

INTERNATIONAL PKWY.

JETPORT ACCESS ROAD

WESTBROOK ST.

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

REV.	BY	DATE:	STATUS:
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E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/18/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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AMY BELL SEGAL RLA 2265

OWENS A. MCCULLOUGH PE 7122

REGISTERED LANDSCAPE ARCHITECT
AMY BELL SEGAL
No.2265
STATE OF MAINE

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel. 207-200-2100

OVERALL LANDSCAPE PLAN

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

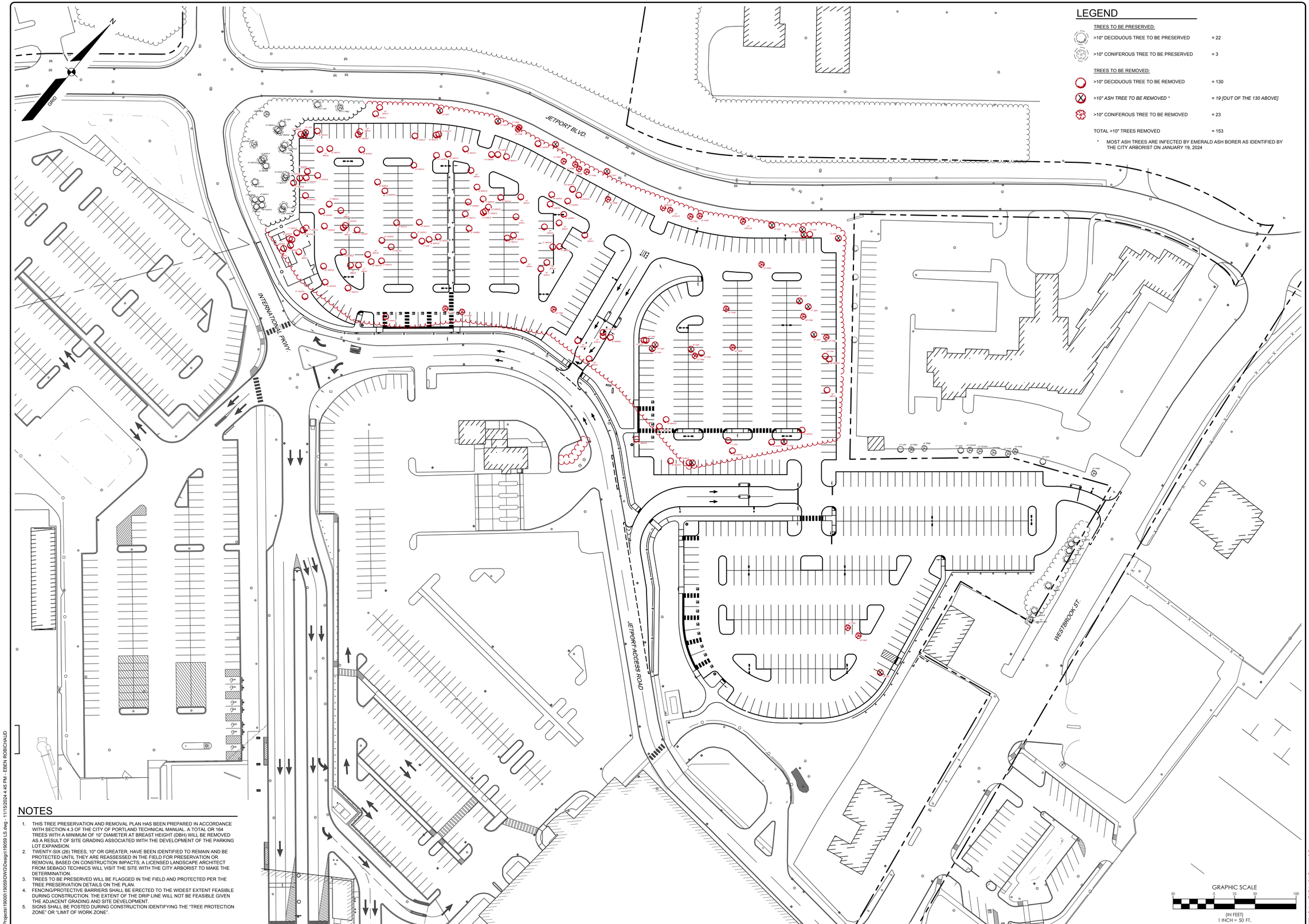
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET L-100

19059 LS dwg, TAB L-100 Overall Landscape

F:\Projects\19000\19059\DWG\Design\19059 LS dwg, 11/15/2024 4:45 PM, EBEN ROBICHAUD



LEGEND

TREES TO BE PRESERVED:

>10" DECIDUOUS TREE TO BE PRESERVED	= 22
>10" CONIFEROUS TREE TO BE PRESERVED	= 3

TREES TO BE REMOVED:

>10" DECIDUOUS TREE TO BE REMOVED	= 130
*>10" ASH TREE TO BE REMOVED **	*= 19 [OUT OF THE 130 ABOVE]*
>10" CONIFEROUS TREE TO BE REMOVED	= 23
TOTAL >10" TREES REMOVED	= 153

* MOST ASH TREES ARE INFECTED BY EMERALD ASH BORER AS IDENTIFIED BY THE CITY ARBORIST ON JANUARY 19, 2024

NOTES

1. THIS TREE PRESERVATION AND REMOVAL PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 4.3 OF THE CITY OF PORTLAND TECHNICAL MANUAL. A TOTAL OR 164 TREES WITH A MINIMUM OF 10" DIAMETER AT BREAST HEIGHT (DBH) WILL BE REMOVED AS A RESULT OF SITE GRADING ASSOCIATED WITH THE DEVELOPMENT OF THE PARKING LOT EXPANSION.
2. TWENTY-SIX (26) TREES, 10" OR GREATER, HAVE BEEN IDENTIFIED TO REMAIN AND BE PROTECTED UNTIL THEY ARE REASSESSED IN THE FIELD FOR PRESERVATION OR REMOVAL, BASED ON CONSTRUCTION IMPACTS; A LICENSED LANDSCAPE ARCHITECT FROM SEBAGO TECHNICS WILL VISIT THE SITE WITH THE CITY ARBORIST TO MAKE THE DETERMINATION.
3. TREES TO BE PRESERVED WILL BE FLAGGED IN THE FIELD AND PROTECTED PER THE TREE PRESERVATION DETAILS ON THE PLAN.
4. FENCING/PROTECTIVE BARRIERS SHALL BE ERECTED TO THE WIDEST EXTENT FEASIBLE DURING CONSTRUCTION. THE EXTENT OF THE DRIP LINE WILL NOT BE FEASIBLE GIVEN THE ADJACENT GRADING AND SITE DEVELOPMENT.
5. SIGNS SHALL BE POSTED DURING CONSTRUCTION IDENTIFYING THE "TREE PROTECTION ZONE" OR "LIMIT OF WORK ZONE".

AMY BELL SEGAL RLA 2265

OWENS A. MCCULLOUGH PE 7122

REGISTERED LANDSCAPE ARCHITECT
AMY BELL SEGAL
No.2265
STATE OF MAINE

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel. 207-200-2100

TREE REMOVAL & PRESERVATION PLAN

OF:

PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:

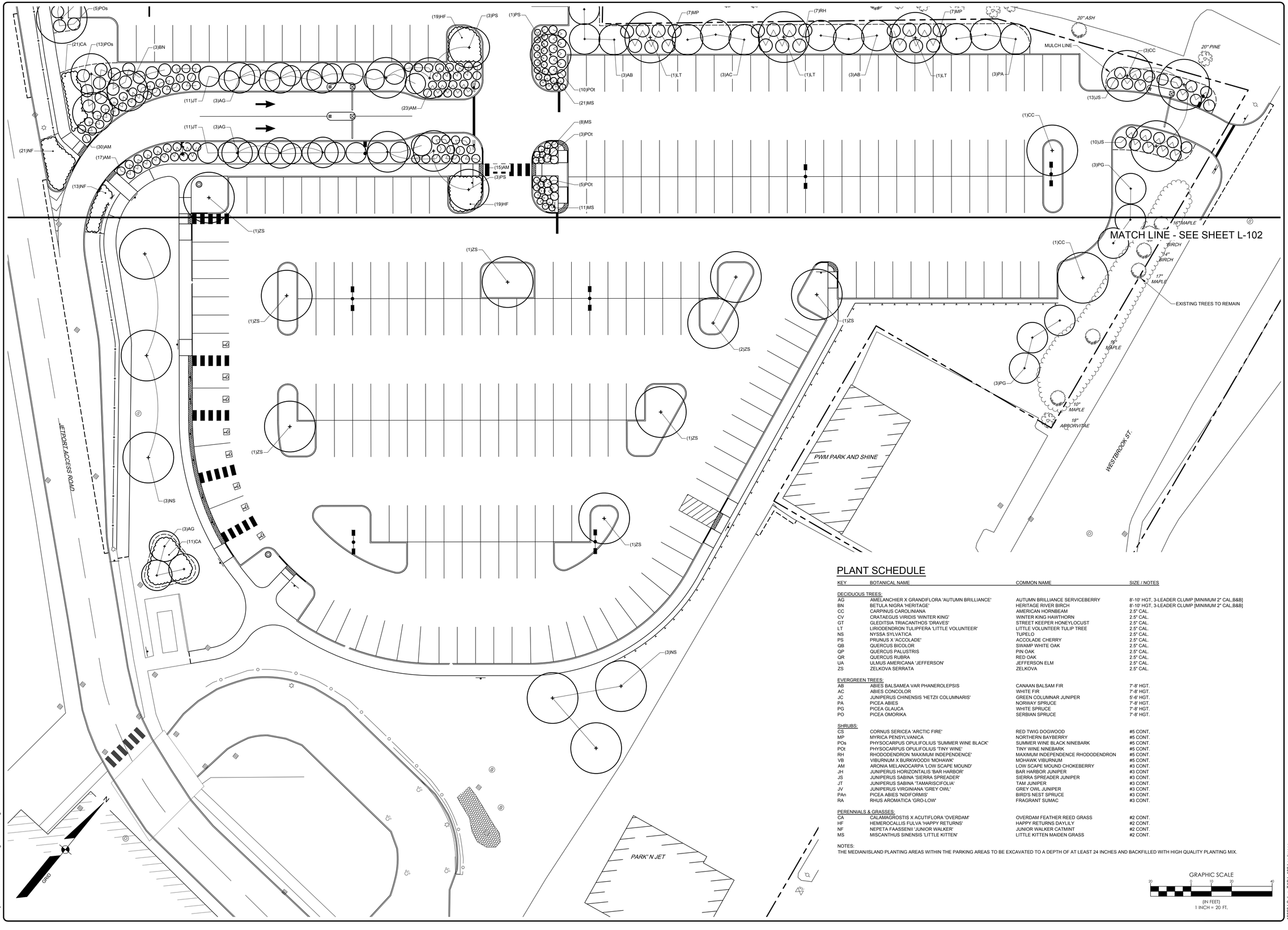
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET L-101

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19059 LS.dwg, TAB1-101 Remove & Preserve



PLANT SCHEDULE

KEY	BOTANICAL NAME	COMMON NAME	SIZE / NOTES
DECIDUOUS TREES:			
AG	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
BN	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
CC	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2.5" CAL.
CV	CRATAEGUS VIRIDIS 'WINTER KING'	WINTER KING HAWTHORN	2.5" CAL.
GT	GLEDITSIA TRIACANTHOS 'DRAVES'	STREET KEEPER HONEYLOCUST	2.5" CAL.
LT	LIRIODENDRON TULIPFERA 'LITTLE VOLUNTEER'	LITTLE VOLUNTEER TULIP TREE	2.5" CAL.
NS	NYSSA SYLVATICA	TUPELO	2.5" CAL.
PS	PRUNUS X 'ACCOLADE'	ACCOLADE CHERRY	2.5" CAL.
QB	QUERCUS BICOLOR	SWAMP WHITE OAK	2.5" CAL.
QP	QUERCUS PALUSTRIS	PIN OAK	2.5" CAL.
QR	QUERCUS RUBRA	RED OAK	2.5" CAL.
UA	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2.5" CAL.
ZS	ZELKOVA SERRATA	ZELKOVA	2.5" CAL.
EVERGREEN TREES:			
AB	ABIES BALSAMEA VAR PHANEROLEPSIS	CANAAN BALSAM FIR	7'-8' HGT.
AC	ABIES CONCOLOR	WHITE FIR	7'-8' HGT.
JC	JUNIPERUS CHINENSIS 'HETZII COLUMNARIS'	GREEN COLUMNAR JUNIPER	5'-6' HGT.
PA	PICEA ABIES	NORWAY SPRUCE	7'-8' HGT.
PG	PICEA GLAUCA	WHITE SPRUCE	7'-8' HGT.
PO	PICEA OMORIKA	SERBIAN SPRUCE	7'-8' HGT.
SHRUBS:			
CS	CORNUS SERICEA 'ARCTIC FIRE'	RED TWIG DOGWOOD	#5 CONT.
MP	MYRICA PENSYLVANICA	NORTHERN BAYBERRY	#5 CONT.
POs	PHYSOCARPUS OPULIFOLIUS 'SUMMER WINE BLACK'	SUMMER WINE BLACK NINEBARK	#5 CONT.
POt	PHYSOCARPUS OPULIFOLIUS 'TINY WINE'	TINY WINE NINEBARK	#5 CONT.
RH	RHODODENDRON 'MAXIMUM INDEPENDENCE'	MAXIMUM INDEPENDENCE RHODODENDRON	#5 CONT.
VB	VIBURNUM X BURKWOODII 'MOHAWK'	MOHAWK VIBURNUM	#5 CONT.
AM	ARONIA MELANOCARPA 'LOW SCAPE MOUND'	LOW SCAPE MOUND CHOKEBERRY	#3 CONT.
JH	JUNIPERUS HORIZONTALIS 'BAR HARBOR'	BAR HARBOR JUNIPER	#3 CONT
JS	JUNIPERUS SABINA 'SIERRA SPREADER'	SIERRA SPREADER JUNIPER	#3 CONT.
JT	JUNIPERUS SABINA 'TAMARISCIFOLIA'	TAM JUNIPER	#3 CONT.
JV	JUNIPERUS VIRGINIANA 'GREY OWL'	GREY OWL JUNIPER	#3 CONT.
PAn	PICEA ABIES 'NIDIFORMIS'	BIRD'S NEST SPRUCE	#3 CONT.
RA	RHUS AROMATICA 'GRO-LOW'	FRAGRANT SUMAC	#3 CONT.
PERENNIALS & GRASSES:			
CA	CALAMAGROSTIS X ACUTIFLORA 'OVERDAM'	OVERDAM FEATHER REED GRASS	#2 CONT.
HF	HEMEROCALLIS FULVA 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	#2 CONT.
NF	NEPETA FAASSENII 'JUNIOR WALKER'	JUNIOR WALKER CATMINT	#2 CONT.
MS	MISCANTHUS SINENSIS 'LITTLE KITTEN'	LITTLE KITTEN MAIDEN GRASS	#2 CONT.

NOTES:
THE MEDIAN/ISLAND PLANTING AREAS WITHIN THE PARKING AREAS TO BE EXCAVATED TO A DEPTH OF AT LEAST 24 INCHES AND BACKFILLED WITH HIGH QUALITY PLANTING MIX.

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

AMY BELL SEGAL RLA 2265

OWENS A. MCCULLOUGH PE 7122

REV.	BY	DATE	STATUS
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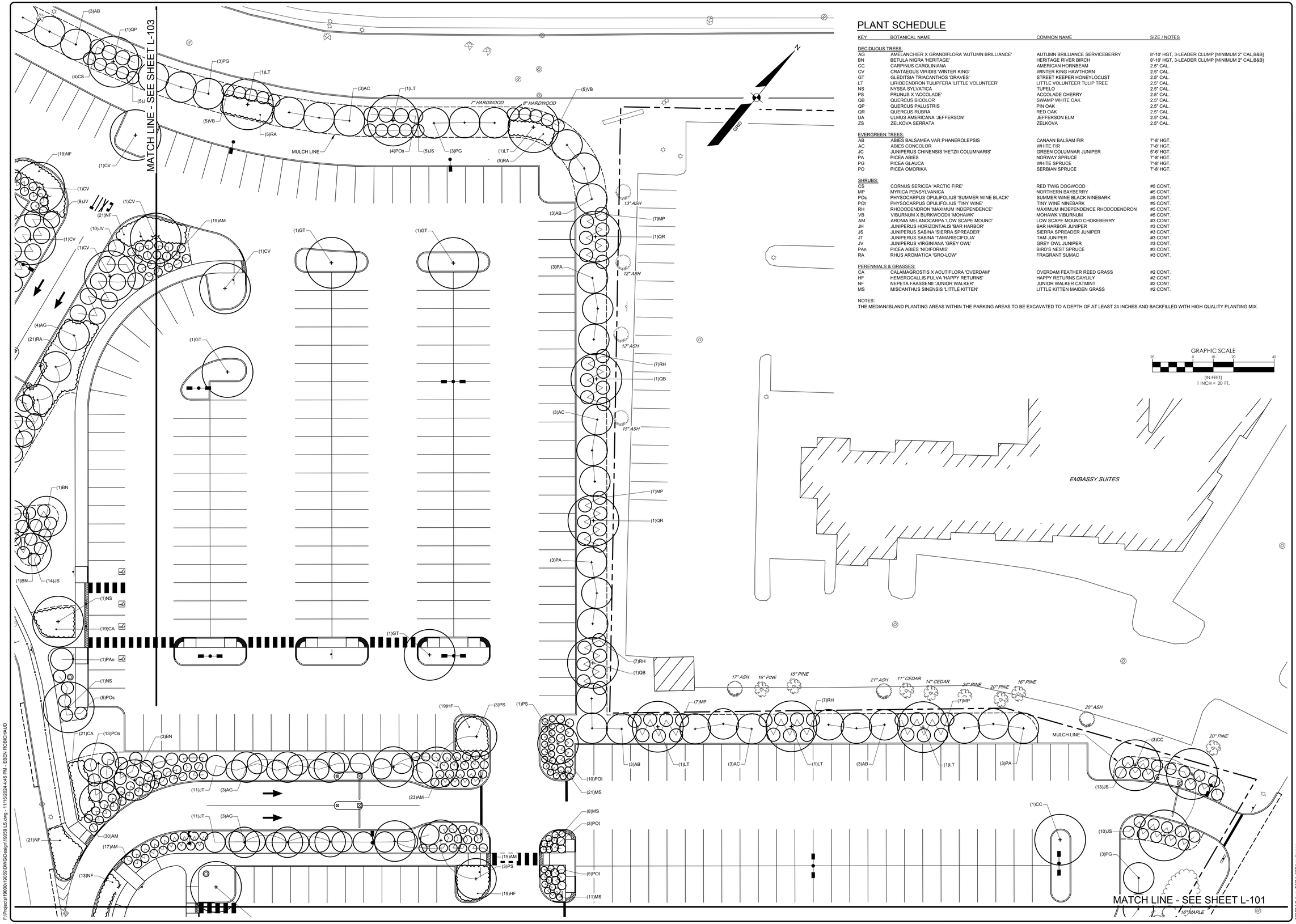
LANDSCAPE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET L-102

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19059 LS dwg, TAB L-102 Landscape



PLANT SCHEDULE

KEY	BOTANICAL NAME	COMMON NAME	SIZE / NOTES
DECIDUOUS TREES:			
AG	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL,B&B]
BN	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL,B&B]
CC	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2.5" CAL.
CV	CRATAEGUS VIRIDIS 'WINTER KING'	WINTER KING HAWTHORN	2.5" CAL.
GT	GLEDITSIA TRIACANTHOS 'DRAVES'	STREET KEEPER HONEYLOCUST	2.5" CAL.
LT	LIRIODENDRON TULIPFERA 'LITTLE VOLUNTEER'	LITTLE VOLUNTEER TULIP TREE	2.5" CAL.
NS	NYSSA SYLVATICA	TUPELO	2.5" CAL.
PS	PRUNUS X 'ACCOLADE'	ACCOLADE CHERRY	2.5" CAL.
QB	QUERCUS BICOLOR	SWAMP WHITE OAK	2.5" CAL.
QP	QUERCUS PALUSTRIS	PIN OAK	2.5" CAL.
QR	QUERCUS RUBRA	RED OAK	2.5" CAL.
UA	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2.5" CAL.
ZS	ZELKOVA SERRATA	ZELKOVA	2.5" CAL.
EVERGREEN TREES:			
AB	ABIES BALSAMEA VAR PHANEROLEPSIS	CANAAN BALSAM FIR	7'-8' HGT.
AC	ABIES CONCOLOR	WHITE FIR	7'-8' HGT.
JC	JUNIPERUS CHINENSIS 'HETZII COLUMNARIS'	GREEN COLUMNAR JUNIPER	5'-6' HGT.
PA	PICEA ABIES	NORWAY SPRUCE	7'-8' HGT.
PG	PICEA GLAUCA	WHITE SPRUCE	7'-8' HGT.
PO	PICEA OMORIKA	SERBIAN SPRUCE	7'-8' HGT.
SHRUBS:			
CS	CORNUS SERICEA 'ARCTIC FIRE'	RED TWIG DOGWOOD	#5 CONT,
MP	MYRICA PENSYLVANICA	NORTHERN BAYBERRY	#5 CONT.
POs	PHYSOCARPUS OPULIFOLIUS 'SUMMER WINE BLACK'	SUMMER WINE BLACK NINEBARK	#5 CONT.
POt	PHYSOCARPUS OPULIFOLIUS 'TINY WINE'	TINY WINE NINEBARK	#5 CONT.
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VB	VIBURNUM X BURKWOODII 'MOHAWK'	MOHAWK VIBURNUM	#5 CONT.
AM	ARONIA MELANOCARPA 'LOW SCAPE MOUND'	LOW SCAPE MOUND CHOKEBERRY	#3 CONT.
JH	JUNIPERUS HORIZONTALIS 'BAR HARBOR'	BAR HARBOR JUNIPER	#3 CONT
JS	JUNIPERUS SABINA 'SIERRA SPREADER'	SIERRA SPREADER JUNIPER	#3 CONT.
JT	JUNIPERUS SABINA 'TAMARISCIFOLIA'	TAM JUNIPER	#3 CONT.
JV	JUNIPERUS VIRGINIANA 'GREY OWL'	GREY OWL JUNIPER	#3 CONT.
PAn	PICEA ABIES 'NIDIFORMIS'	BIRD'S NEST SPRUCE	#3 CONT.
RA	RHUS AROMATICA 'GRO-LOW'	FRAGRANT SUMAC	#3 CONT.
PERENNIALS & GRASSES:			
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NOTES:
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GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

AMY BELL SEGAL, RLA 2265

REGISTERED LANDSCAPE ARCHITECT
STATE OF MAINE
AMY BELL SEGAL
No.2265

OWENS A. MCCULLOUGH, PE 7122

REV.	BY	DATE:	STATUS:
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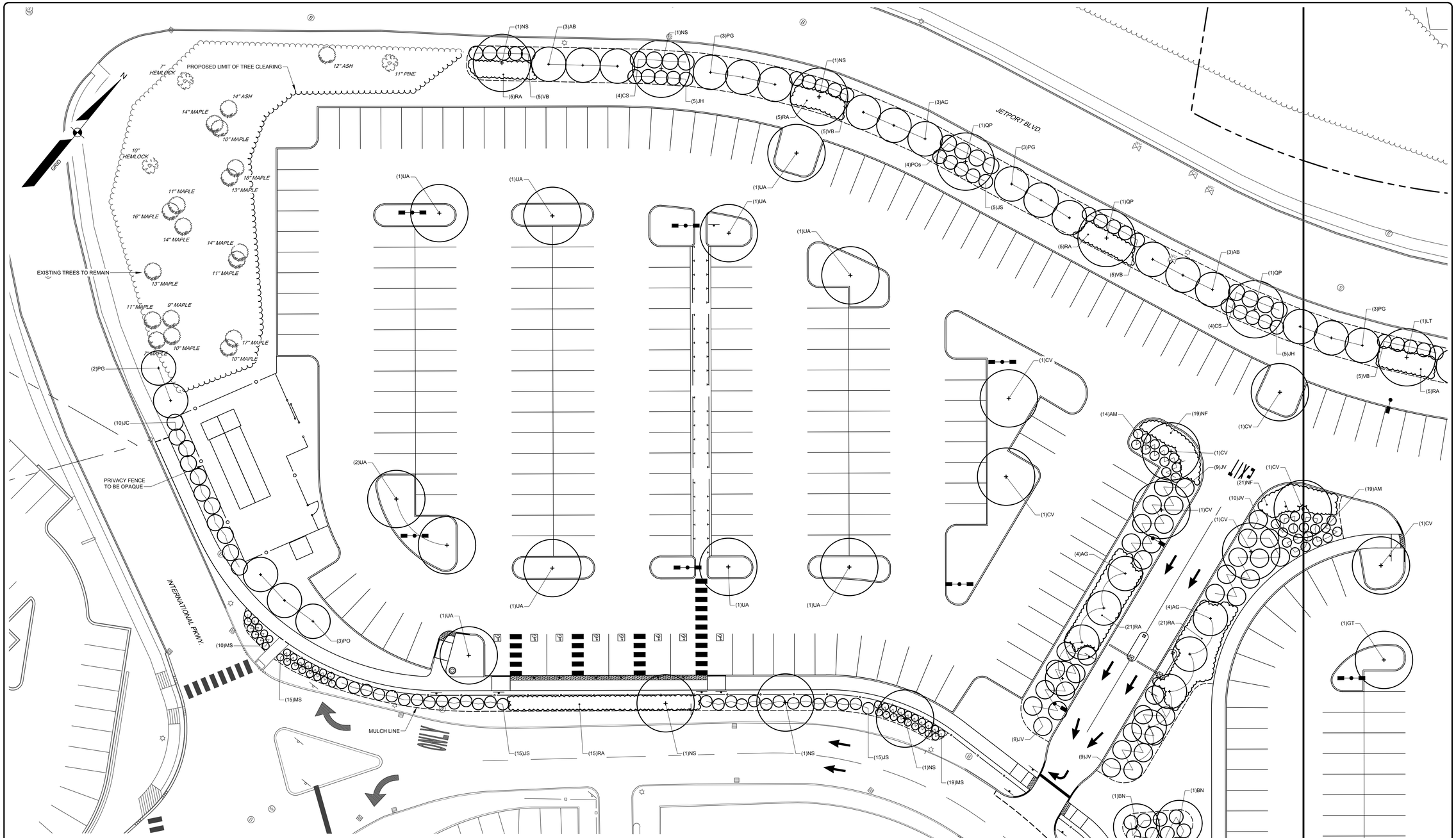
LANDSCAPE PLAN
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DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET L-103

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19059 LS.dwg - TAB L-103 Landscape



PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE / NOTES
DECIDUOUS TREES:				
AG		AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL,B&B]
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KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE / NOTES
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MP		MYRICA PENSYLVANICA	NORTHERN BAYBERRY	#5 CONT.
POs		PHYSOCARPUS OPULIFOLIUS 'SUMMER WINE BLACK'	SUMMER WINE BLACK NINEBARK	#5 CONT.
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AM		ARONIA MELANOCARPA 'LOW SCAPE MOUND'	LOW SCAPE MOUND CHOKEBERRY	#3 CONT.
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JV		JUNIPERUS VIRGINIANA 'GREY OWL'	GREY OWL JUNIPER	#3 CONT.
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PERENNIALS & GRASSES:				
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MS		MISCANTHUS SINENSIS 'LITTLE KITTEN'	LITTLE KITTEN MAIDEN GRASS	#2 CONT.
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DESIGNED	TFG
DRAWN	EPR
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DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET L-104

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19059_LS.dwg, TAB L-104 Landscape

SCHEDULE

PHASE 1 - 3 MONTHS

PHASE 2 - 3 MONTHS

PHASE 1 - SCOPE OF WORK

1. CLOSE CELL PHONE LOT AND GRAVEL LOTS.
2. INSTALL UNDERGROUNND STORMWATER TREATMENT SYSTEM SF-1 IN UPPER LOT, REGRADE AND PAVE.
   NOTE: PARKING GATE VENDOR NEEDS TO INSTALL PAVEMENT LOOPS AT NEW ENTRY AND EXIT GATES DURING THIS PHASE.
3. CONSTRUCT UNDERGROUND POWER AND COMMUNICATIONS TO ENTRY AND EXIT GATE ISLANDS. ENTRY AND EXIT GATE EQUIPMENT INSTALLED IN THIS PHASE.
4. INSTALL UNDERGROUND GATE AND SIGN CONDUITS FOR UPPER LOT.

PHASE 2 - SCOPE OF WORK

1. INSTALL UNDERGROUND STORMWATER TREATMENT SYSTEM SF-2 IN LOWER LOT, REGRADE AND PAVE.
2. INSTALL SECONDARY EXIT GATE EQUIPMENT.
   NOTE: PARKING GATE VENDOR NEEDS TO INSTALL PAVEMENT LOOPS AT NEW ENTRY AND EXIT GATES DURING THIS PHASE.
3. CONSTRUCT UNDERGROUND POWER AND COMMUNICATIONS TO SECONDARY EXIT GATE ISLAND. ENTRY AND EXIT GATE EQUIPMENT INSTALLED IN THIS PHASE.
4. INSTALL UNDERGROUND GATE AND SIGN CONDUITS FOR LOWER LOT.

AVIS RENTAL
JETPORT BLVD.
UPPER PARKING LOT
INSTALL EROSION CONTROL BLANKET (PHASE 1)
INTERNATIONAL PKWY.
PROPOSED PRIMARY EXIT
CONSTRUCTION EGRESS (PHASE 1 ONLY)
LONG TERM PARKING
INSTALL EROSION CONTROL BLANKET (PHASE 1)
INSTALL EROSION CONTROL BLANKET (PHASE 1)
PROPOSED ENTRY
EMBASSY SUITES
PROPOSED SECONDARY EXIT
CONSTRUCTION ACCESS (BOTH PHASES)
TEMPORARY BARRIERS (PHASE 1)
INSTALL EROSION CONTROL BLANKET (PHASE 1)
JETPORT ACCESS ROAD
PWM PARK AND SHINE
WESTBROOK ST.
LOWER PARKING LOT
INSTALL EROSION CONTROL BLANKET (PHASE 2)
PARKING GARAGE
PARK 'N JET
GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

REV.	BY	DATE:	STATUS:
F.	OAM	11/15/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/19/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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AMY BELL SEGAL, RLA 2265

OWENS A. MCCULLOUGH, PE 7122
STATE OF MAINE
OWENS A. MCCULLOUGH
No. 7122
REGISTERED PROFESSIONAL ENGINEER

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CONSTRUCTION SEQUENCE PLAN

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET C-400

19059 CONSTRUCTION.dwg, TAB C-400 CONSTRUCTION SEQUENCE PLAN

F:\Projects\19000\19059\DWG\Design\19059 CONSTRUCTION.dwg - 11/15/2024 4:46 PM - EBEN ROBICHAUD

EROSION CONTROL MEASURES

PRE-CONSTRUCTION PHASE

PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS (SILT FENCE) WILL BE STAKED/INSTALLED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. THE PLACEMENT OF SEDIMENT BARRIERS SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THIS EROSION CONTROL PLAN AND DETAILS IN THIS PLAN SET. THIS NETWORK IS TO BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED.

PRIOR TO ANY CLEARING OR GRUBBING, A CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED AT THE INTERSECTION OF THE PROPOSED ENTRANCES AND EXISTING ROADWAY TO AVOID TRACKING OF MUD, DUST AND DEBRIS FROM THE SITE.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE A DETAILED SCHEDULE AND MARKED UP PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE MUNICIPAL STAFF. THREE COPIES OF THE SCHEDULE AND MARKED UP PLAN SHALL BE PROVIDED TO THE MUNICIPALITY THREE DAYS PRIOR TO THE SCHEDULED PRE-CONSTRUCTION MEETING. SPECIAL ATTENTION SHALL BE GIVEN TO THE 14 DAY LIMIT OF DISTURBANCE IN THE SCHEDULE ADDRESSING TEMPORARY AND PERMANENT VEGETATION MEASURES.

CONSTRUCTION AND POST-CONSTRUCTION PHASE

AREAS UNDERGOING ACTUAL CONSTRUCTION SHALL ONLY EXPOSE THAT AMOUNT OF MINERAL SOIL NECESSARY FOR PROGRESSIVE AND EFFICIENT CONSTRUCTION. AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD, SUCH AS ACTIVE EXCAVATION AND ACTIVE GRADING. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS ACTIVELY OCCURRING OR CAN BE MULCHED IN THE SAME DAY. OPEN AREAS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL AS SHOWN ON THE DESIGN PLANS AND AS DESCRIBED WITHIN THIS EROSION CONTROL PLAN WITHIN SEVEN (7) DAYS OF DISTURBANCE. AREAS LOCATED WITHIN 100 FEET OF STREAMS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL WITHIN SEVEN (7) DAYS. REFER TO WINTER EROSION CONTROL NOTES FOR THE TREATMENT OF OPEN AREAS AFTER OCTOBER 1ST OF THE CONSTRUCTION YEAR.

THE CONTRACTOR MUST INSTALL ANY ADDED MEASURES WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE DEPENDENT UPON THE ACTUAL SITE AND WEATHER CONDITIONS. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, IN ORDER TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION.

EROSION CONTROL APPLICATIONS & MEASURES
THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET.

1. TEMPORARY MULCHING:

ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 14 DAYS SHALL BE MULCHED. DISTURBED AREAS ADJACENT TO NATURAL RESOURCES THAT ARE NOT GRADED WITHIN SEVEN (7) DAYS SHALL BE MULCHED. ALSO, AREAS, WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED, SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING. EROSION CONTROL BLANKETS ARE RECOMMENDED TO BE USED AT THE BASE OF GRASSED WATERWAYS AND ON SLOPES GREATER THAN 33%. MULCH ANCHORING SHOULD BE USED ON SLOPES GREATER THAN 5% AFTER SEPTEMBER 15TH OF THE CONSTRUCTION YEAR (SEE WINTER EROSION CONTROL NOTES).
TYPES OF MULCH:

HAY OR STRAW: SHALL BE APPLIED AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE).

EROSION CONTROL MIX: SHALL BE PLACED EVENLY AND MUST PROVIDE 100% SOIL COVERAGE. EROSION CONTROL MIX SHALL BE APPLIED SUCH THAT THE THICKNESS ON SLOPES 3:1 OR LESS IS 2 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THE THICKNESS ON SLOPES BETWEEN 3:1 AND 2:1 SHALL BE 4 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THIS SHALL NOT BE USED ON SLOPES GREATER THAN 2:1.

EROSION CONTROL BLANKET: SHALL BE INSTALLED SUCH THAT CONTINUOUS CONTACT BETWEEN THE MAT AND THE SOIL IS OBTAINED. INSTALL BLANKETS AND STAPLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

2. SOIL STOCKPILES:

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES. SEDIMENT BARRIERS SHALL BE INSTALLED DOWNGRADIENT OF STOCKPILES, AND STORMWATER SHALL BE PREVENTED FROM RUNNING ONTO THE STOCKPILE.

3. NATURAL RESOURCES PROTECTION:

ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES SHALL BE MULCHED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1 OF THIS SECTION) WITHIN 7 DAYS OF EXPOSURE OR PRIOR TO ANY STORM EVENT. SEDIMENT BARRIERS (AS DESCRIBED IN PART 4 OF THIS SECTION) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE.

4. SEDIMENT BARRIERS:

PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. SEDIMENT BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

HAY BALES: SHALL NOT BE INSTALLED ADJACENT TO WETLAND. INSTALL PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.

EROSION CONTROL MIX: SHALL NOT BE USED ADJACENT TO WETLANDS. INSTALL PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER. EROSION CONTROL MIX BERMS SHALL NOT BE USED AT THE BOTTOM OF STEEP SLOPES (>8%) OR SLOPES WITH FLOWING WATER.

CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

5. TEMPORARY CHECK DAMS:

SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

STONE CHECK DAMS: STONE DAMS SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

HAY BALE CHECK DAMS: BALES SHALL BE WIRE-BOUND OR STRING-TIED. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER. HAY BALES SHALL BE PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL, STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS.

6. STORMDRAIN INLET PROTECTION:

INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLET OR CURB INLET PRIOR TO PERMANENT STABILIZATION OF THE IMMEDIATE AND UPSTREAM DISTURBED AREAS. THEY SHALL BE CONSTRUCTED IN A MANNER THAT WILL FACILITATE CLEAN-OUT AND DISPOSAL OF TRAPPED SEDIMENTS AND MINIMIZE INTERFERENCE WITH CONSTRUCTION ACTIVITIES. ANY RESULTANT PONDING OF WATER FROM THE PROTECTION METHOD MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.

HAY BALE DROP INLET PROTECTION: WE DO NOT RECOMMEND THE USE OF HAY BALES AS INLET PROTECTION.

CONCRETE BLOCK AND STONE INLET SEDIMENT FILTER (DROP OR CURB INLET): SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE HEIGHT OF THE CONCRETE BLOCK BARRIER CAN VARY BUT MUST BE BETWEEN 12 AND 24 INCHES TALL. A MINIMUM OF 1 INCH CRUSHED STONE SHALL BE USED.

MANUFACTURED SEDIMENT BARRIERS AND FILTER (DROP OR CURB INLET): MANUFACTURED FILTERS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

7. STABILIZED CONSTRUCTION ENTRANCE/EXIT:

PRIOR TO CLEARING AND/OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICALLY SWEPT TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. THE TERM "SWEEP" IS UNDERSTOOD TO MEAN REMOVAL AND RECOVERY OF TRACKED SEDIMENT WITH A STREET SWEEPER, NOT BRUSHING THE MATERIAL INTO SWALES OR STRUCTURES WITH A MECHANICAL BROOM. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS. THE CONTRACTOR SHALL MAINTAIN THE STABILIZED CONSTRUCTION ENTRANCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

DUST CONTROL:

DUST CONTROL DURING CONSTRUCTION SHALL BE ACHIEVED BY THE USE OF A WATERING TRUCK TO PERIODICALLY SPRINKLE THE EXPOSED ROADWAY AREAS AS NECESSARY TO REDUCE DUST DURING THE DRY MONTHS. APPLYING OTHER DUST CONTROL PRODUCTS SUCH AS CALCIUM CHLORIDE OR OTHER MANUFACTURED PRODUCTS ARE ALLOWED IF AUTHORIZED BY THE PROPER LOCAL, STATE AND/OR FEDERAL REGULATING AGENCIES. HOWEVER, IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO MITIGATE DUST AND SOIL LOSS FROM THE SITE. IF OFFSITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NOT LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS.

TEMPORARY VEGETATION:

TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDBED PREPARATION AND APPLICATION OF SEED SHALL BE CONDUCTED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUALS FOR CONTRACTORS AND ENGINEERS, LATEST REVISION. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

PERMANENT VEGETATION:

REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE APPLICATION OF SEED SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR, PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

SEEDBED PREPARATION:

A. FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.

B. SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P205-K20 OR EQUAL)	18.4 LBS./1,000 S.F.
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS./1,000 S.F.

C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDBED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

APPLICATION OF SEED:

A. SEEDING: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS: (MDOT SEED MIX METHOD #1 - PARK MIXTURE)

SEED TYPE	APPLICATION RATE
CREEPING RED FESCUE	1.8 LBS/1,000 S.F. (78.4 LBS/ACRE)
KENTUCKY BLUEGRASS	1.0 LBS/1,000 S.F. (43.6 LBS/ACRE)
CHEWINGS FESCUE	0.60 LBS/1,000 S.F. (26.1 LBS/ACRE)
PERENNIAL RYEGRASS	0.40 LBS/1,000 S.F. (17.4 LBS/ACRE)
ANNUAL RYEGRASS	0.20 LBS/1,000 S.F. (8.70 LBS/ACRE)
TOTAL	4.00 LBS/1,000 S.F. (174.20 LBS/ACRE)

NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND SEED MIXTURES. MDEP RECOMMENDED SEED MIXTURES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 2016 OR LATEST REVISION.

B. HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. RECOMMENDED SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

C. MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS.

SODDING:
FOLLOWING SEEDBED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES, AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW, STARTING AT THE LOWEST ELEVATION. SOD SHOULD BE ROLLED OR TAMPED DOWN TO EVEN OUT THE JOINTS ONCE LAID DOWN. WHERE FLOW IS PREVALENT THE SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE ESTABLISHED BETWEEN APRIL 1ST AND NOVEMBER 15TH OF THE CONSTRUCTION YEAR, HOWEVER, REFER TO THE WINTER EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% (10H:1V) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.
A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE CONTRACTOR WILL COVER THE SLOPE WITH A LAYER OF WOOD WASTE COMPOST AS DESCRIBED IN ITEM 2(C.) OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM 2(D.) OF THIS STANDARD.
B. STABILIZE THE SLOPE WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE 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 WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).
C. STABILIZE THE SLOPE WITH WOOD WASTE COMPOST -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF WOOD WASTE COMPOST ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE WOOD WASTE COMPOST, THE CONTRACTOR WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. THE CONTRACTOR WILL NOT USE WOOD WASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
D. STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE CONTRACTOR WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOIL S -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15%. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.
A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE CONTRACTOR WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 3(C.) OF THIS STANDARD.
B. STABILIZE THE SOIL WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
C. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE CONTRACTOR WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE CONTRACTOR WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

1. MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, AND AT LEAST EVERY SEVEN (7) DAYS, THE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES. THE CONTRACTOR SHALL PERFORM REPAIRS NO LATER THAN THE END OF THE NEXT WORKDAY, TO ALLOW CONTINUED PROPER FUNCTIONING OF THE EROSION CONTROL MEASURE. THE CONTRACTOR SHALL PROVIDE THE NECESSARY REGULATING AGENCIES WITH WRITTEN DOCUMENTATION DESCRIBING DATES OF INSPECTIONS AND NECESSARY FOLLOW-UP WORK TO MAINTAIN EROSION CONTROL MEASURES MEETING THE REQUIREMENTS OF THIS PLAN WITHIN SEVEN (7) DAYS.

2. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDINGS, THE CONTRACTOR SHALL INSPECT THE WORK AREA SEMIMONTHLY UNTIL THE SEEDINGS HAVE BEEN ESTABLISHED. ESTABLISHED MEANS A MINIMUM OF 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH. RESEEDING SHALL BE CARRIED OUT BY THE CONTRACTOR WITH FOLLOW-UP INSPECTIONS IN THE EVENT OF ANY FAILURES UNTIL VEGETATION IS ADEQUATELY ESTABLISHED.

HOUSEKEEPING:

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.

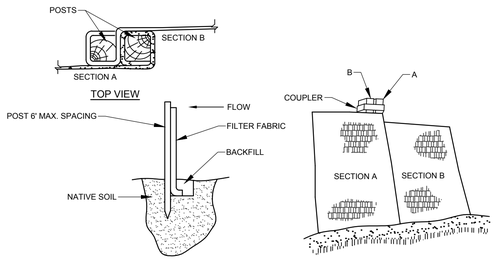
2. GROUNDWATER PROTECTION. DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE-TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.

3. FUGITIVE SEDIMENT AND DUST. ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF-SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.

4. DEBRIS AND OTHER MATERIALS. MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

5. EXCAVATION DE-WATERING. EXCAVATION DE-WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

6. AUTHORIZED NON-STORMWATER DISCHARGES. IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE:
A. DISCHARGES FROM FIREFIGHTING ACTIVITY;
B. FIRE HYDRANT FLUSHINGS;
C. VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE AND TRANSMISSION WASHING IS PROHIBITED);
D. DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS;
E. RO

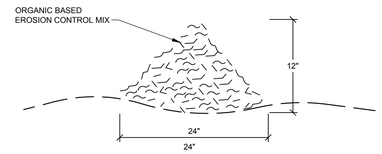


INSTALLATION:

1. EXCAVATE A 6"x 6" TRENCH ALONG THE LINE OF PLACEMENT FOR THE FILTER BARRIER.
2. UNROLL A SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH.
3. DRIVE POSTS INTO THE GROUND UNTIL APPROXIMATELY 2" OF FABRIC IS LYING ON THE TRENCH BOTTOM.
4. LAY THE TOE-IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL THE TRENCH AND TAMP THE SOIL. TOE-IN CAN ALSO BE ACCOMPLISHED BY LAYING THE FABRIC FLAP ON UNDISTURBED GROUND AND PILING AND TAMPING FILL AT THE BASE, BUT MUST BE ACCOMPANIED BY AN INTERCEPTION DITCH.
5. JOIN SECTION AS SHOWN ABOVE.
6. BARRIER SHALL BE MIRAFI SILT FENCE OR EQUAL.

FILTER BARRIER

NOT TO SCALE



COMPOSITION:

EROSION CONTROL MIX SHALL BE MANUFACTURED ON OR OFF THE PROJECT SITE SUCH THAT ITS COMPOSITION IS IN ACCORDANCE WITH THE MDEP MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL, LAST REVISED 3/2003 OR LATER. IT MUST CONSIST PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.

INSTALLATION:

1. THE BARRIER MUST BE PLACED ACROSS THE SLOPE, ALONG THE CONTOUR.

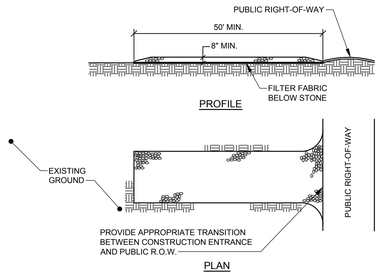
2. EXISTING GROUND SHALL BE PREPARED SUCH THAT THE BARRIER MAY LIE NEARLY FLAT ALONG THE GROUND TO AVOID THE CREATION OF VOIDS AND BRIDGES IN ORDER TO MINIMIZE THE POTENTIAL OF WASH OUTS UNDER THE BARRIER

3. THE BARRIER SHALL BE A MINIMUM OF 1 FOOT HIGH (AS MEASURED ON THE UPHILL SIDE) AND 2 FEET WIDE FOR SLOPES LESS THAN 5% IN GRADE AND SHALL BE WIDER TO ACCOMMODATE THE ADDITIONAL RUNOFF.

4. EROSION CONTROL MIX CAN BE INSTALLED WHERE SILT FENCE IS ILLUSTRATED ON THE DESIGN PLANS IN AREAS EXCEPT IN, BUT NOT LIMITED TO, THE FOLLOWING AREAS: WETLAND AREAS, AT POINTS OF CONCENTRATED FLOW, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS AND CLOSED STORM SYSTEMS AND AT THE BOTTOM OF STEEP SLOPES THAT ARE MORE THAN 50 FEET FROM TOP TO BOTTOM.

EROSION CONTROL MIX BERM

NOT TO SCALE

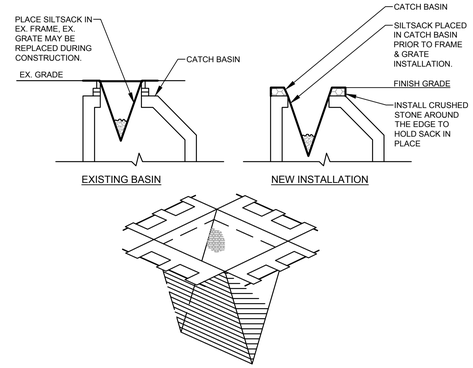


NOTES:

1. STONE SIZE- AASHTO DESIGNATION M43, SIZE NO. 2 (2 1/2" TO 1 1/2"). USE CRUSHED STONE.
2. LENGTH- AS SHOWN ON PLANS, MIN. 50 FEET.
3. THICKNESS- NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH- NOT LESS THAN FULL WIDTH OF ALL POINT OF INGRESS OR EGRESS.
5. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



NOTES:

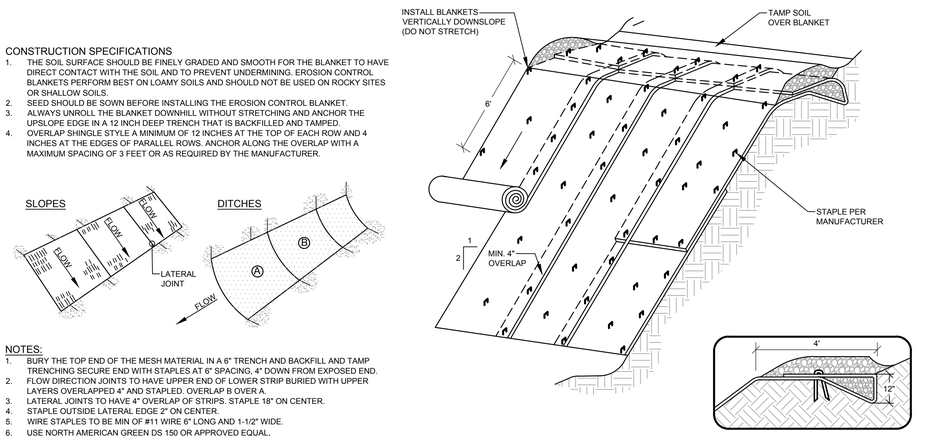
PRIOR TO FINAL GRADING AND PAVING OPERATIONS BEGIN A CATCH BASIN INSERT (SUCH AS A SILT SACK OR A DANDY BAG II) MUST BE INSTALLED IN EACH BASIN PER MANUFACTURES INSTRUCTIONS. HAY BALES SHOULD BE REMOVED ONCE INSERTS ARE INSTALLED.

CATCH BASIN PROTECTION DETAIL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. THE SOIL SURFACE SHOULD BE FINELY GRADED AND SMOOTH FOR THE BLANKET TO HAVE DIRECT CONTACT WITH THE SOIL AND TO PREVENT UNDERMINING. EROSION CONTROL BLANKETS PERFORM BEST ON LOAMY SOILS AND SHOULD NOT BE USED ON ROCKY SITES OR SHALLOW SOILS.
2. SEED SHOULD BE SOWN BEFORE INSTALLING THE EROSION CONTROL BLANKET.
3. ALWAYS UNROLL THE BLANKET DOWNHILL WITHOUT STRETCHING AND ANCHOR THE UPSLOPE EDGE IN A 12 INCH DEEP TRENCH THAT IS BACKFILLED AND TAMPED.
4. OVERLAP SHINGLE STYLE A MINIMUM OF 12 INCHES AT THE TOP OF EACH ROW AND 4 INCHES AT THE EDGES OF PARALLEL ROWS. ANCHOR ALONG THE OVERLAP WITH A MAXIMUM SPACING OF 3 FEET OR AS REQUIRED BY THE MANUFACTURER.

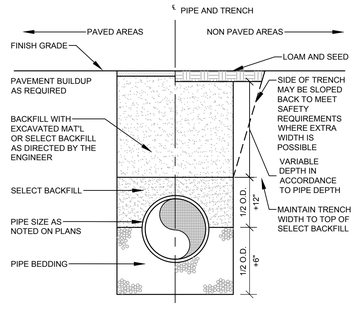


NOTES:

1. BURY THE TOP END OF THE MESH MATERIAL IN A 6" TRENCH AND BACKFILL AND TAMP TRENCHING SECURE END WITH STAPLES AT 6" SPACING, 4" DOWN FROM EXPOSED END.
2. FLOW DIRECTION JOINTS TO HAVE UPPER END OF LOWER STRIP BURIED WITH UPPER LAYERS OVERLAPPED 4" AND STAPLED. OVERLAP B OVER A.
3. LATERAL JOINTS TO HAVE 4" OVERLAP OF STRIPS. STAPLE 18" ON CENTER.
4. STAPLE OUTSIDE LATERAL EDGE 2" ON CENTER.
5. WIRE STAPLES TO BE MIN OF #11 WIRE 6" LONG AND 1-1/2" WIDE.
6. USE NORTH AMERICAN GREEN DS 150 OR APPROVED EQUAL.

EROSION CONTROL BLANKET

NOT TO SCALE



TRENCH BACKFILL SCHEDULE		
PIPE TYPE	PIPE BEDDING MATERIAL	SELECT BACKFILL
CORRUGATED METAL DUCTILE IRON REINFORCED CONCRETE	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
SOLID PVC-SDR 35 HDPE	MDOT 703.13 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL, OR MDOT 703.13 3/4" CRUSHED STONE
PERFORATED PVC-SDR 35 HDPE	MDOT 703.13 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL, OR MDOT 703.13 3/4" CRUSHED STONE

NOTE:

ALL BRACING AND SHEETING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL MEET ALL STATE AND O.S.H.A. SAFETY STANDARDS.

TRENCH SECTION

NOT TO SCALE

OWENS A. MCCULLOUGH PE 7122

AMY BELL SEGAL RLA 2265

STATE OF MAINE
OWENS A. MCCULLOUGH
No. 7122
REGISTERED PROFESSIONAL ENGINEER

REV.	BY	DATE	STATUS
F.	OAM	11/15/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/19/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AS AUTHORIZED BY OTHERS, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

EROSION CONTROL DETAILS

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

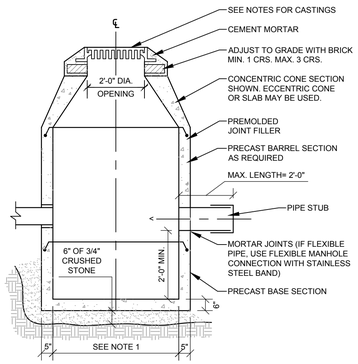
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-501

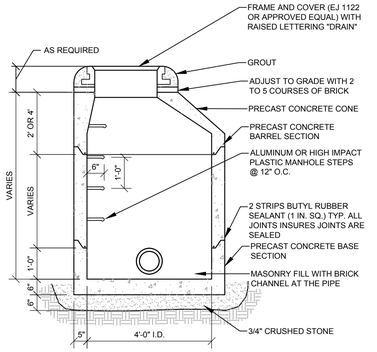
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19059 D.dwg - TAB:C-501 Details

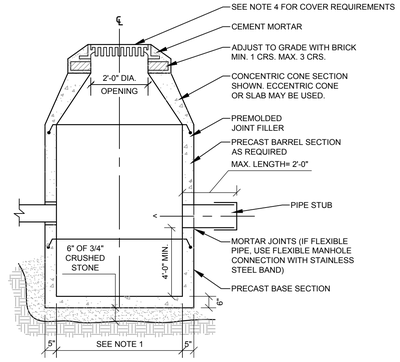


NOTES:
1. 4'-0" I.D. TYPICAL, SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON PLANS.
4. CATCH BASIN FRAME AND GRATE TO BE EJ 5520M5, OR APPROVED EQUAL.

CATCH BASIN
NOT TO SCALE

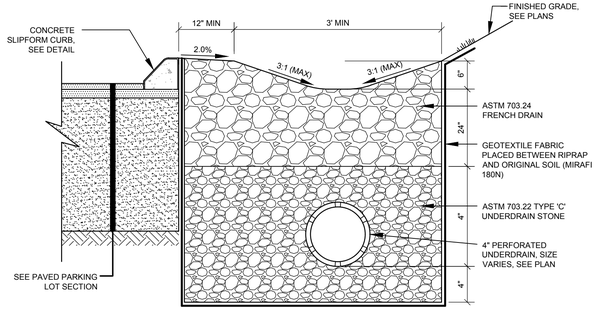


PRECAST MANHOLE
NOT TO SCALE

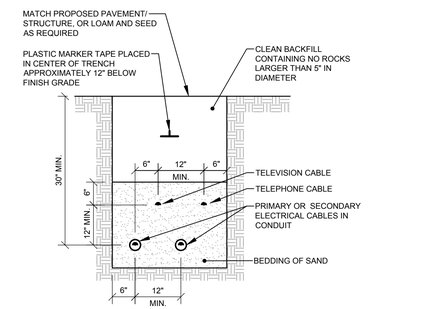


NOTES:
1. 4'-0" I.D. TYPICAL. SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON PLANS.
4. COVER FOR PRETREATMENT DRAINAGE STRUCTURES SHALL BE A SOLID MANHOLE COVER OR A CATCH BASIN GRATE AS SPECIFIED ON PLANS.
5. CATCH BASIN FRAME AND GRATE TO BE EJ 5520M5, OR APPROVED EQUAL.
6. DRAIN MANHOLE COVER TO BE EJ 1122 OR APPROVED EQUAL WITH RAISED LETTERING "DRAIN".

PRE-TREATMENT DRAINAGE STRUCTURE
NOT TO SCALE

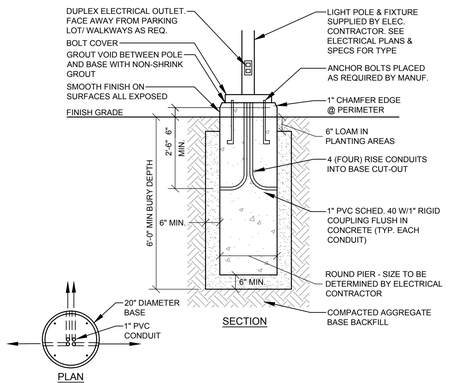


STONE DRIP EDGE
NOT TO SCALE



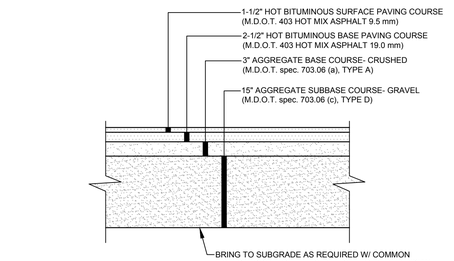
NOTES:
CABLES TO BE ENCASED IN SCHEDULE 40 PVC CONDUIT.

UNDERGROUND CABLE INSTALLATION
NOT TO SCALE



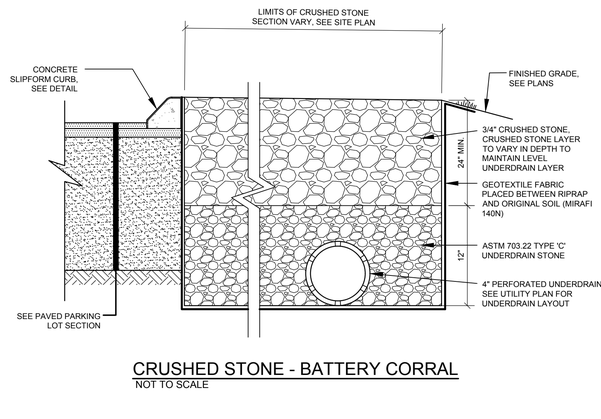
NOTES:
1. CONCRETE f'c=5000 psi @ 28 DAYS WITH STEEL REINFORCEMENT
2. CONDUIT AND ANCHOR BOLTS PLACED AS REQUIRED PROVIDED BY ELECTRICAL CONTRACTOR
3. PROVIDE 2 COATS BITUMINOUS DAMPROOFING FOR ALL CONCRETE BELOW GRADE.
4. INSTALL BASE 3'-0" ABOVE FINISH GRADE IN LOCATIONS WHERE POLES ARE IN PARKING LOT PAVEMENT. MAINTAIN MINIMUM BURY DEPTH.
5. LIGHT POLE BASE AS MANUFACTURED BY SUPERIOR CONCRETE OR APPROVED EQUAL

24" ROUND LIGHT POLE BASE
NOT TO SCALE

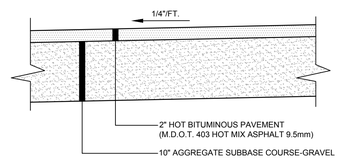


NOTES:
1. COMPACT GRAVEL SUBBASE, BASE COURSE TO 95% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. CONTRACTOR SHALL SET GRADE STAKES MARKING SUBBASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.

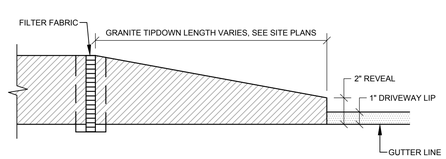
VEHICULAR PAVEMENT SECTION
NOT TO SCALE



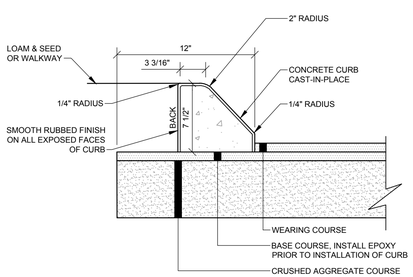
CRUSHED STONE - BATTERY CORRAL
NOT TO SCALE



PEDESTRIAN PAVEMENT SECTION
NOT TO SCALE

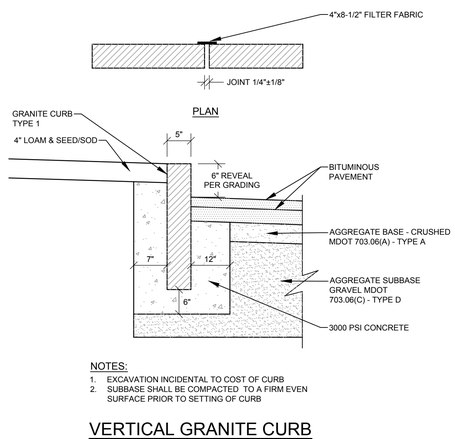


TIPDOWN CURB INSTALLATION
NOT TO SCALE



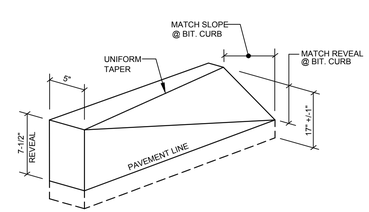
NOTES:
1. SEE TYPICAL ACCESS DRIVE SECTION FOR ROADWAY MATERIAL SPECIFICATIONS AND DEPTHS.
2. TIPDOWNS SHALL BE PROVIDED AS SHOWN ON PLANS.

SLIPFORM CURB SECTION - MOLD 1
NOT TO SCALE



NOTES:
1. EXCAVATION INCIDENTAL TO COST OF CURB
2. SUBBASE SHALL BE COMPACTED TO A FIRM EVEN SURFACE PRIOR TO SETTING OF CURB

VERTICAL GRANITE CURB
NOT TO SCALE



VERTICAL TO SLOPED CURB GRANITE TRANSITION STONES
NOT TO SCALE

OWENS A. MCCULLOUGH PE 7122
AMY BELL SEGAL RLA 2265

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A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

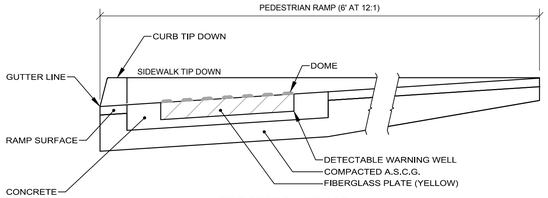
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SITE DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

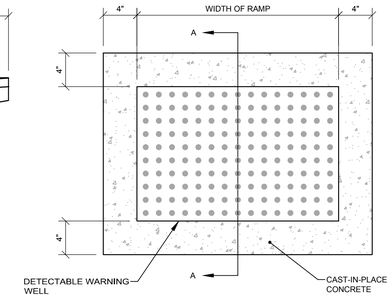
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel. 207-200-2100

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

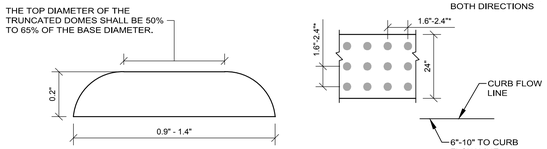
SHEET C-502



SIDE SECTION VIEW OF
DETECTABLE WARNING, WELL, CURB AND GUTTER

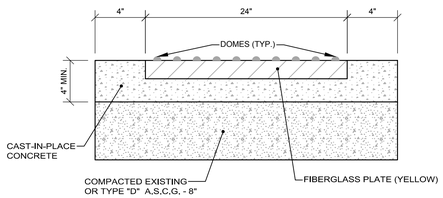


PLAN VIEW OF DETECTABLE WARNING AND WELL



ELEVATION VIEW PLAN VIEW

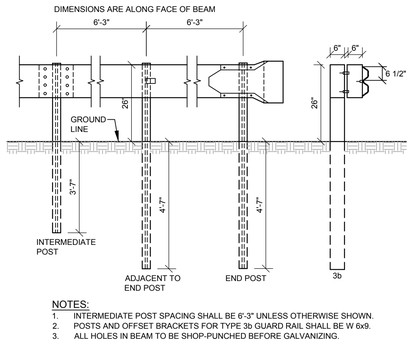
DOME AND DETECTABLE WARNING DETAILS



SECTION A-A

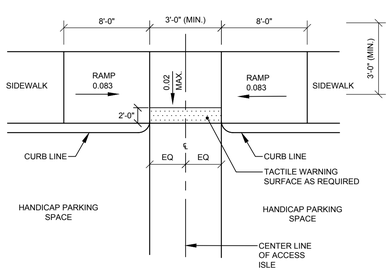
NOTE: ALL DETECTABLE WARNING AREAS SHALL START 6" - 10" FROM THE FLOW LINE OF THE CURB, BE 24" IN DEPTH, AND COVER THE COMPLETE WIDTH OF THE RAMP AREA ONLY.

TRUNCATED DOME PAVING
NOT TO SCALE

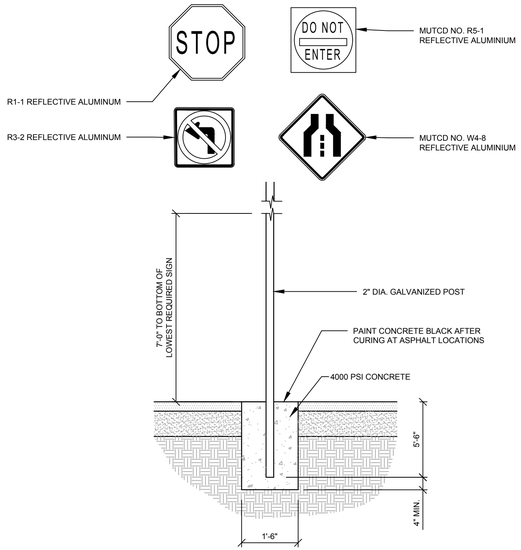


NOTES:
1. INTERMEDIATE POST SPACING SHALL BE 6'-3" UNLESS OTHERWISE SHOWN.
2. POSTS AND OFFSET BRACKETS FOR TYPE 3b GUARD RAIL SHALL BE W 6x9.
3. ALL HOLES IN BEAM TO BE SHOP-PUNCHED BEFORE GALVANIZING.

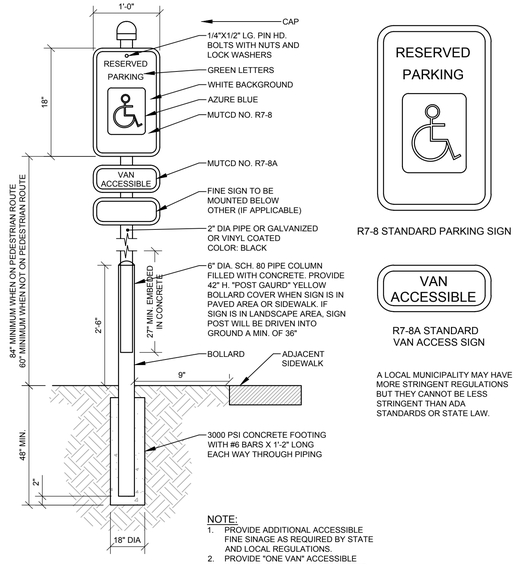
GUARDRAIL TYPE 3b
NOT TO SCALE



ADA ACCESSIBLE RAMP
NOT TO SCALE



TYPICAL TRAFFIC CONTROL SIGN
NOT TO SCALE



NOTE:
1. PROVIDE ADDITIONAL ACCESSIBLE FINE SINAGE AS REQUIRED BY STATE AND LOCAL REGULATIONS.
2. PROVIDE "ONE VAN" ACCESSIBLE SIGN PER 25 HC SPACES REQUIRED.
3. WHENEVER POSSIBLE SIGN SHALL BE MOUNTED CENTERED ON PARKING SPACE UNLESS SPECIFIED OTHERWISE.
4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PRIOR TO ORDERING MATERIALS.

RESERVED PARKING SIGN - BOLLARD (S-3)
NOT TO SCALE

R7-8 STANDARD PARKING SIGN

R7-8A STANDARD VAN ACCESS SIGN

A LOCAL MUNICIPALITY MAY HAVE MORE STRINGENT REGULATIONS BUT THEY CANNOT BE LESS STRINGENT THAN ADA STANDARDS OR STATE LAW.

Missing or invalid reference
File: ..\..\Images\2024-05-24_Wayfinding Signage Exhibit\19059_Pedestrain Wayfinding Sign (S6)_2024-05-24.pdf
Sheet: 1

Missing or invalid reference
File: ..\..\Images\2024-05-24_Wayfinding Signage Exhibit\Vehicular Wayfinding Signage\1905
Sheet: 1

AMY BELL SEGAL, RLA 2265

OWENS A. MCCULLOUGH PE 7122

STATE OF MAINE
OWENS A. MCCULLOUGH
No. 7122
REGISTERED PROFESSIONAL ENGINEER

REV.	BY	DATE:	STATUS:
F.	OAM	11/15/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/18/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

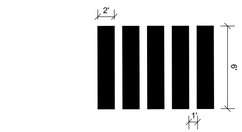
SITE DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-503

19059 D.dwg, TAB:C-503 Details

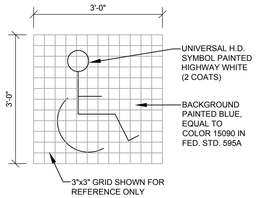
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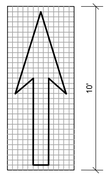
PAVEMENT MARKING NOTES

1. ALL PAVEMENT MARKINGS SHALL BE IN CONFORMANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, U.S. DOT, FHWA, LATEST EDITION.
2. ALL PAVEMENT MARKING LINES SHALL BE PAINT AND 4" WIDE, EXCEPT FOR:
   SWSL-12"
   SYCL-12"
   CROSSWALK BARS - 24"
3. PAVEMENT WORD AND SYMBOL MARKINGS SHALL BE WHITE PAINT.
4. SOLID WHITE STOP LINE SHALL BE A MINIMUM OF 4' BEHIND THE EDGE OF CROSSWALK.

CROSSWALK DETAIL
NOT TO SCALE

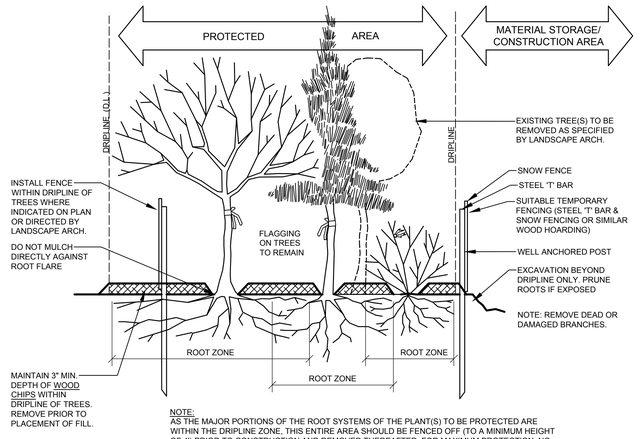


ADA RESERVED PARKING
NOT TO SCALE



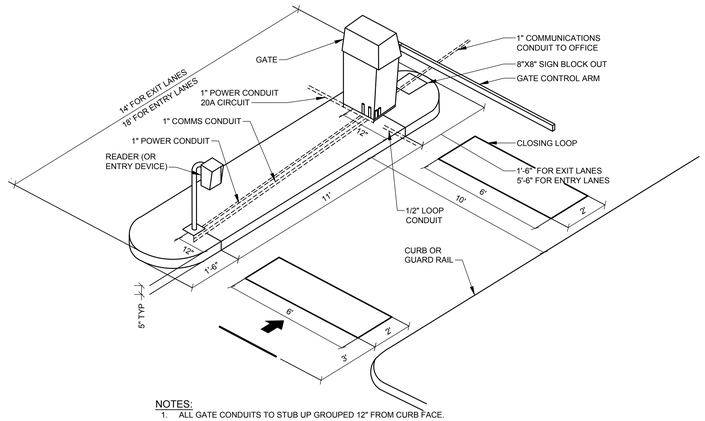
13 SQUARE FEET

PAVEMENT ARROW DETAIL
NOT TO SCALE



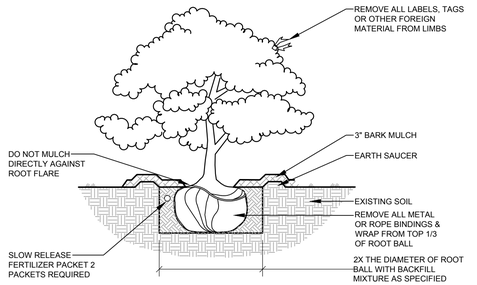
NOTE:
AS THE MAJOR PORTIONS OF THE ROOT SYSTEMS OF THE PLANT(S) TO BE PROTECTED ARE WITHIN THE DRIPLINE ZONE, THIS ENTIRE AREA SHOULD BE FENCED OFF (TO A MINIMUM HEIGHT OF 4') PRIOR TO CONSTRUCTION AND REMOVED THEREAFTER. FOR MAXIMUM PROTECTION, NO VEHICLE TRESPASS, EXCAVATION, FILL, WASTE DISCHARGE OR OR MATERIAL STORAGE SHOULD BE ALLOWED IN THIS ZONE.

TREE PROTECTION DETAIL
NOT TO SCALE
CROSS-SECTION OF TYPICAL PLANT GROUPING

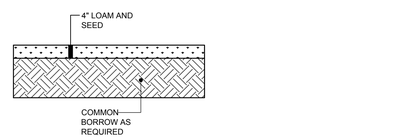


NOTES:
1. ALL GATE CONDUITS TO STUB UP GROUPED 12" FROM CURB FACE.
2. EXIT/ENTRY DEVICE CONDUIT TO STUB UP 12" FROM CURB FACE.
3. DISTANCE BETWEEN GATE AND REVENUE DEVICE SHOULD BE 11' ON CENTER.
4. EACH LANE SHOULD HAVE ITS OWN 20A CIRCUIT.
5. CONTRACTOR TO VERIFY WITH PARKING GATE VENDOR THE DIMENSIONS AND PLACEMENT OF CONDUITS AND BLOCK OUTS PRIOR TO PLACING CONCRETE FOR THESE ISLANDS

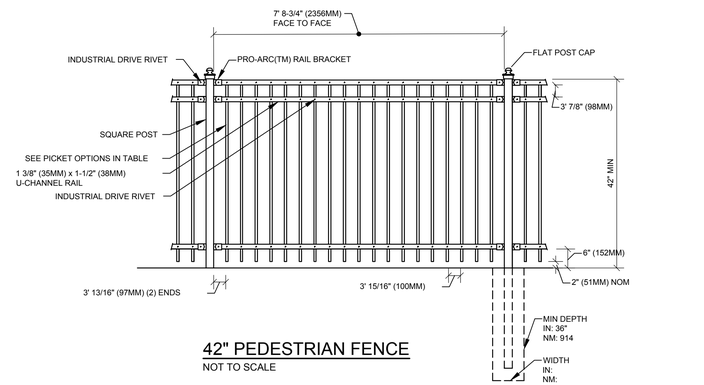
PARKING ENTRY ISLAND
NOT TO SCALE



DECIDUOUS & EVERGREEN SHRUB
NOT TO SCALE



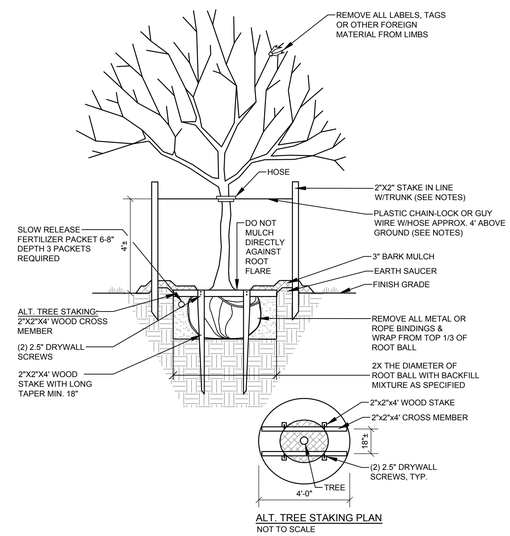
LOAM & SEED SECTION
NOT TO SCALE



NOTES:
1. METRIC DIMENSIONS ARE NOMINAL EQUIVALENTS TO UI.S. DIMENSIONS.
2. SPECIFICATIONS SHOWN CAN BE CHANGED BY MAST HALCO ONL.Y
3. FOOTING WIDTH TO BE (4)X POST WIDTH
4. FOR MATCHING GATE SEE DRAWING 6-5010M (SINGLE) OR 6-5015M (DOUBLE)
5. IMPERIAL "B" GUARDRAIL BY MASTER HALCO. Co. (1-800-229-5615)
6. ALL SURFACES SHALL BE BLACK POWDER COATED FINISH BY MANUFACTURER.

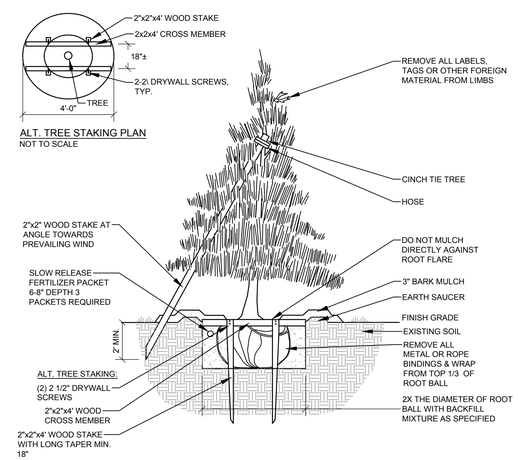
PICKET SIZE	GAUGE
3/4" [19MM]	14 GA

42" PEDESTRIAN FENCE
NOT TO SCALE



ALT. TREE STAKING PLAN
NOT TO SCALE

DECIDUOUS TREES
NOT TO SCALE



ALT. TREE STAKING PLAN
NOT TO SCALE

NOTES:
INSTALL STAKES AND GUYS TO TREES IF THE FOLLOWING APPLY:
1. THE TREE IS OF SUBSTANTIAL SIZE.
2. THE PLANTING LOCATION IS EXTREMELY WINDY, AS ON OPEN UNDEVELOPED SITES.
3. THE PLANTING LOCATION IS COMPRISED OF SAND OR OTHER LOOSE TEXTURED SOILS.
4. IF STAKES AND GUYS ARE REQUIRED, REMOVE AFTER ONE YEAR TIME.

EVERGREEN TREES
NOT TO SCALE

AMY BELL SEGAL RLA 2265

OWENS A. MCCULLOUGH PE 7122

STATE OF MAINE OWENS A. MCCULLOUGH No. 7122 REGISTERED PROFESSIONAL ENGINEER

REV.	BY	DATE	STATUS
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION
B.	PDO	03/18/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
F.	OAM	11/15/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT

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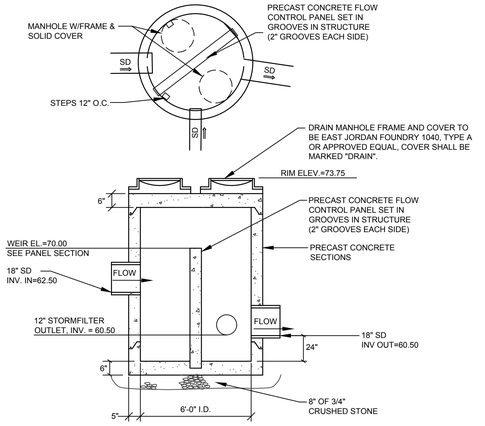
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DESIGNED	TFG
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CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

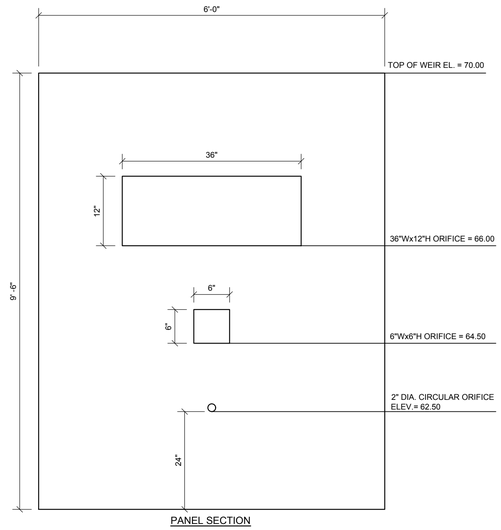
SHEET C-504

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19059 D.dwg, TAB C-504 Details

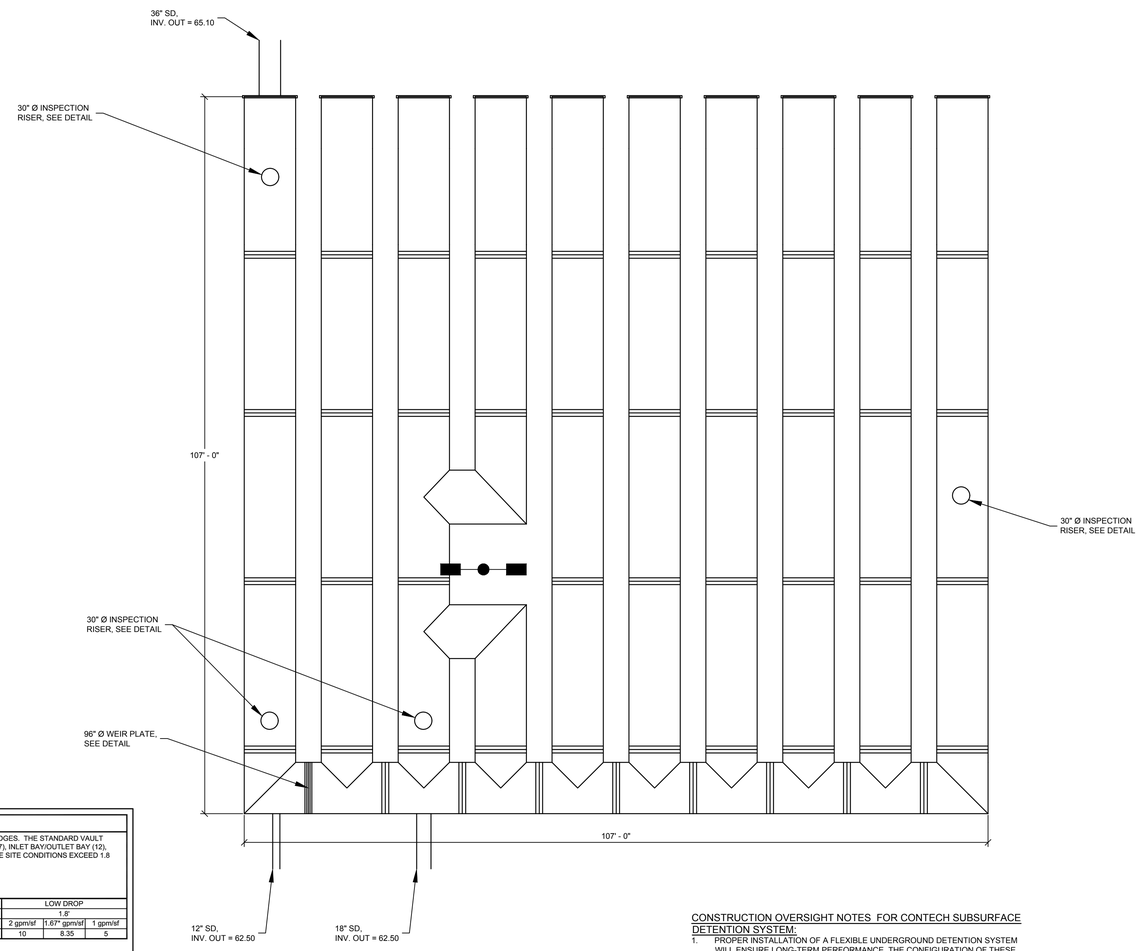


NOTES:
1. SUBMIT SHOP DRAWINGS FOR OWNER/ENGINEER APPROVAL.
2. STRUCTURE SHALL BE DESIGNED FOR H-20 LOADING.



PANEL SECTION

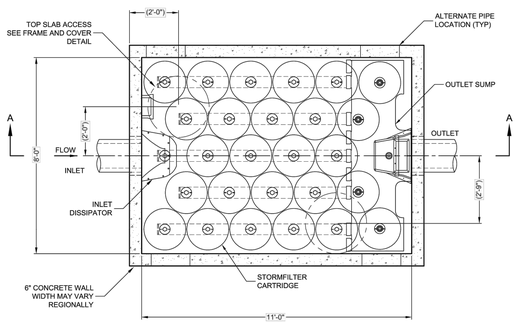
OUTLET CONTROL STRUCTURE (OCS-1)
NOT TO SCALE



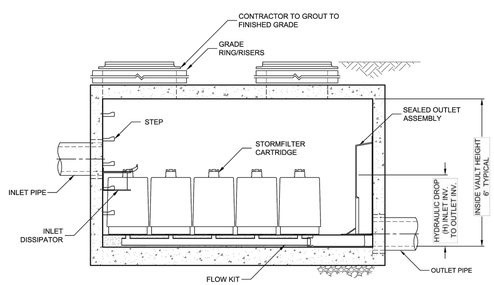
CONTECH SUBSURFACE DETENTION SYSTEM SF-1
NOT TO SCALE

CONSTRUCTION OVERSIGHT NOTES FOR CONTECH SUBSURFACE DETENTION SYSTEM:

1. PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THE SUBMITTAL DRAWINGS, ARE APPROPRIATE FOR YOUR SITE.
2. INSPECTIONS BY A PROFESSIONAL ENGINEER SHALL CONSIST OF WEEKLY VISITS TO THE SITE TO INSPECT THE CONSTRUCTION AND STABILIZATION OF THE PROPOSED SUBSURFACE DETENTION SYSTEM TO BE BUILT ON THE SITE. INSPECTIONS SHALL CONSIST OF AN APPROPRIATE NUMBER OF VISITS TO THE SITE TO INSPECT THE INSTALLATION OF THE SUBSURFACE DETENTION SYSTEM CONSTRUCTION FROM INITIAL GROUND DISTURBANCE TO BACKFILL OVER THE SYSTEM.

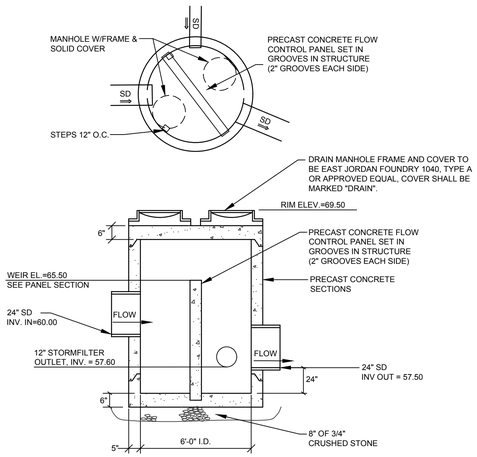


PLAN VIEW
VAULT STYLE: OUTLET SUMP (NIB)

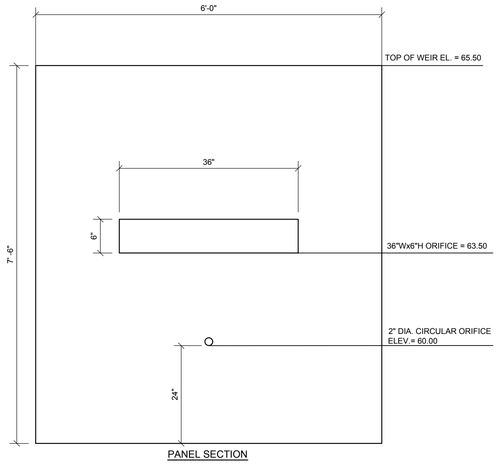


SECTION A-A

The Stormwater Management StormFilter®
U.S. PATENTS: 5,322,629; 5,707,517; 5,769,034; 5,904,836; 6,027,639; 6,511,595; 6,649,048; 6,991,724; 7,186,333; 7,296,692; 7,297,266; 7,390,408; 7,425,262; 7,470,366; 7,857,966; 8,431,016; 8,501,014; 8,506,806; 8,512,561; 8,673,153; 8,790,515; 8,858,795; 9,227,151; 9,861,919; 10,137,393; 10,343,094; 10,376,815; 10,413,844; 10,427,076; 10,427,077; 10,434,450; 10,441,902; 10,449,475; 10,449,476; 10,456,717; 10,464,000; 10,464,001; 10,464,002; 10,464,003; 10,464,004; 10,464,005; 10,464,006; 10,464,007; 10,464,008; 10,464,009; 10,464,010; 10,464,011; 10,464,012; 10,464,013; 10,464,014; 10,464,015; 10,464,016; 10,464,017; 10,464,018; 10,464,019; 10,464,020; 10,464,021; 10,464,022; 10,464,023; 10,464,024; 10,464,025; 10,464,026; 10,464,027; 10,464,028; 10,464,029; 10,464,030; 10,464,031; 10,464,032; 10,464,033; 10,464,034; 10,464,035; 10,464,036; 10,464,037; 10,464,038; 10,464,039; 10,464,040; 10,464,041; 10,464,042; 10,464,043; 10,464,044; 10,464,045; 10,464,046; 10,464,047; 10,464,048; 10,464,049; 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NOTES:
1. SUBMIT SHOP DRAWINGS FOR OWNER/ENGINEER APPROVAL.
2. STRUCTURE SHALL BE DESIGNED FOR H-20 LOADING.



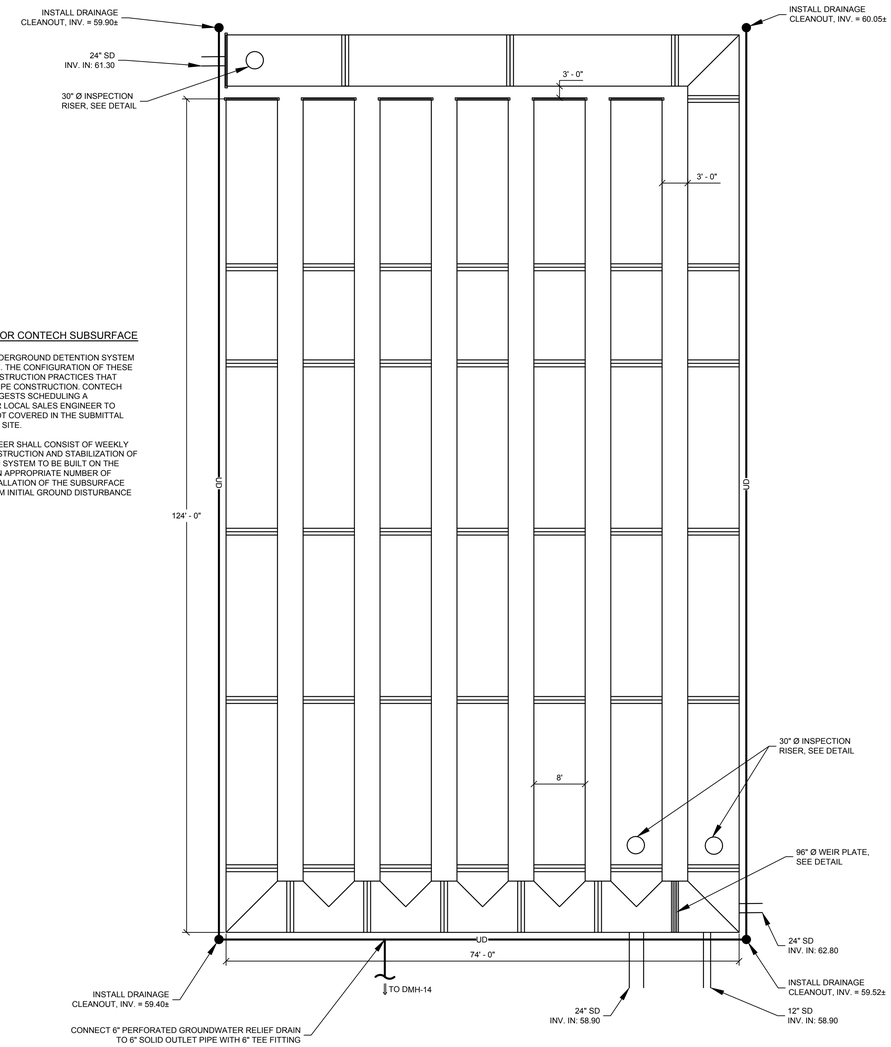
PANEL SECTION

OUTLET CONTROL STRUCTURE (OCS-2)
NOT TO SCALE

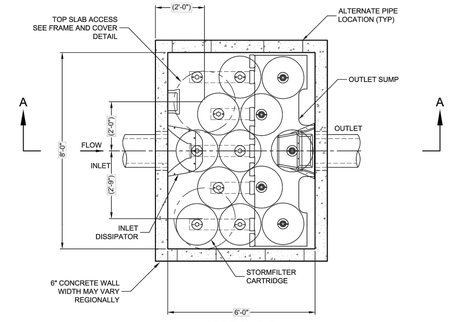
CONSTRUCTION OVERSIGHT NOTES FOR CONTECH SUBSURFACE DETENTION SYSTEM:

1. PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THE SUBMITTAL DRAWINGS, ARE APPROPRIATE FOR YOUR SITE.

2. INSPECTIONS BY A PROFESSIONAL ENGINEER SHALL CONSIST OF WEEKLY VISITS TO THE SITE TO INSPECT THE CONSTRUCTION AND STABILIZATION OF THE PROPOSED SUBSURFACE DETENTION SYSTEM TO BE BUILT ON THE SITE. INSPECTIONS SHALL CONSIST OF AN APPROPRIATE NUMBER OF VISITS TO THE SITE TO INSPECT THE INSTALLATION OF THE SUBSURFACE DETENTION SYSTEM CONSTRUCTION FROM INITIAL GROUND DISTURBANCE TO BACKFILL OVER THE SYSTEM.



CONTECH SUBSURFACE DETENTION SYSTEM SF-2
NOT TO SCALE



SECTION B-B
VAULT STYLE: OUTLET SUMP (NIB)

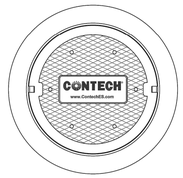
STORMFILTER DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD VAULT STYLE IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (12). VAULT STYLE OPTIONS INCLUDE OUTLET BAY (7), STORMFILTER 6X6 PEAK HYDRAULIC CAPACITY IS 1.8 CFS. IF THE SITE CONDITIONS EXCEED 1.8 CFS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			1.8'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	10	8.35	5

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
CARTRIDGE HEIGHT (27", 18", LOW DROP(LD))	*
NUMBER OF CARTRIDGES REQUIRED	*
CARTRIDGE FLOW RATE	*
MEDIA TYPE (PERLITE, ZPG, PSORB)	*

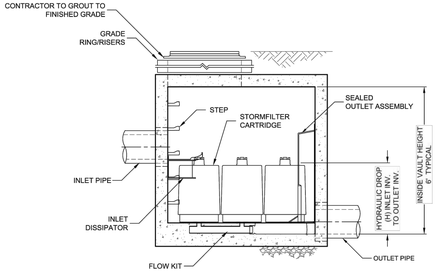
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE #1	*	*	*
INLET PIPE #2	*	*	*
OUTLET PIPE	*	*	*

UPSTREAM RIM ELEVATION	*
DOWNSTREAM RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD



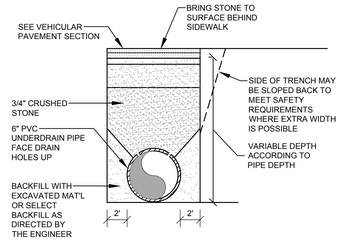
SECTION A-A

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR SITE SPECIFIC DRAWINGS WITH DETAILED VAULT DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
7. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).
8. STORMFILTER STRUCTURE SHALL BE PRECAST CONFORMING TO ASTM C-857 AND AASHTO LOAD FACTOR DESIGN METHOD.

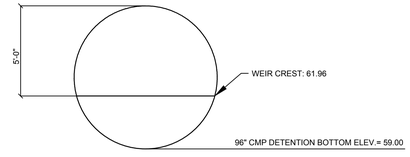
INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER VAULT (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL VAULT SECTIONS AND ASSEMBLE VAULT.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

SF806
STORMFILTER
STANDARD DETAIL



GROUNDWATER RELIEF DRAIN
NOT TO SCALE



96" Ø WEIR PLATE DETAIL
NOT TO SCALE

REV.	BY	DATE	STATUS
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION
B.	PDO	03/19/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
F.	OAM	11/15/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AS APPROVED BY OTHERS, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS INC.

AMY BELL SEGAL, RLA 2265

OWENS A. MCCULLOUGH PE 7122

STATE OF MAINE
OWENS A. MCCULLOUGH
No. 7122
REGISTERED PROFESSIONAL ENGINEER

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

SITE DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

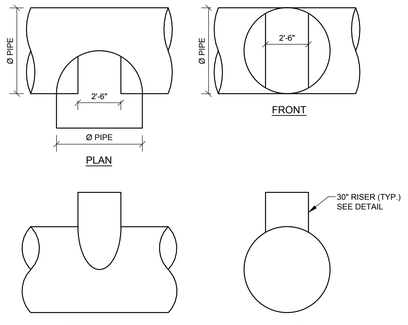
DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-506

19059 D.dwg, 1 TAB C-506 Details

F:\Projects\19000\19059\DWG\Design\19059 D.dwg - 11/15/2024 4:46 PM - EBEN ROBICHAUD

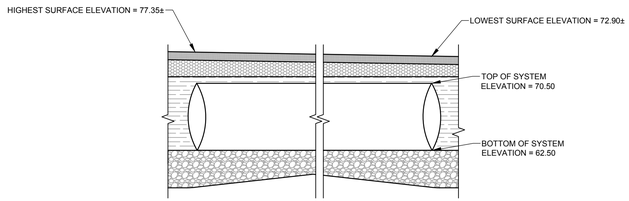
I:\STORMWATER\CCOMMOP\510 STORMFILTER\6X6 STANDARD DRAWINGS\VAULT TOWG\SF6066JDTL SEALED OUTLET RISER.DWG 9/20/2021 2:09 PM



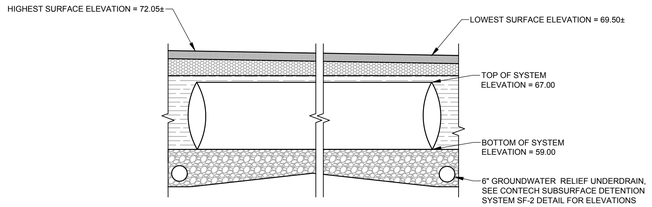
NOTE:
LADDERS ARE OPTIONAL AND ARE NOT REQUIRED FOR ALL SYSTEMS.

NOTE:
MANWAY DETAIL APPLICABLE FOR CMP SYSTEMS WITH DIAMETERS 48" AND LARGER. MANWAYS MAY BE REQUIRED ON SMALLER SYSTEMS DEPENDING ON ACTUAL SITE SPECIFIC CONDITIONS.

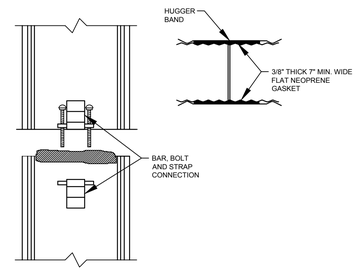
INSPECTION RISER DETAIL
NOT TO SCALE



SUBSURFACE DETENTION 1
SECTION VIEW



SUBSURFACE DETENTION 2
SECTION VIEW

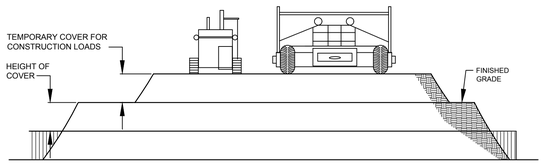


CONNECTION DETAIL SINGLE BOLT, BAR AND STRAP

NOTES

1. BANDS ARE NORMALLY FURNISHED AS FOLLOWS:
   12" THRU 48", 1-PIECE
   54" THRU 96", 2-PIECE
   102" THRU 144", 3-PIECES
2. BAND FASTENERS ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDS
3. REROLLED ANNULAR END CORRUGATIONS ARE NORMALLY 2 2/3" x 1/2". DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES

12" HUGGER BAND DETAIL
NOT TO SCALE



CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM
NOT TO SCALE

1. MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT

FOUNDATION/BEDDING PREPARATION

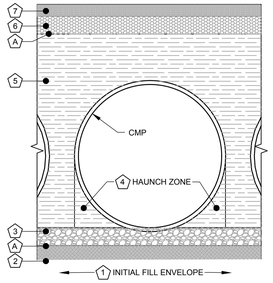
2. PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION. THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER.

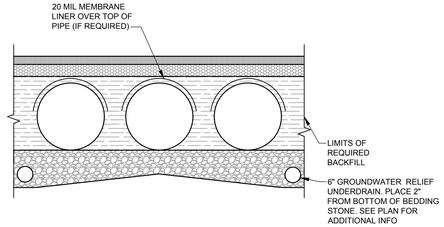
4. HAUNCH ZONE MATERIAL SHALL BE PLACED AND UNIFORMLY COMPACTED WITHOUT SOFT SPOTS.

BACKFILL

WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO LIFT (16") DIFFERENTIAL BETWEEN ANY OF THE LENGTH OF THE DETENTION SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON THE PIPE.

OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS, AS APPROVED BY SITE ENGINEER.





DETENTION SYSTEMS - CMP DETENTION / CMP DRAINAGE

	MATERIAL LOCATION	DESCRIPTION	MATERIAL DESIGNATION	DESIGNATION
7	RIGID OR FLEXIBLE PAVEMENT (IF APPLICABLE)			
6	ROAD BASE (IF APPLICABLE)			
A	GEOTEXTILE LAYER	NON-WOVEN GEOTEXTILE	CONTECT C-40 OR C-45	ENGINEER DECISION FOR CONSIDERATION TO PREVENT SOIL MIGRATION INTO VARYING SOIL TYPES
5	BACKFILL	WELL GRADED GRANULAR MATERIAL WHICH MAY CONTAIN SMALL AMOUNTS OF SILT OR CLAY.	AASHTO M 145- A-1, A-2, A-3	PLACED IN 8" ± LOOSE LIFTS AND COMPACTED TO 90% STANDARD PROCTOR PER AASHTO T 99
3	BEDDING STONE	WELL GRADED GRANULAR BEDDING MATERIAL WITH MAXIMUM PARTICLE SIZE OF 3"	AASHTO M43- 3, 357, 4, 467, 5, 56, 57	ENGINEER TO DETERMINE IF BEDDING IS REQUIRED. PIPE MAY BE PLACED ON THE TRENCH BOTTOM OF A RELATIVELY LOOSE, NATIVE SUITABLE WELL GRADED AND GRANULAR MATERIAL. FOR ARCH PIPES IT IS RECOMMENDED TO BE SHAPED TO A RELATIVELY FLAT BOTTOM OR FINE-GRADE THE FOUNDATION TO A SLIGHT V-SHAPE. UNSUITABLE MATERIAL SHOULD BE OVER-EXCAVATED AND RE-PLACED WITH A 4"-6" LAYER OF WELL GRADED AND GRANULAR STONE PER THE MATERIAL DESIGNATION. SEE AASHTO 26.3.8.1/26.5.3 BEDDING INFO.
A	GEOTEXTILE LAYER	NON-WOVEN GEOTEXTILE	CONTECH C-40 OR C-45	ENGINEER DECISION FOR CONSIDERATION TO PREVENT SOIL MIGRATION INTO VARYING SOIL TYPES

NOTE: BACKFILL USING CONTROLLED LOW-STRENGTH MATERIAL (CLSM, "FLASH FILL" OR "FLOWABLE FILL") WHEN THE SPACING BETWEEN THE PIPES WILL NOT ALLOW FOR PLACEMENT AND ADEQUATE COMPACTION OF THE BACKFILL.

DETENTION SYSTEM
NOT TO SCALE

SPECIFICATION FOR CORRUGATED STEEL PIPE-ALUMINIZED TYPE 2 STEEL

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE CORRUGATED STEEL PIPE (CSP) DETAILED IN THE PROJECT PLANS.

MATERIAL
THE ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M274 OR ASTM A929.

PIPE
THE CSP SHALL BE MANUFACTURED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF AASHTO M36 OR ASTM A760. THE PIPE SIZES, GAGES AND CORRUGATIONS SHALL BE AS SHOWN ON THE PROJECT PLANS.

ALL FABRICATION OF THE PRODUCT SHALL OCCUR WITHIN THE UNITED STATES.

HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH RECOMMENDATIONS OF THE NATIONAL CORRUGATED STEEL PIPE ASSOCIATION (NCSPA)

INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II OR ASTM A798 AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

MATERIAL SPECIFICATION
NOT TO SCALE

AMY BELL SEGAL, RLA 2265

OWENS A. MCCULLOUGH, PE 7122

STATE OF MAINE
OWENS A. MCCULLOUGH
No. 7122
PROFESSIONAL ENGINEER

REV.	BY	DATE	STATUS
F.	OAM	11/15/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/18/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

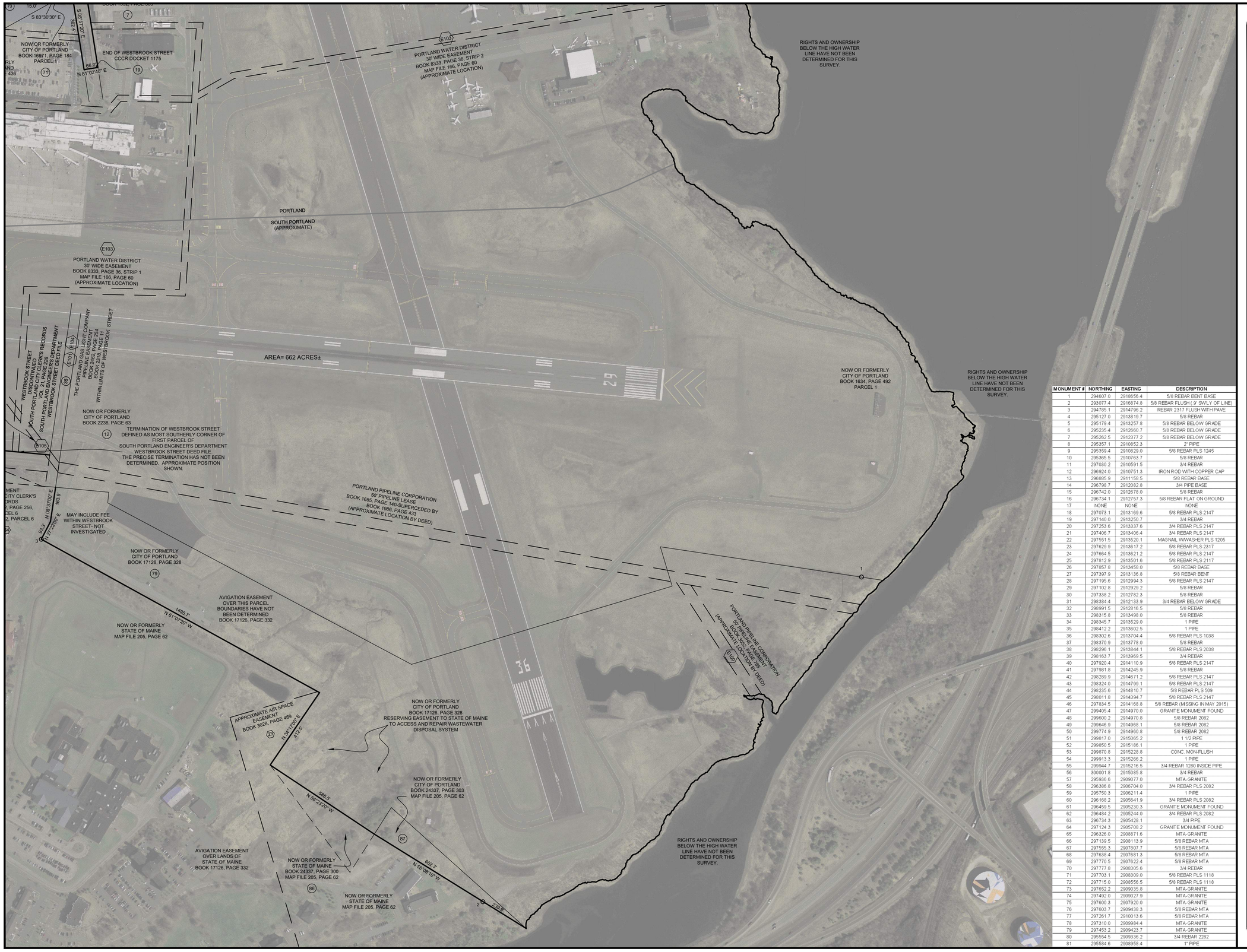
SITE DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-507

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19059 D.dwg - TAB:C-507 Details



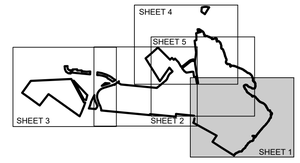
MONUMENT #	NORTHING	EASTING	DESCRIPTION
1	294607.0	2918656.4	5/8 REBAR BENT BASE
2	293077.4	2916874.8	5/8 REBAR FLUSH (9' SWLY OF LINE)
3	294785.1	2914796.2	REBAR 2317 FLUSH WITH PAVE
4	295127.0	2913819.7	5/8 REBAR
5	295179.4	2913257.8	5/8 REBAR BELOW GRADE
6	295235.4	2912660.7	5/8 REBAR BELOW GRADE
7	295262.5	2912377.2	5/8 REBAR BELOW GRADE
8	295357.1	2910852.3	2" PIPE
9	295359.4	2910829.0	5/8 REBAR PLS 1245
10	295365.5	2910763.7	5/8 REBAR
11	297030.2	2910591.5	3/4 REBAR
12	296924.0	2910751.3	IRON ROD WITH COPPER CAP
13	296885.9	2911158.5	5/8 REBAR BASE
14	296798.7	2912082.8	3/4 PIPE BASE
15	296742.0	2912678.0	5/8 REBAR
16	296734.1	2912757.3	5/8 REBAR FLAT ON GROUND
17	NONE	NONE	NONE
18	297073.1	2913169.6	5/8 REBAR PLS 2147
19	297140.0	2913250.7	3/4 REBAR
20	297253.6	2913337.6	3/4 REBAR PLS 2147
21	297406.7	2913406.4	3/4 REBAR PLS 2147
22	297551.5	2913520.1	MAGNAIL W/WASHER PLS 1205
23	297629.9	2913617.2	5/8 REBAR PLS 2317
24	297664.5	2913621.2	5/8 REBAR PLS 2147
25	297812.9	2913501.6	5/8 REBAR PLS 2117
26	297857.8	2913458.0	5/8 REBAR BASE
27	297397.9	2913136.8	5/8 REBAR BENT
28	297195.6	2912994.3	5/8 REBAR PLS 2147
29	297102.8	2912929.2	5/8 REBAR
30	297338.2	2912782.3	5/8 REBAR
31	298384.4	2912133.9	3/4 REBAR BELOW GRADE
32	298991.5	2912816.5	5/8 REBAR
33	298315.8	2913498.0	5/8 REBAR
34	298345.7	2913529.0	1 PIPE
35	298412.2	2913602.5	1 PIPE
36	298302.6	2913704.4	5/8 REBAR PLS 1038
37	298370.9	2913778.0	5/8 REBAR
38	298296.1	2913844.1	5/8 REBAR PLS 2038
39	298163.7	2913969.5	3/4 REBAR
40	297920.4	2914110.9	5/8 REBAR PLS 2147
41	297981.8	2914245.9	5/8 REBAR
42	298289.9	2914671.2	5/8 REBAR PLS 2147
43	298324.0	2914799.1	5/8 REBAR PLS 2147
44	298235.6	2914810.7	5/8 REBAR PLS 509
45	298011.8	2914394.7	5/8 REBAR PLS 2147
46	297834.5	2914168.8	5/8 REBAR (MISSING IN MAY 2015)
47	299405.4	2914970.0	GRANITE MONUMENT FOUND
48	299600.2	2914970.8	5/8 REBAR 2082
49	299646.9	2914968.1	5/8 REBAR 2082
50	299774.9	2914960.8	5/8 REBAR 2082
51	299817.0	2915065.2	1 1/2 PIPE
52	299850.5	2915186.1	1 PIPE
53	299870.8	2915228.8	CONC. MON-FLUSH
54	299913.3	2915266.2	1 PIPE
55	299944.7	2915216.5	3/4 REBAR 1280 INSIDE PIPE
56	300001.8	2915085.8	3/4 REBAR
57	295936.6	2909077.0	MTA-GRANITE
58	296386.8	2906704.0	3/4 REBAR PLS 2082
59	295750.3	2906211.4	1 PIPE
60	296168.2	2905641.9	3/4 REBAR PLS 2082
61	296459.5	2905230.3	GRANITE MONUMENT FOUND
62	296484.2	2905244.0	3/4 REBAR PLS 2082
63	296734.3	2905428.1	3/4 PIPE
64	297124.3	2905708.2	GRANITE MONUMENT FOUND
65	296326.0	2908871.6	MTA-GRANITE
66	297139.5	2908113.9	5/8 REBAR MTA
67	297555.3	2907807.7	5/8 REBAR MTA
68	297638.4	2907681.3	5/8 REBAR MTA
69	297770.5	2907622.4	5/8 REBAR MTA
70	297777.8	2908305.6	3/4 REBAR
71	297703.1	2908309.0	5/8 REBAR PLS 1118
72	297715.0	2908556.5	5/8 REBAR PLS 1118
73	297652.2	2909035.8	MTA-GRANITE
74	297492.0	2909027.9	MTA-GRANITE
75	297600.3	2907920.0	MTA-GRANITE
76	297603.7	2909438.3	5/8 REBAR MTA
77	297261.7	2910013.6	5/8 REBAR MTA
78	297310.0	2909984.4	MTA-GRANITE
79	297453.2	2909423.7	MTA-GRANITE
80	295554.5	2909336.2	3/4 REBAR 2282
81	295584.6	2908958.4	1" PIPE

NOTES

1. BOOK AND PAGE CITATIONS SHOWN HEREON REFER TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. NO MONUMENTS WERE SET AS OF THE DATE OF THIS PLAN.
3. A WRITTEN REPORT OF FINDINGS AND OPINIONS AS REQUIRED BY SECTION 10.A.3.D OF THE TECHNICAL STANDARDS OF PRACTICE OF THE STATE OF MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS WAS NOT PREPARED.
4. THE PURPOSE OF THIS SURVEY WAS TO DEFINE THE PERIMETER BOUNDARY OF THE PORTLAND INTERNATIONAL JETPORT PARCEL AND ACCESSORY PARCELS IN THE VICINITY OF THE JETPORT. INTERIOR PARCEL BOUNDARIES WERE NOT RESEARCHED OR DEFINED EXCEPT WHERE REQUIRED TO DEFINE THE PERIMETER BOUNDARY. EASEMENTS DEPICTED ON THIS PLAN WERE NOT COMPLETELY RESEARCHED OR LOCATED IN THE FIELD BUT SHOW THEIR GENERAL LOCATION RELATIVE TO THE PERIMETER BOUNDARY.
5. AERIAL PHOTOGRAPHY SHOWN WAS TAKEN IN 2015.
6. CURRENT OWNER: CITY OF PORTLAND
389 CONGRESS ST.
PORTLAND, MAINE 04101

LEGEND

- 1 — MONUMENT FOUND WITH REFERENCE NUMBER
- 79 — HIGHWAY MONUMENT FOUND WITH REFERENCE NUMBER
- 64 — STONE/GRANITE FOUND WITH REFERENCE NUMBER
- EASEMENT BOUNDARY
- PROPERTY LINE
- INTERIOR PARCEL BOUNDARY
- APPROXIMATE ABUTTER BOUNDARY
- E105 12 — PARCEL NUMBERING CORRESPONDS WITH DRAWING "PORTLAND INTERNATIONAL JETPORT EXHIBIT 'A'" DATED 7-9-2018, BY COFFMAN ASSOCIATES



SHEET INDEX
NOT TO SCALE



GRID NORTH
MAINE COORDINATE SYSTEM OF 1983 (2011)
WEST ZONE

SCALE: 1"= 200'

200' 0 200' 400' 600' 800'

SURVEY STANDARD

THIS PLAN WAS PREPARED FROM INFORMATION OBTAINED BY A SURVEY CONFORMING SUBSTANTIALLY TO THE REQUIREMENTS OF TECHNICAL STANDARDS CONTAINED IN CHAPTER 90, PART 2, OF THE RULES OF THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS, EFFECTIVE APRIL 1, 2001.

CLARK G. STAPLES, MAINE LICENSED
PROFESSIONAL LAND SURVEYOR No. 2332

STATE OF MAINE
CLARK G. STAPLES
NO. 2332
PROFESSIONAL LAND SURVEYOR

BOUNDARY SURVEY

OF LANDS OF

THE CITY OF PORTLAND

IN THE VICINITY OF

THE PORTLAND INTERNATIONAL JETPORT
-PORTLAND & SOUTH PORTLAND-
CUMBERLAND COUNTY, MAINE
FOR

Stantec

GOOD DEEDS
LAND SURVEYING • DEED RESEARCH
109 MAIN STREET
BELFAST, ME 04915
(207) 338-5743

DWG: 14078 MASTER PLAN 20220126.DWG
DATE: JANUARY 26, 2022
SCALE: 1"=200'
SHEET: 1 OF 5

MONUMENT #	NORTHING	EASTING	DESCRIPTION
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31	298384.4	2912133.9	3/4 REBAR BELOW GRADE
32	298991.5	2912816.5	5/8 REBAR
33	298315.8	2913488.0	5/8 REBAR
34	298345.7	2913529.0	1 PIPE
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45	298011.8	2914394.7	5/8 REBAR PLS 2147
46	297834.5	2914168.8	5/8 REBAR (MISSING IN MAY 2015)
47	299405.4	2914970.0	GRANITE MONUMENT FOUND
48	299600.2	2914970.8	5/8 REBAR 2082
49	299646.9	2914968.1	5/8 REBAR 2082
50	299774.9	2914960.8	5/8 REBAR 2082
51	299817.0	2915065.2	1 1/2 PIPE
52	299850.5	2915186.1	1 PIPE

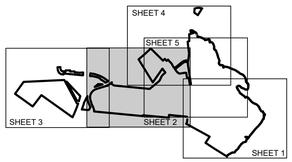
MONUMENT #	NORTHING	EASTING	DESCRIPTION
53	299870.8	2915228.8	CONC. MON-FLUSH
54	299913.3	2915266.2	1 PIPE
55	299944.7	2915216.5	3/4 REBAR 1280 INSIDE PIPE
56	300001.8	2915085.8	3/4 REBAR
57	295936.6	2909077.0	MT A GRANITE
58	296388.8	2906704.0	3/4 REBAR PLS 2082
59	295750.3	2906211.4	1 PIPE
60	296168.2	2905641.9	3/4 REBAR PLS 2082
61	296459.5	2905230.3	GRANITE MONUMENT FOUND
62	296484.2	2905244.0	3/4 REBAR PLS 2082
63	296734.3	2905428.1	3/4 PIPE
64	297124.3	2905708.2	GRANITE MONUMENT FOUND
65	296326.0	2908871.6	MT A GRANITE
66	297139.5	2908113.9	5/8 REBAR MT A
67	297555.3	2907807.7	5/8 REBAR MT A
68	297638.4	2907681.3	5/8 REBAR MT A
69	297770.5	2907622.4	5/8 REBAR MT A
70	297777.8	2908305.6	3/4 REBAR
71	297703.1	2908309.0	5/8 REBAR PLS 1118
72	297715.0	2908556.5	5/8 REBAR PLS 1118
73	297652.2	2909035.8	MT A GRANITE
74	297492.0	2909027.9	MT A GRANITE
75	297600.3	2907920.0	MT A GRANITE
76	297603.7	2909438.3	5/8 REBAR MT A
77	297261.7	2910013.6	5/8 REBAR MT A
78	297310.0	2909984.4	MT A GRANITE
79	297453.2	2909423.7	MT A GRANITE
80	295554.5	2909336.2	3/4 REBAR 2282
81	295584.6	2908958.4	1" PIPE

NOTES

1. BOOK AND PAGE CITATIONS SHOWN HEREON REFER TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. NO MONUMENTS WERE SET AS OF THE DATE OF THIS PLAN.
3. A WRITTEN REPORT OF FINDINGS AND OPINIONS AS REQUIRED BY SECTION 10.A.3.D OF THE TECHNICAL STANDARDS OF PRACTICE OF THE STATE OF MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS WAS NOT PREPARED.
4. THE PURPOSE OF THIS SURVEY WAS TO DEFINE THE PERIMETER BOUNDARY OF THE PORTLAND INTERNATIONAL JETPORT PARCEL AND ACCESSORY PARCELS IN THE VICINITY OF THE JETPORT. INTERIOR PARCEL BOUNDARIES WERE NOT RESEARCHED OR DEFINED EXCEPT WHERE REQUIRED TO DEFINE THE PERIMETER BOUNDARY. EASEMENTS DEPICTED ON THIS PLAN WERE NOT COMPLETELY RESEARCHED OR LOCATED IN THE FIELD BUT SHOW THEIR GENERAL LOCATION RELATIVE TO THE PERIMETER BOUNDARY.
5. AERIAL PHOTOGRAPHY SHOWN WAS TAKEN IN 2015.
6. CURRENT OWNER: CITY OF PORTLAND
   389 CONGRESS ST.
   PORTLAND, MAINE 04101

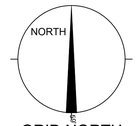
LEGEND

- 1 — MONUMENT FOUND WITH REFERENCE NUMBER
- 79 — HIGHWAY MONUMENT FOUND WITH REFERENCE NUMBER
- 64 — STONE/GRANITE FOUND WITH REFERENCE NUMBER
- EASEMENT BOUNDARY
- PROPERTY LINE
- INTERIOR PARCEL BOUNDARY
- APPROXIMATE ABUTTER BOUNDARY
- E105 / 12 — PARCEL NUMBERING CORRESPONDS WITH DRAWING "PORTLAND INTERNATIONAL JETPORT EXHIBIT 'A'" DATED 7-9-2018, BY COFFMAN ASSOCIATES



SHEET INDEX

NOT TO SCALE



GRID NORTH

MAINE COORDINATE SYSTEM OF 1983 (2011)
WEST ZONE

SCALE: 1"= 200'

200' 0 200' 400' 600' 800'

SURVEY STANDARD

THIS PLAN WAS PREPARED FROM INFORMATION OBTAINED BY A SURVEY CONFORMING SUBSTANTIALLY TO THE REQUIREMENTS OF TECHNICAL STANDARDS CONTAINED IN CHAPTER 90, PART 2, OF THE RULES OF THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS, EFFECTIVE APRIL 1, 2001.

CLARK G. STAPLES, MAINE LICENSED PROFESSIONAL LAND SURVEYOR No. 2332

STATE OF MAINE — CLARK G STAPLES — NO. 2332 — PROFESSIONAL LAND SURVEYOR

BOUNDARY SURVEY

OF LANDS OF

THE CITY OF PORTLAND

IN THE VICINITY OF

THE PORTLAND INTERNATIONAL JETPORT

-PORTLAND & SOUTH PORTLAND-

CUMBERLAND COUNTY, MAINE

FOR

Stantec

GOOD DEEDS
LAND SURVEYING • DEED RESEARCH
109 MAIN STREET
BELFAST, ME 04915
(207) 338-5743

DWG: 14078 MASTER PLAN 20220126.DWG

DATE: JANUARY 26, 2022

SCALE: 1"=200'

SHEET: 2 OF 5

MONUMENT #	NORTHING	EASTING	DESCRIPTION
1	294607.0	2918656.4	5/8 REBAR BENT BASE
2	293077.4	2916874.8	5/8 REBAR FLUSH (9' SWLY OF LINE)
3	294785.1	2914796.2	REBAR 2317 FLUSH WITH PAVE
4	295127.0	2913819.7	5/8 REBAR
5	295179.4	2913257.8	5/8 REBAR BELOW GRADE
6	295235.4	2912660.7	5/8 REBAR BELOW GRADE
7	295262.5	2912377.2	5/8 REBAR BELOW GRADE
8	295357.1	2910852.3	2" PIPE
9	295359.4	2910829.0	5/8 REBAR PLS 1245
10	295365.5	2910763.7	5/8 REBAR
11	297030.2	2910591.5	3/4 REBAR
12	296924.0	2910751.3	IRON ROD WITH COPPER CAP
13	296885.9	2911158.5	5/8 REBAR BASE
14	296798.7	2912082.8	3/4 PIPE BASE
15	296742.0	2912678.0	5/8 REBAR
16	296734.1	2912757.3	5/8 REBAR FLAT ON GROUND
17	NONE	NONE	NONE
18	297073.1	2913169.6	5/8 REBAR PLS 2147
19	297140.0	2913250.7	3/4 REBAR
20	297253.6	2913337.6	3/4 REBAR PLS 2147
21	297406.7	2913406.4	3/4 REBAR PLS 2147
22	297551.5	2913520.1	MAGNAIL WWASHER PLS 1205
23	297629.9	2913617.2	5/8 REBAR PLS 2117
24	297664.5	2913621.2	5/8 REBAR PLS 2147
25	297812.9	2913501.6	5/8 REBAR PLS 2117
26	297857.8	2913458.0	5/8 REBAR BASE
27	297397.9	2913136.8	5/8 REBAR BENT
28	297195.6	2912994.3	5/8 REBAR PLS 2147
29	297102.8	2912929.2	5/8 REBAR
30	297338.2	2912782.3	5/8 REBAR
31	298384.4	2912133.9	3/4 REBAR BELOW GRADE
32	298991.5	2912816.5	5/8 REBAR
33	298315.8	2913488.0	5/8 REBAR
34	298345.7	2913529.0	1 PIPE
35	298412.2	2913602.5	1 PIPE
36	298302.6	2913704.4	5/8 REBAR PLS 1038
37	298370.9	2913778.0	5/8 REBAR
38	298296.1	2913844.1	5/8 REBAR PLS 2038
39	298163.7	2913969.5	3/4 REBAR
40	297920.4	2914110.9	5/8 REBAR PLS 2147
41	297981.8	2914245.9	5/8 REBAR
42	298289.9	2914671.2	5/8 REBAR PLS 2147
43	298324.0	2914799.1	5/8 REBAR PLS 2147
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77	297261.7	2910013.6	5/8 REBAR MT A
78	297310.0	2909984.4	MT A-GRANITE
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80	295554.5	2909336.2	3/4 REBAR 2282
81	295584.6	2908958.4	1" PIPE


NOW OR FORMERLY SYSCO FOOD SERVICES OF NORTHERN NEW ENGLAND, INC. BOOK 13655, PAGE 102 MAP FILE 138, PAGE 56, LOT 14
NOW OR FORMERLY SYSCO FOOD SERVICES OF NORTHERN NEW ENGLAND, INC. BOOK 13655, PAGE 102 MAP FILE 138, PAGE 56, LOT 15
NOW OR FORMERLY SYSCO FOOD SERVICES OF NORTHERN NEW ENGLAND, INC. BOOK 12175, PAGE 203
NOW OR FORMERLY ROYAL FLOUR, LLC BOOK 21368, PAGE 258 MAP FILE 138, PAGE 56, LOT 17
NOW OR FORMERLY MAINE METAL FINISHING COMPANY, INC. BOOK 6282, PAGE 336 MAP FILE 138, PAGE 56, LOT 18
NOW OR FORMERLY SABLEGOLF, LLC BOOK 17279, PAGE 232 PARCEL 3 MAP FILE 4, PAGE 33
NOW OR FORMERLY ROBERT HARRISBURG BOOK 2493, PAGE 223 FORMERLY FRANK P. CUMMINGS BOOK 479, PAGE 285 SEE MAP FILE 4, PAGE 33
NOW OR FORMERLY SABLEGOLF, LLC BOOK 17279, PAGE 232 PARCEL 2 MAP FILE 4, PAGE 33 MAP FILE 199, PAGE 454 MAP FILE 184, PAGE 16 MAP FILE 159, PAGE 64 MAP FILE 163, PAGE 47
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NOW OR FORMERLY CITY OF PORTLAND BOOK 21040, PAGE 74, PARCEL 2
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NOW OR FORMERLY GEORGE M. HUTCHINS BOOK 2391, PAGE 239
NOW OR FORMERLY MAINE TURNPIKE AUTHORITY BOOK 12998, PAGE 349 PARCEL 1 & 2
NOW OR FORMERLY CITY OF PORTLAND BOOK 21040, PAGE 64, PARCEL 2 PLAN BOOK 213, PAGE 194
NOW OR FORMERLY TEMPLE BETH-EL BOOK 2520, PAGE 125
NOW OR FORMERLY MAINE TURNPIKE AUTHORITY BOOK 15057, PAGE 16
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NOW OR FORMERLY CITY OF PORTLAND CITY CLERK'S RECORDS BOOK 72, PAGE 256 DOCKET 332, PARCEL 2
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NOW OR FORMERLY MARY-ROSE STARR BOOK 13684, PAGE 121
LEASE TO DULUTH HOLDINGS, INC. (UNRECORDED) LOCATION AS PROVIDED BY SEBAGO TECHNICS
NOW OR FORMERLY CITY OF PORTLAND BOOK 3007, PAGE 617, PARCELS B-6
MAP KEY 85 BOOK 23154, PAGE 238 DISCONTINUANCE OF PORTION OF JETPORT PLAZA ROAD
NOW OR FORMERLY JETPORT PLAZA LLC BOOK 21265, PAGE 300 MAP FILE 113, PAGE 58
LEASE TO JETPORT PROPERTIES LLC BOOK 25698, PAGE 194 PARCELS A,B,C MAP KEY 88.89.90
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AIRSPACE EASEMENT BOOK 3007, PAGE 883 BOOK 3007, PAGE 617 PARCEL D-1
EASEMENT TO PORTLAND WATER DISTRICT BOOK 2411, PAGE 136 4 RODS WIDE (APPROXIMATE LOCATION)
NOW OR FORMERLY CITY OF PORTLAND BOOK 2457, PAGE 262
NOW OR FORMERLY CITY OF PORTLAND BOOK 2457, PAGE 262
PORTLAND SOUTH PORTLAND (APPROXIMATE)
AREA= 89.0 ACRES±
AREA= 4.2 ACRES±
AREA= 4.2 ACRES±
AREA= 5.6 ACRES±
AREA= 3.5 ACRES±
AREA= 240.9 ACRES±
N 87°17'50" E 2273.4'
N 87°22'50" E 251.5'
N 87°13'50" E 247.8'
N 84°24'50" W 1113.2'
N 84°29'20" E 72.8'
N 83°48'20" W 75.0'
N 77°54'50" W 188.4'
N 71°12'30" W 178.0'
N 84°26'10" E 181.8'
N 86°48'10" E 196.8'
S 84°26'00" E 282.2'
S 02°25'20" E 46.5'
S 02°25'20" W 60.8'
S 02°25'20" E 181.5'
S 02°40'20" W 160.4'
S 02°45'20" E 151.2'
S 02°45'20" E 72.8'
S 25°36'10" W 36.3'
S 14°05'00" E 104.0'
S 22°28'30" E 60.2'
S 55°59'50" E 83.3'
N 87°58'40" E 167.0'
N 06°03'22" W 178.1'
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N 83°35'30" W 135.7'
N 87°17'50" E 2273.4'
N 27°25'00" W 1111.1'
S 37°22'20" E 1475.3'
S 71°40'50" E 124.2'
S 71°46'50" E 77.1'
S 25°27'50" W 405.6'
N 27°34'00" W 117.4'
N 62°26'10" W 19.6'
N 30°11'10" E 117.1'
N 45°13'50" E 30.0'
S 85°27'00" E 379.1'
N 53°51'40" E 10.0'
N 03°28'40" E 75.0'
S 84°33'10" E 414.4'
S 72°39'10" W 414.4'
S 25°46'10" E 33.0'
N 72°39'10" E 501.1'
N 17°20'50" W 501.1'
N 72°39'10" E 1120.8'
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N 55°42'10" W 237.4'
S 55°42'10" E 237.4'
S 34°20'50" W 162.5'
N 34°20'50" E 162.5'
S 84°29'20" E 72.8'
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73	297652.2	2909035.8	MT A-GRANITE
74	297492.0	2909027.9	MT A-GRANITE
75	297600.3	2907920.0	MT A-GRANITE
76	297603.7	2909438.3	5/8 REBAR MT A
77	297261.7	2910013.6	5/8 REBAR MT A
78	297310.0	2909984.4	MT A-GRANITE
79	297453.2	2909423.7	MT A-GRANITE
80	295554.5	2909336.2	3/4 REBAR 2282
81	295584.6	2908958.4	1" PIPE

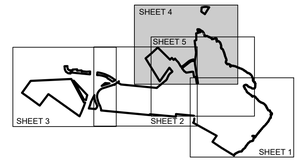


NOTES

1. BOOK AND PAGE CITATIONS SHOWN HEREON REFER TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. NO MONUMENTS WERE SET AS OF THE DATE OF THIS PLAN.
3. A WRITTEN REPORT OF FINDINGS AND OPINIONS AS REQUIRED BY SECTION 10.A.3.D OF THE TECHNICAL STANDARDS OF PRACTICE OF THE STATE OF MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS WAS NOT PREPARED.
4. THE PURPOSE OF THIS SURVEY WAS TO DEFINE THE PERIMETER BOUNDARY OF THE PORTLAND INTERNATIONAL JETPORT PARCEL AND ACCESSORY PARCELS IN THE VICINITY OF THE JETPORT. INTERIOR PARCEL BOUNDARIES WERE NOT RESEARCHED OR DEFINED EXCEPT WHERE REQUIRED TO DEFINE THE PERIMETER BOUNDARY. EASEMENTS DEPICTED ON THIS PLAN WERE NOT COMPLETELY RESEARCHED OR LOCATED IN THE FIELD BUT SHOW THEIR GENERAL LOCATION RELATIVE TO THE PERIMETER BOUNDARY.
5. AERIAL PHOTOGRAPHY SHOWN WAS TAKEN IN 2015.
6. CURRENT OWNER: CITY OF PORTLAND
   389 CONGRESS ST.
   PORTLAND, MAINE 04101

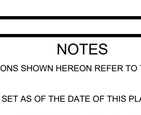
LEGEND

- 1 — MONUMENT FOUND WITH REFERENCE NUMBER
- 79 — HIGHWAY MONUMENT FOUND WITH REFERENCE NUMBER
- 64 — STONE/GRANITE FOUND WITH REFERENCE NUMBER
- EASEMENT BOUNDARY
- PROPERTY LINE
- INTERIOR PARCEL BOUNDARY
- APPROXIMATE ABUTTER BOUNDARY
- (E105) (12) — PARCEL NUMBERING CORRESPONDS WITH DRAWING "PORTLAND INTERNATIONAL JETPORT EXHIBIT "A" DATED 7-9-2018, BY COFFMAN ASSOCIATES



SHEET INDEX

NOT TO SCALE



GRID NORTH

MAINE COORDINATE SYSTEM OF 1983 (2011)
WEST ZONE

SCALE: 1"= 200'

200' 0 200' 400' 600' 800'

SURVEY STANDARD

THIS PLAN WAS PREPARED FROM INFORMATION OBTAINED BY A SURVEY CONFORMING SUBSTANTIALLY TO THE REQUIREMENTS OF TECHNICAL STANDARDS CONTAINED IN CHAPTER 90, PART 2, OF THE RULES OF THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS, EFFECTIVE APRIL 1, 2001.

CLARK G. STAPLES, MAINE LICENSED
PROFESSIONAL LAND SURVEYOR No. 2332

STATE OF MAINE
CLARK
G
STAPLES
NO. 2332
PROFESSIONAL
LAND SURVEYOR

BOUNDARY SURVEY

OF LANDS OF

THE CITY OF PORTLAND

IN THE VICINITY OF

THE PORTLAND INTERNATIONAL JETPORT
-PORTLAND & SOUTH PORTLAND-
CUMBERLAND COUNTY, MAINE
FOR

Stantec

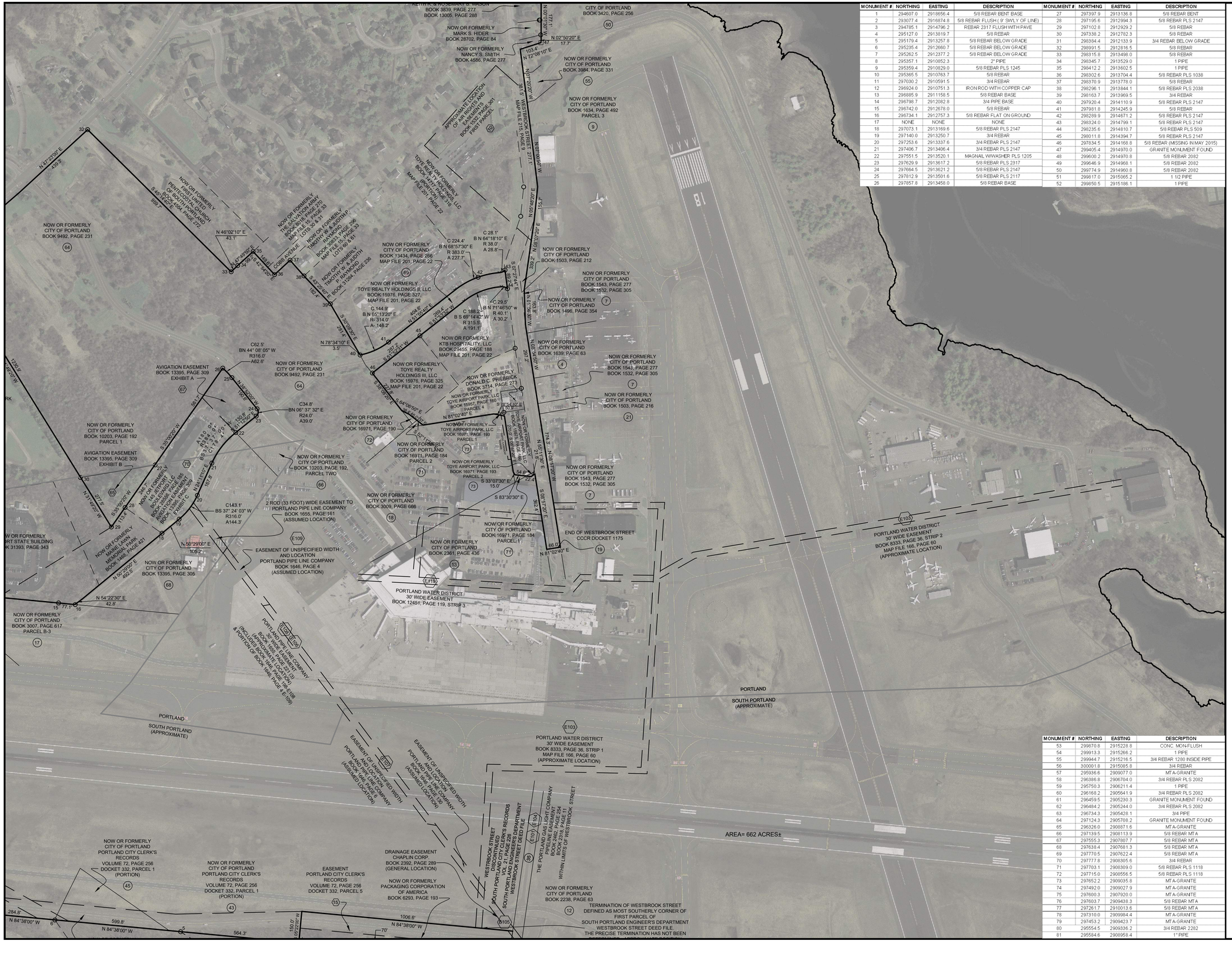
GOOD DEEDS
LAND SURVEYING • DEED RESEARCH
109 MAIN STREET
BELFAST, ME 04915
(207) 338-5743

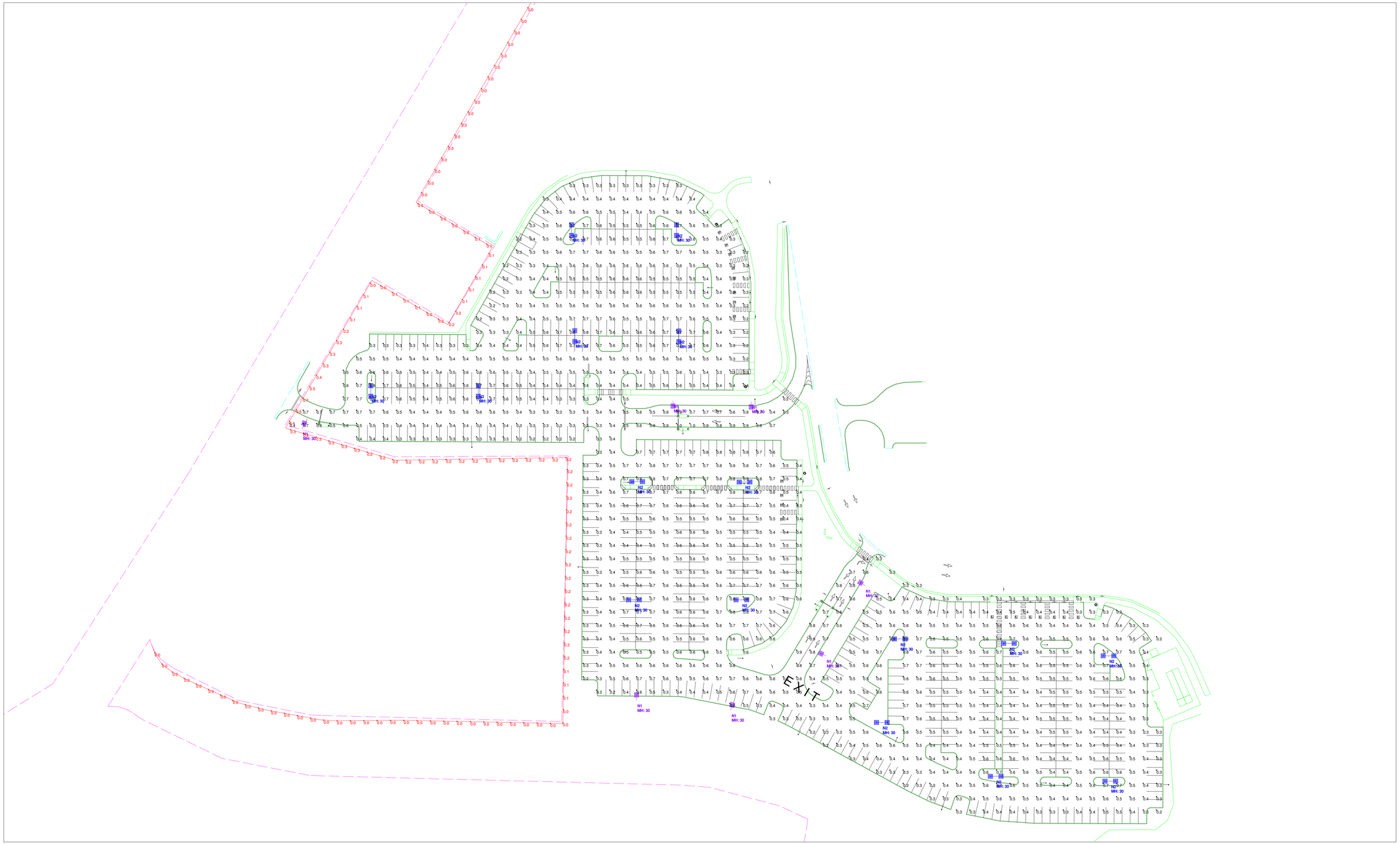
DWG: 14078 MASTER PLAN 20220126.DWG

DATE: JANUARY 26, 2022

SCALE: 1"=200'

SHEET: 4 OF 5


KEITH R. & ROSEMARY B. MASON BOOK 3839, PAGE 277 BOOK 13005, PAGE 288
NOW OR FORMERLY MARK S. HIDER BOOK 28702, PAGE 94
NOW OR FORMERLY NANCY S. SMITH BOOK 4586, PAGE 277
CITY OF PORTLAND BOOK 3420, PAGE 256
NOW OR FORMERLY CITY OF PORTLAND BOOK 3984, PAGE 331
NOW OR FORMERLY CITY OF PORTLAND BOOK 1634, PAGE 492 PARCEL 3
APPROXIMATE LOCATION OF NW RIGHTS AND EASEMENTS DESCRIBED IN BOOK 1655, PAGE 301 FIRST PARCEL
381.5' WESTBROOK STREET 22'-11' MAP FILE 215 PAGE 9
NOW OR FORMERLY CITY OF PORTLAND BOOK 1503, PAGE 212
NOW OR FORMERLY CITY OF PORTLAND BOOK 1543, PAGE 277 BOOK 1532, PAGE 305
NOW OR FORMERLY CITY OF PORTLAND BOOK 1496, PAGE 354
NOW OR FORMERLY CITY OF PORTLAND BOOK 1639, PAGE 63
NOW OR FORMERLY CITY OF PORTLAND BOOK 1543, PAGE 277 BOOK 1532, PAGE 305
NOW OR FORMERLY CITY OF PORTLAND BOOK 1503, PAGE 216
NOW OR FORMERLY CITY OF PORTLAND BOOK 1543, PAGE 277 BOOK 1532, PAGE 305
NOW OR FORMERLY CITY OF PORTLAND BOOK 9492, PAGE 231
NOW OR FORMERLY PENOBSCOT MCMURCH OF SOUTH PORTLAND BOOK 1584, PAGE 272
NOW OR FORMERLY TRE-SALVATION ARMY BOOK 3618, PAGE 270 MAP FILE 5, PAGE 33 LOTS 5, 6 & 41
NOW OR FORMERLY TIMOTHY W. & JUDITH P. RAMOND BOOK 3363, PAGE 246 MAP FILE 15, PAGE 33 LOTS 66 & 68
NOW OR FORMERLY TIMOTHY W. & JUDITH P. RAMOND BOOK 31294, PAGE 236
NOW OR FORMERLY TOYE REALTY HOLDINGS II, LLC BOOK 15976, PAGE 327, MAP FILE 201, PAGE 22
NOW OR FORMERLY CITY OF PORTLAND BOOK 13434, PAGE 266 MAP FILE 201, PAGE 22
NOW OR FORMERLY TOYE REALTY HOLDINGS III, LLC BOOK 15976, PAGE 325 MAP FILE 201, PAGE 22
NOW OR FORMERLY KTB HOSPITALITY, LLC BOOK 29455, PAGE 188 MAP FILE 201, PAGE 22
NOW OR FORMERLY DONALD C. PHILBRICK BOOK 3714, PAGE 273
NOW OR FORMERLY TOYE AIRPORT PARK, LLC BOOK 15957, PAGE 160 PARCEL 4
NOW OR FORMERLY TOYE AIRPORT PARK, LLC BOOK 16971, PAGE 193 PARCEL 1
NOW OR FORMERLY TOYE AIRPORT PARK, LLC BOOK 16971, PAGE 193 PARCEL 2
NOW OR FORMERLY CITY OF PORTLAND BOOK 16971, PAGE 190
NOW OR FORMERLY CITY OF PORTLAND BOOK 16971, PAGE 184 PARCEL 2
NOW OR FORMERLY CITY OF PORTLAND BOOK 16971, PAGE 184 PARCEL 1
NOW OR FORMERLY CITY OF PORTLAND BOOK 3009, PAGE 606
NOW OR FORMERLY CITY OF PORTLAND BOOK 2361, PAGE 436
NOW OR FORMERLY CITY OF PORTLAND BOOK 3007, PAGE 617 PARCEL B-3
NOW OR FORMERLY CITY OF PORTLAND BOOK 13395, PAGE 305
NOW OR FORMERLY CITY OF PORTLAND BOOK 10203, PAGE 192 PARCEL 1
NOW OR FORMERLY CITY OF PORTLAND BOOK 10203, PAGE 192, PARCEL TWO
NOW OR FORMERLY CITY OF PORTLAND BOOK 9492, PAGE 231
NOW OR FORMERLY MAINE LAWN MEMORIAL PARK BOOK 1466, PAGE 221
NOW OR FORMERLY BOULDERVILLE 145 STROUDWATER BOOK 28566, PAGE 185 AVIGATION EASEMENT BOOK 13395, PAGE 309 EXHIBIT C
AVIGATION EASEMENT BOOK 13395, PAGE 309 EXHIBIT A
AVIGATION EASEMENT BOOK 13395, PAGE 309 EXHIBIT B
NOW OR FORMERLY CITY OF PORTLAND PORTLAND CITY CLERK'S RECORDS VOLUME 72, PAGE 256 DOCKET 332, PARCEL 1 (PORTION)
NOW OR FORMERLY CITY OF PORTLAND PORTLAND CITY CLERK'S RECORDS VOLUME 72, PAGE 256 DOCKET 332, PARCEL 1 (PORTION)
EASEMENT PORTLAND CITY CLERK'S RECORDS VOLUME 72, PAGE 256 DOCKET 332, PARCEL 5
NOW OR FORMERLY PACKAGING CORPORATION OF AMERICA BOOK 6293, PAGE 193
DRAINAGE EASEMENT CHAPLIN CORP BOOK 2392, PAGE 289 (GENERAL LOCATION)
NOW OR FORMERLY CITY OF PORTLAND BOOK 2238, PAGE 63
2 ROD (33 FOOT) WIDE EASEMENT TO PORTLAND PIPE LINE COMPANY BOOK 1655, PAGE 161 (ASSUMED LOCATION)
EASEMENT OF UNSPECIFIED WIDTH AND LOCATION PORTLAND PIPE LINE COMPANY BOOK 1646, PAGE 4 (ASSUMED LOCATION)
PORTLAND PIPE LINE COMPANY 30' WIDE EASEMENT BOOK 1655, PAGE 221 (3) (APPROXIMATE LOCATION) (INCLUDES BOOK 1646, PAGE 184 & PORTION OF BOOK 1646, PAGE E-109)
EASEMENT OF UNSPECIFIED WIDTH AND LOCATION PORTLAND PIPE LINE COMPANY BOOK 1646, PAGE 4 (ASSUMED LOCATION)
EASEMENT OF UNSPECIFIED WIDTH AND LOCATION PORTLAND PIPE LINE COMPANY BOOK 1646, PAGE 4 (ASSUMED LOCATION)
PORTLAND WATER DISTRICT 30' WIDE EASEMENT BOOK 12451, PAGE 119, STRIP 3
PORTLAND WATER DISTRICT 30' WIDE EASEMENT BOOK 8333, PAGE 36, STRIP 1 MAP FILE 166, PAGE 60 (APPROXIMATE LOCATION)
PORTLAND WATER DISTRICT 30' WIDE EASEMENT BOOK 8333, PAGE 36, STRIP 2 MAP FILE 166, PAGE 60 (APPROXIMATE LOCATION)
THE PORTLAND GAS LIGHT COMPANY PIPELINE EASEMENT BOOK 2462, PAGE 314 BOOK 2539, PAGE 11 WITHIN LIMITS OF WESTBROOK STREET
WESTBROOK STREET (CONTINUED SOUTHERLY AS PUBLIC WAYS) SOUTH PORTLAND CITY CLERK'S RECORDS VOL. 21, PAGE 28 SOUTH PORTLAND ENGINEER'S DEPARTMENT WESTBROOK STREET DEED FILE
END OF WESTBROOK STREET CCOR DOCKET 1175
TERMINATION OF WESTBROOK STREET DEFINED AS MOST SOUTHERLY CORNER OF FIRST PARCEL OF SOUTH PORTLAND ENGINEER'S DEPARTMENT WESTBROOK STREET DEED FILE. THE PRECISE TERMINATION HAS NOT BEEN
PORTLAND
SOUTH PORTLAND (APPROXIMATE)
PORTLAND
SOUTH PORTLAND (APPROXIMATE)
AREA= 662 ACRES±
N 47°23'00" E 439.8'
N 46°02'10" E 43.1'
N 42°47'59" E 162.6'
N 42°47'59" E 162.6'
S 43°23'40" E 162.4'
S 37°09'39" E 161.4'
N 78°34'10" E 3.5'
S 37°09'39" E 1230.9'
S 37°09'39" W 1230.9'
S 37°09'39" W 591.1'
S 37°09'39" W 1130.8'
S 37°09'39" W 1130.8'
S 37°09'39" W 1130.8



Scale: 1 inch= 50.00 Ft.

Luminaire Schedule

Symbol	Qty	Label	LLF	Description	Lum. Watts
	7	N1	0.850	NV-1-T4L-16L-1-30K7-SINGLE	56
	16	N2	0.850	NV-1-T5QW-32L-530-30K7-TWIN TUMED TO 39W	39

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
PROPERTY LINE	Illuminance	Fc	0.09	0.7	0.0	N.A.	N.A.
SITE CALCS	Illuminance	Fc	0.50	1.0	0.2	2.50	5.00

NLS LIGHTING

Date:11/14/2024

PROJECT:

PORTLAND MAINE INTERNATIONAL JETPORT EXPANSION

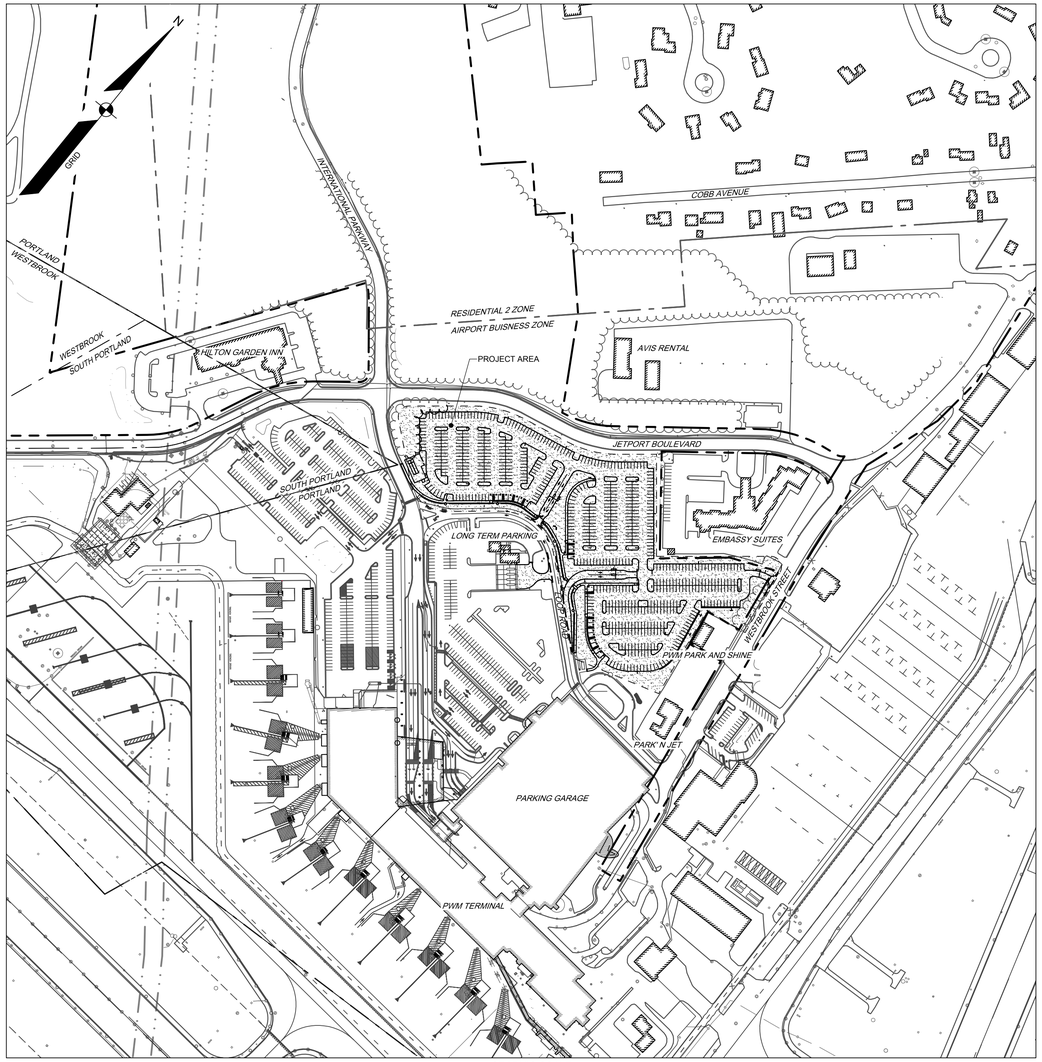
CHARRON REFLEX LIGHTING

Drawing:

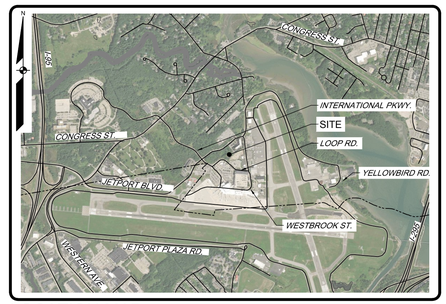
Photometric Study

PORTLAND INTERNATIONAL JETPORT
PARKING EXPANSION

1001 WESTBROOK STREET
PORTLAND, MAINE 04102



GRAPHIC SCALE
200 0 100 200 400
(IN FEET)
1 INCH = 200FT.



LOCATION MAP NTS

Sheet List Table

SHEET	TITLE
G-001	COVER SHEET
G-002	NOTES & LEGEND
C-003	DEMOLITION PLAN
C-100	OVERALL SITE PLAN
C-101	SITE PLAN
C-102	SITE PLAN
C-103	SITE PLAN
C-200	OVERALL GRADING PLAN
C-201	GRADING PLAN
C-202	GRADING PLAN
C-203	GRADING PLAN
C-300	OVERALL UTILITY PLAN
C-301	UTILITY PLAN
C-302	UTILITY PLAN
C-303	UTILITY PLAN
C-304	PIPE AND STRUCTURE DATA TABLES
L-100	OVERALL LANDSCAPE PLAN
L-101	TREE REMOVAL & PRESERVATION PLAN
L-102	LANDSCAPE PLAN
L-103	LANDSCAPE PLAN
L-104	LANDSCAPE PLAN
C-400	CONSTRUCTION SEQUENCE PLAN
C-500	EROSION CONTROL NOTES
C-501	EROSION CONTROL DETAILS
C-502	SITE DETAILS
C-503	SITE DETAILS
C-504	SITE DETAILS
C-505	SITE DETAILS
C-506	SITE DETAILS
C-507	SITE DETAILS
1 OF 5	BOUNDARY SURVEY
2 OF 5	BOUNDARY SURVEY
3 OF 5	BOUNDARY SURVEY
4 OF 5	BOUNDARY SURVEY
5 OF 5	BOUNDARY SURVEY
1 OF 1	SITE PHOTOMETRICS PLAN

APPLICANT:

PORTLAND INTERNATIONAL JETPORT
PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

ENGINEER/SURVEYOR/
LANDSCAPE ARCHITECT:

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

2024-08-30

AMY BELL SEGAL, RLA 2265
LICENSED LANDSCAPE ARCHITECT
Amy Bell Segal
No. 2265
STATE OF MAINE
08.30.24

PAUL D. OSTROWSKI, PE 11175
STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
LICENSED PROFESSIONAL ENGINEER
08/30/2024

REV.	BY:	DATE:	STATUS:
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	06/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/19/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS AUTHORIZED BY OTHERS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

COVER SHEET
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 200'
PROJECT	19059

SHEET G-001

F:\Projects\19000\19059\DWG\Design\19059 C.dwg - 8/30/2024 2:00 PM - TANNER F. GOODINE

19059 C.dwg, TAB:G-001 Cover

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	DEED LINE/R.O.W.	
	TIE LINE	
	SETBACK	
	EASEMENT	
	BUFFER	
	FLOODPLAIN	
	FLOODWAY	
	CENTERLINE	
⊡	MONUMENT	■
◎	IRON PIPE/ROD	●
◎	DRILL HOLE	◉
C1/L1	DEED CALL	
C1/L1	CURVE/LINE NO.	C1/L1
	SOILS	
	ZONE LINE	
	ZONE LINE ON PL	
BENCHMARK DESCRIPTION WITH ELEVATION	BENCHMARK	
△	SURVEY CONTROL	
TP-1	TEST PIT	
MW-1	MONITORING WELL	
B-1	BORING	
	BUILDING	
	DECK/STEPS/ OVERHANG	
	EDGE WETLAND	
	WETLANDS	
	UPLANDS	
	STREAM	
	LEDGE	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
120 118	CONTOURS	120
×120.00	SPOT GRADE	+120.00
O	CHAIN LINK FENCE	O
X	BARB WIRE FENCE	X
◻	STOCKADE FENCE	◻
	GUARD RAIL	
	STONE WALL	
	RETAINING WALL	
	DECIDUOUS TREE	X
	CONIFEROUS TREE	X
	MULCH LINE	
○	BOLLARD	●
	SIGN	
	RAILROAD	
G	GAS	G
	GAS GATE VALVE	GV
GM	GAS METER	
G	GAS MANHOLE	
W	WATER	W
	WATER GATE VALVE	WV
	WATER SHUT OFF	
	HYDRANT	
W	WATER MANHOLE	
W	WELL	W
S	SANITARY SEWER	S
FM	FORCE MAIN	FM
S	SANITARY MANHOLE	
	SEWER CLEAN OUT	
SD	STORM DRAIN	SD
UD	UNDER DRAIN	UD
D	DRAINAGE MANHOLE	
	CATCH BASIN	
OHU	OVERHEAD UTILITY	OHU
UGU	UNDERGROUND UTILITY	UGU
T	TRANSFORMER PAD	T
E	ELECTRICAL MANHOLE	E
EM	ELECTRIC METER	
H	HVAC UNIT	
T	TELEPHONE MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	
	DRAINAGE DITCH	
	EROSION CONTROL BLANKET	
	FILTER BARRIER	FB
	RIPRAP	
	CHECK DAM	
	INLET PROTECTION	
	BOULDER	

GENERAL NOTES

1. BOOK AND PAGE CITATIONS SHOWN HEREON REFER TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. NO MONUMENTS WERE SET AS OF THE DATE OF THIS PLAN.
3. A WRITTEN REPORT OF FINDINGS AND OPINIONS AS REQUIRED BY SECTION 10.A.3.D OF THE TECHNICAL STANDARDS OF PRACTICE OF THE STATE OF MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS WAS NOT PREPARED.
4. THE PURPOSE OF THIS SURVEY WAS TO DEFINE THE PERIMETER BOUNDARY OF THE PORTLAND INTERNATIONAL JETPORT PARCEL AND ACCESSORY PARCELS IN THE VICINITY OF THE JETPORT. INTERIOR PARCEL BOUNDARIES WERE NOT RESEARCHED OR DEFINED EXCEPT WHERE REQUIRED TO DEFINE THE PERIMETER BOUNDARY. EASEMENTS DEPICTED ON THIS PLAN WERE NOT COMPLETELY RESEARCHED OR LOCATED IN THE FIELD BUT SHOW THEIR GENERAL LOCATION RELATIVE TO THE PERIMETER BOUNDARY.
5. CURRENT OWNER:

   CITY OF PORTLAND
   389 CONGRESS ST.
   PORTLAND, MAINE 04101
6. ALL WORK SHALL CONFORM TO THE APPLICABLE CODES AND ORDINANCES.
7. CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIM OR HERSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIM OR HERSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
8. CONTRACTOR SHALL NOTIFY ENGINEER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND IN THE FIELD.
9. PROVIDE ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND OWNER'S REQUIREMENTS UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
10. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
11. CONTRACTOR SHALL CLEAN AND REMOVE DEBRIS AND SEDIMENT DEPOSITED ON PUBLIC STREETS, SIDEWALKS, ADJACENT AREAS, OR OTHER PUBLIC WAYS DUE TO CONSTRUCTION.
12. CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN CONSTRUCTION TO PROTECT EXISTING STRUCTURES, PHYSICAL FEATURES, AND MAINTAIN SITE STABILITY DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE ALL AREAS TO ORIGINAL CONDITION AND AS DIRECTED BY DESIGN DRAWINGS.
13. SITE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.
14. ALL PAVEMENT MARKINGS AND DIRECTIONAL SIGNAGE SHOWN ON THE PLAN SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS.
15. ALL PAVEMENT JOINTS SHALL BE SAWCUT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
16. NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.
17. IMMEDIATELY UPON COMPLETION OF CUTS/FILLS, THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH EROSION CONTROL NOTES AND AS SPECIFIED ON PLANS.
18. THE CONTRACTOR SHALL BE FULLY AND SOLELY RESPONSIBLE FOR THE REMOVAL, REPLACEMENT AND RECTIFICATION OF ALL DAMAGED AND DEFECTIVE MATERIAL AND WORKMANSHIP IN CONNECTION WITH THE CONTRACT WORK. THE CONTRACTOR SHALL REPLACE OR REPAIR AS DIRECTED BY THE ENGINEER ALL SUCH DAMAGED OR DEFECTIVE MATERIALS WHICH APPEAR WITHIN A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.
19. ALL WORK PERFORMED BY THE GENERAL CONTRACTOR AND/OR TRADE SUBCONTRACTOR SHALL CONFORM TO THE REQUIREMENTS OF LOCAL, STATE OR FEDERAL LAWS, AS WELL AS ANY OTHER GOVERNING REQUIREMENTS, WHETHER OR NOT SPECIFIED ON THE DRAWINGS.
20. WHERE THE TERMS "APPROVED EQUAL", "OTHER APPROVED", "EQUAL TO", "ACCEPTABLE" OR OTHER GENERAL QUALIFYING TERMS ARE USED IN THESE NOTES, IT SHALL BE UNDERSTOOD THAT REFERENCE IS MADE TO THE RULING AND JUDGEMENT OF SEBAGO TECHNICS, INC.
21. THE GENERAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PROTECTION FOR THE WORK UNTIL TURNED OVER TO THE OWNER.
22. THE GENERAL CONTRACTOR SHALL MAINTAIN A CURRENT AND COMPLETE SET OF CONSTRUCTION DRAWINGS ON SITE DURING ALL PHASES OF CONSTRUCTION FOR USE OF ALL TRADES.
23. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.
24. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. ANY MODIFICATION TO SUIT FIELD DIMENSION AND CONDITION SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ANY WORK.
25. BEFORE THE FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL REMOVE ALL EQUIPMENT AND MATERIALS, REPAIR OR REPLACE PRIVATE OR PUBLIC PROPERTY WHICH MAY HAVE BEEN DAMAGED OR DESTROYED DURING CONSTRUCTION, CLEAN THE AREAS WITHIN AND ADJACENT TO THE PROJECT WHICH HAVE BEEN OBSTRUCTED BY HIS/HER OPERATIONS, AND LEAVE THE PROJECT AREA NEAT AND PRESENTABLE.
26. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING FLOW THROUGH THE EXISTING CLOSED STORM DRAINAGE SYSTEM DURING CONSTRUCTION AND SHALL SUBMIT A WORK PLAN FOR APPROVAL BY THE DESIGN ENGINEER.
27. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE MAY OF 2023 BY COLE PETERS, PROFESSIONAL WETLAND SCIENTIST OF SEBAGO TECHNICS, INC. AND LOCATED BY GROUND SURVEY. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND NORTHEAST REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS.

UTILITY DEMOLITION NOTES

1. PROTECT EXISTING BOUNDARY LINE MONUMENTATION. IF DISTURBED, EXISTING MONUMENTATION TO BE RESET BY A PROFESSIONAL LAND SURVEYOR.
2. DEMOLITION OF UTILITIES REQUIRING TREE REMOVAL SHALL BE COORDINATED WITH THE OWNER AND IN ACCORDANCE WITH PROJECT PLANS.
3. UTILITY DEMOLITION SHALL BE COMPLETED IN COORDINATION WITH NEW INFRASTRUCTURE. CONTRACTOR SHALL ENSURE EXISTING SURFACE DRAINAGE IS MAINTAINED DURING CONSTRUCTION.
4. EXISTING SEWER AND STORM DRAINAGE INFRASTRUCTURE TO REMAIN ACTIVE DURING CONSTRUCTION AND UPON COMPLETION OF PROJECT. DEMOLITION/CONSTRUCTION ACTIVITIES SHALL NOT INTERFERE OR IMPEDE EXISTING FLOWS. CONTRACTOR SHALL PROVIDE BYPASS PUMPING AS REQUIRED DURING SEWER AND STORM DEMOLITION AND NEW CONSTRUCTION. DAMAGE TO EXISTING SEWER INFRASTRUCTURE SHALL BE REPAIRED BY CONTRACTOR AT THEIR EXPENSE.
5. DEMOLITION SHOWN IS FOR MAJOR SITE ELEMENTS TO BE DEMOLISHED. OTHER MINOR DEMOLITION MAY BE REQUIRED AS PART OF CONSTRUCTION AND SHALL BE CONSIDERED INCIDENTAL TO THE COST OF CONSTRUCTION. COORDINATE ALL DEMOLITION WORK WITH SITE AND BUILDING DRAWINGS.
6. PRIOR TO ANY DEMOLITION, THE CONTRACTOR SHALL SUBMIT A SEQUENCE OF DEMOLITION PLANS TO THE OWNER. THIS PLAN SHALL DEPICT LOCATIONS OF PROPOSED TERMINATIONS AND ANY TEMPORARY SERVICES THAT WILL BE NEEDED.
7. CONTRACTOR REQUIRED TO CONFIRM/MAINTAIN BENCHMARKS. IF IMPACTED CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION/RELOCATION AND COORDINATION WITH PROJECT TEAM.

GRADING & EROSION NOTES

1. SIDESLOPES SHALL NOT BE STEEPER THAN 3:1 (H:V) EXCEPT AS OTHERWISE IDENTIFIED ON THIS PLAN. ALL SIDESLOPES STEEPER THAN 3:1 (H: V) SHALL BE LINED WITH EROSION CONTROL BLANKET, OR ADDITIONAL MEASURES AS INDICATED.
2. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENT CONTROL BMPS" MANUAL PUBLISHED BY BUREAU OF LAND AND WATER QUALITY MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
3. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE LOAM AND SEED PER DETAIL.
4. SEE UTILITY DRAWINGS FOR PIPE AND STRUCTURE DATA TABLES.

CONSTRUCTION PLAN

1. PROVIDE EROSION CONTROL MEASURES PRIOR TO SITE DISTURBANCE.
2. WETLANDS, ASSOCIATED SETBACKS AND STREAM SETBACKS TO BE STAKED BY OWNER PRIOR TO SITE DISTURBANCE.
3. GRADING AND CLEARING LIMITS SHALL NOT ENCROACH ON ADJACENT PROPERTIES UNLESS NOTED OTHERWISE ON THE PLANS.
4. OPEN AREAS SHALL BE LIMITED TO AREAS BEING WORKED IN. THE AREA STRIPPED OF EXISTING VEGETATION AT ANY GIVEN TIME SHALL BE MINIMIZED AND BE PHASED WHERE PRACTICAL SO THAT AREAS ARE REVEGETATED AND PERMANENTLY STABILIZED BEFORE ADDITIONAL AREAS ARE STRIPPED OF EXISTING VEGETATION. STABILIZE CONSTRUCTION AREAS BY USE OF RIPRAP, SEED, MULCH, OR OTHER GROUND COVER WITHIN ONE WEEK FROM THE TIME IT WAS ACTIVELY WORKED. SURFACES SHALL BE STABILIZED PRIOR TO DIRECTING STORMWATER RUNOFF TOWARD STORMWATER BMPS. PLEASE REFER TO DRAINAGE PLANS FOR WATERSHED AREAS.

LANDSCAPE NOTES

1. PLANT QUANTITIES SHOWN ON PLANT LISTS ARE FOR CONVENIENCE TO THE CONTRACTOR ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ALL PLANT MATERIAL INSTALLATION AS SHOWN ON PLANS.
2. SIZE AND GRADING STANDARDS OF PLANT MATERIALS SHALL CONFORM TO THE LATEST EDITION OF "U.S.A. STANDARD FOR NURSERY STOCK," BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
3. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
4. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING, STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE BY THE OWNER.
5. PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR BY THE CONTRACTOR AND A PERIOD OF TWO YEARS THEREAFTER BY THE OWNER FROM DATE OF INSTALLATION. DURING THE ONE YEAR GUARANTEE PERIOD, DEAD PLANT MATERIAL SHALL BE REPLACED AT NO COST TO THE OWNER. AT THE END OF THE ONE YEAR PERIOD, THE CONTRACTOR SHALL OBTAIN FINAL ACCEPTANCE FROM THE OWNER.
6. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
7. EXISTING TREES TO BE PRESERVED WILL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
8. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF THE UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER.
9. ALL SHRUB BEDS SHALL BE MULCHED WITH 3" CLEAN SHREDDED DARK BROWN BARK MULCH.
10. THE CONTRACTOR SHALL PROVIDE 4" LOAM FOR ALL AREAS TO BE SODDED OR SEEDED. PLANTING AREAS SHALL RECEIVE 12" ROLLED THICKNESS OF LOAM. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
11. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT (AND MUNICIPAL AUTHORITY, IF APPLICABLE) PRIOR TO INSTALLATION ON SITE.
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR PERENNIAL AND ANNUAL FLOWER BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
13. DURING CLEANING OF SITE AND PRIOR TO TREE AND SHRUB INSTALLATION, CONTRACTOR SHALL REMOVE INVASIVE PLANTS. AREAS WHERE INVASIVE PLANTS ARE REMOVED AND NO OTHER PLANTING IS PROPOSED, AREA SHALL BE LOAM AND SEEDED.

UTILITY NOTES

1. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION. PROTECT EXISTING ONSITE SEWER PIPE AND ADJUST MANHOLE RIMS TO GRADE WHERE APPLICABLE.
2. ALL GRAVITY CONDUIT PIPES SHALL BE INSTALLED USING A PIPE LASER AND TARGET SYSTEM THROUGH THE PIPE. ON PIPE RUNS 50 FEET OR LESS, THE CONTRACTOR SHALL REQUEST ENGINEER'S APPROVAL TO USE OR NOT USE A GROUND LASER.
3. MAINTAIN MINIMUM 5'-6" OF COVER ABOVE TOP OF WATER SERVICE PIPE.
4. MAINTAIN MINIMUM 10 FEET HORIZONTAL SEPARATION BETWEEN WATER SERVICES AND OTHER UTILITIES. MAINTAIN MINIMUM 18 INCHES VERTICAL SEPARATION BETWEEN WATER SERVICES AND OTHER UTILITIES.
5. LOWER OR RAISE WATER SERVICES AS REQUIRED TO MAINTAIN MINIMUM 12 INCH VERTICAL SEPARATION FROM OTHER UTILITIES. WATER SERVICES CROSSING SEWERS SHALL MAINTAIN 12 INCH MINIMUM SEPARATION BETWEEN THE BOTTOM OF WATER LINE AND TOP OF SEWER UNLESS NOTED OTHERWISE ON THE PLANS.
6. PIPE:
   - SEWER PIPE SHALL BE SDR 35 PVC OR APPROVED EQUAL.
   - STORMDRAIN SHALL BE ADS N-12 DUAL WALL HDPE PIPE WITH SMOOTH-WALLED INTERIOR OR APPROVED EQUAL UNLESS NOTED OTHERWISE ON THE UTILITY PLANS.
   - WATER PIPE AND FITTINGS SHALL CONFORM TO THE DISTRICT HAVING JURISDICTION'S SPECIFICATIONS. MAIN WATER SERVICE PIPE SHALL BE DUCTILE IRON, CLASS 52 PUSH-ON PIPE MEETING THE REQUIREMENTS OF AWWA/ANSI C-111/A21.11 (LATEST REVISION). PIPE SHALL BE CEMENT-LINED AWWA/ANSI C104/A21.4 WITH LINING TWICE THE THICKNESS SPECIFIED, AND COATED TWICE WITH A BITUMINOUS SEAL COATING. PROVIDE THRUST BLOCKS AT ALL WATER SERVICE BENDS.
7. COORDINATE ALL UTILITY LOCATIONS AND INVERTS AT BUILDING WITH ARCHITECTURAL, STRUCTURAL AND PLUMBING DRAWINGS.
8. WATER SERVICE ENTRANCE DESIGNS TO INCLUDE METERS AND BACKFLOW PREVENTERS TO MEET ALL STANDARDS AND REQUIREMENTS OF THE DISTRICT HAVING JURISDICTION.
9. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY GRADE CHANGES THAT WILL IMPACT STORM DRAINAGE INFRASTRUCTURE OR OTHER UTILITIES.
10. UTILITIES WITHIN 5 FEET FROM FACE OF BUILDING ARE COORDINATED ON RELEVANT M.E.P. DRAWINGS. CONTRACTOR SHALL COORDINATE INVERTS, CONNECTIONS AND MATERIALS WITH ALL DRAWINGS.
11. CONTRACTOR SHALL FURNISH AND INSTALL TRENCHING, MATERIALS AND BACKFILL FOR ALL UTILITIES. ELECTRICAL AND TELECOM/DATA PROVIDERS WILL PULL PRIMARY SERVICE TO TRANSFORMER AND PANEL. CONTRACTOR RESPONSIBLE FOR TIMING AND COORDINATION WITH UTILITIES AND DRAWINGS. COORDINATE WITH ELECTRICAL DRAWINGS FOR CONDUIT SCHEDULE, TYPE AND SIZES.
12. COORDINATE ALL WATER RELATED WORK WITH DISTRICT HAVING JURISDICTION.
13. THE CONTRACTOR IS HEREBY CAUTIONED THAT ALL SITE FEATURES SHOWN HEREON ARE BASED ON FIELD OBSERVATIONS BY THE SURVEYOR AND BY INFORMATION PROVIDED BY UTILITY COMPANIES. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT DIG SAFE (811) AT LEAST THREE (3) BUT NOT MORE THAN THIRTY (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES.
14. CONTRACTOR SHALL BE AWARE THAT DIG SAFE ONLY NOTIFIES ITS "MEMBER" UTILITIES ABOUT THE DIG. WHEN NOTIFIED, DIG SAFE WILL ADVISE CONTRACTOR OF MEMBER UTILITIES IN THE AREA. CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND CONTACTING NON-MEMBER UTILITIES DIRECTLY. NON-MEMBER UTILITIES MAY INCLUDE TOWN OR CITY WATER AND SEWER DISTRICTS AND SMALL LOCAL UTILITIES, AS WELL AS USG PUBLIC WORKS SYSTEMS.
15. CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF 23 MRSA 3360-A. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITIES TO OBTAIN AUTHORIZATION PRIOR TO RELOCATION OF ANY EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS. IF A UTILITY CONFLICT ARISES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER, THE MUNICIPALITY AND APPROPRIATE UTILITY COMPANY PRIOR TO PROCEEDING WITH ANY RELOCATION.

TYPICAL ABBREVIATIONS

AC	ACRE
AFG	ABOVE FINISH GRADE
APPROX.	APPROXIMATELY
BC	BOTTOM OF CURB
BCC	BITUMINOUS CONCRETE CURB
BIT	BITUMINOUS
BLDG	BUILDING
BW	BOTTOM OF WALL
CB	CATCH BASIN
CONC	CONCRETE
CONT	CONTINUOUS
DI	DUCTILE IRON
DIA	DIAMETER
DMH	DRAIN MANHOLE
E.W.	EACH WAY
ELEV	ELEVATION
FFE	FINISH FLOOR ELEVATION
FIN. GR.	FINISH GRADE
FTG	FOOTING
HDPE	HIGH DENSITY POLYETHYLENE
HGT	HEIGHT
HMA	HOT MIX ASPHALT
INV	INVERT
LF	LINEAR FEET
OC	ON CENTER
PVC	POLYVINYL CHLORIDE
PWD	PORTLAND WATER DISTRICT
R	RADIUS
R.O.W.	RIGHT OF WAY
S.F.	SQUARE FEET
SCH	SCHEDULE
SCSC	SLIPFORM CONCRETE SLOPED CURB
SCVC	SLIPFORM CONCRETE VERTICAL CURB
SD	STORM DRAIN
SGC	SLOPED GRANITE CURB
SMH	SEWER MANHOLE SPECS SPECIFICATIONS
SS	SANITARY SEWER
SSGC	SALVAGED SLOPED GRANITE CURB
SVGC	SALVAGED VERTICAL GRANITE CURB
TC	TOP OF CURB
TW	TOP OF WALL
TYP	TYPICAL
VGC	VERTICAL GRANITE CURB
VIF	VERIFY IN FIELD

AMY BELL SEGAL RLA 2265

STATE OF MAINE — LICENSED LANDSCAPE ARCHITECT — Amy Bell Segal — No. 2265 — 08.30.24

PAUL D. OSTROWSKI PE 11175

STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — LICENSED PROFESSIONAL ENGINEER — 08/30/2024

REV.	BY	DATE	STATUS
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/18/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

NOTES & LEGEND

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET G-002

F:\Projects\19000\19059\DWG\Design\19059 NL.dwg - 8/30/2024 2:00 PM - TANNER F. GOODINE

19059 NL.dwg - TAB:G-002 Notes & Legend

NOTE: FOR INDIVIDUAL TREE REMOVAL AND PRESERVATION, PLEASE REFER TO THE TREE PRESERVATION & REMOVAL PLAN

AVIS RENTAL

JETPORT BLVD.

INTERNATIONAL PKWY.

CB 8437
RIM=74.87
INV.IN=69.07, 6" HDPE, 2
INV.OUT=68.86, 12" HDPE, 5
SUMP=65.77

LONG TERM PARKING

EMBASSY SUITES

PWM PARK AND SHINE

WESTBROOK ST.

JETPORT ACCESS ROAD

PARKING GARAGE

PARK' N JET

DEMOLITION PLAN KEY NOTES

1. REMOVE VEHICULAR ASPHALT PAVING
2. REMOVE PEDESTRIAN ASPHALT PAVING
3. REMOVE GRANITE CURB
4. REMOVE TREES & REMOVE STUMPS
5. REMOVE GRAVEL SURFACE
6. REMOVE LIGHT POLE & BASE
7. REMOVE SIGN
8. REMOVE CONCRETE ENTRY ISLAND & ENTRY/EXIT GATE EQUIPMENT
9. REMOVE INDIVIDUAL TREE & STUMP
10. REMOVE DRAINAGE STRUCTURE
11. REMOVE DRAINAGE STRUCTURE COVER
12. REMOVE STORM DRAIN PIPE
13. REMOVE SCULPTURE AND STORE AT LOCATION SPECIFIED BY OWNER
14. REMOVE & SALVAGE WAYFINDING SIGN FOR REINSTALLATION
15. REMOVE OVERHEAD UTILITY LINE
16. REMOVE CHAINLINK FENCE
17. REMOVE EXISTING UTILITY POLE

DEMOLITION LEGEND

DEMO PAVEMENT

DEMO GRAVEL

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

F:\Projects\19000\19059\DWG\Design\19059 DEMO.dwg 8/30/2024 2:00 PM - TANNER F. GOODINE

19059 DEMO.dwg, TAB:C-002 DEMO PLAN 1

AMY BELL SEGAL RLA 2265

Amy Bell Segal
No. 2265
LICENSED LANDSCAPE ARCHITECT
STATE OF MAINE
08.30.24

PAUL D. OSTROWSKI PE 11175

PAUL D. OSTROWSKI
No. 11175
LICENSED PROFESSIONAL ENGINEER
STATE OF MAINE
08/30/2024

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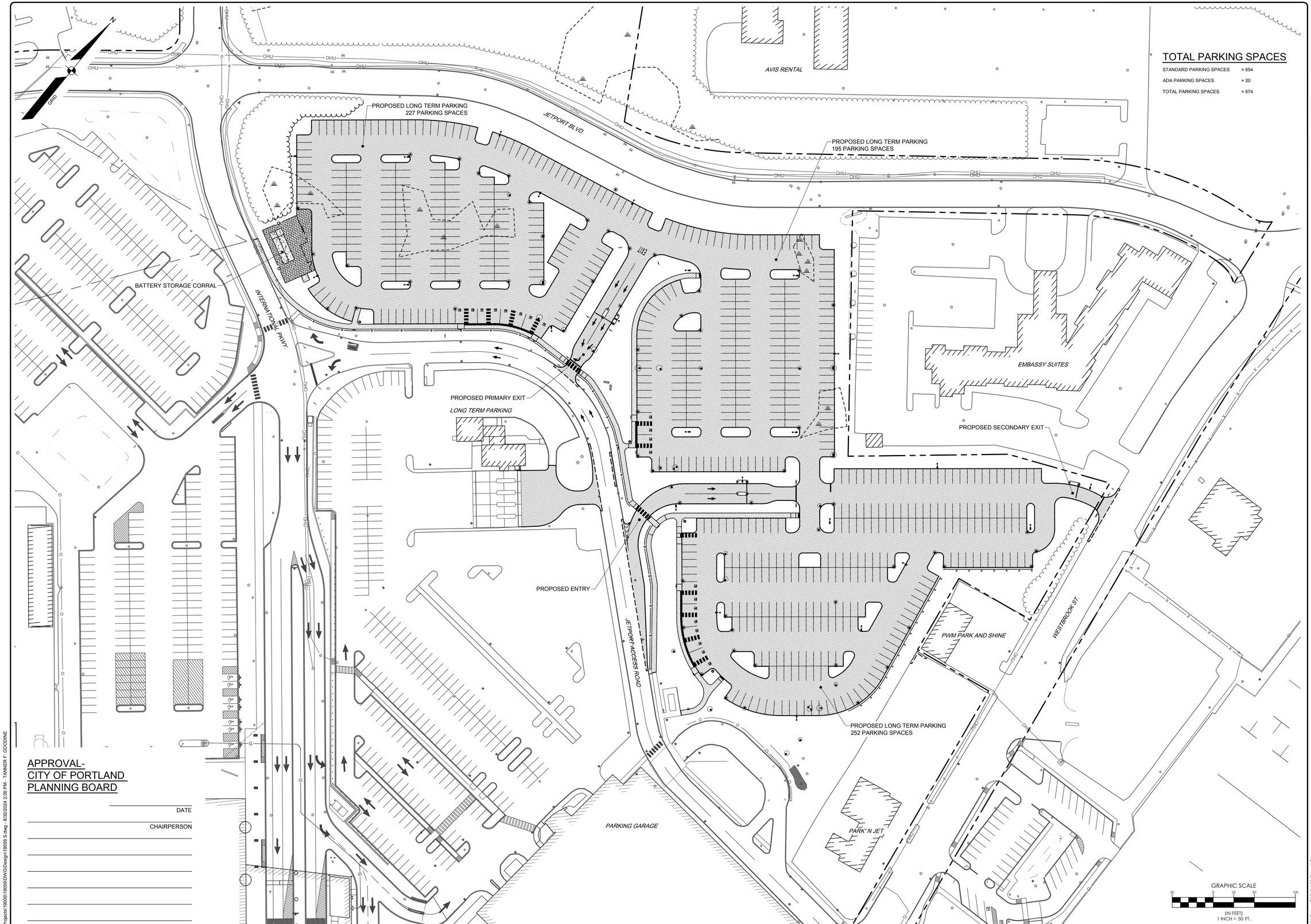
DEMOLITION PLAN

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET C-003



APPROVAL-
CITY OF PORTLAND
PLANNING BOARD

DATE

CHAIRPERSON

F:\Projects\19000\19059\DWG\Design\19059 S.dwg 8/30/2024 2:00 PM - TANNER F. GOODINE

AMY BELL SEGAL RLA 2265

LICENSED LANDSCAPE ARCHITECT
Amy Bell Segal
No. 2265
STATE OF MAINE
08.30.24

PAUL D. OSTROWSKI PE 11175

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
LICENSED PROFESSIONAL ENGINEER
08/30/2024

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OVERALL SITE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

19059 S.dwg, TAB:C-100 Overall Site

SHEET C-100

MATCH LINE - SEE THIS SHEET

MATCH LINE - SEE SHEET C-102

(18) 9' X 18' PARKING SPACES

TRASH RECEPTACLE, TYP. BY OTHERS

PAVEMENT SAWCUT

EXISTING LIGHT POLE, TO REMAIN

ENTRY GATE ISLAND, SEE DETAIL

CURB MATERIAL TRANSITION POINT

STOP BAR

DIRECTIONAL ARROW, TYP.

6' CROSSWALK

ADA DETECTABLE WARNING PANELS, TYP.

(12) 9' X 18' PARKING SPACES

4" WHITE PARKING PAINT STRIPING

(28) 9' X 18' PARKING SPACES

(26) 9' X 18' PARKING SPACES

SECONDARY EXIT GATE ISLAND, SEE DETAIL

QUEUING FOR ONE PASSENGER VEHICLE

GATE ARM, TYP.

PAVEMENT SAWCUT

INSTALL PEDESTRIAN FENCE, TYP.

PEDESTRIAN PAVEMENT

(6) 9' X 18' PARKING SPACES
(8) 11' X 18' ADA PARKING SPACES

(10) 9' X 18' PARKING SPACES

(22) 9' X 18' PARKING SPACES

SEE LUMINAIRE SCHEDULE FOR ADDITIONAL LIGHTING INFORMATION

(19) 9' X 18' PARKING SPACES

(17) 9' X 18' PARKING SPACES

(12) 9' X 18' PARKING SPACES

(8) 9' X 18' PARKING SPACES

(36) 9' X 18' PARKING SPACES

EX DMH-8436

JETPORT ACCESS ROAD

PAVEMENT SAWCUT

EXISTING LIGHT POLE, TO REMAIN

ADA DETECTABLE WARNING PANELS, TYP.

TRASH RECEPTACLE, TYP. BY OTHERS

PROPOSED SIDEWALK TO CONNECT TO EXISTING SIDEWALK AND RAMP

PWM PARK AND SHINE

PARK' N JET

WESTBROOK ST.

CURB MATERIAL TRANSITION POINT

EXISTING TREE CANOPY TO REMAIN

VEHICULAR PAVEMENT

VEHICULAR GUARDRAIL, TYP.

GRAPHIC SCALE
30 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

CURB ABBREVIATIONS

VSCC - VERTICAL SLIPFORM CONCRETE CURB
SSCC - SLOPED SLIPFORM CONCRETE CURB
VGC - VERTICAL GRANITE CURB

TIPDOWN ABBREVIATIONS

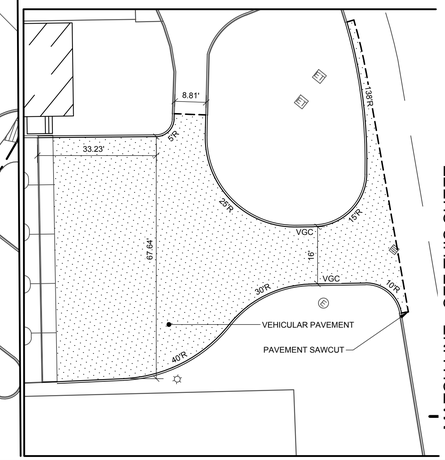
TD1 - SLIPFORM CONCRETE TIPDOWN
TD2 - VERTICAL GRANITE TIPDOWN

SIGN SCHEDULE

S-1 : STOP SIGN
S-2: DO NOT ENTER SIGN
S-3: ADA ACCESSIBLE PARKING SIGN [*MOUNTED ON BOLLARD*]
S-4: STOP & LEFT TURN PROHIBITION SIGN
S-5: VEHICULAR LONG-TERM PARKING SIGNAGE
S-6: PEDESTRIAN WAYFINDING SIGNAGE
S-7: ALTERNATE LANE MERGE SIGN
S-8: CAUTION VEHICLE EXITING SIGN

LUMINAIRE SCHEDULE

LABEL	MOUNTING HEIGHT	LLF	LUM. LUMENS	LUM. WATTS	DESCRIPTION
A5	30'-0" AFG	0.900	9036	85	VP-ST-1-36L-85-3K7-5QW
C1	30'-0" AFG	0.900	5002	39	VP-ST-1-36L-39-3K7-CL
S4	30'-0" AFG	0.900	6876	55	VP-ST-1-36L-55-3K7-4W



MATCH LINE - SEE THIS SHEET

AMY BELL SEGAL, RLA 2265

STATE OF MAINE LICENSED LANDSCAPE ARCHITECT Amy Bell Segal No. 2265 08.30.24

PAUL D. OSTROWSKI, PE 11175

STATE OF MAINE ENGINEER PAUL D. OSTROWSKI No. 11175 REGISTERED PROFESSIONAL 08/30/2024

REV.	BY	DATE	STATUS
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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

SITE PLAN

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-101

F:\Projects\19000\19059\DWG\Design\19059 S.dwg - 8/30/2024 2:00 PM - TANNER F. GOODINE

19059 S.dwg, TAB:C-101 Site

CURB ABBREVIATIONS

VSCC - VERTICAL SLIPFORM CONCRETE CURB
SSCC - SLOPED SLIPFORM CONCRETE CURB
VGC - VERTICAL GRANITE CURB

TIPDOWN ABBREVIATIONS

TD1 - SLIPFORM CONCRETE TIPDOWN
TD2 - VERTICAL GRANITE TIPDOWN

SIGN SCHEDULE

S-1 : STOP SIGN
S-2: DO NOT ENTER SIGN
S-3: ADA ACCESSIBLE PARKING SIGN [*MOUNTED ON BOLLARD*]
S-4: STOP & LEFT TURN PROHIBITION SIGN
S-5: VEHICULAR LONG-TERM PARKING SIGNAGE
S-6: PEDESTRIAN WAYFINDING SIGNAGE
S-7: ALTERNATE LANE MERGE SIGN
S-8: CAUTION VEHICLE EXITING SIGN

LUMINAIRE SCHEDULE

LABEL	MOUNTING HEIGHT	LLF	LUM. LUMENS	LUM. WATTS	DESCRIPTION
A5	30'-0" AFG	0.900	9036	85	VP-ST-1-36L-85-3K7-5QW
C1	30'-0" AFG	0.900	5002	39	VP-ST-1-36L-39-3K7-CL
S4	30'-0" AFG	0.900	6876	55	VP-ST-1-36L-55-3K7-4W

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

MATCH LINE - SEE SHEET C-103

MATCH LINE - SEE SHEET C-101

JETPORT BLVD.

7" HARDWOOD

8" HARDWOOD

13" ASH

12" ASH

12" ASH

15" ASH

EMBASSY SUITES

GRID

CURB MATERIAL TRANSITION POINT

EXIT

(21) 9' X 18' PARKING SPACES

SEE LUMINAIRE SCHEDULE FOR ADDITIONAL LIGHTING INFORMATION

PEDESTRIAN PAVEMENT

VEHICULAR PAVEMENT

INSTALL PEDESTRIAN FENCE, TYP.

(18) 9' X 18' PARKING SPACES
(4) 11' X 18' ADA PARKING SPACES

(13) 9' X 18' PARKING SPACES

(19) 9' X 18' PARKING SPACES

(20) 9' X 18' PARKING SPACES

(20) 9' X 18' PARKING SPACES

(20) 9' X 18' PARKING SPACES

(28) 9' X 18' PARKING SPACES

(18) 9' X 18' PARKING SPACES

(12) 9' X 18' PARKING SPACES

(28) 9' X 18' PARKING SPACES

(26) 9' X 18' PARKING SPACES

(26) 9' X 18' PARKING SPACES

TRASH RECEPTACLE, TYP. BY OTHERS

PAVEMENT SAWCUT

EXISTING LIGHT POLE, TO REMAIN

6' CROSSWALK

ENTRY GATE ISLAND, SEE DETAIL

ADA DETECTABLE WARNING PANELS, TYP.

DIRECTIONAL ARROW, TYP.

STOP BAR

4" WHITE PARKING PAINT STRIPING

SECONDARY EXIT GATE ISLAND, SEE DETAIL

QUEUING FOR ONE PASSENGER VEHICLE

GATE ARM, TYP.

PAVEMENT SAWCUT

REV.	BY	DATE:	STATUS:
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION
B.	PDO	03/19/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT

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AMY BELL SEGAL RLA 2265

STATE OF MAINE — LICENSED LANDSCAPE ARCHITECT — Amy Bell Segal — No. 2265 — 08.30.24

PAUL D. OSTROWSKI PE 11175

STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — LICENSED PROFESSIONAL ENGINEER — 08/30/2024

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

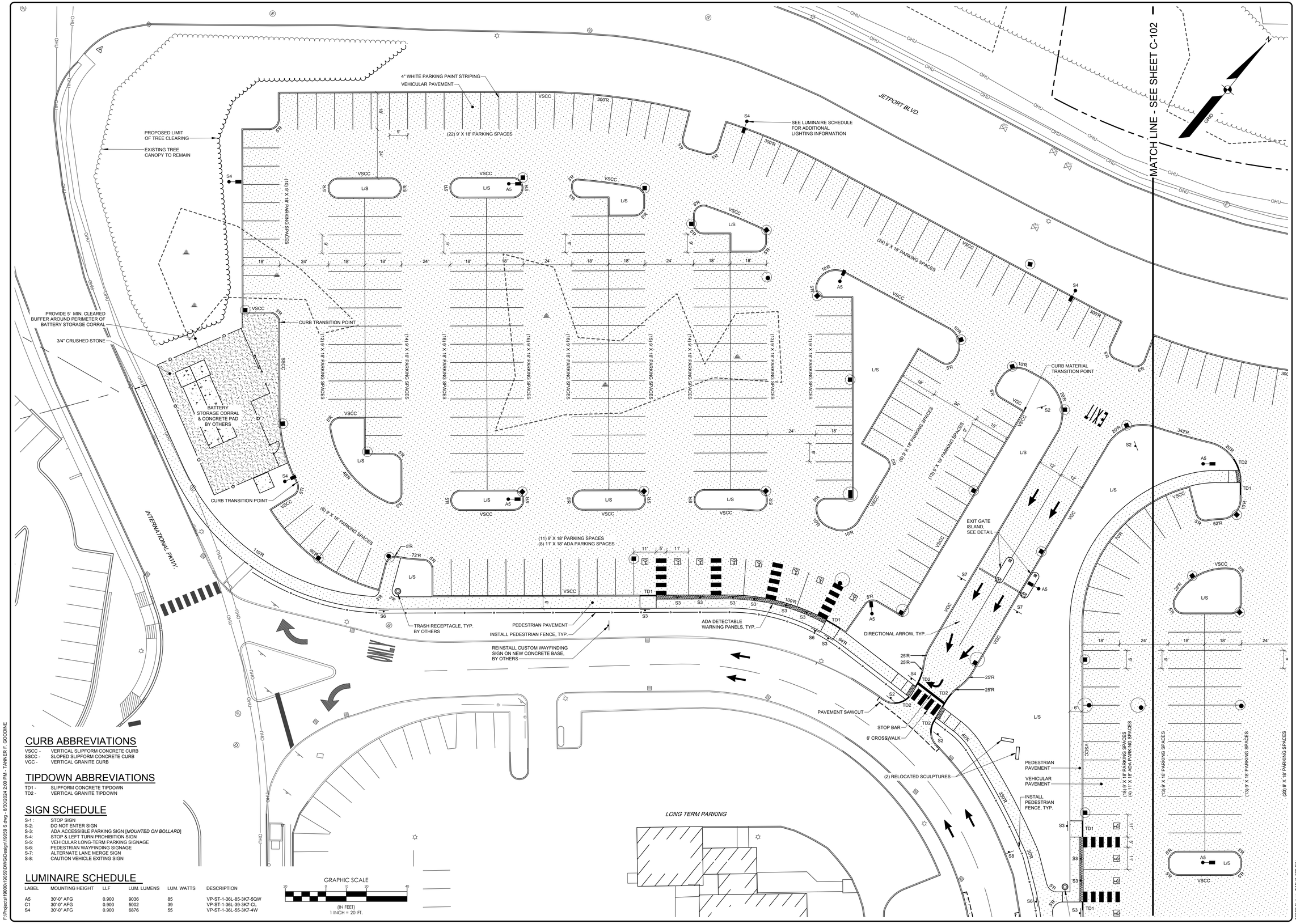
SITE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-102

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19059 S.dwg, TAB:C-102 Site



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AMY BELL SEGAL, RLA 2265

LICENSED LANDSCAPE ARCHITECT
Amy Bell Segal
No. 2265
STATE OF MAINE
08.30.24

PAUL D. OSTROWSKI, PE 11175

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
LICENSED PROFESSIONAL ENGINEER
08/30/2024

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

SITE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-103

F:\Projects\19000\19059\DWG\Design\19059 S.dwg - 8/30/2024 2:00 PM - TANNER F. GOODINE

19059 S.dwg, TAB C-103 Site

PROPOSED WETLAND IMPACT: 5,812 SF

PROPOSED WETLAND IMPACT: 2,806 SF

PROPOSED WETLAND IMPACT: 791 SF
(PREVIOUSLY PERMITTED BUT NOT IMPACTED WETLAND, L-26841-TC-A-N)

PREVIOUSLY PERMITTED AND IMPACTED WETLAND
(L-26841-TC-A-N)

PROPOSED WETLAND IMPACT: 1,742 SF

AVIS RENTAL

JETPORT BLVD.

INTERNATIONAL PKWY.

LONG TERM PARKING

EMBASSY SUITES

PWM PARK AND SHINE

S. WESTBROOK ST.

JETPORT ACCESS ROAD

PARKING GARAGE

PARK 'N JET

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

REV.	BY	DATE	STATUS
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PAUL D. OSTROWSKI PE 11175

AMY BELL SEGAL RLA 2265

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
08/30/2024

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

OVERALL GRADING PLAN

OF:

PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:

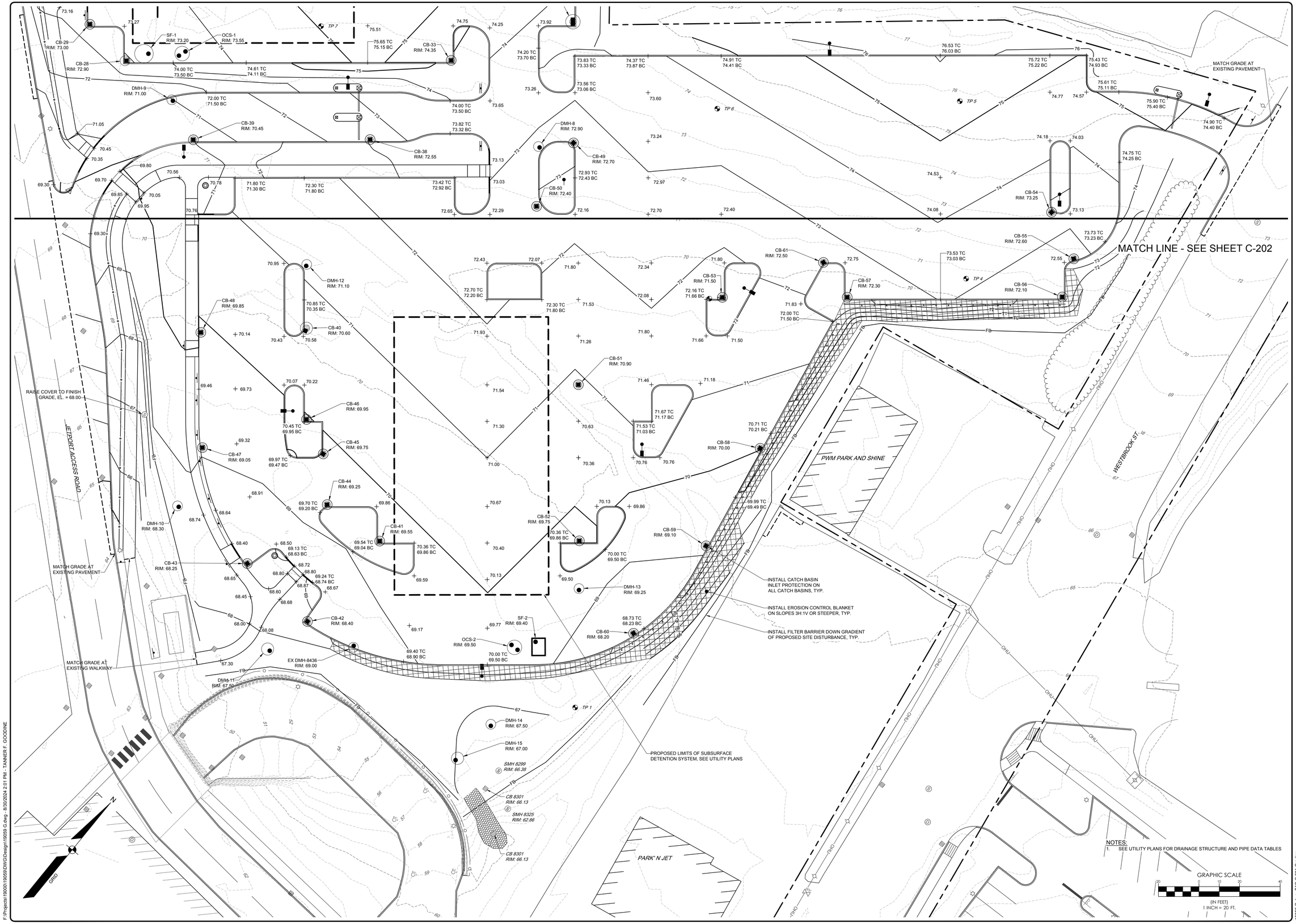
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET C-200

F:\Projects\19000\19059\DWG\Design\19059 G.dwg - 8/30/2024 2:01 PM - TANNER F. GOODINE

19059 G.dwg, TAB C-200 Overall Grading



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19059 G.dwg, TAB C-201 Grading

PAUL D. OSTROWSKI PE 11175

AMY BELL SEGAL RLA 2265

STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — REGISTERED PROFESSIONAL ENGINEER — 08/30/2024

REV.	BY	DATE:	STATUS:
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GRADING PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-201

MATCH LINE - SEE SHEET C-203

MATCH LINE - SEE SHEET C-201

JETPORT BLVD.

EMBASSY SUITES

GRID

INSTALL STONE DRIP EDGE, SEE DETAIL

PROPOSED WETLAND IMPACT: 791 SF
(PREVIOUSLY PERMITTED BUT NOT IMPACTED WETLAND, L-26841-TC-A-N)

INSTALL FILTER BARRIER DOWN GRADIENT OF PROPOSED SITE DISTURBANCE, TYP.

INSTALL EROSION CONTROL BLANKET ON SLOPES 3H:1V OR STEEPER, TYP.

PROPOSED LIMITS OF SUBSURFACE DETENTION SYSTEM, SEE UTILITY PLANS

INSTALL CATCH BASIN INLET PROTECTION ON ALL CATCH BASINS, TYP.

PREVIOUSLY PERMITTED AND IMPACTED WETLAND (L-26841-TC-A-N)

PROPOSED WETLAND IMPACT: 1,742 SF

MATCH GRADE AT EXISTING PAVEMENT

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

CB-16 RIM: 77.45
CB-18 RIM: 77.20
CB-21 RIM: 77.80
CB-22 RIM: 77.60
CB-23 RIM: 74.60
CB-25 RIM: 78.15
CB-26 RIM: 77.15
CB-27 RIM: 75.25
CB-28 RIM: 72.90
CB-29 RIM: 73.00
CB-30 RIM: 73.80
CB-31 RIM: 77.25
CB-32 RIM: 78.90
CB-33 RIM: 74.35
CB-34 RIM: 75.00
CB-35 RIM: 77.10
CB-36 RIM: 75.80
CB-37 RIM: 73.55
CB-38 RIM: 72.55
CB-39 RIM: 70.45
CB-49 RIM: 72.70
CB-50 RIM: 72.40
CB-54 RIM: 73.25
CB 8267 RIM: 79.95
DMH 8265 RIM: 80.50
CB 8135 RIM: 79.95
CB 8267 RIM: 75.37
DMH 8265 RIM: 75.64
CB 8263 RIM: 75.25
DMH-3 RIM: 74.80
DMH-4 RIM: 75.35
DMH-6 RIM: 76.40
DMH-7 RIM: 76.50
DMH-8 RIM: 72.90
DMH-9 RIM: 71.00
SF-1 RIM: 73.20
OCS-1 RIM: 73.55

TP 11 TP 10 TP 9 TP 8 TP 7 TP 6 TP 5 TP 23 TP 24 TP 25

78.15 TC 77.65 BC
79.21 TC 78.71 BC
79.54 TC 79.04 BC
81.41 TC 80.91 BC
79.71 TC 79.21 BC
79.00 TC 78.50 BC
78.53 TC 78.03 BC
78.38 TC 77.88 BC
79.11 TC 78.61 BC
79.40 TC 78.90 BC
78.71 TC 78.21 BC
78.95 TC 78.45 BC
77.23 TC 76.73 BC
77.57 TC 77.07 BC
77.36 TC 76.86 BC
77.81 TC 77.31 BC
76.01 TC 75.51 BC
75.65 TC 75.15 BC
74.00 TC 73.50 BC
74.61 TC 74.11 BC
72.00 TC 71.50 BC
73.82 TC 73.32 BC
71.80 TC 71.30 BC
72.30 TC 71.80 BC
73.42 TC 72.92 BC
74.20 TC 73.70 BC
73.83 TC 73.33 BC
74.37 TC 73.87 BC
74.91 TC 74.41 BC
73.56 TC 73.06 BC
76.53 TC 76.03 BC
75.72 TC 75.22 BC
75.43 TC 74.93 BC
75.61 TC 75.11 BC
75.90 TC 75.40 BC
74.90 TC 74.40 BC
74.75 TC 74.25 BC
76.74 TC 76.24 BC
72.93 TC 72.43 BC

80.33 80.55 80.07 79.41 79.11 79.83 79.59 79.29 78.57 79.47 79.29 77.85 78.72 78.63 76.86 76.53 76.35 78.21 81.90 80.90 78.68 78.51 78.35 77.60 77.67 74.47 74.02 73.30 74.08 74.32 74.76 75.52 75.28 76.23 75.75 75.51 74.79 73.40 73.67 73.16 73.27 75.51 74.75 74.25 73.92 73.26 73.60 74.24 74.57 74.77 74.18 74.03 74.53 73.13 72.65 72.29 72.16 72.97 72.70 72.40 74.08 73.65 71.05 70.45 70.35 69.80 70.56 69.70 69.30 69.85 70.05 69.95 70.76 70.78 74.02

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REV.	BY	DATE:	STATUS:
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A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER PAUL D. OSTROWSKI No. 11175 08/30/2024

SEBAGO TECHNICS
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100
WWW.SEBAGOTECHNICS.COM

GRADING PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

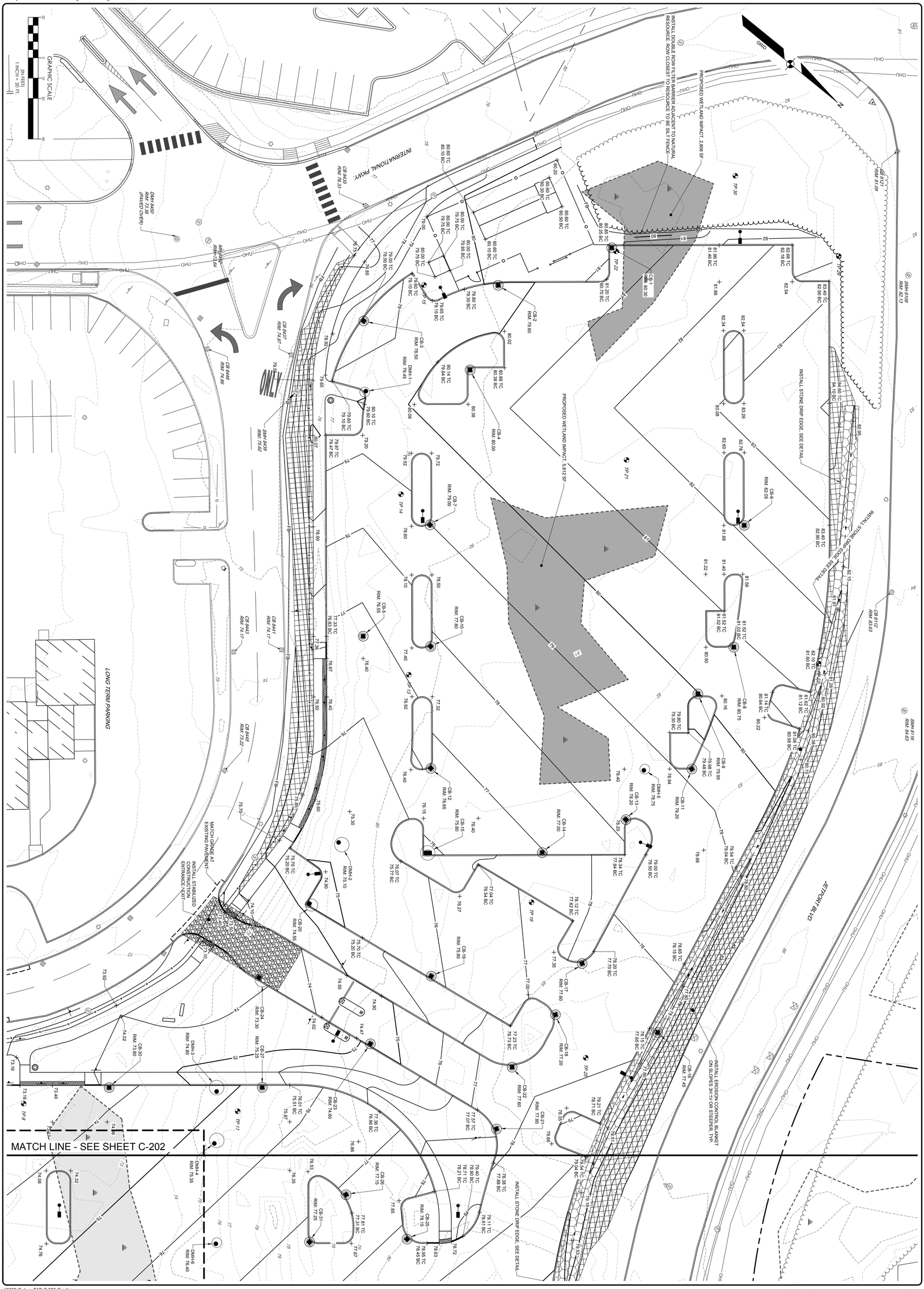
DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-202

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19059 G.dwg, TAB C-202 Grading

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Page 1946

19059 G.dwg, TAB-C-203 Grading

SHEET C-203

PROJECT	19059
SCALE	1" = 20'
DATE	02/29/2024
CHECKED	PDO
DRAWN	EPR
DESIGNED	TFG

GRADING PLAN

OF:

PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:

PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

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PAUL D. OSTROWSKI PE 11175

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
LICENSED
PROFESSIONAL ENGINEER
08/30/2024

AMY BELL SEGAL RLA 2265

UTILITY NOTES:

1. ELECTRICAL LAYOUT SHOWN IS PRELIMINARY. ALL ELECTRICAL WORK, INCLUDING CONDUIT SIZE, TYPE, AND ROUTING TO BE COORDINATED WITH ELECTRICAL ENGINEER.
2. NUMBER OF CONDUITS REQUIRED TO PROVIDE NECESSARY SERVICES TO ENTRY/EXIT GATES, FUTURE ELECTRICAL VEHICLE (EV) CHARGING STATIONS, AND POWER TO SITE LIGHTING TO BE DETERMINED BY ELECTRICAL ENGINEER PRIOR TO CONSTRUCTION.
3. SEE SHEET C-304 FOR PIPE AND STRUCTURE DATA TABLES.

AVIS RENTAL
JETPORT BLVD.
INTERNATIONAL PKWY.
LONG TERM PARKING
JETPORT ACCESS ROAD
PARKING GARAGE
EMBASSY SUITES
SUBSURFACE DETENTION & TREATMENT SYSTEM #1 (SF-1)
SUBSURFACE DETENTION & TREATMENT SYSTEM #2 (SF-2)
PWM PARK AND SHINE
WESTBROOK ST.
PARK' N JET
TP 1 TP 2 TP 3 TP 4 TP 5 TP 6 TP 7 TP 8 TP 9 TP 10 TP 11 TP 12 TP 13 TP 14 TP 15 TP 19 TP 21 TP 22 TP 23 TP 25 TP 27 TP 31

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

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PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

STATE OF MAINE — REGISTERED PROFESSIONAL ENGINEER — PAUL D. OSTROWSKI — No. 11175 — 08/30/2024

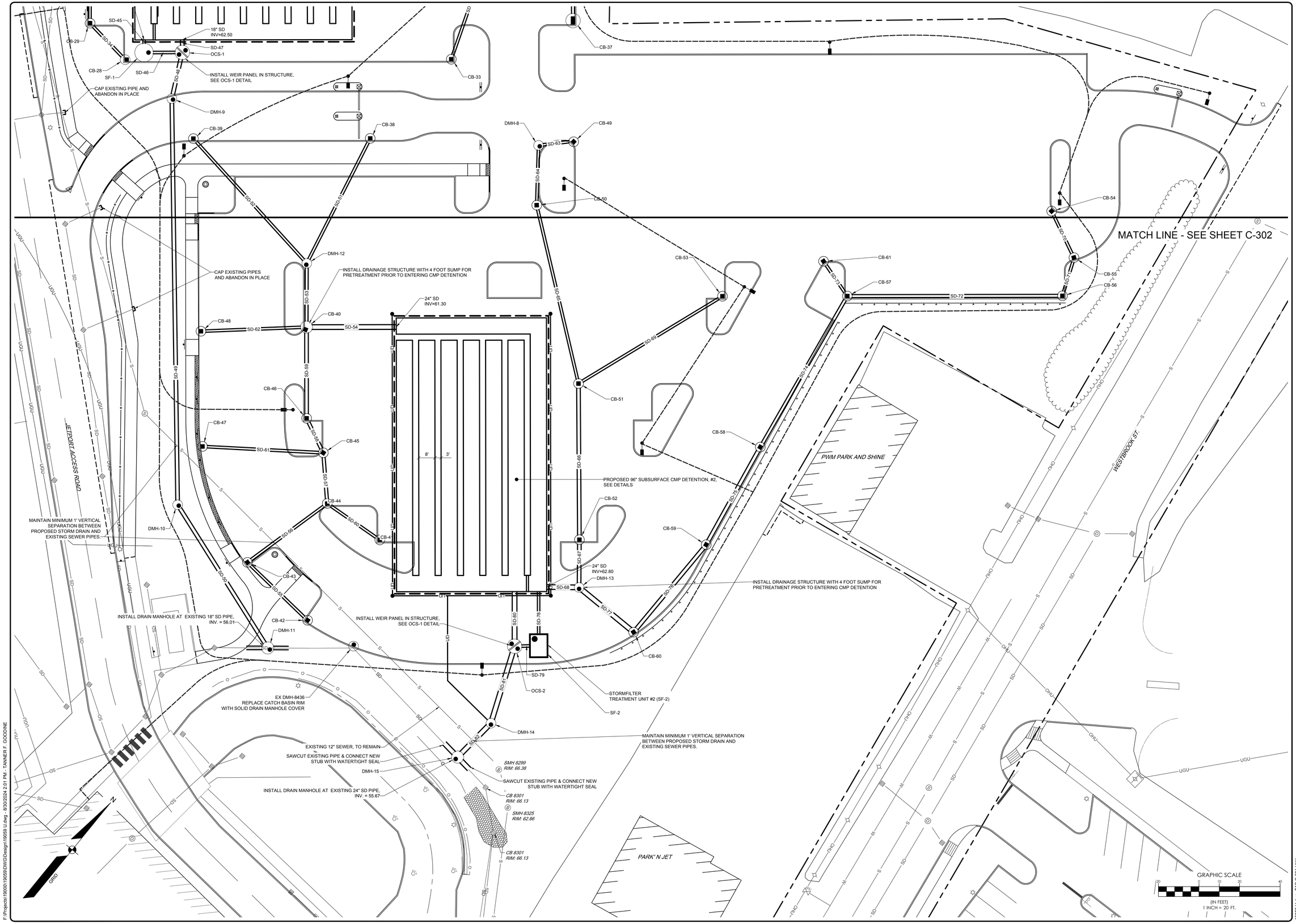
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OVERALL UTILITY PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET C-300

F:\Projects\19000\19059\DWG\Design\19059 U.dwg - 8/30/2024 2:01 PM - TANNER F. GOODINE
19059 U.dwg, TAB:C-300 Overall Utility



REV.	BY	DATE:	STATUS:
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B.	PDO	03/19/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
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PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL, RLA 2265

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
08/30/2024

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

UTILITY PLAN

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

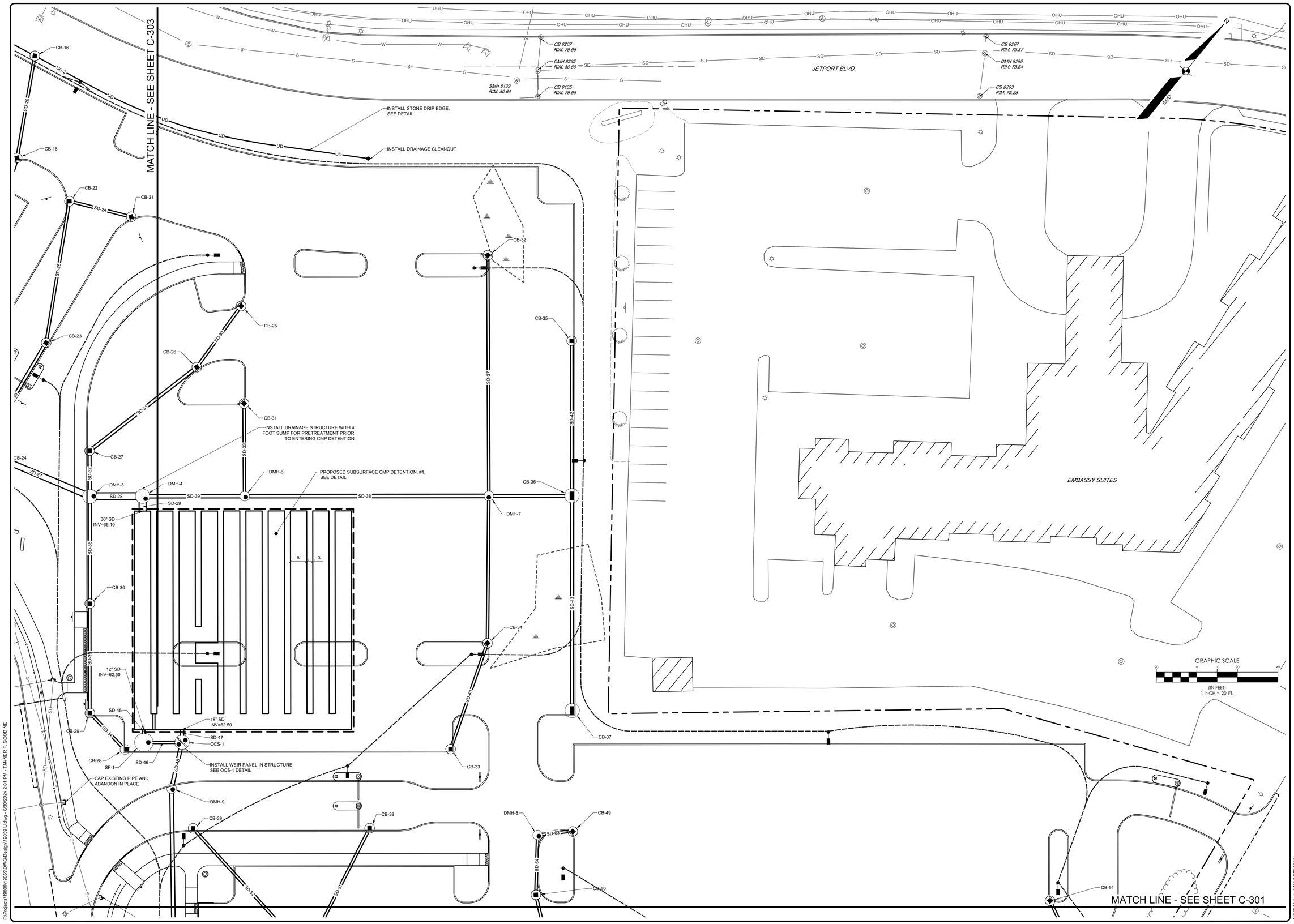
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-301

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19059 U.dwg, TAB:C-301 Utility



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PAUL D. OSTROWSKI PE 11175

AMY BELL SEGAL RLA 2265

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
08/30/2024

REV.	BY	DATE:	STATUS:
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/19/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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UTILITY PLAN

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

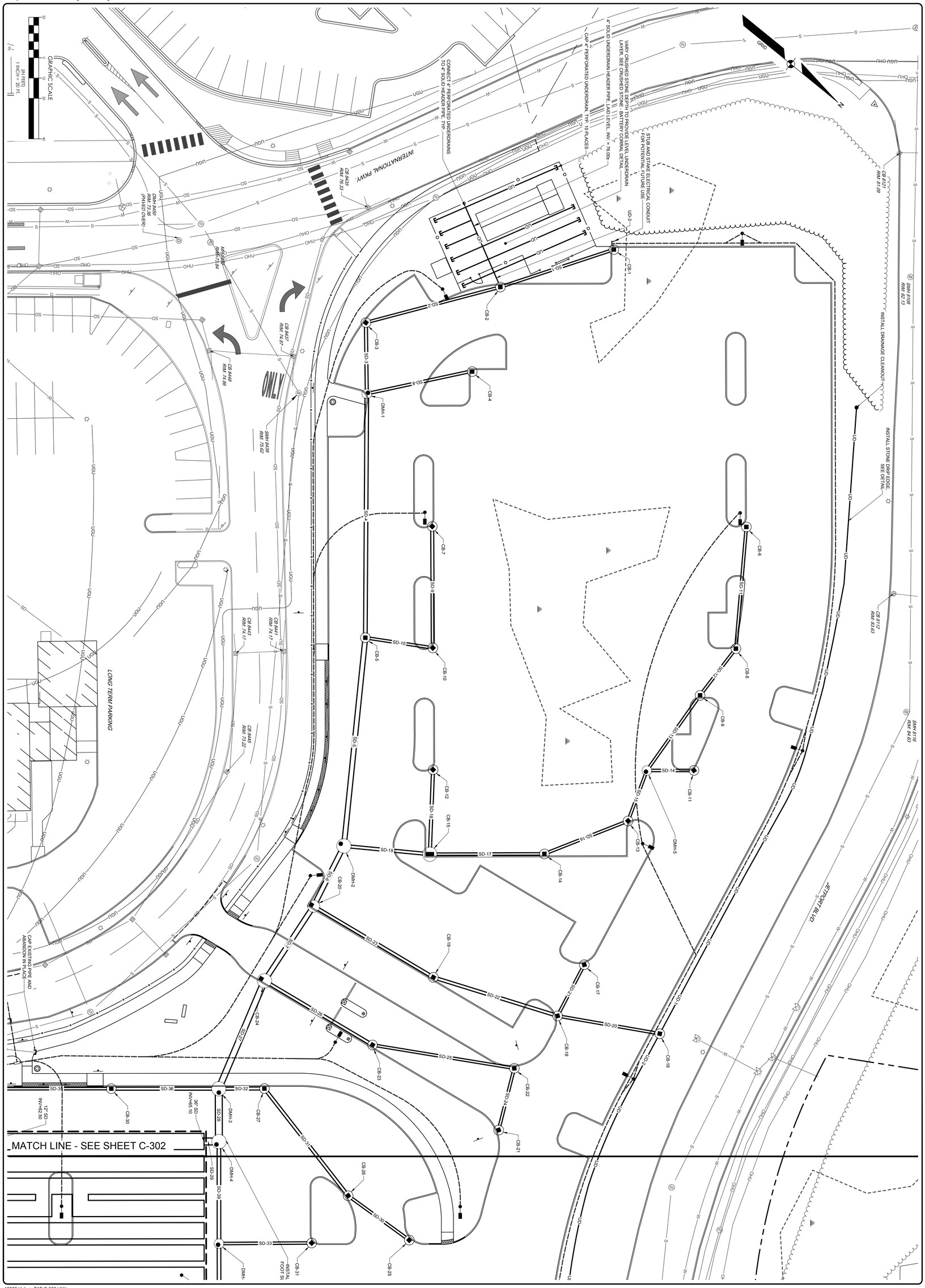
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET C-302

19059 U.dwg, TAB C-302 Utility

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Page 1950

19059 U.dwg, TAB-C-303 Utility

PAUL D. OSTROWSKI PE 11175

AMY BELL SEGAL RLA 2265

SHEET C-303

PROJECT	DESIGNED
19059	TFG
SCALE	DRAWN
1" = 20'	EPR
DATE	CHECKED
02/29/2024	PDO

UTILITY PLAN

OF:

PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:

PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

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STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
LICENSED PROFESSIONAL ENGINEER
08/30/2024

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-1	80.30		76.70 (SD-1)	48" DIA.
CB-2	79.60	76.00 (SD-1) 76.00 (UD-3)	75.90 (SD-2)	48" DIA.
CB-3	78.50	74.90 (SD-2)	74.65 (SD-3)	48" DIA.
CB-4	80.00		75.50 (SD-8)	48" DIA.
CB-5	76.55	71.75 (SD-10) 71.50 (SD-4)	71.00 (SD-5)	48" DIA.
CB-6	82.05		78.45 (SD-11)	48" DIA.
CB-7	79.00		74.25 (SD-9)	48" DIA.
CB-8	80.75	76.90 (SD-11)	76.80 (SD-12)	48" DIA.
CB-9	79.95	76.35 (SD-12)	76.10 (SD-13)	48" DIA.
CB-10	77.80	72.60 (SD-9)	72.50 (SD-10)	48" DIA.
CB-11	79.20		75.60 (SD-14)	48" DIA.
CB-12	76.65		72.90 (SD-18)	48" DIA.
CB-13	78.20	74.20 (SD-15)	74.10 (SD-16)	48" DIA.
CB-14	77.00	73.40 (SD-16)	73.30 (SD-17)	48" DIA.
CB-15	75.80	72.20 (SD-17) 72.15 (SD-18)	70.00 (SD-19)	72" DOUBLE GRATE
CB-16	77.45	74.45 (UD-1) 74.45 (UD-2)	74.35 (SD-20)	48" DIA.
CB-17	77.60		73.65 (SD-21)	48" DIA.
CB-18	77.20	73.35 (SD-21) 73.35 (SD-20)	73.10 (SD-22)	48" DIA.
CB-19	75.80	71.85 (SD-22)	71.75 (SD-23)	48" DIA.
CB-20	74.55	70.70 (SD-23) 68.10 (SD-6)	68.00 (SD-7)	60" DIA.
CB-21	77.80		74.00 (SD-24)	48" DIA.
CB-22	77.60	73.20 (SD-24)	73.10 (SD-25)	48" DIA.
CB-23	74.60	71.00 (SD-25)	69.30 (SD-26)	48" DIA.
CB-24	73.30	68.15 (SD-26) 67.40 (SD-7)	66.90 (SD-27)	72" DIA.
CB-25	78.15		74.55 (SD-30)	48" DIA.
CB-26	77.15	73.30 (SD-30)	73.05 (SD-31)	48" DIA.
CB-27	75.25	70.75 (SD-31)	70.50 (SD-32)	48" DIA.
CB-28	72.90		68.95 (SD-34)	48" DIA.
CB-29	73.00	68.80 (SD-34)	68.70 (SD-35)	48" DIA.

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-30	73.80	68.25 (SD-35)	68.00 (SD-36)	48" DIA.
CB-31	77.25		73.65 (SD-33)	48" DIA.
CB-32	78.90		75.30 (SD-37)	48" DIA.
CB-33	74.35		70.75 (SD-40)	48" DIA.
CB-34	75.00	70.15 (SD-40)	70.05 (SD-41)	48" DIA.
CB-35	77.10		73.50 (SD-42)	48" DIA.
CB-36	75.80	72.20 (SD-42) 68.90 (SD-43)	68.65 (SD-44)	72" DOUBLE GRATE
CB-37	73.55		69.95 (SD-43)	72" DOUBLE GRATE
CB-38	72.55		67.30 (SD-51)	48" DIA.
CB-39	70.45		66.77 (SD-52)	48" DIA.
CB-40	70.60	62.30 (SD-59) 65.50 (SD-53) 65.45 (SD-62)	61.80 (SD-54)	60" DIA.
CB-41	69.55		65.95 (SD-60)	48" DIA.
CB-42	68.40		64.80 (SD-55)	48" DIA.
CB-43	68.25	64.40 (SD-55)	64.30 (SD-56)	48" DIA.
CB-44	69.25	65.65 (SD-60) 63.80 (SD-56)	63.55 (SD-57)	48" DIA.
CB-45	69.75	63.30 (SD-57) 64.80 (SD-61)	63.20 (SD-58)	48" DIA.
CB-46	69.95	63.05 (SD-58)	62.80 (SD-59)	48" DIA.
CB-47	69.05		65.45 (SD-61)	48" DIA.
CB-48	69.85		66.05 (SD-62)	48" DIA.
CB-49	72.70		69.10 (SD-63)	48" DIA.
CB-50	72.40	68.40 (SD-64)	68.30 (SD-65)	48" DIA.
CB-51	70.90	66.50 (SD-65) 66.50 (SD-69)	66.00 (SD-66)	48" DIA.
CB-52	69.75	64.70 (SD-66)	64.20 (SD-67)	48" DIA.
CB-53	71.50		67.90 (SD-69)	48" DIA.
CB-54	73.25		69.55 (SD-70)	48" DIA.
CB-55	72.60	69.00 (SD-70)	68.90 (SD-71)	48" DIA.
CB-56	72.10	68.30 (SD-71)	68.20 (SD-72)	48" DIA.
CB-57	72.30	67.16 (SD-72) 67.93 (SD-73)	67.05 (SD-74)	48" DIA.
CB-58	70.00	66.06 (SD-74)	65.81 (SD-75)	48" DIA.

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-59	69.10	64.81 (SD-75)	64.71 (SD-76)	48" DIA.
CB-60	68.20	64.15 (SD-76)	63.65 (SD-77)	48" DIA.
CB-61	72.50		68.50 (SD-73)	48" DIA.
DMH-1	79.45	73.70 (SD-3) 74.20 (SD-8)	73.60 (SD-4)	48" DIA.
DMH-2	75.10	69.35 (SD-19) 68.60 (SD-5)	68.50 (SD-6)	72" DIA.
DMH-3	74.80	66.25 (SD-27) 70.00 (SD-32) 67.50 (SD-36)	65.75 (SD-28)	72" DIA.
DMH-4	75.35	65.35 (SD-28) 66.30 (SD-39)	65.25 (SD-29)	72" DIA.
DMH-5	78.75	76.10 (SD-13) 75.30 (SD-14)	75.20 (SD-15)	48" DIA.
DMH-6	76.40	66.82 (SD-38) 72.50 (SD-33)	66.72 (SD-39)	48" DIA.
DMH-7	76.50	72.90 (SD-37) 69.30 (SD-41) 68.20 (SD-44)	67.95 (SD-38)	48" DIA.
DMH-8	72.90	68.95 (SD-63)	68.85 (SD-64)	48" DIA.
DMH-9	71.00	60.30 (SD-48)	60.20 (SD-49)	48" DIA.
DMH-10	68.30	58.60 (SD-49)	58.50 (SD-50)	48" DIA.
DMH-11	67.50	56.01 (SD-50) 56.01 (EX. SD-1)	56.01 (EX. SD-2)	60" DIA.
DMH-12	71.10	65.95 (SD-51) 65.95 (SD-52)	65.85 (SD-53)	48" DIA.
DMH-13	69.25	63.70 (SD-67) 63.30 (SD-77)	63.20 (SD-68)	48" DIA.
DMH-14	67.50	57.20 (SD-81) 58.92 (GW-1)	57.10 (SD-82)	48" DIA.
DMH-15	67.00	56.87 (SD-82) 55.67 (EX. SD-3)	55.67 (EX. SD-4)	60" DIA.
EX DMH-8436	69.00			SEE SHEET C-301
OCS-1	73.55	62.50 (SD-47) 60.50 (SD-46)	60.40 (SD-48)	72" DIA.
OCS-2	69.50	57.60 (SD-79) 59.00 (SD-80)	57.50 (SD-81)	72" DIA.
SF-1	73.20	62.50 (SD-45)	60.60 (SD-46)	96" DIA.
SF-2	69.40	59.00 (SD-78)	57.70 (SD-79)	72 x 96 inch Rectangular Structure

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
EX. SD-1	18"	8'	0.40%
EX. SD-2	18"	8'	0.30%
EX. SD-3	24"	7'	0.38%
EX. SD-4	24"	6'	0.41%
GW-1	6"	28'	0.50%
SD-1	12"	55'	1.27%
SD-2	12"	65'	1.55%
SD-3	15"	31'	3.07%
SD-4	18"	118'	1.77%
SD-5	24"	100'	2.39%
SD-6	24"	28'	1.44%
SD-7	24"	39'	1.56%
SD-8	12"	49'	2.64%
SD-9	15"	58'	2.85%
SD-10	12"	32'	2.37%
SD-11	12"	58'	2.66%
SD-12	12"	27'	1.66%
SD-13	12"	43'	0.00%
SD-14	12"	19'	1.56%
SD-15	12"	23'	4.42%
SD-16	12"	40'	1.73%
SD-17	12"	52'	2.14%
SD-18	15"	37'	2.04%
SD-19	15"	37'	1.78%
SD-20	12"	47'	2.12%
SD-21	12"	25'	1.22%
SD-22	15"	60'	2.08%
SD-23	15"	64'	1.64%
SD-24	12"	29'	2.72%
SD-25	12"	67'	3.14%

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
SD-26	15"	57'	2.02%
SD-27	30"	52'	1.25%
SD-28	36"	20'	1.99%
SD-29	36"	4'	3.44%
SD-30	12"	33'	3.76%
SD-31	15"	63'	3.64%
SD-32	15"	18'	2.85%
SD-33	12"	44'	2.63%
SD-34	12"	21'	0.72%
SD-35	12"	50'	0.90%
SD-36	15"	48'	1.04%
SD-37	12"	115'	2.09%
SD-38	18"	117'	0.97%
SD-39	18"	45'	0.92%
SD-40	12"	51'	1.17%
SD-41	12"	69'	1.09%
SD-42	12"	72'	1.82%
SD-43	15"	103'	1.02%
SD-44	15"	36'	1.25%
SD-45	12"	2'	0.00%
SD-46	12"	12'	0.84%
SD-47	18"	3'	0.00%
SD-48	18"	18'	0.54%
SD-49	18"	196'	0.82%
SD-50	18"	79'	3.15%
SD-51	12"	65'	2.07%
SD-52	12"	79'	1.04%
SD-53	15"	27'	1.30%
SD-54	24"	42'	1.20%
SD-55	12"	37'	1.08%

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
SD-56	12"	45'	1.11%
SD-57	15"	23'	1.08%
SD-58	15"	15'	1.01%
SD-59	18"	41'	1.23%
SD-60	12"	28'	1.09%
SD-61	12"	56'	1.17%
SD-62	12"	50'	1.21%
SD-63	12"	13'	1.12%
SD-64	12"	28'	1.64%
SD-65	12"	86'	2.08%
SD-66	18"	77'	1.69%
SD-67	18"	22'	2.32%
SD-68	24"	14'	2.86%
SD-69	12"	83'	1.69%
SD-70	12"	21'	2.56%
SD-71	12"	18'	3.39%
SD-72	15"	104'	1.00%
SD-73	12"	21'	2.74%
SD-74	15"	82'	1.21%
SD-75	18"	51'	1.96%
SD-76	18"	54'	1.04%
SD-77	24"	33'	1.07%
SD-78	12"	23'	0.00%
SD-79	12"	6'	1.70%
SD-80	24"	24'	0.00%
SD-81	24"	35'	0.86%
SD-82	24"	19'	1.19%
UD-1	6"	34'	1.61%
UD-2	6"	26'	2.15%
UD-3	4"	6'	0.00%

PAUL D. OSTROWSKI PE 11175

AMY BELL SEGAL RLA 2265

STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
REGISTERED PROFESSIONAL ENGINEER
08/30/2024

REV.	BY	DATE:	STATUS:
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
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PIPE AND STRUCTURE DATA TABLES

OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

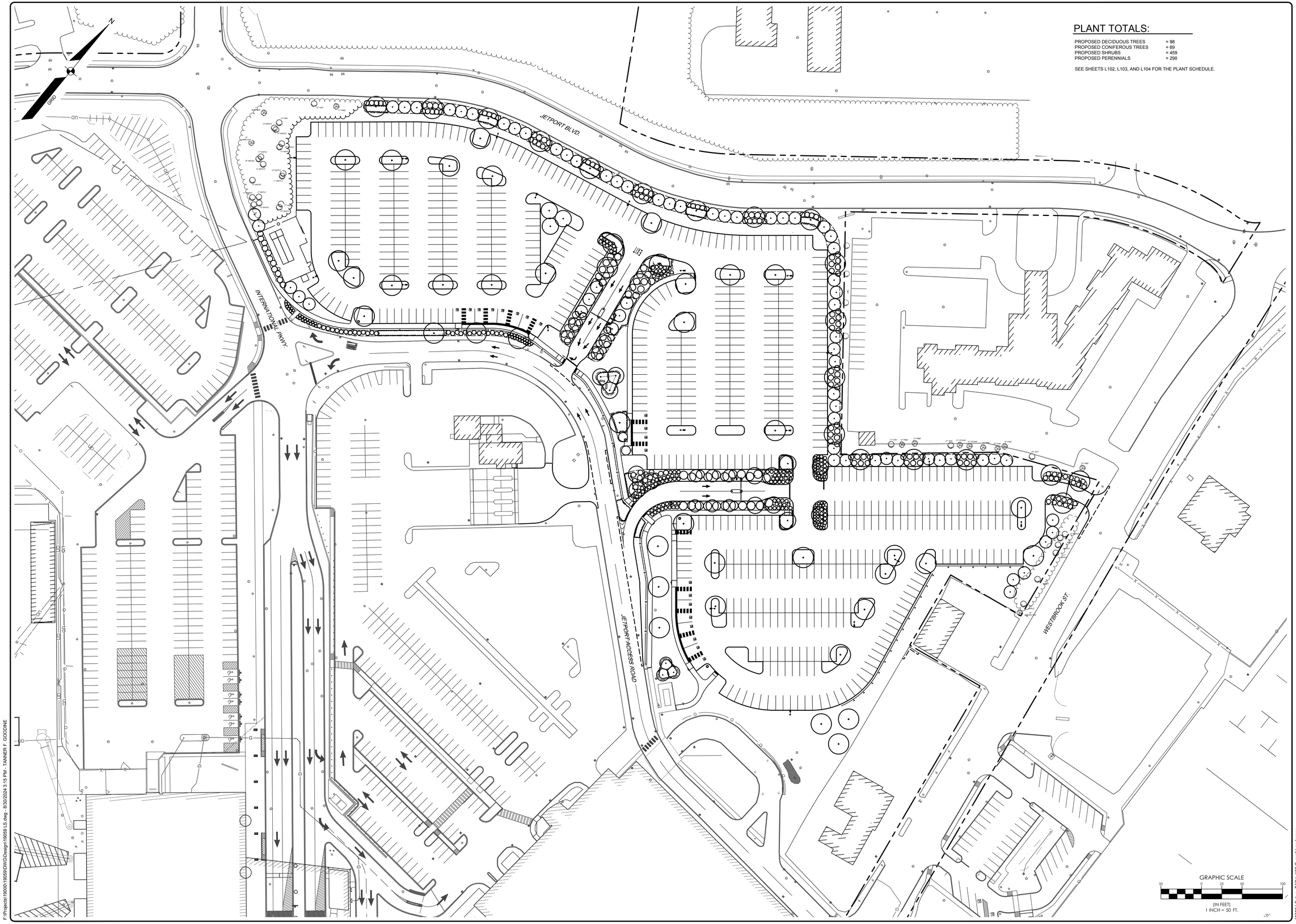
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-304

19059 U.dwg, TAB:C-304 Structure & Pipe Data

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PLANT TOTALS:

PROPOSED DECIDUOUS TREES	= 98
PROPOSED CONIFEROUS TREES	= 69
PROPOSED SHRUBS	= 459
PROPOSED PERENNIALS	= 290

SEE SHEETS L102, L103, AND L104 FOR THE PLANT SCHEDULE.

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PAUL D. OSTROVSKI PE 11175

AMY BELL SEGAL RLA 2265

LICENSED LANDSCAPE ARCHITECT
Amy Bell Segal
No. 2265
STATE OF MAINE
08.30.24

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South Portland, ME 04106
Tel. 207-200-2100

OVERALL LANDSCAPE PLAN

OF:

PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:

PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

19059 LS dwg, TAB L-100 Overall Landscape

SHEET L-100

LEGEND

TREES TO BE PRESERVED:

	>10" DECIDUOUS TREE TO BE PRESERVED	= 22
	>10" CONIFEROUS TREE TO BE PRESERVED	= 3

TREES TO BE REMOVED:

	>10" DECIDUOUS TREE TO BE REMOVED	= 130
X	*>10" ASH TREE TO BE REMOVED **	*= 19 [OUT OF THE 130 ABOVE]*
	>10" CONIFEROUS TREE TO BE REMOVED	= 23
	TOTAL >10" TREES REMOVED	= 153

* MOST ASH TREES ARE INFECTED BY EMERALD ASH BORER AS IDENTIFIED BY THE CITY ARBORIST ON JANUARY 19, 2024

NOTES

1. THIS TREE PRESERVATION AND REMOVAL PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 4.3 OF THE CITY OF PORTLAND TECHNICAL MANUAL. A TOTAL OR 164 TREES WITH A MINIMUM OF 10" DIAMETER AT BREAST HEIGHT (DBH) WILL BE REMOVED AS A RESULT OF SITE GRADING ASSOCIATED WITH THE DEVELOPMENT OF THE PARKING LOT EXPANSION.
2. TWENTY-SIX (26) TREES, 10" OR GREATER, HAVE BEEN IDENTIFIED TO REMAIN AND BE PROTECTED UNTIL THEY ARE REASSESSED IN THE FIELD FOR PRESERVATION OR REMOVAL BASED ON CONSTRUCTION IMPACTS; A LICENSED LANDSCAPE ARCHITECT FROM SEBAGO TECHNICS WILL VISIT THE SITE WITH THE CITY ARBORIST TO MAKE THE DETERMINATION.
3. TREES TO BE PRESERVED WILL BE FLAGGED IN THE FIELD AND PROTECTED PER THE TREE PRESERVATION DETAILS ON THE PLAN.
4. FENCING/PROTECTIVE BARRIERS SHALL BE ERECTED TO THE WIDEST EXTENT FEASIBLE DURING CONSTRUCTION. THE EXTENT OF THE DRIP LINE WILL NOT BE FEASIBLE GIVEN THE ADJACENT GRADING AND SITE DEVELOPMENT.
5. SIGNS SHALL BE POSTED DURING CONSTRUCTION IDENTIFYING THE "TREE PROTECTION ZONE" OR "LIMIT OF WORK ZONE".

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

AMY BELL SEGAL RLA 2265
PAUL D. OSTROVSKI PE 11175

LICENSED LANDSCAPE ARCHITECT
Amy Bell Segal
No. 2265
STATE OF MAINE
08.30.24

REV.	BY	DATE:	STATUS:
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/19/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

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WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

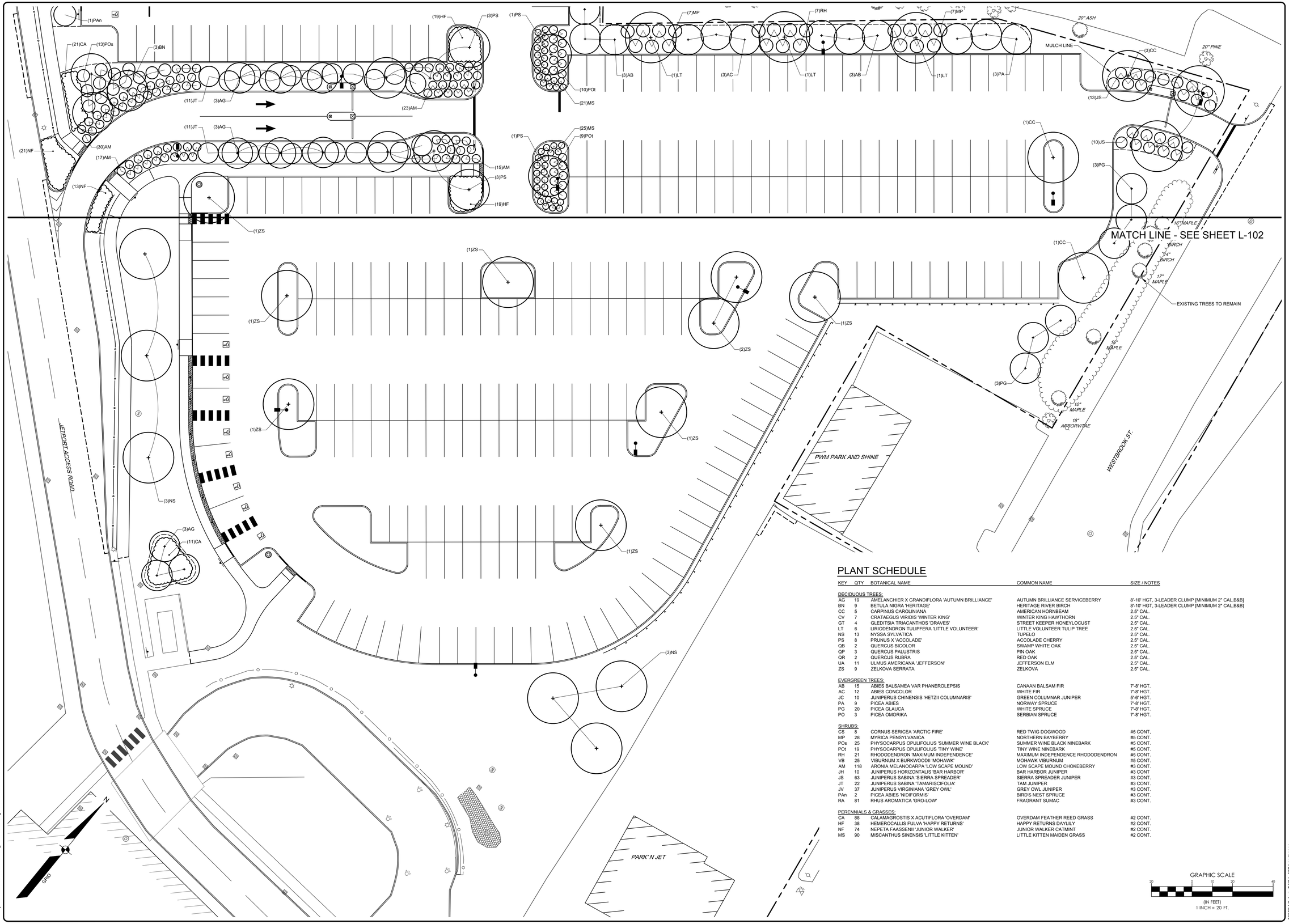
TREE REMOVAL & PRESERVATION PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET L-101

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19059 LS.dwg - TAB:L-101 Remove & Preserve



PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE / NOTES
DECIDUOUS TREES:				
AG	19	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
BN	9	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL.B&B]
CC	5	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2.5" CAL.
CV	7	CRATAEGUS VIRIDIS 'WINTER KING'	WINTER KING HAWTHORN	2.5" CAL.
GT	4	GLEDITSIA TRIACANTHOS 'DRAVES'	STREET KEEPER HONEYLOCUST	2.5" CAL.
LT	6	LIRIODENDRON TULIPFERA 'LITTLE VOLUNTEER'	LITTLE VOLUNTEER TULIP TREE	2.5" CAL.
NS	13	NYSSA SYLVATICA	TUPELO	2.5" CAL.
PS	8	PRUNUS X 'ACCOLADE'	ACCOLADE CHERRY	2.5" CAL.
QB	2	QUERCUS BICOLOR	SWAMP WHITE OAK	2.5" CAL.
QP	3	QUERCUS PALUSTRIS	PIN OAK	2.5" CAL.
QR	2	QUERCUS RUBRA	RED OAK	2.5" CAL.
UA	11	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2.5" CAL.
ZS	9	ZELKOVA SERRATA	ZELKOVA	2.5" CAL.
EVERGREEN TREES:				
AB	15	ABIES BALSAMEA VAR PHANEROLEPSIS	CANAAN BALSAM FIR	7'-8' HGT.
AC	12	ABIES CONCOLOR	WHITE FIR	7'-8' HGT.
JC	10	JUNIPERUS CHINENSIS 'HETZII COLUMNARIS'	GREEN COLUMNAR JUNIPER	5'-6' HGT.
PA	9	PICEA ABIES	NORWAY SPRUCE	7'-8' HGT.
PG	20	PICEA GLAUCA	WHITE SPRUCE	7'-8' HGT.
PO	3	PICEA OMORIKA	SERBIAN SPRUCE	7'-8' HGT.
SHRUBS:				
CS	8	CORNUS SERICEA 'ARCTIC FIRE'	RED TWIG DOGWOOD	#5 CONT.
MP	28	MYRICA PENSYLVANICA	NORTHERN BAYBERRY	#5 CONT.
POs	25	PHYSOCARPUS OPULIFOLIUS 'SUMMER WINE BLACK'	SUMMER WINE BLACK NINEBARK	#5 CONT.
POt	19	PHYSOCARPUS OPULIFOLIUS 'TINY WINE'	TINY WINE NINEBARK	#5 CONT.
RH	21	RHODODENDRON 'MAXIMUM INDEPENDENCE'	MAXIMUM INDEPENDENCE RHODODENDRON	#5 CONT.
VB	25	VIBURNUM X BURKWOODII 'MOHAWK'	MOHAWK VIBURNUM	#5 CONT.
AM	118	ARONIA MELANOCARPA 'LOW SCAPE MOUND'	LOW SCAPE MOUND CHOKEBERRY	#3 CONT.
JH	10	JUNIPERUS HORIZONTALIS 'BAR HARBOR'	BAR HARBOR JUNIPER	#3 CONT
JS	63	JUNIPERUS SABINA 'SIERRA SPREADER'	SIERRA SPREADER JUNIPER	#3 CONT.
JT	22	JUNIPERUS SABINA 'TAMARISCIFOLIA'	TAM JUNIPER	#3 CONT.
JV	37	JUNIPERUS VIRGINIANA 'GREY OWL'	GREY OWL JUNIPER	#3 CONT.
PAn	2	PICEA ABIES 'NIDIFORMIS'	BIRD'S NEST SPRUCE	#3 CONT.
RA	81	RHUS AROMATICA 'GRO-LOW'	FRAGRANT SUMAC	#3 CONT.
PERENNIALS & GRASSES:				
CA	88	CALAMAGROSTIS X ACUTIFLORA 'OVERDAM'	OVERDAM FEATHER REED GRASS	#2 CONT.
HF	38	HEMEROCALLIS FULVA 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	#2 CONT.
NF	74	NEPETA FAASSENII 'JUNIOR WALKER'	JUNIOR WALKER CATMINT	#2 CONT.
MS	90	MISCANTHUS SINENSIS 'LITTLE KITTEN'	LITTLE KITTEN MAIDEN GRASS	#2 CONT.

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

AMY BELL SEGAL RLA 2265
PAUL D. OSTROVSKI PE 11175

AMY BELL SEGAL No. 2265 LICENSED LANDSCAPE ARCHITECT STATE OF MAINE
08.30.24

REV.	BY	DATE	STATUS
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E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT

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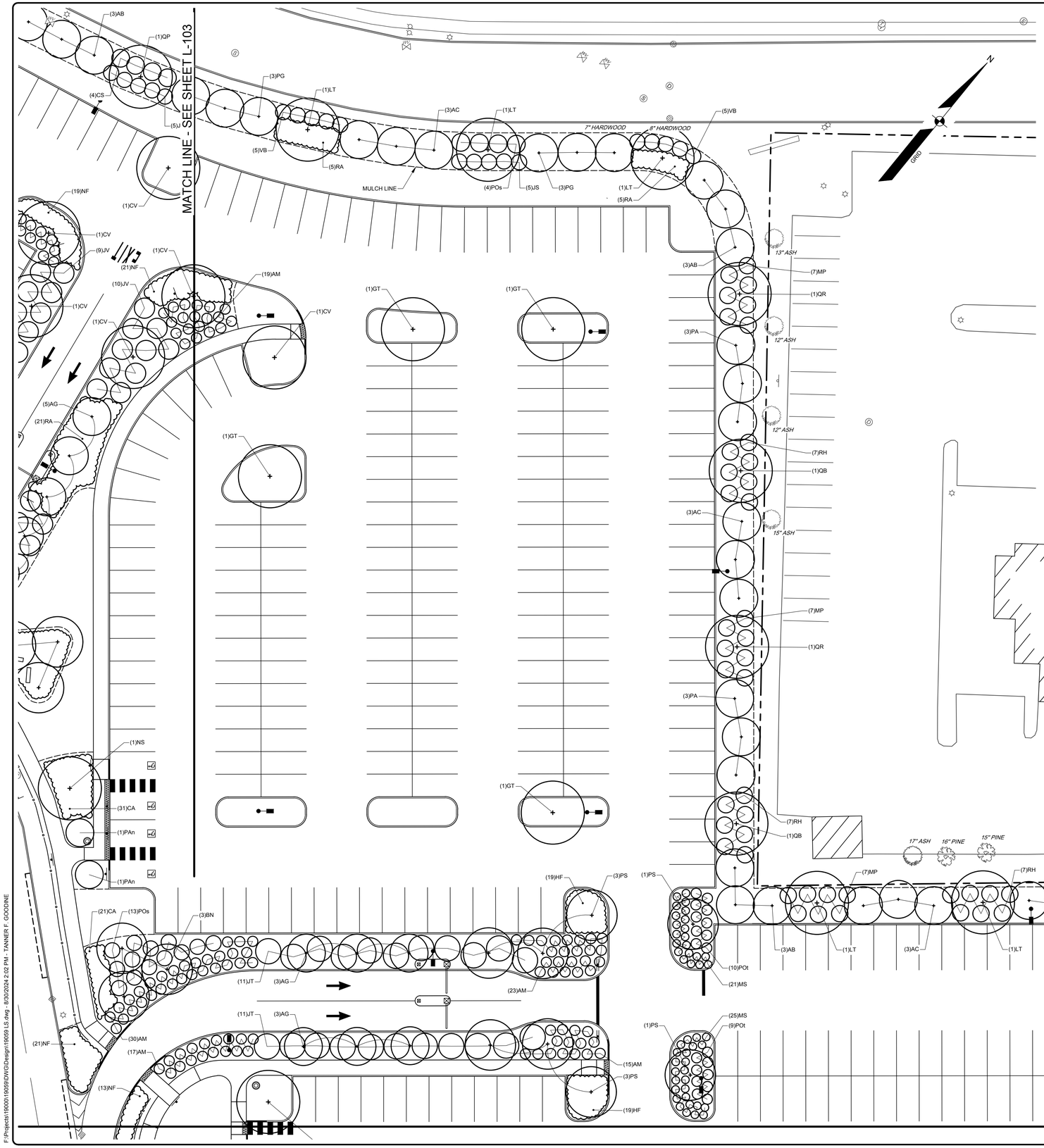
LANDSCAPE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET L-102

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19059 LS.dwg, TAB L-102 Landscape



PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE / NOTES
DECIDUOUS TREES:				
AG	19	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	8'-10' HGT, 3-LEADER CLUMP [MINIMUM 2" CAL,B&B]
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CC	5	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2.5" CAL.
CV	7	CRATAEGUS VIRIDIS 'WINTER KING'	WINTER KING HAWTHORN	2.5" CAL.
GT	4	GLEDITSIA TRIACANTHOS 'DRAVES'	STREET KEEPER HONEYLOCUST	2.5" CAL.
LT	6	LIRIODENDRON TULIPFERA 'LITTLE VOLUNTEER'	LITTLE VOLUNTEER TULIP TREE	2.5" CAL.
NS	13	NYSSA SYLVATICA	TUPELO	2.5" CAL.
PS	8	PRUNUS X 'ACCOLADE'	ACCOLADE CHERRY	2.5" CAL.
QB	2	QUERCUS BICOLOR	SWAMP WHITE OAK	2.5" CAL.
QP	3	QUERCUS PALUSTRIS	PIN OAK	2.5" CAL.
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UA	11	ULMUS AMERICANA 'JEFFERSON'	JEFFERSON ELM	2.5" CAL.
ZS	9	ZELKOVA SERRATA	ZELKOVA	2.5" CAL.
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AC	12	ABIES CONCOLOR	WHITE FIR	7'-8' HGT.
JC	10	JUNIPERUS CHINENSIS 'HETZII COLUMNARIS'	GREEN COLUMNAR JUNIPER	5'-6' HGT.
PA	9	PICEA ABIES	NORWAY SPRUCE	7'-8' HGT.
PG	20	PICEA GLAUCA	WHITE SPRUCE	7'-8' HGT.
PO	3	PICEA OMORIKA	SERBIAN SPRUCE	7'-8' HGT.
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HF	38	HEMEROCALLIS FULVA 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	#2 CONT.
NF	74	NEPETA FAASSENII 'JUNIOR WALKER'	JUNIOR WALKER CATMINT	#2 CONT.
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GRAPHIC SCALE
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AMY BELL SEGAL RLA 2265
PAUL D. OSTROWSKI PE 11175

LICENSED LANDSCAPE ARCHITECT
Amy Bell Segal
No. 2265
STATE OF MAINE
08.30.24

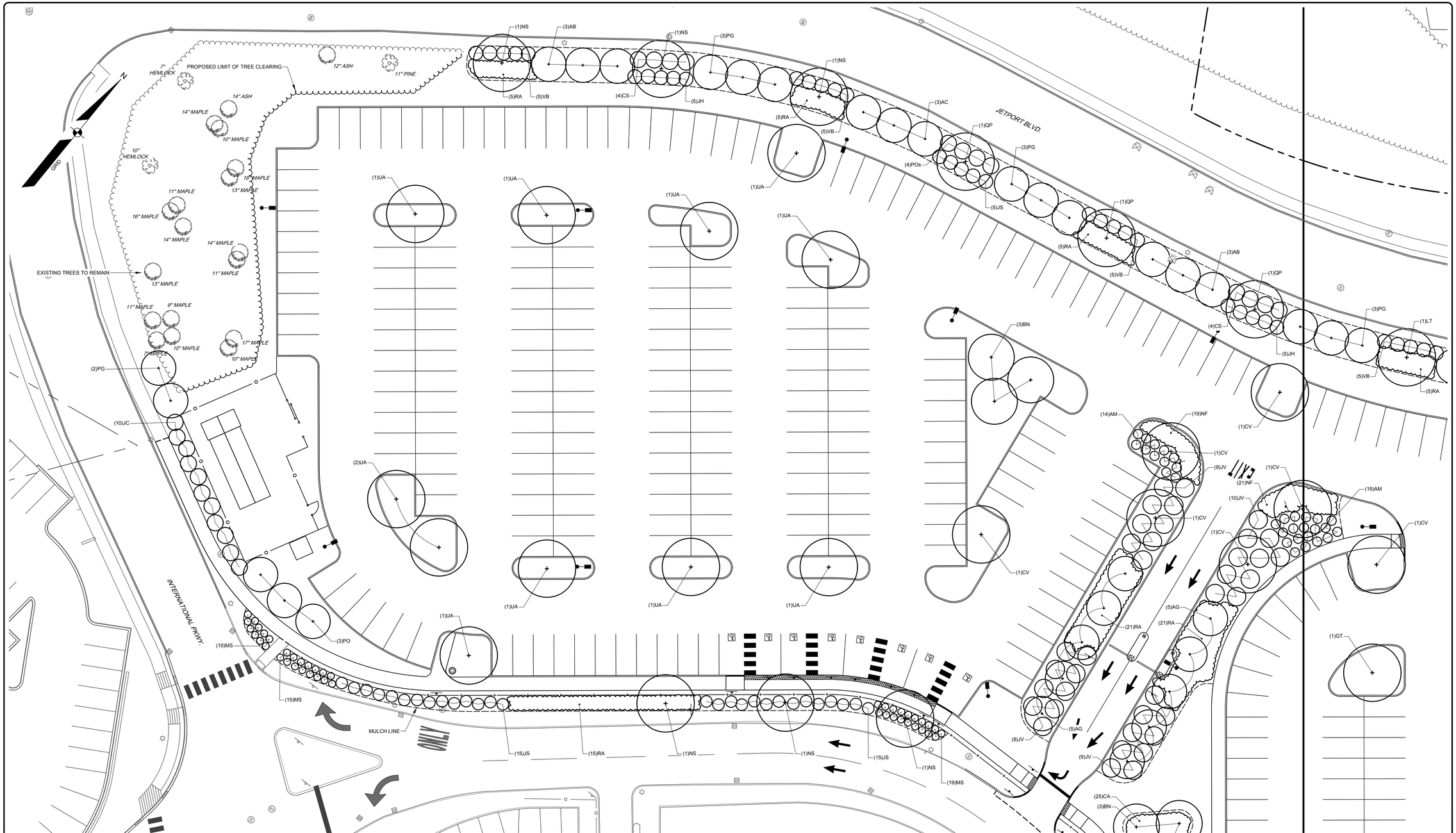
SEBAGO TECHNICS
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South Portland, ME 04106
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LANDSCAPE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 20'
PROJECT	19059

SHEET L-103

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19059 LS.dwg T:AB L-103 Landscape



PLANT SCHEDULE

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AMY BELL, SEGAL, RLA 2265

PAUL D. OSTROVSKI, PE 11175

REV	BY:	DATE:	STATUS:
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E	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT

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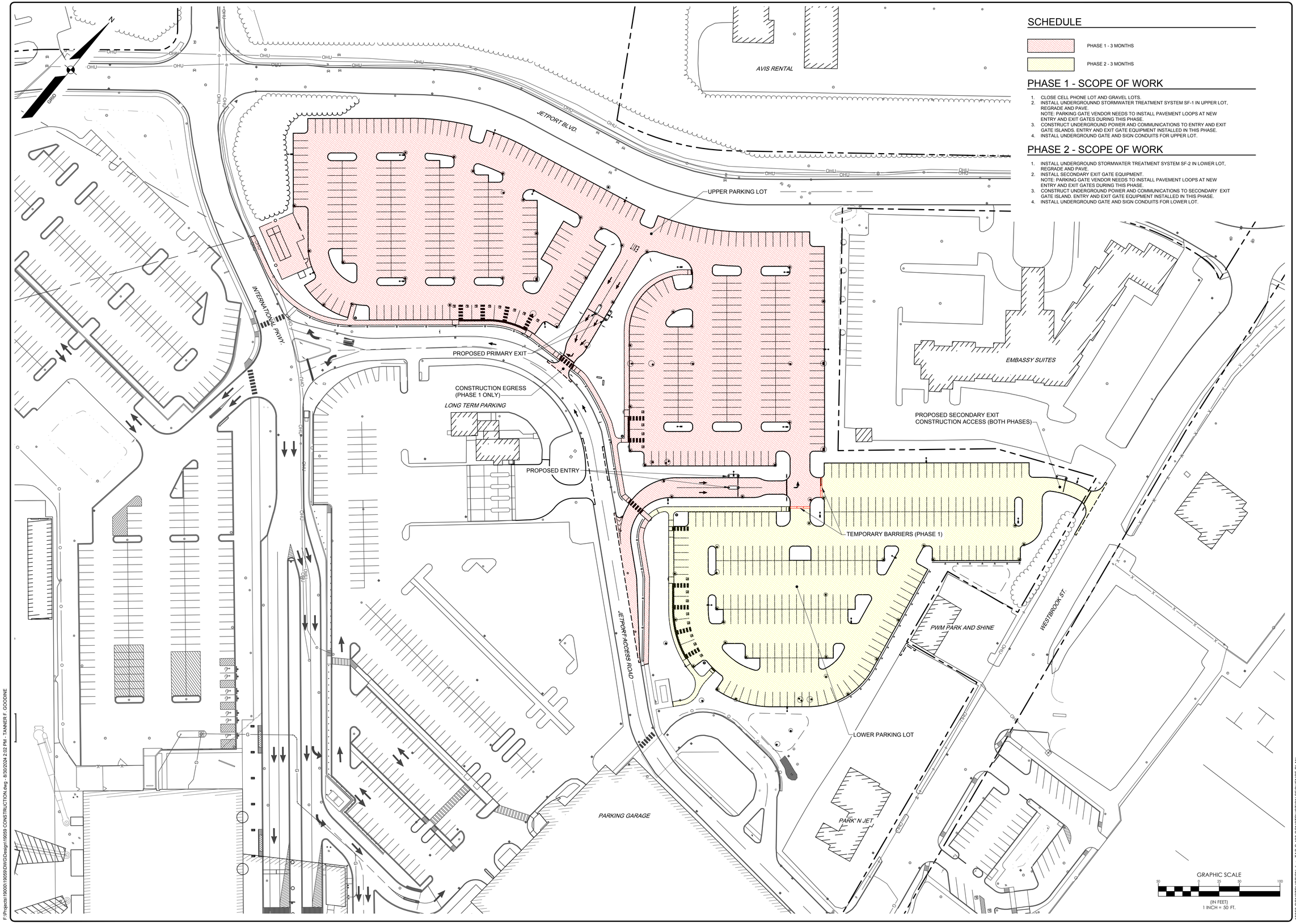
LANDSCAPE PLAN
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

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CHECKED	PDO
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PROJECT	19059

SHEET L-104

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19059 LS.dwg, TAB:L-104 Landscape



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Page 1957

PAUL D. OSTROWSKI PE 11175

AMY BELL SEGAL RLA 2265

STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — REGISTERED PROFESSIONAL ENGINEER — 08/30/2024

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CONSTRUCTION SEQUENCE PLAN

OF:

PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102

FOR:

PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	1" = 50'
PROJECT	19059

SHEET C-400

19059 CONSTRUCTION.dwg, TAB C-400 CONSTRUCTION SEQUENCE PLAN

EROSION CONTROL MEASURES

PRE-CONSTRUCTION PHASE

PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS (SILT FENCE) WILL BE STAKED/INSTALLED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. THE PLACEMENT OF SEDIMENT BARRIERS SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THIS EROSION CONTROL PLAN AND DETAILS IN THIS PLAN SET. THIS NETWORK IS TO BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED.

PRIOR TO ANY CLEARING OR GRUBBING, A CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED AT THE INTERSECTION OF THE PROPOSED ENTRANCES AND EXISTING ROADWAY TO AVOID TRACKING OF MUD, DUST AND DEBRIS FROM THE SITE.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE A DETAILED SCHEDULE AND MARKED UP PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE MUNICIPAL STAFF. THREE COPIES OF THE SCHEDULE AND MARKED UP PLAN SHALL BE PROVIDED TO THE MUNICIPALITY THREE DAYS PRIOR TO THE SCHEDULED PRE-CONSTRUCTION MEETING. SPECIAL ATTENTION SHALL BE GIVEN TO THE 14 DAY LIMIT OF DISTURBANCE IN THE SCHEDULE ADDRESSING TEMPORARY AND PERMANENT VEGETATION MEASURES.

CONSTRUCTION AND POST-CONSTRUCTION PHASE

AREAS UNDERGOING ACTUAL CONSTRUCTION SHALL ONLY EXPOSE THAT AMOUNT OF MINERAL SOIL NECESSARY FOR PROGRESSIVE AND EFFICIENT CONSTRUCTION. AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD, SUCH AS ACTIVE EXCAVATION AND ACTIVE GRADING. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS ACTIVELY OCCURRING OR CAN BE MULCHED IN THE SAME DAY. OPEN AREAS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL AS SHOWN ON THE DESIGN PLANS AND AS DESCRIBED WITHIN THIS EROSION CONTROL PLAN WITHIN SEVEN (7) DAYS OF DISTURBANCE. AREAS LOCATED WITHIN 100 FEET OF STREAMS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL WITHIN SEVEN (7) DAYS. REFER TO WINTER EROSION CONTROL NOTES FOR THE TREATMENT OF OPEN AREAS AFTER OCTOBER 1ST OF THE CONSTRUCTION YEAR.

THE CONTRACTOR MUST INSTALL ANY ADDED MEASURES WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE DEPENDENT UPON THE ACTUAL SITE AND WEATHER CONDITIONS. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, IN ORDER TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION.

EROSION CONTROL APPLICATIONS & MEASURES
THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET.

1. TEMPORARY MULCHING:

ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 14 DAYS SHALL BE MULCHED. DISTURBED AREAS ADJACENT TO NATURAL RESOURCES THAT ARE NOT GRADED WITHIN SEVEN (7) DAYS SHALL BE MULCHED. ALSO, AREAS, WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED, SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING. EROSION CONTROL BLANKETS ARE RECOMMENDED TO BE USED AT THE BASE OF GRASSED WATERWAYS AND ON SLOPES GREATER THAN 33%. MULCH ANCHORING SHOULD BE USED ON SLOPES GREATER THAN 5% AFTER SEPTEMBER 15TH OF THE CONSTRUCTION YEAR (SEE WINTER EROSION CONTROL NOTES).
TYPES OF MULCH:

HAY OR STRAW: SHALL BE APPLIED AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE).

EROSION CONTROL MIX: SHALL BE PLACED EVENLY AND MUST PROVIDE 100% SOIL COVERAGE. EROSION CONTROL MIX SHALL BE APPLIED SUCH THAT THE THICKNESS ON SLOPES 3:1 OR LESS IS 2 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THE THICKNESS ON SLOPES BETWEEN 3:1 AND 2:1 SHALL BE 4 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THIS SHALL NOT BE USED ON SLOPES GREATER THAN 2:1.

EROSION CONTROL BLANKET: SHALL BE INSTALLED SUCH THAT CONTINUOUS CONTACT BETWEEN THE MAT AND THE SOIL IS OBTAINED. INSTALL BLANKETS AND STAPLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

2. SOIL STOCKPILES:

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES. SEDIMENT BARRIERS SHALL BE INSTALLED DOWNGRADIENT OF STOCKPILES, AND STORMWATER SHALL BE PREVENTED FROM RUNNING ONTO THE STOCKPILE.

3. NATURAL RESOURCES PROTECTION:

ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES SHALL BE MULCHED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1 OF THIS SECTION) WITHIN 7 DAYS OF EXPOSURE OR PRIOR TO ANY STORM EVENT. SEDIMENT BARRIERS (AS DESCRIBED IN PART 4 OF THIS SECTION) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE.

4. SEDIMENT BARRIERS:

PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. SEDIMENT BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

HAY BALES: SHALL NOT BE INSTALLED ADJACENT TO WETLAND. INSTALL PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.

EROSION CONTROL MIX: SHALL NOT BE USED ADJACENT TO WETLANDS. INSTALL PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER. EROSION CONTROL MIX BERMS SHALL NOT BE USED AT THE BOTTOM OF STEEP SLOPES (>8%) OR SLOPES WITH FLOWING WATER.

CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

5. TEMPORARY CHECK DAMS:

SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

STONE CHECK DAMS: STONE DAMS SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

HAY BALE CHECK DAMS: BALES SHALL BE WIRE-BOUND OR STRING-TIED. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER. HAY BALES SHALL BE PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL, STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS.

6. STORMDRAIN INLET PROTECTION:

INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLET OR CURB INLET PRIOR TO PERMANENT STABILIZATION OF THE IMMEDIATE AND UPSTREAM DISTURBED AREAS. THEY SHALL BE CONSTRUCTED IN A MANNER THAT WILL FACILITATE CLEAN-OUT AND DISPOSAL OF TRAPPED SEDIMENTS AND MINIMIZE INTERFERENCE WITH CONSTRUCTION ACTIVITIES. ANY RESULTANT PONDING OF WATER FROM THE PROTECTION METHOD MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.

HAY BALE DROP INLET PROTECTION: WE DO NOT RECOMMEND THE USE OF HAY BALES AS INLET PROTECTION.

CONCRETE BLOCK AND STONE INLET SEDIMENT FILTER (DROP OR CURB INLET): SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE HEIGHT OF THE CONCRETE BLOCK BARRIER CAN VARY BUT MUST BE BETWEEN 12 AND 24 INCHES TALL. A MINIMUM OF 1 INCH CRUSHED STONE SHALL BE USED.

MANUFACTURED SEDIMENT BARRIERS AND FILTER (DROP OR CURB INLET): MANUFACTURED FILTERS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

7. STABILIZED CONSTRUCTION ENTRANCE/EXIT:

PRIOR TO CLEARING AND/OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICALLY SWEPT TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. THE TERM "SWEEP" IS UNDERSTOOD TO MEAN REMOVAL AND RECOVERY OF TRACKED SEDIMENT WITH A STREET SWEEPER, NOT BRUSHING THE MATERIAL INTO SWALES OR STRUCTURES WITH A MECHANICAL BROOM. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS. THE CONTRACTOR SHALL MAINTAIN THE STABILIZED CONSTRUCTION ENTRANCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

DUST CONTROL:

DUST CONTROL DURING CONSTRUCTION SHALL BE ACHIEVED BY THE USE OF A WATERING TRUCK TO PERIODICALLY SPRINKLE THE EXPOSED ROADWAY AREAS AS NECESSARY TO REDUCE DUST DURING THE DRY MONTHS. APPLYING OTHER DUST CONTROL PRODUCTS SUCH AS CALCIUM CHLORIDE OR OTHER MANUFACTURED PRODUCTS ARE ALLOWED IF AUTHORIZED BY THE PROPER LOCAL, STATE AND/OR FEDERAL REGULATING AGENCIES. HOWEVER, IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO MITIGATE DUST AND SOIL LOSS FROM THE SITE. IF OFFSITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NOT LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS.

TEMPORARY VEGETATION:

TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDBED PREPARATION AND APPLICATION OF SEED SHALL BE CONDUCTED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUALS FOR CONTRACTORS AND ENGINEERS, LATEST REVISION. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

PERMANENT VEGETATION:

REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE APPLICATION OF SEED SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR, PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

SEEDBED PREPARATION:

A. FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.

B. SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P205-K20 OR EQUAL)	18.4 LBS./1,000 S.F.
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS./1,000 S.F.

C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDBED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

APPLICATION OF SEED:

A. SEEDING: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS: (MDOT SEED MIX METHOD #1 - PARK MIXTURE)

SEED TYPE	APPLICATION RATE
CREEPING RED FESCUE	1.8 LBS/1,000 S.F. (78.4 LBS/ACRE)
KENTUCKY BLUEGRASS	1.0 LBS/1,000 S.F. (43.6 LBS/ACRE)
CHEWINGS FESCUE	0.60 LBS/1,000 S.F. (26.1 LBS/ACRE)
PERENNIAL RYEGRASS	0.40 LBS/1,000 S.F. (17.4 LBS/ACRE)
ANNUAL RYEGRASS	0.20 LBS/1,000 S.F. (8.70 LBS/ACRE)
TOTAL	4.00 LBS/1,000 S.F. (174.20 LBS/ACRE)

NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND SEED MIXTURES. MDEP RECOMMENDED SEED MIXTURES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 2016 OR LATEST REVISION.

B. HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. RECOMMENDED SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

C. MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS.

SODDING:
FOLLOWING SEEDBED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES, AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW, STARTING AT THE LOWEST ELEVATION. SOD SHOULD BE ROLLED OR TAMPED DOWN TO EVEN OUT THE JOINTS ONCE LAID DOWN. WHERE FLOW IS PREVALENT THE SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE ESTABLISHED BETWEEN APRIL 1ST AND NOVEMBER 15TH OF THE CONSTRUCTION YEAR, HOWEVER, REFER TO THE WINTER EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% (10H:1V) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE CONTRACTOR WILL COVER THE SLOPE WITH A LAYER OF WOOD WASTE COMPOST AS DESCRIBED IN ITEM 2(C.) OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM 2(D.) OF THIS STANDARD.
B. STABILIZE THE SLOPE WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE 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 WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).
C. STABILIZE THE SLOPE WITH WOOD WASTE COMPOST -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF WOOD WASTE COMPOST ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE WOOD WASTE COMPOST, THE CONTRACTOR WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. THE CONTRACTOR WILL NOT USE WOOD WASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
D. STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE CONTRACTOR WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOIL S -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15%. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE CONTRACTOR WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 3(C.) OF THIS STANDARD.
B. STABILIZE THE SOIL WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
C. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE CONTRACTOR WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE CONTRACTOR WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

1. MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, AND AT LEAST EVERY SEVEN (7) DAYS, THE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES. THE CONTRACTOR SHALL PERFORM REPAIRS NO LATER THAN THE END OF THE NEXT WORKDAY, TO ALLOW CONTINUED PROPER FUNCTIONING OF THE EROSION CONTROL MEASURE. THE CONTRACTOR SHALL PROVIDE THE NECESSARY REGULATING AGENCIES WITH WRITTEN DOCUMENTATION DESCRIBING DATES OF INSPECTIONS AND NECESSARY FOLLOW-UP WORK TO MAINTAIN EROSION CONTROL MEASURES MEETING THE REQUIREMENTS OF THIS PLAN WITHIN SEVEN (7) DAYS.

2. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDINGS, THE CONTRACTOR SHALL INSPECT THE WORK AREA SEMIMONTHLY UNTIL THE SEEDINGS HAVE BEEN ESTABLISHED. ESTABLISHED MEANS A MINIMUM OF 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH. RESEEDING SHALL BE CARRIED OUT BY THE CONTRACTOR WITH FOLLOW-UP INSPECTIONS IN THE EVENT OF ANY FAILURES UNTIL VEGETATION IS ADEQUATELY ESTABLISHED.

HOUSEKEEPING:

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.

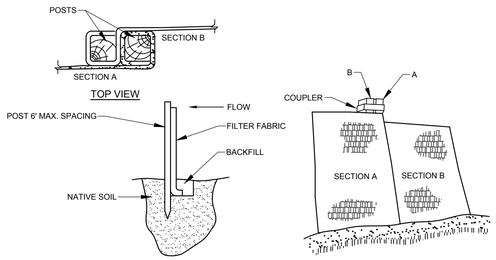
2. GROUNDWATER PROTECTION. DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE-TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.

3. FUGITIVE SEDIMENT AND DUST. ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF-SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.

4. DEBRIS AND OTHER MATERIALS. MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

5. EXCAVATION DE-WATERING. EXCAVATION DE-WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

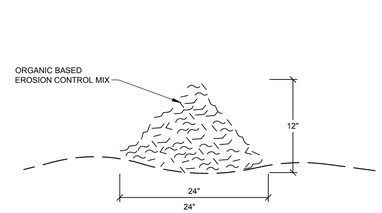
6. AUTHORIZED NON-STORMWATER DISCHARGES. IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE:
A. DISCHARGES FROM FIREFIGHTING ACTIVITY;
B. FIRE HYDRANT FLUSHINGS;
C. VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE AND TRANSMISSION WASHING IS PROHIBITED);
D. DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS;
E. RO



INSTALLATION:

1. EXCAVATE A 6"x 6" TRENCH ALONG THE LINE OF PLACEMENT FOR THE FILTER BARRIER.
2. UNROLL A SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH.
3. DRIVE POSTS INTO THE GROUND UNTIL APPROXIMATELY 2" OF FABRIC IS LYING ON THE TRENCH BOTTOM.
4. LAY THE TOE-IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL THE TRENCH AND TAMP THE SOIL. TOE-IN CAN ALSO BE ACCOMPLISHED BY LAYING THE FABRIC FLAP ON UNDISTURBED GROUND AND PILING AND TAMPING FILL AT THE BASE. BUT MUST BE ACCOMPANIED BY AN INTERCEPTION DITCH.
5. JOIN SECTION AS SHOWN ABOVE.
6. BARRIER SHALL BE MIRAFI SILT FENCE OR EQUAL.

FILTER BARRIER
NOT TO SCALE



COMPOSITION:

EROSION CONTROL MIX SHALL BE MANUFACTURED ON OR OFF THE PROJECT SITE SUCH THAT ITS COMPOSITION IS IN ACCORDANCE WITH THE MDEP MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL, LAST REVISED 3/2003 OR LATER. IT MUST CONSIST PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.

INSTALLATION:

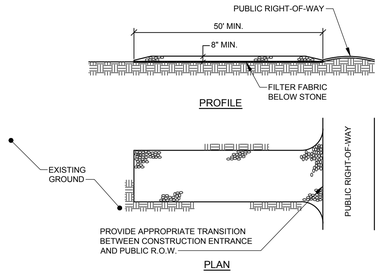
1. THE BARRIER MUST BE PLACED ACROSS THE SLOPE, ALONG THE CONTOUR.

2. EXISTING GROUND SHALL BE PREPARED SUCH THAT THE BARRIER MAY LIE NEARLY FLAT ALONG THE GROUND TO AVOID THE CREATION OF VOIDS AND BRIDGES IN ORDER TO MINIMIZE THE POTENTIAL OF WASH OUTS UNDER THE BARRIER

3. THE BARRIER SHALL BE A MINIMUM OF 1 FOOT HIGH (AS MEASURED ON THE UPHILL SIDE) AND 2 FEET WIDE FOR SLOPES LESS THAN 5% IN GRADE AND SHALL BE WIDER TO ACCOMMODATE THE ADDITIONAL RUNOFF.

4. EROSION CONTROL MIX CAN BE INSTALLED WHERE SILT FENCE IS ILLUSTRATED ON THE DESIGN PLANS IN AREAS EXCEPT IN, BUT NOT LIMITED TO, THE FOLLOWING AREAS: WETLAND AREAS, AT POINTS OF CONCENTRATED FLOW, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS AND CLOSED STORM SYSTEMS AND AT THE BOTTOM OF STEEP SLOPES THAT ARE MORE THAN 50 FEET FROM TOP TO BOTTOM.

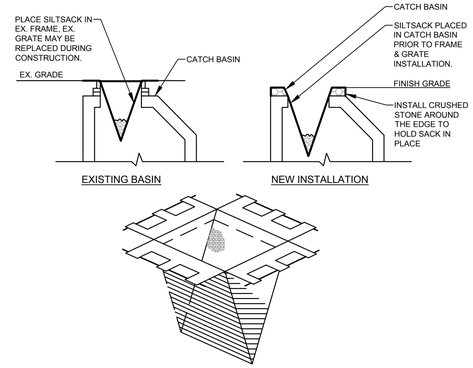
EROSION CONTROL MIX BERM
NOT TO SCALE



NOTES:

1. STONE SIZE- AASHTO DESIGNATION M43, SIZE NO. 2 (2 1/2" TO 1 1/2"). USE CRUSHED STONE.
2. LENGTH- AS SHOWN ON PLANS, MIN. 50 FEET.
3. THICKNESS- NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH- NOT LESS THAN FULL WIDTH OF ALL POINT OF INGRESS OR EGRESS.
5. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



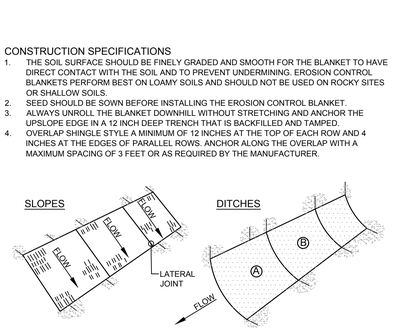
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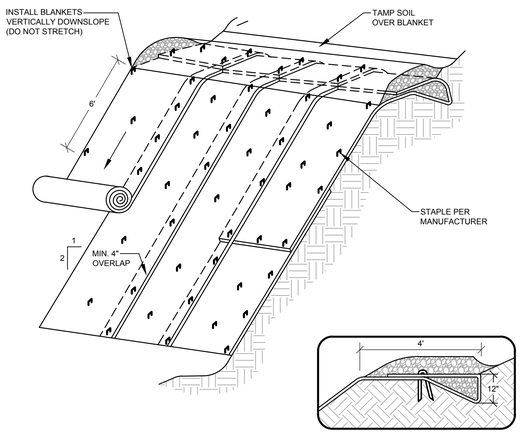
PRIOR TO FINAL GRADING AND PAVING OPERATIONS BEGIN A CATCH BASIN INSERT (SUCH AS A SILT SACK OR A DANDY BAG II) MUST BE INSTALLED IN EACH BASIN PER MANUFACTURES INSTRUCTIONS. HAY BALES SHOULD BE REMOVED ONCE INSERTS ARE INSTALLED.

CATCH BASIN PROTECTION DETAIL
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. THE SOIL SURFACE SHOULD BE FINELY GRADED AND SMOOTH FOR THE BLANKET TO HAVE DIRECT CONTACT WITH THE SOIL AND TO PREVENT UNDERMINING. EROSION CONTROL BLANKETS PERFORM BEST ON LOAMY SOILS AND SHOULD NOT BE USED ON ROCKY SITES OR SHALLOW SOILS.
2. SEED SHOULD BE SOWN BEFORE INSTALLING THE EROSION CONTROL BLANKET.
3. ALWAYS UNROLL THE BLANKET DOWNHILL WITHOUT STRETCHING AND ANCHOR THE UPSLOPE EDGE IN A 12 INCH DEEP TRENCH THAT IS BACKFILLED AND TAMPED.
4. OVERLAP SHINGLE STYLE A MINIMUM OF 12 INCHES AT THE TOP OF EACH ROW AND 4 INCHES AT THE EDGES OF PARALLEL ROWS. ANCHOR ALONG THE OVERLAP WITH A MAXIMUM SPACING OF 3 FEET OR AS REQUIRED BY THE MANUFACTURER.

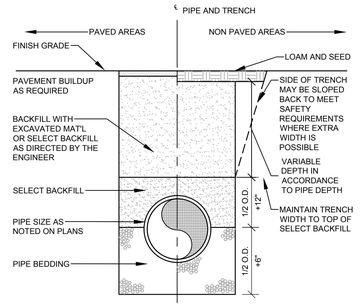




NOTES:

1. BURY THE TOP END OF THE MESH MATERIAL IN A 6" TRENCH AND BACKFILL AND TAMP TRENCHING SECURE END WITH STAPLES AT 6" SPACING, 4" DOWN FROM EXPOSED END.
2. FLOW DIRECTION JOINTS TO HAVE UPPER END OF LOWER STRIP BURIED WITH UPPER LAYERS OVERLAPPED 4" AND STAPLED. OVERLAP B OVER A.
3. LATERAL JOINTS TO HAVE 4" OVERLAP OF STRIPS. STAPLE 18" ON CENTER.
4. STAPLE OUTSIDE LATERAL EDGE 2" ON CENTER.
5. WIRE STAPLES TO BE MIN OF #11 WIRE 6" LONG AND 1-1/2" WIDE.
6. USE NORTH AMERICAN GREEN DS 150 OR APPROVED EQUAL.

EROSION CONTROL BLANKET
NOT TO SCALE



TRENCH BACKFILL SCHEDULE		
PIPE TYPE	PIPE BEDDING MATERIAL	SELECT BACKFILL
CORRUGATED METAL DUCTILE IRON REINFORCED CONCRETE	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
SOLID PVC-SDR 35 HDPE	MDOT 703.13 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL, OR MDOT 703.13 3/4" CRUSHED STONE
PERFORATED PVC-SDR 35 HDPE	MDOT 703.13 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL, OR MDOT 703.13 3/4" CRUSHED STONE

NOTE:
ALL BRACING AND SHEETING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL MEET ALL STATE AND O.S.H.A. SAFETY STANDARDS.

TRENCH SECTION
NOT TO SCALE

PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — REGISTERED PROFESSIONAL ENGINEER — 08/30/2024

REV.	BY	DATE	STATUS
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/19/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS MADE TO THIS PLAN SET WITHOUT THE AUTHORIZATION OF SEBAGO TECHNICS, INC. SHALL BE DONE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

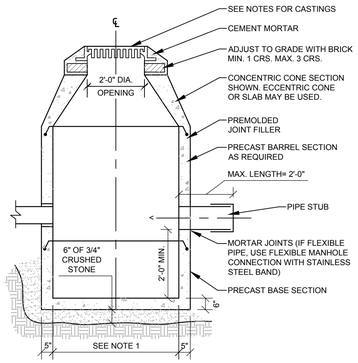
EROSION CONTROL DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-501

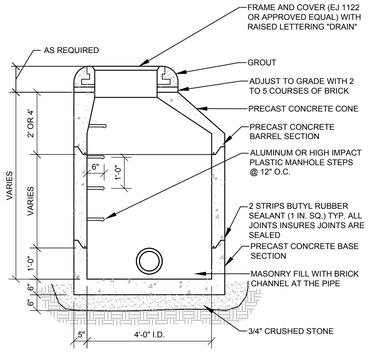
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19059 D.dwg - TAB:C-501 Details

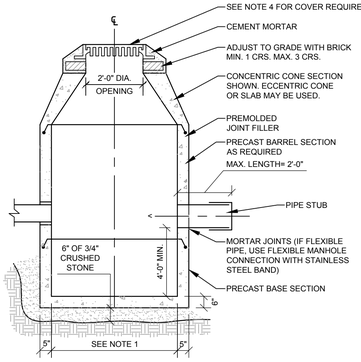


NOTES:
1. 4'-0" I.D. TYPICAL, SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON PLANS.
4. CATCH BASIN FRAME AND GRATE TO BE EJ 5520M5, OR APPROVED EQUAL.

CATCH BASIN
NOT TO SCALE

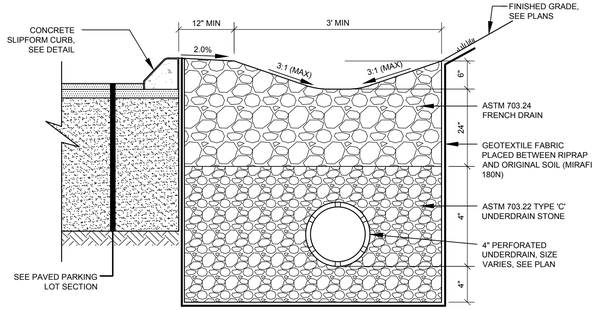


PRECAST MANHOLE
NOT TO SCALE

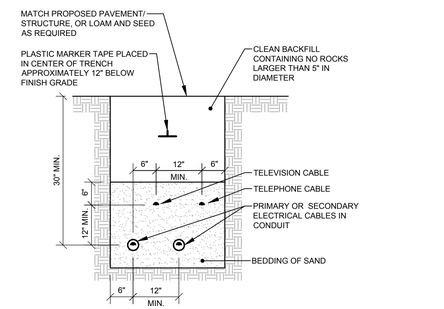


NOTES:
1. 4'-0" I.D. TYPICAL, SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON PLANS.
4. COVER FOR PRETREATMENT DRAINAGE STRUCTURES SHALL BE A SOLID MANHOLE COVER OR A CATCH BASIN GRATE AS SPECIFIED ON PLANS.
5. CATCH BASIN FRAME AND GRATE TO BE EJ 5520M5, OR APPROVED EQUAL.
6. DRAIN MANHOLE COVER TO BE EJ 1122 OR APPROVED EQUAL WITH RAISED LETTERING "DRAIN".

PRE-TREATMENT DRAINAGE STRUCTURE
NOT TO SCALE

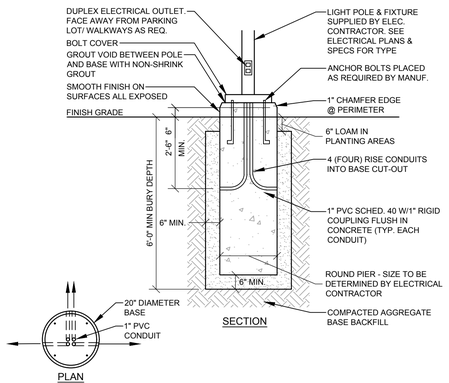


STONE DRIP EDGE
NOT TO SCALE



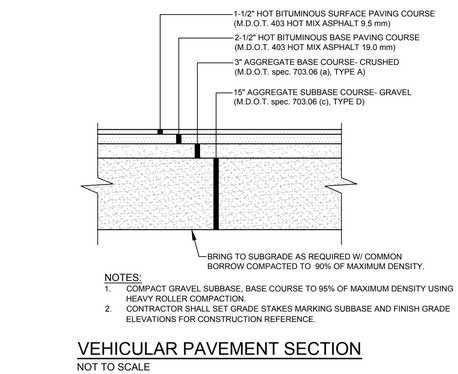
NOTES:
CABLES TO BE ENCASED IN SCHEDULE 40 PVC CONDUIT.

UNDERGROUND CABLE INSTALLATION
NOT TO SCALE



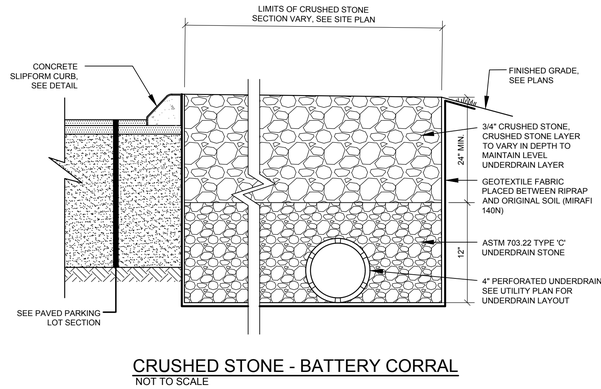
NOTES:
1. CONCRETE f'c=5000 psi @ 28 DAYS WITH STEEL REINFORCEMENT
2. CONDUIT AND ANCHOR BOLTS PLACED AS REQUIRED PROVIDED BY ELECTRICAL CONTRACTOR
3. PROVIDE 2 COATS BITUMINOUS DAMPROOFING FOR ALL CONCRETE BELOW GRADE.
4. INSTALL BASE 3'-0" ABOVE FINISH GRADE IN LOCATIONS WHERE POLES ARE IN PARKING LOT PAVEMENT. MAINTAIN MINIMUM BURY DEPTH.
5. LIGHT POLE BASE AS MANUFACTURED BY SUPERIOR CONCRETE OR APPROVED EQUAL

24" ROUND LIGHT POLE BASE
NOT TO SCALE

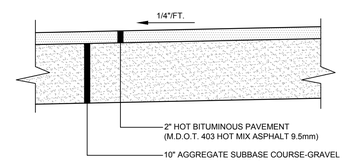


NOTES:
1. COMPACT GRAVEL SUBBASE, BASE COURSE TO 95% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. CONTRACTOR SHALL SET GRADE STAKES MARKING SUBBASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.

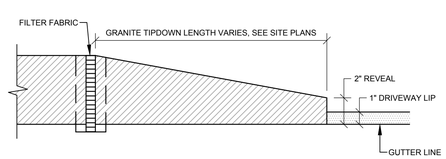
VEHICULAR PAVEMENT SECTION
NOT TO SCALE



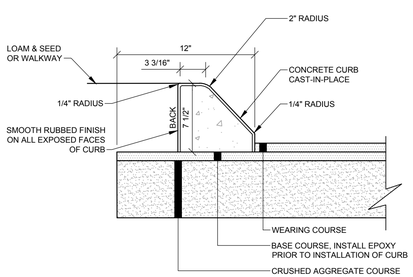
CRUSHED STONE - BATTERY CORRAL
NOT TO SCALE



PEDESTRIAN PAVEMENT SECTION
NOT TO SCALE

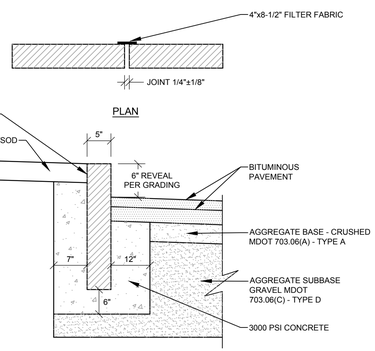


TIPDOWN CURB INSTALLATION
NOT TO SCALE



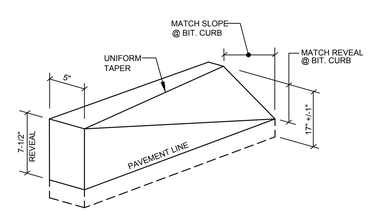
NOTES:
1. SEE TYPICAL ACCESS DRIVE SECTION FOR ROADWAY MATERIAL SPECIFICATIONS AND DEPTHS.
2. TIPDOWNS SHALL BE PROVIDED AS SHOWN ON PLANS.

SLIPFORM CURB SECTION - MOLD 1
NOT TO SCALE



NOTES:
1. EXCAVATION INCIDENTAL TO COST OF CURB
2. SUBBASE SHALL BE COMPACTED TO A FIRM EVEN SURFACE PRIOR TO SETTING OF CURB

VERTICAL GRANITE CURB
NOT TO SCALE



VERTICAL TO SLOPED CURB GRANITE TRANSITION STONES
NOT TO SCALE

REV.	BY	DATE	STATUS
E	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
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PAUL D. OSTROWSKI PE 11175 — AMY BELL SEGAL RLA 2265

STATE OF MAINE — PAUL D. OSTROWSKI — 11175 — REGISTERED PROFESSIONAL ENGINEER — 08/30/2024

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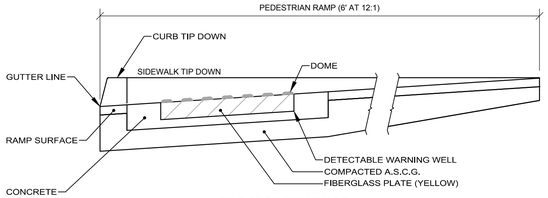
SITE DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

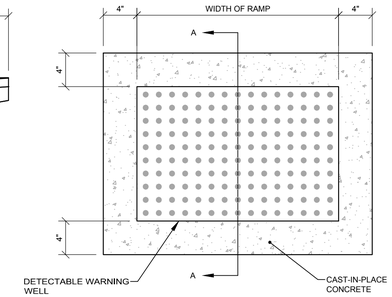
SHEET C-502

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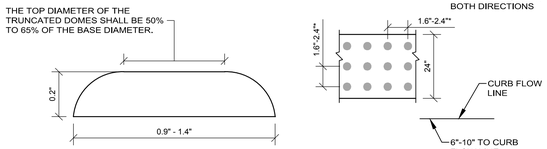
19059 D.dwg, TAB:C-502 Details



SIDE SECTION VIEW OF
DETECTABLE WARNING, WELL, CURB AND GUTTER

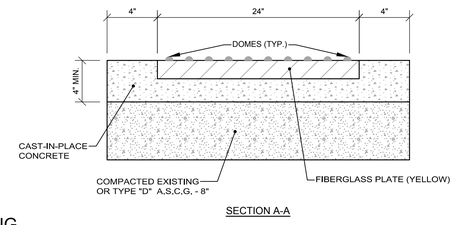


PLAN VIEW OF DETECTABLE WARNING AND WELL



ELEVATION VIEW PLAN VIEW

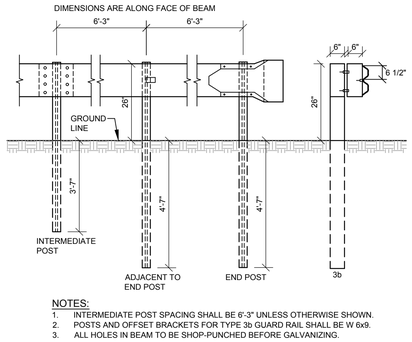
DOME AND DETECTABLE WARNING DETAILS



SECTION A-A

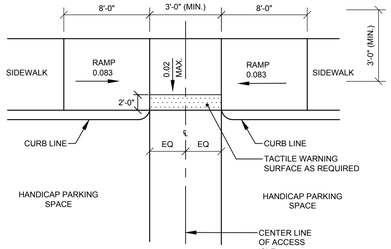
NOTE: ALL DETECTABLE WARNING AREAS SHALL START 6" - 10" FROM THE FLOW LINE OF THE CURB, BE 24" IN DEPTH, AND COVER THE COMPLETE WIDTH OF THE RAMP AREA ONLY.

TRUNCATED DOME PAVING
NOT TO SCALE

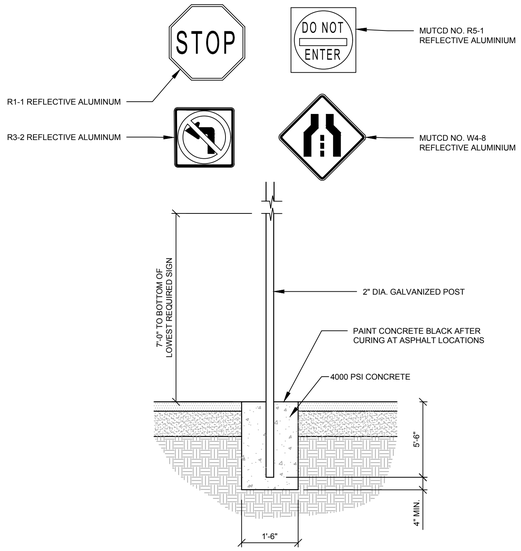


NOTES:
1. INTERMEDIATE POST SPACING SHALL BE 6'-3" UNLESS OTHERWISE SHOWN.
2. POSTS AND OFFSET BRACKETS FOR TYPE 3b GUARD RAIL SHALL BE W 6x9.
3. ALL HOLES IN BEAM TO BE SHOP-PUNCHED BEFORE GALVANIZING.

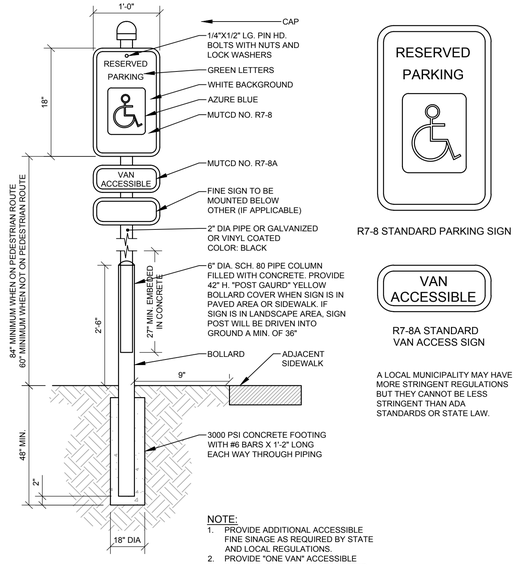
GUARDRAIL TYPE 3b
NOT TO SCALE



ADA ACCESSIBLE RAMP
NOT TO SCALE



TYPICAL TRAFFIC CONTROL SIGN
NOT TO SCALE



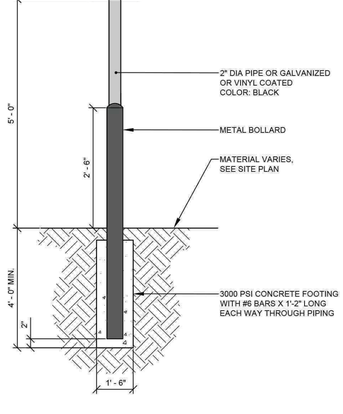
NOTE:
1. PROVIDE ADDITIONAL ACCESSIBLE FINE SINAGE AS REQUIRED BY STATE AND LOCAL REGULATIONS.
2. PROVIDE "ONE VAN" ACCESSIBLE SIGN PER 25 HC SPACES REQUIRED.
3. WHENEVER POSSIBLE SIGN SHALL BE MOUNTED CENTERED ON PARKING SPACE UNLESS SPECIFIED OTHERWISE.
4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PRIOR TO ORDERING MATERIALS.

R7-8 STANDARD PARKING SIGN

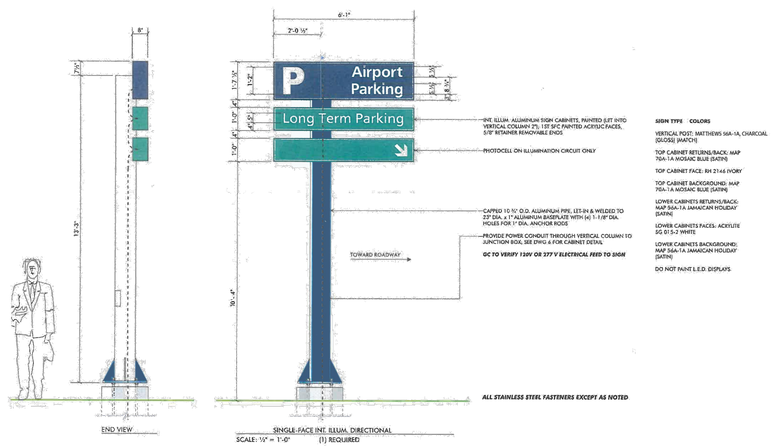
R7-8A STANDARD
VAN ACCESS SIGN

A LOCAL MUNICIPALITY MAY HAVE MORE STRINGENT REGULATIONS BUT THEY CANNOT BE LESS STRINGENT THAN ADA STANDARDS OR STATE LAW.

RESERVED PARKING SIGN - BOLLARD (S-3)
NOT TO SCALE



PEDESTRIAN WAYFINDING SIGNAGE (S6)
NOT TO SCALE
[SIMILAR TO EXISTING SIGNS BY NEOKRAFT SIGNS]



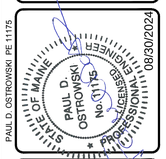
PROPOSED LONG TERM PARKING SIGN (S5)
[SIMILAR TO EXISTING SIGNS BY NEOKRAFT SIGNS]

F:\Projects\19000\19059\DWG\Design\19059 D.dwg 8/30/2024 2:02 PM TANNER F. GOODINE

AMY BELL SEGAL RLA 2265



PAUL D. OSTROWSKI PE 11175



REV.	BY	DATE:	STATUS:
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/18/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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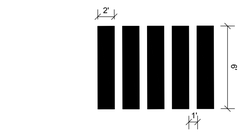
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

SITE DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

19059 D.dwg, TAB:C-503 Details

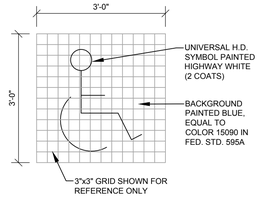
SHEET C-503



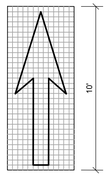
PAVEMENT MARKING NOTES

1. ALL PAVEMENT MARKINGS SHALL BE IN CONFORMANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, U.S. DOT, FHWA, LATEST EDITION.
2. ALL PAVEMENT MARKING LINES SHALL BE PAINT AND 4" WIDE, EXCEPT FOR:
   SWSL-12"
   SYCL-12"
   CROSSWALK BARS - 24"
3. PAVEMENT WORD AND SYMBOL MARKINGS SHALL BE WHITE PAINT.
4. SOLID WHITE STOP LINE SHALL BE A MINIMUM OF 4' BEHIND THE EDGE OF CROSSWALK.

CROSSWALK DETAIL
NOT TO SCALE

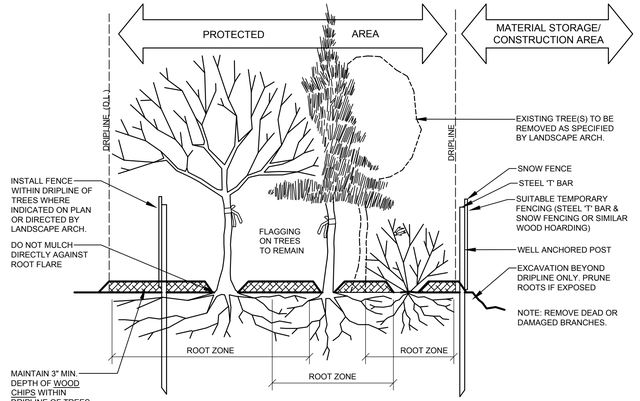


ADA RESERVED PARKING
NOT TO SCALE



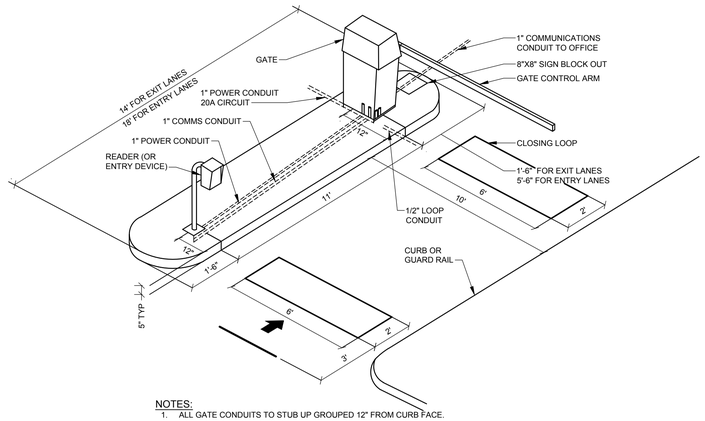
13 SQUARE FEET

PAVEMENT ARROW DETAIL
NOT TO SCALE



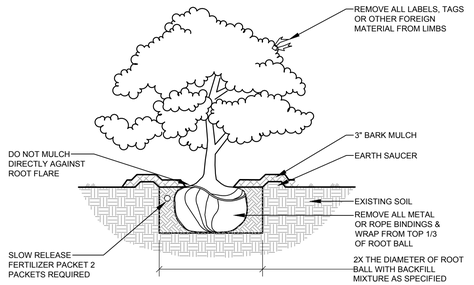
NOTE:
AS THE MAJOR PORTIONS OF THE ROOT SYSTEMS OF THE PLANT(S) TO BE PROTECTED ARE WITHIN THE DRIPLINE ZONE, THIS ENTIRE AREA SHOULD BE FENCED OFF (TO A MINIMUM HEIGHT OF 4') PRIOR TO CONSTRUCTION AND REMOVED THEREAFTER. FOR MAXIMUM PROTECTION, NO VEHICLE TRESPASS, EXCAVATION, FILL, WASTE DISCHARGE OR OR MATERIAL STORAGE SHOULD BE ALLOWED IN THIS ZONE.

TREE PROTECTION DETAIL
NOT TO SCALE
CROSS-SECTION OF TYPICAL PLANT GROUPING

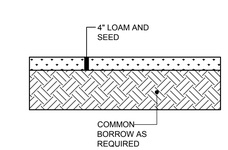


NOTES:
1. ALL GATE CONDUITS TO STUB UP GROUPED 12" FROM CURB FACE.
2. EXIT/ENTRY DEVICE CONDUIT TO STUB UP 12" FROM CURB FACE.
3. DISTANCE BETWEEN GATE AND REVENUE DEVICE SHOULD BE 11' ON CENTER.
4. EACH LANE SHOULD HAVE ITS OWN 20A CIRCUIT.
5. CONTRACTOR TO VERIFY WITH PARKING GATE VENDOR THE DIMENSIONS AND PLACEMENT OF CONDUITS AND BLOCK OUTS PRIOR TO PLACING CONCRETE FOR THESE ISLANDS

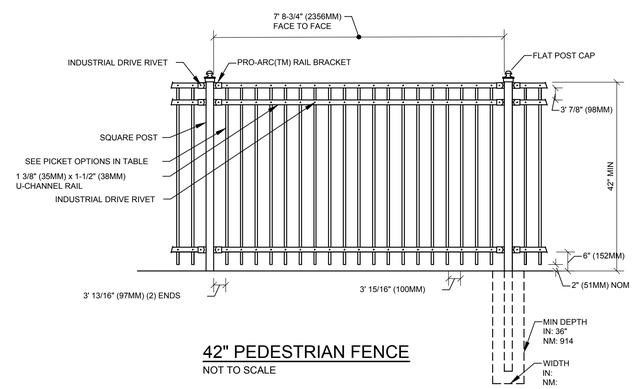
PARKING ENTRY ISLAND
NOT TO SCALE



DECIDUOUS & EVERGREEN SHRUB
NOT TO SCALE



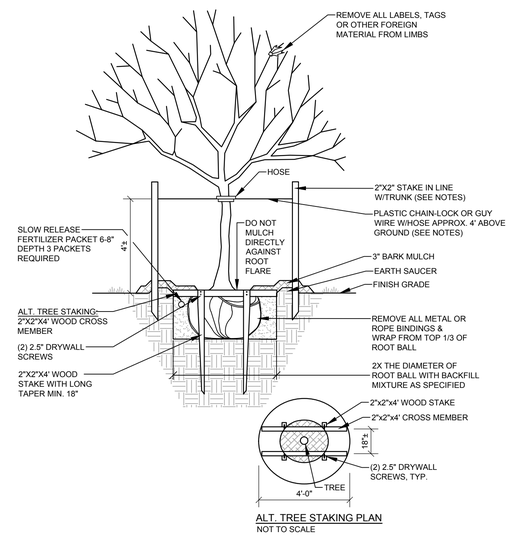
LOAM & SEED SECTION
NOT TO SCALE



NOTES:
1. METRIC DIMENSIONS ARE NOMINAL EQUIVALENTS TO UI.S. DIMENSIONS.
2. SPECIFICATIONS SHOWN CAN BE CHANGED BY MAST HALCO ONL.Y
3. FOOTING WIDTH TO BE (4)X POST WIDTH
4. FOR MATCHING GATE SEE DRAWING 6-5010M (SINGLE) OR 6-5015M (DOUBLE)
5. IMPERIAL "B" GUARDRAIL BY MASTER HALCO. Co. (1-800-229-5615)
6. ALL SURFACES SHALL BE BLACK POWDER COATED FINISH BY MANUFACTURER.

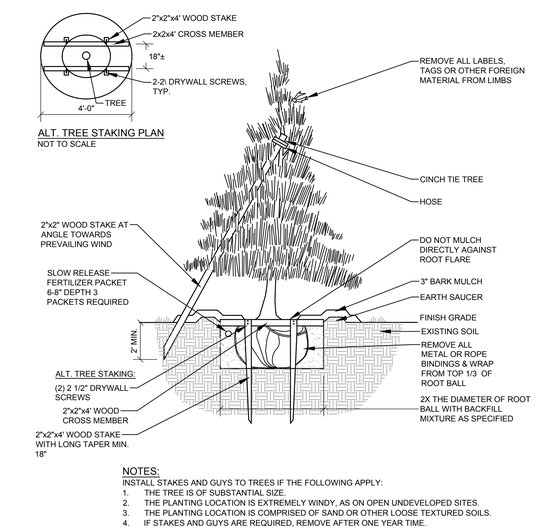
PICKET SIZE	GAUGE
3/4" [19MM]	14 GA

42" PEDESTRIAN FENCE
NOT TO SCALE



ALT. TREE STAKING PLAN
NOT TO SCALE

DECIDUOUS TREES
NOT TO SCALE



NOTES:
INSTALL STAKES AND GUYS TO TREES IF THE FOLLOWING APPLY:
1. THE TREE IS OF SUBSTANTIAL SIZE.
2. THE PLANTING LOCATION IS EXTREMELY WINDY, AS ON OPEN UNDEVELOPED SITES.
3. THE PLANTING LOCATION IS COMPRISED OF SAND OR OTHER LOOSE TEXTURED SOILS.
4. IF STAKES AND GUYS ARE REQUIRED, REMOVE AFTER ONE YEAR TIME.

EVERGREEN TREES
NOT TO SCALE

AMY BELL SEGAL, RLA 2265
LICENSED LANDSCAPE ARCHITECT
Amy Bell Segal
No. 2265
STATE OF MAINE
08.30.24

PAUL D. OSTROWSKI, PE 11175
STATE OF MAINE
PAUL D. OSTROWSKI
No. 11175
LICENSED PROFESSIONAL ENGINEER
08/30/2024

E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
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A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION
REV.	BY	DATE:	STATUS:

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

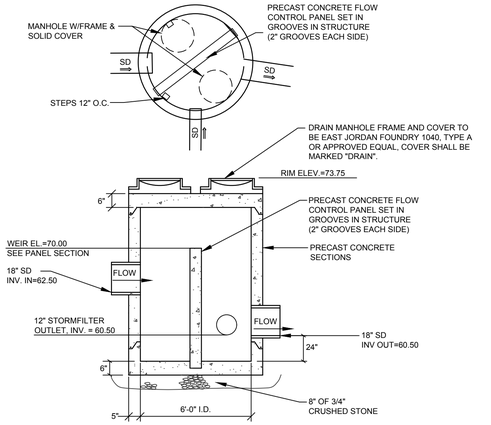
SITE DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

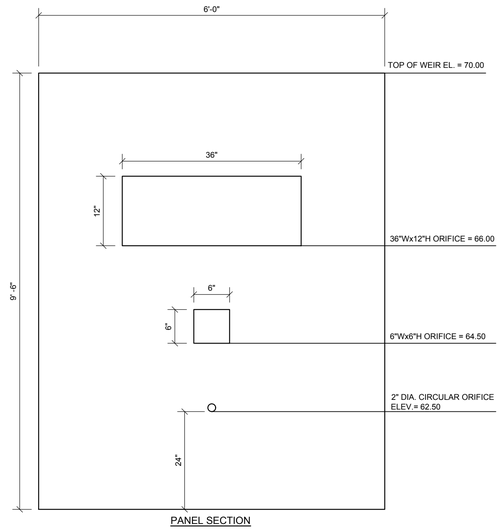
SHEET C-504

F:\Projects\19000\19059\DWG\Design\19059 D.dwg, 8/30/2024 2:02 PM, TANNER F. GOODINE

19059 D.dwg, TAB C-504 Details



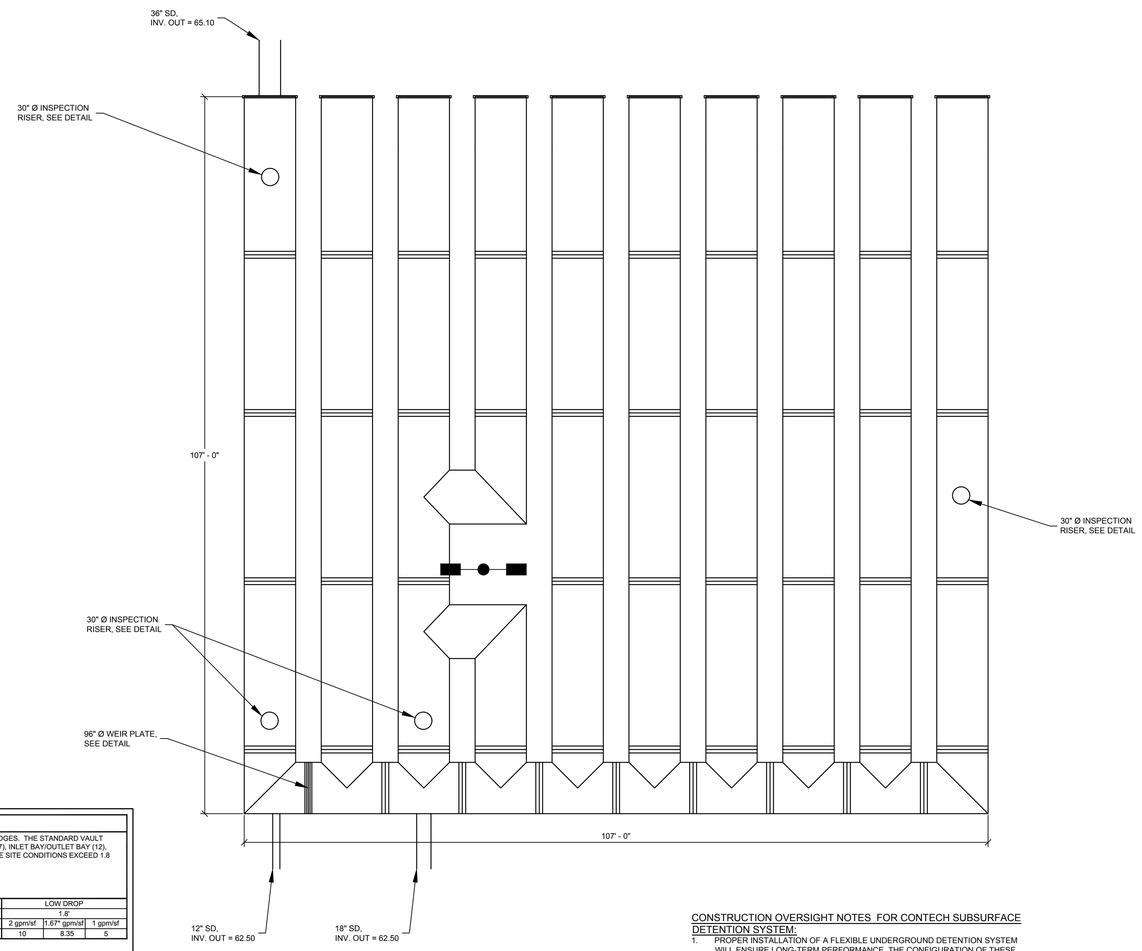
NOTES:
1. SUBMIT SHOP DRAWINGS FOR OWNER/ENGINEER APPROVAL.
2. STRUCTURE SHALL BE DESIGNED FOR H-20 LOADING.



PANEL SECTION

OUTLET CONTROL STRUCTURE (OCS-1)

NOT TO SCALE

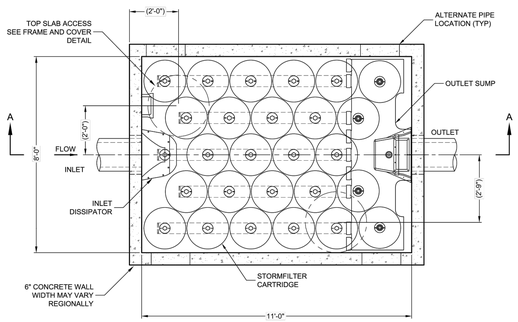


CONTECH SUBSURFACE DETENTION SYSTEM SF-1

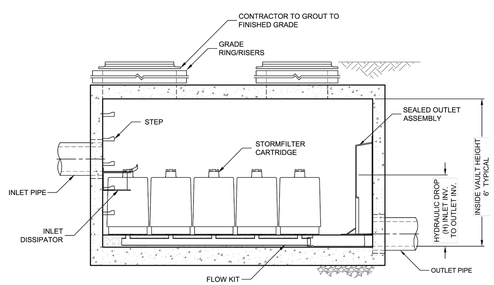
NOT TO SCALE

CONSTRUCTION OVERSIGHT NOTES FOR CONTECH SUBSURFACE DETENTION SYSTEM:

1. PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THE SUBMITTAL DRAWINGS, ARE APPROPRIATE FOR YOUR SITE.
2. INSPECTIONS BY A PROFESSIONAL ENGINEER SHALL CONSIST OF WEEKLY VISITS TO THE SITE TO INSPECT THE CONSTRUCTION AND STABILIZATION OF THE PROPOSED SUBSURFACE DETENTION SYSTEM TO BE BUILT ON THE SITE. INSPECTIONS SHALL CONSIST OF AN APPROPRIATE NUMBER OF VISITS TO THE SITE TO INSPECT THE INSTALLATION OF THE SUBSURFACE DETENTION SYSTEM CONSTRUCTION FROM INITIAL GROUND DISTURBANCE TO BACKFILL OVER THE SYSTEM.

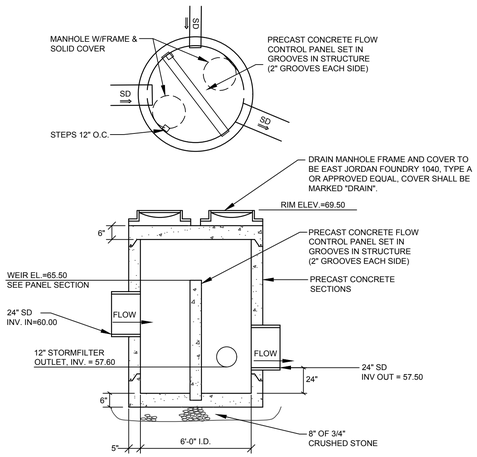


PLAN VIEW
VAULT STYLE: OUTLET SUMP (NIB)

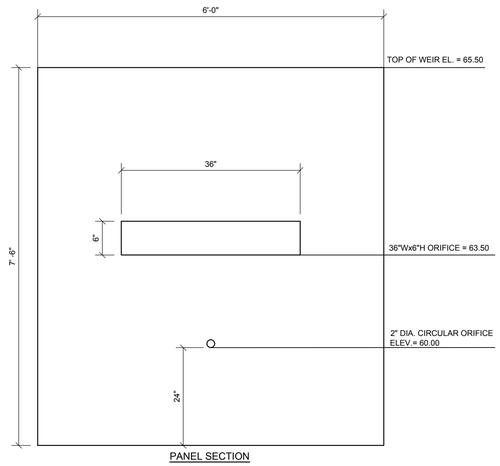


SECTION A-A

The Stormwater Management StormFilter®
U.S. PATENTS: 5,322,629; 5,707,517; 5,759,415; 6,027,639; 6,350,374; 6,406,615; 6,649,048; 6,991,724; 7,186,333; 7,296,692; 7,297,266; 7,390,408; 7,425,262; 7,470,366; 7,563,363; 7,566,399; 7,792,704; 8,431,005; 8,702,970; 8,741,141; 8,845,892; 8,961,777; 9,352,263; 9,382,702; 9,731,222; 9,861,916; 9,861,917; 9,861,918; 9,895,626; 9,895,627; 9,895,628; 9,901,842; 9,908,063; 9,914,078; 9,914,079; 9,914,080; 9,914,081; 9,914,082; 9,914,083; 9,914,084; 9,914,085; 9,914,086; 9,914,087; 9,914,088; 9,914,089; 9,914,090; 9,914,091; 9,914,092; 9,914,093; 9,914,094; 9,914,095; 9,914,096; 9,914,097; 9,914,098; 9,914,099; 9,914,100; 9,914,101; 9,914,102; 9,914,103; 9,914,104; 9,914,105; 9,914,106; 9,914,107; 9,914,108; 9,914,109; 9,914,110; 9,914,111; 9,914,112; 9,914,113; 9,914,114; 9,914,115; 9,914,116; 9,914,117; 9,914,118; 9,914,119; 9,914,120; 9,914,121; 9,914,122; 9,914,123; 9,914,124; 9,914,125; 9,914,126; 9,914,127; 9,914,128; 9,914,129; 9,914,130; 9,914,131; 9,914,132; 9,914,133; 9,914,134; 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NOTES:
1. SUBMIT SHOP DRAWINGS FOR OWNER/ENGINEER APPROVAL.
2. STRUCTURE SHALL BE DESIGNED FOR H-20 LOADING.



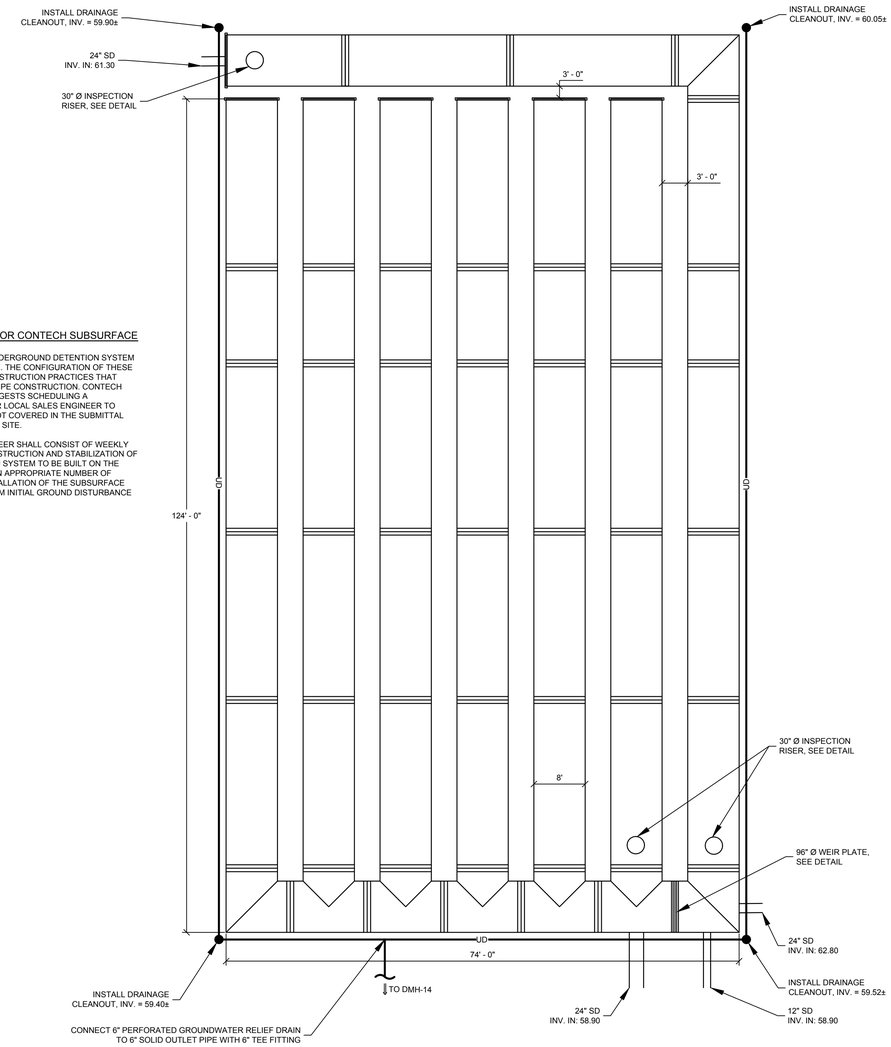
PANEL SECTION

OUTLET CONTROL STRUCTURE (OCS-2)
NOT TO SCALE

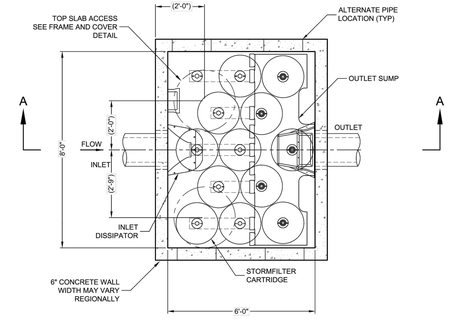
CONSTRUCTION OVERSIGHT NOTES FOR CONTECH SUBSURFACE DETENTION SYSTEM:

1. PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THE SUBMITTAL DRAWINGS, ARE APPROPRIATE FOR YOUR SITE.

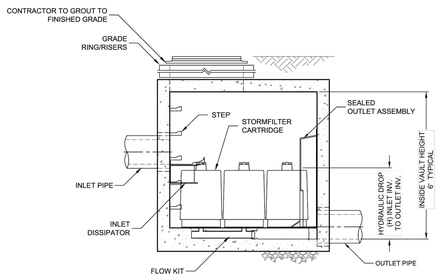
2. INSPECTIONS BY A PROFESSIONAL ENGINEER SHALL CONSIST OF WEEKLY VISITS TO THE SITE TO INSPECT THE CONSTRUCTION AND STABILIZATION OF THE PROPOSED SUBSURFACE DETENTION SYSTEM TO BE BUILT ON THE SITE. INSPECTIONS SHALL CONSIST OF AN APPROPRIATE NUMBER OF VISITS TO THE SITE TO INSPECT THE INSTALLATION OF THE SUBSURFACE DETENTION SYSTEM CONSTRUCTION FROM INITIAL GROUND DISTURBANCE TO BACKFILL OVER THE SYSTEM.



CONTECH SUBSURFACE DETENTION SYSTEM SF-2
NOT TO SCALE



SECTION B-B
VAULT STYLE: OUTLET SUMP (NIB)



SECTION A-A

The Stormwater Solution
StormFilter®
CONTECH'S STORMFILTER SYSTEM IS PROTECTED BY ONE OR MORE OF THE FOLLOWING: US PATENTS 5,322,629; 5,707,517; 5,824,207; 6,027,642; 6,511,595; 6,649,048; 6,991,723; 7,186,333; 7,296,692; 7,297,252; 7,513,991; AND OTHER PATENTS PENDING

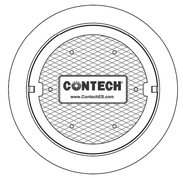
STORMFILTER DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD VAULT STYLE IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (12). VAULT STYLE OPTIONS INCLUDE OUTLET BAY (7), STORMFILTER 6X6 PEAK HYDRAULIC CAPACITY IS 1.8 CFS. IF THE SITE CONDITIONS EXCEED 1.8 CFS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			1.8'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	10	8.35	5

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
CARTRIDGE HEIGHT (27", 18", LOW DROP(LD))	*
NUMBER OF CARTRIDGES REQUIRED	*
CARTRIDGE FLOW RATE	*
MEDIA TYPE (PERLITE, ZPG, PSORB)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE #1	*	*	*
INLET PIPE #2	*	*	*
OUTLET PIPE	*	*	*

UPSTREAM RIM ELEVATION	*
DOWNSTREAM RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

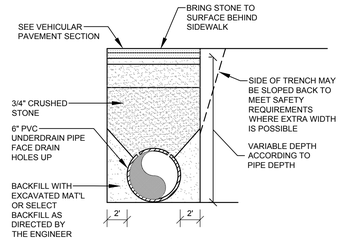
* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR SITE SPECIFIC DRAWINGS WITH DETAILED VAULT DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
7. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).
8. STORMFILTER STRUCTURE SHALL BE PRECAST CONFORMING TO ASTM C-857 AND AASHTO LOAD FACTOR DESIGN METHOD.

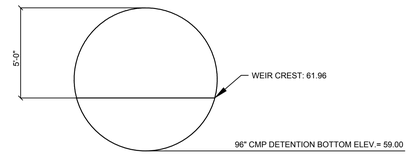
INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER VAULT (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL VAULT SECTIONS AND ASSEMBLE VAULT.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr. Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

SF806
STORMFILTER
STANDARD DETAIL



GROUNDWATER RELIEF DRAIN
NOT TO SCALE



96" Ø WEIR PLATE DETAIL
NOT TO SCALE

PAUL D. OSTROWSKI PE 11175
AMY BELL SEGAL RLA 2265

STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — REGISTERED PROFESSIONAL ENGINEER — 08/30/2024

REV.	BY	DATE	STATUS
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
D.	PDO	08/16/2024	SHEET C-507 REISSUED TO MAINE DEP
C.	PDO	05/28/2024	OVERALL GRADING PLAN REISSUED TO MAINE DEP AND ACOE
B.	PDO	03/18/2024	ISSUED TO CITY FOR MAJOR SITE PLAN AMENDMENT
A.	PDO	02/29/2024	ISSUE TO MDEP FOR SLODA / NRPA PERMIT APPLICATION

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

SITE DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

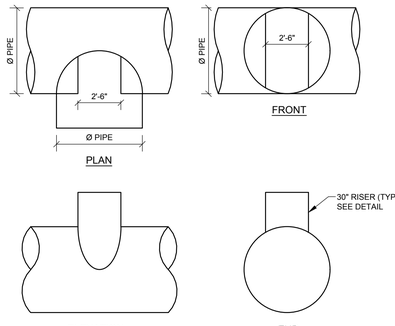
DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-506

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I:\STORMWATER\CCOMMOP\10 G STORMFILTER\40 STANDARD DRAWINGS\VAULT TOWG\SF1066.DTL SEALED OUTLET RISER.DWG 9/20/2021 2:09 PM

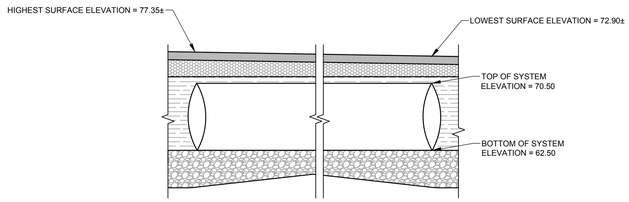
19059 D.dwg - TAB C-506 Details



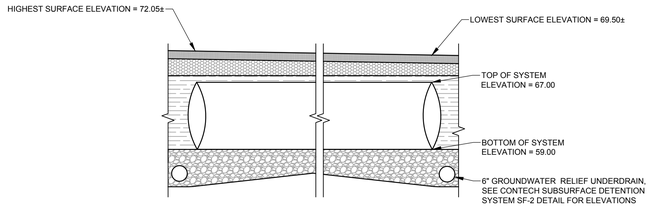
NOTE:
LADDERS ARE OPTIONAL AND ARE NOT REQUIRED FOR ALL SYSTEMS.

NOTE:
MANWAY DETAIL APPLICABLE FOR CMP SYSTEMS WITH DIAMETERS 48" AND LARGER. MANWAYS MAY BE REQUIRED ON SMALLER SYSTEMS DEPENDING ON ACTUAL SITE SPECIFIC CONDITIONS.

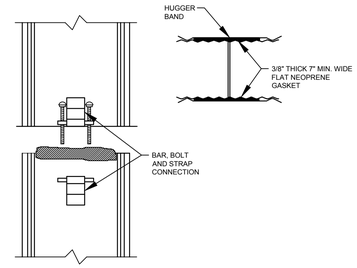
INSPECTION RISER DETAIL
NOT TO SCALE



SUBSURFACE DETENTION 1
SECTION VIEW



SUBSURFACE DETENTION 2
SECTION VIEW

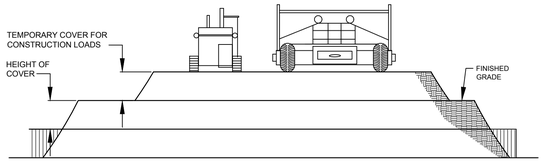


CONNECTION DETAIL SINGLE BOLT, BAR AND STRAP

NOTES

1. BANDS ARE NORMALLY FURNISHED AS FOLLOWS:
   12" THRU 48", 1-PIECE
   54" THRU 96", 2-PIECE
   102" THRU 144", 3-PIECES
2. BAND FASTENERS ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDS
3. REROLLED ANNULAR END CORRUGATIONS ARE NORMALLY 2 2/3" x 1/2". DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES

12" HUGGER BAND DETAIL
NOT TO SCALE



CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM
NOT TO SCALE

(1) MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT

FOUNDATION/BEDDING PREPARATION

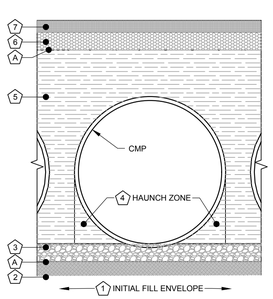
(2) PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION. THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER.

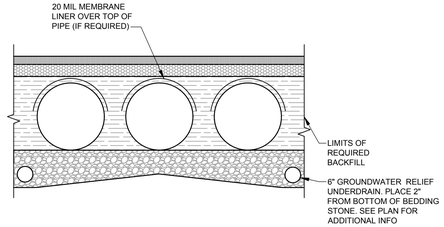
(4) HAUNCH ZONE MATERIAL SHALL BE PLACED AND UNIFORMLY COMPACTED WITHOUT SOFT SPOTS.

BACKFILL

WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO LIFT (16") DIFFERENTIAL BETWEEN ANY OF THE LENGTH OF THE DETENTION SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON THE PIPE.

OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS, AS APPROVED BY SITE ENGINEER.





DETENTION SYSTEMS - CMP DETENTION / CMP DRAINAGE

	MATERIAL LOCATION	DESCRIPTION	MATERIAL DESIGNATION	DESIGNATION
7	RIGID OR FLEXIBLE PAVEMENT (IF APPLICABLE)			
6	ROAD BASE (IF APPLICABLE)			
A	GEOTEXTILE LAYER	NON-WOVEN GEOTEXTILE	CONTECT C-40 OR C-45	ENGINEER DECISION FOR CONSIDERATION TO PREVENT SOIL MIGRATION INTO VARYING SOIL TYPES
5	BACKFILL	WELL GRADED GRANULAR MATERIAL WHICH MAY CONTAIN SMALL AMOUNTS OF SILT OR CLAY.	AASHTO M 145- A-1, A-2, A-3	PLACED IN 8" ± LOOSE LIFTS AND COMPACTED TO 90% STANDARD PROCTOR PER AASHTO T 99
3	BEDDING STONE	WELL GRADED GRANULAR BEDDING MATERIAL WITH MAXIMUM PARTICLE SIZE OF 3"	AASHTO M43- 3, 357, 4, 467, 5, 56, 57	ENGINEER TO DETERMINE IF BEDDING IS REQUIRED. PIPE MAY BE PLACED ON THE TRENCH BOTTOM OF A RELATIVELY LOOSE, NATIVE SUITABLE WELL GRADED AND GRANULAR MATERIAL. FOR ARCH PIPES IT IS RECOMMENDED TO BE SHAPED TO A RELATIVELY FLAT BOTTOM OR FINE-GRADE THE FOUNDATION TO A SLIGHT V-SHAPE. UNSUITABLE MATERIAL SHOULD BE OVER-EXCAVATED AND RE-PLACED WITH A 4"-6" LAYER OF WELL GRADED AND GRANULAR STONE PER THE MATERIAL DESIGNATION. SEE AASHTO 26.3.8.1/26.5.3 BEDDING INFO.
A	GEOTEXTILE LAYER	NON-WOVEN GEOTEXTILE	CONTECH C-40 OR C-45	ENGINEER DECISION FOR CONSIDERATION TO PREVENT SOIL MIGRATION INTO VARYING SOIL TYPES

NOTE: BACKFILL USING CONTROLLED LOW-STRENGTH MATERIAL (CLSM, "FLASH FILL" OR "FLOWABLE FILL") WHEN THE SPACING BETWEEN THE PIPES WILL NOT ALLOW FOR PLACEMENT AND ADEQUATE COMPACTION OF THE BACKFILL.

DETENTION SYSTEM
NOT TO SCALE

SPECIFICATION FOR CORRUGATED STEEL PIPE-ALUMINIZED TYPE 2 STEEL

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE CORRUGATED STEEL PIPE (CSP) DETAILED IN THE PROJECT PLANS.

MATERIAL
THE ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M274 OR ASTM A929.

PIPE
THE CSP SHALL BE MANUFACTURED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF AASHTO M36 OR ASTM A760. THE PIPE SIZES, GAGES AND CORRUGATIONS SHALL BE AS SHOWN ON THE PROJECT PLANS.

ALL FABRICATION OF THE PRODUCT SHALL OCCUR WITHIN THE UNITED STATES.

HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH RECOMMENDATIONS OF THE NATIONAL CORRUGATED STEEL PIPE ASSOCIATION (NCSPA)

INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II OR ASTM A798 AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

MATERIAL SPECIFICATION
NOT TO SCALE

REV.	BY	DATE	STATUS
E.	PDO	08/30/2024	RE-ISSUE TO CITY OF PORTLAND FOR MAJOR SITE PLAN AMENDMENT
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AMY BELL SEGAL, RLA 2265

PAUL D. OSTROWSKI, PE 11175

STATE OF MAINE — PAUL D. OSTROWSKI — No. 11175 — REGISTERED PROFESSIONAL ENGINEER — 08/30/2024

SEBAGO TECHNICS
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100
WWW.SEBAGOTECHNICS.COM

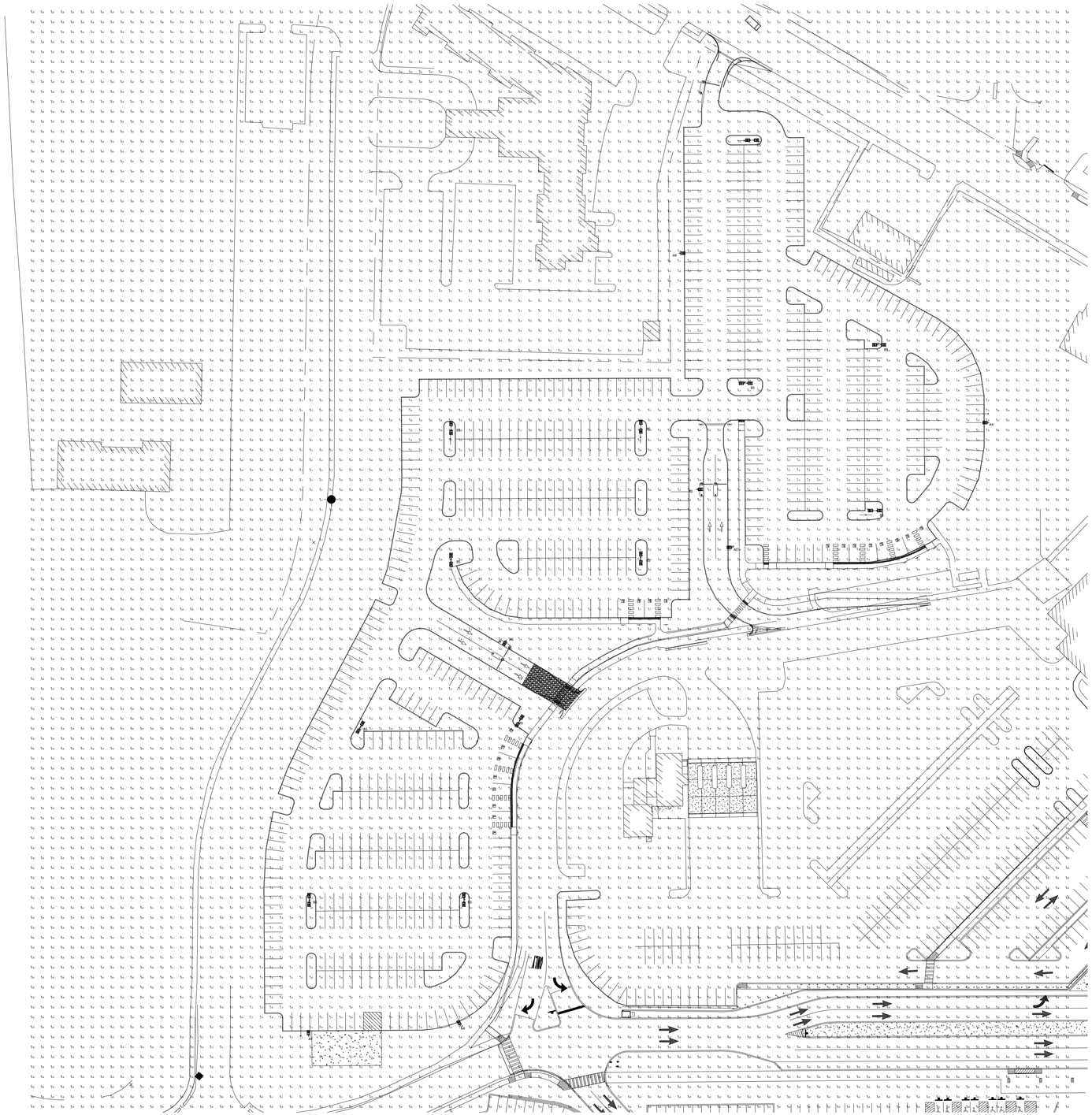
SITE DETAILS
OF:
PORTLAND INTERNATIONAL JETPORT PARKING EXPANSION
1001 WESTBROOK STREET
PORTLAND, MAINE 04102
FOR:
PORTLAND INTERNATIONAL JETPORT PWM
CITY OF PORTLAND
1001 WESTBROOK STREET PORTLAND, MAINE 04102

DESIGNED	TFG
DRAWN	EPR
CHECKED	PDO
DATE	02/29/2024
SCALE	N/A
PROJECT	19059

SHEET C-507

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19059 D.dwg - TAB:C-507 Details



Luminaire Schedule							
Symbol	Qty	Label	Mounting Height	LLF	Lum. Lumens	Lum. Watts	Description
	3	A5	30' - 0" AFG	0.900	23445	240	VP-2-72L-240-3K7-5QW
	12	B5	30' - 0" AFG	0.900	23445	240	VP-2-72L-240-3K7-5QW
	4	A4	30' - 0" AFG	0.900	21466	240	VP-2-72L-240-3K7-4W

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Overall Area	Illuminance	Fc	0.53	4.8	0.0	N.A.	N.A.
Parking Area	Illuminance	Fc	1.90	4.8	0.5	3.80	9.60

60 0 30 60 120 240

1 Inch = 60 - FT.

1. THIS LIGHTING DESIGN IS BASED ON LIMITED INFORMATION SUPPLIED BY OTHERS TO CURRENT. SITE DETAILS PROVIDED HEREON ARE REPRODUCED ONLY AS A VISUALIZATION AID. FIELD DEVIATIONS MAY SIGNIFICANTLY AFFECT PREDICTED PERFORMANCE. PRIOR TO INSTALLATION, CRITICAL SITE INFORMATION (POLE LOCATIONS, ORIENTATION, MOUNTING HEIGHT, ETC.) SHOULD BE COORDINATED WITH THE CONTRACTOR AND/OR SPECIFIER RESPONSIBLE FOR THE PROJECT.
2. LUMINAIRE DATA IS TESTED TO INDUSTRY STANDARDS UNDER LABORATORY CONDITIONS. OPERATING VOLTAGE AND NORMAL MANUFACTURING TOLERANCES OF LAMP, BALLAST, AND LUMINAIRE MAY AFFECT FIELD RESULTS.
3. CONFORMANCE TO FACILITY CODE AND OTHER LOCAL REQUIREMENTS IS THE RESPONSIBILITY OF THE OWNER AND/OR THE OWNER'S REPRESENTATIVE.

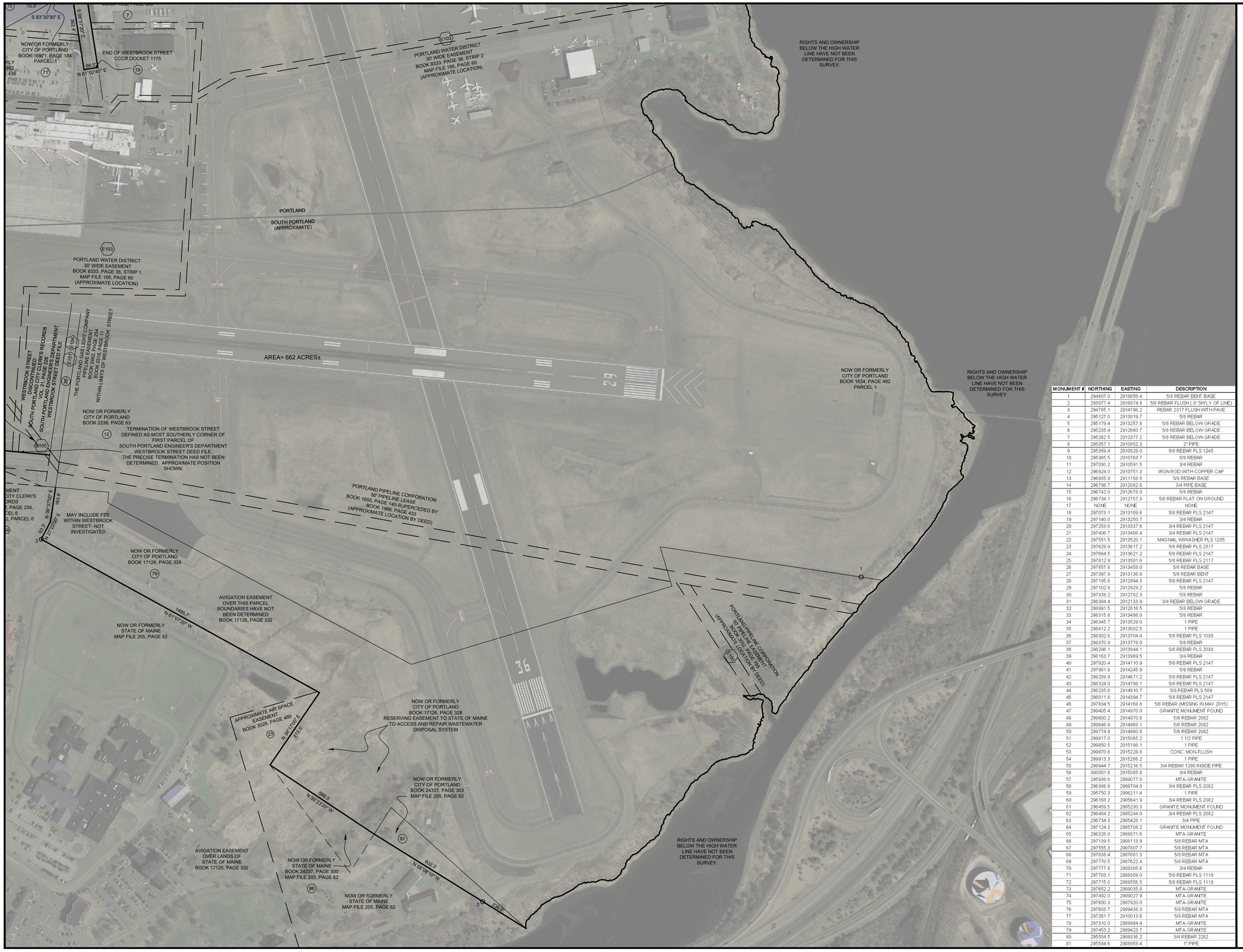
TITLE:

PORTLAND JETWAY
PORTLAND, ME
SITE PHOTOMETRIC PLAN

REVISED FROM DRAWING NUMBER(S):	
R1: 11/27/23	R5: 02/07/24
R2: 01/23/24	
R3: 01/30/24	
R4: 02/05/24	

Current

DN BY: DHK	DATE: 11/17/23	CHK BY: N/A
REV. BY: DHK	DATE: 02/05/24	SCALE: AS NOTED
QUOTE: N/A	DRAWING / DESIGN NO.: A232214R5	



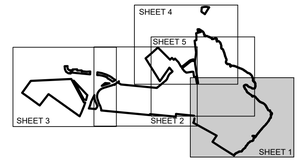
MONUMENT #	NORTHING	EASTING	DESCRIPTION
1	294607.0	2918656.4	5/8 REBAR BENT BASE
2	293077.4	2916874.8	5/8 REBAR FLUSH (9' SWLY OF LINE)
3	294785.1	2914796.2	REBAR 2317 FLUSH WITH PAVE
4	295127.0	2913819.7	5/8 REBAR
5	295179.4	2913257.8	5/8 REBAR BELOW GRADE
6	295235.4	2912660.7	5/8 REBAR BELOW GRADE
7	295262.5	2912377.2	5/8 REBAR BELOW GRADE
8	295357.1	2910852.3	2" PIPE
9	295359.4	2910829.0	5/8 REBAR PLS 1245
10	295365.5	2910763.7	5/8 REBAR
11	297030.2	2910591.5	3/4 REBAR
12	296924.0	2910751.3	IRON ROD WITH COPPER CAP
13	296885.9	2911158.5	5/8 REBAR BASE
14	296798.7	2912082.8	3/4 PIPE BASE
15	296742.0	2912678.0	5/8 REBAR
16	296734.1	2912757.3	5/8 REBAR FLAT ON GROUND
17	NONE	NONE	NONE
18	297073.1	2913169.6	5/8 REBAR PLS 2147
19	297140.0	2913250.7	3/4 REBAR
20	297253.6	2913337.6	3/4 REBAR PLS 2147
21	297406.7	2913406.4	3/4 REBAR PLS 2147
22	297551.5	2913520.1	MAGNAIL W/WASHER PLS 1205
23	297629.9	2913617.2	5/8 REBAR PLS 2317
24	297664.5	2913621.2	5/8 REBAR PLS 2147
25	297812.9	2913501.6	5/8 REBAR PLS 2117
26	297857.8	2913458.0	5/8 REBAR BASE
27	297397.9	2913136.8	5/8 REBAR BENT
28	297195.6	2912994.3	5/8 REBAR PLS 2147
29	297102.8	2912929.2	5/8 REBAR
30	297338.2	2912782.3	5/8 REBAR
31	298384.4	2912133.9	3/4 REBAR BELOW GRADE
32	298991.5	2912816.5	5/8 REBAR
33	298315.8	2913498.0	5/8 REBAR
34	298345.7	2913529.0	1 PIPE
35	298412.2	2913602.5	1 PIPE
36	298302.6	2913704.4	5/8 REBAR PLS 1038
37	298370.9	2913778.0	5/8 REBAR
38	298296.1	2913844.1	5/8 REBAR PLS 2038
39	298163.7	2913969.5	3/4 REBAR
40	297920.4	2914110.9	5/8 REBAR PLS 2147
41	297861.8	2914245.9	5/8 REBAR
42	298289.9	2914671.2	5/8 REBAR PLS 2147
43	298324.0	2914799.1	5/8 REBAR PLS 2147
44	298235.6	2914810.7	5/8 REBAR PLS 509
45	298011.8	2914394.7	5/8 REBAR PLS 2147
46	297834.5	2914168.8	5/8 REBAR (MISSING IN MAY 2015)
47	299405.4	2914970.0	GRANITE MONUMENT FOUND
48	299600.2	2914970.8	5/8 REBAR 2082
49	299646.9	2914968.1	5/8 REBAR 2082
50	299774.9	2914960.8	5/8 REBAR 2082
51	299817.0	2915065.2	1 1/2 PIPE
52	299850.5	2915186.1	1 PIPE
53	299870.8	2915228.8	CONC. MON-FLUSH
54	299913.3	2915266.2	1 PIPE
55	299944.7	2915216.5	3/4 REBAR 1280 INSIDE PIPE
56	300001.8	2915085.8	3/4 REBAR
57	295936.6	2909077.0	MTA-GRANITE
58	296386.8	2906704.0	3/4 REBAR PLS 2082
59	295750.3	2906211.4	1 PIPE
60	296168.2	2905641.9	3/4 REBAR PLS 2082
61	296459.5	2905230.3	GRANITE MONUMENT FOUND
62	296484.2	2905244.0	3/4 REBAR PLS 2082
63	296734.3	2905428.1	3/4 PIPE
64	297124.3	2905708.2	GRANITE MONUMENT FOUND
65	296326.0	2908871.6	MTA-GRANITE
66	297139.5	2908113.9	5/8 REBAR MTA
67	297555.3	2907807.7	5/8 REBAR MTA
68	297638.4	2907681.3	5/8 REBAR MTA
69	297770.5	2907622.4	5/8 REBAR MTA
70	297777.8	2908305.6	3/4 REBAR
71	297703.1	2908309.0	5/8 REBAR PLS 1118
72	297715.0	2908556.5	5/8 REBAR PLS 1118
73	297652.2	2909035.8	MTA-GRANITE
74	297492.0	2909027.9	MTA-GRANITE
75	297600.3	2907920.0	MTA-GRANITE
76	297603.7	2909438.3	5/8 REBAR MTA
77	297261.7	2910013.6	5/8 REBAR MTA
78	297310.0	2909984.4	MTA-GRANITE
79	297453.2	2909423.7	MTA-GRANITE
80	295554.5	2909336.2	3/4 REBAR 2282
81	295584.6	2908958.4	1" PIPE

NOTES

1. BOOK AND PAGE CITATIONS SHOWN HEREON REFER TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. NO MONUMENTS WERE SET AS OF THE DATE OF THIS PLAN.
3. A WRITTEN REPORT OF FINDINGS AND OPINIONS AS REQUIRED BY SECTION 10.A.3.D OF THE TECHNICAL STANDARDS OF PRACTICE OF THE STATE OF MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS WAS NOT PREPARED.
4. THE PURPOSE OF THIS SURVEY WAS TO DEFINE THE PERIMETER BOUNDARY OF THE PORTLAND INTERNATIONAL JETPORT PARCEL AND ACCESSORY PARCELS IN THE VICINITY OF THE JETPORT. INTERIOR PARCEL BOUNDARIES WERE NOT RESEARCHED OR DEFINED EXCEPT WHERE REQUIRED TO DEFINE THE PERIMETER BOUNDARY. EASEMENTS DEPICTED ON THIS PLAN WERE NOT COMPLETELY RESEARCHED OR LOCATED IN THE FIELD BUT SHOW THEIR GENERAL LOCATION RELATIVE TO THE PERIMETER BOUNDARY.
5. AERIAL PHOTOGRAPHY SHOWN WAS TAKEN IN 2015.
6. CURRENT OWNER: CITY OF PORTLAND
389 CONGRESS ST.
PORTLAND, MAINE 04101

LEGEND

- 1 — MONUMENT FOUND WITH REFERENCE NUMBER
- 79 — HIGHWAY MONUMENT FOUND WITH REFERENCE NUMBER
- 64 — STONE/GRANITE FOUND WITH REFERENCE NUMBER
- EASEMENT BOUNDARY
- PROPERTY LINE
- INTERIOR PARCEL BOUNDARY
- APPROXIMATE ABUTTER BOUNDARY
- E105 / 12 — PARCEL NUMBERING CORRESPONDS WITH DRAWING "PORTLAND INTERNATIONAL JETPORT EXHIBIT 'A'" DATED 7-9-2018, BY COFFMAN ASSOCIATES



SHEET INDEX

NOT TO SCALE



GRID NORTH

MAINE COORDINATE SYSTEM OF 1983 (2011)
WEST ZONE

SCALE: 1"= 200'

200' 0 200' 400' 600' 800'

SURVEY STANDARD

THIS PLAN WAS PREPARED FROM INFORMATION OBTAINED BY A SURVEY CONFORMING SUBSTANTIALLY TO THE REQUIREMENTS OF TECHNICAL STANDARDS CONTAINED IN CHAPTER 90, PART 2, OF THE RULES OF THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS, EFFECTIVE APRIL 1, 2001.

CLARK G. STAPLES, MAINE LICENSED PROFESSIONAL LAND SURVEYOR No. 2332

STATE OF MAINE · CLARK G. STAPLES · NO. 2332 · PROFESSIONAL LAND SURVEYOR

BOUNDARY SURVEY

OF LANDS OF

THE CITY OF PORTLAND

IN THE VICINITY OF

THE PORTLAND INTERNATIONAL JETPORT

-PORTLAND & SOUTH PORTLAND-

CUMBERLAND COUNTY, MAINE

FOR

Stantec

GOOD DEEDS
LAND SURVEYING • DEED RESEARCH
109 MAIN STREET
BELFAST, ME 04915
(207) 338-5743

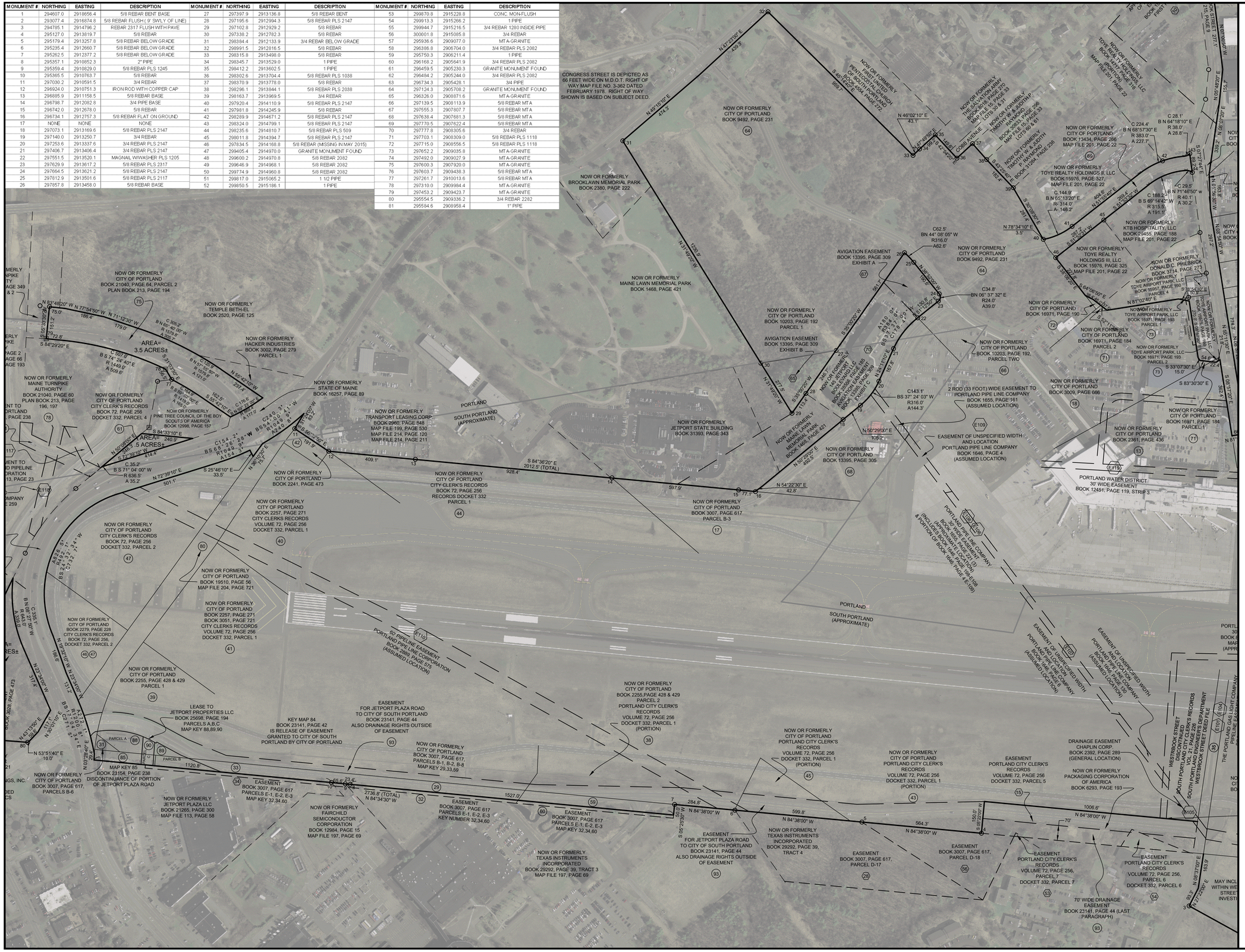
DWG: 14078 MASTER PLAN 20220126.DWG

DATE: JANUARY 26, 2022

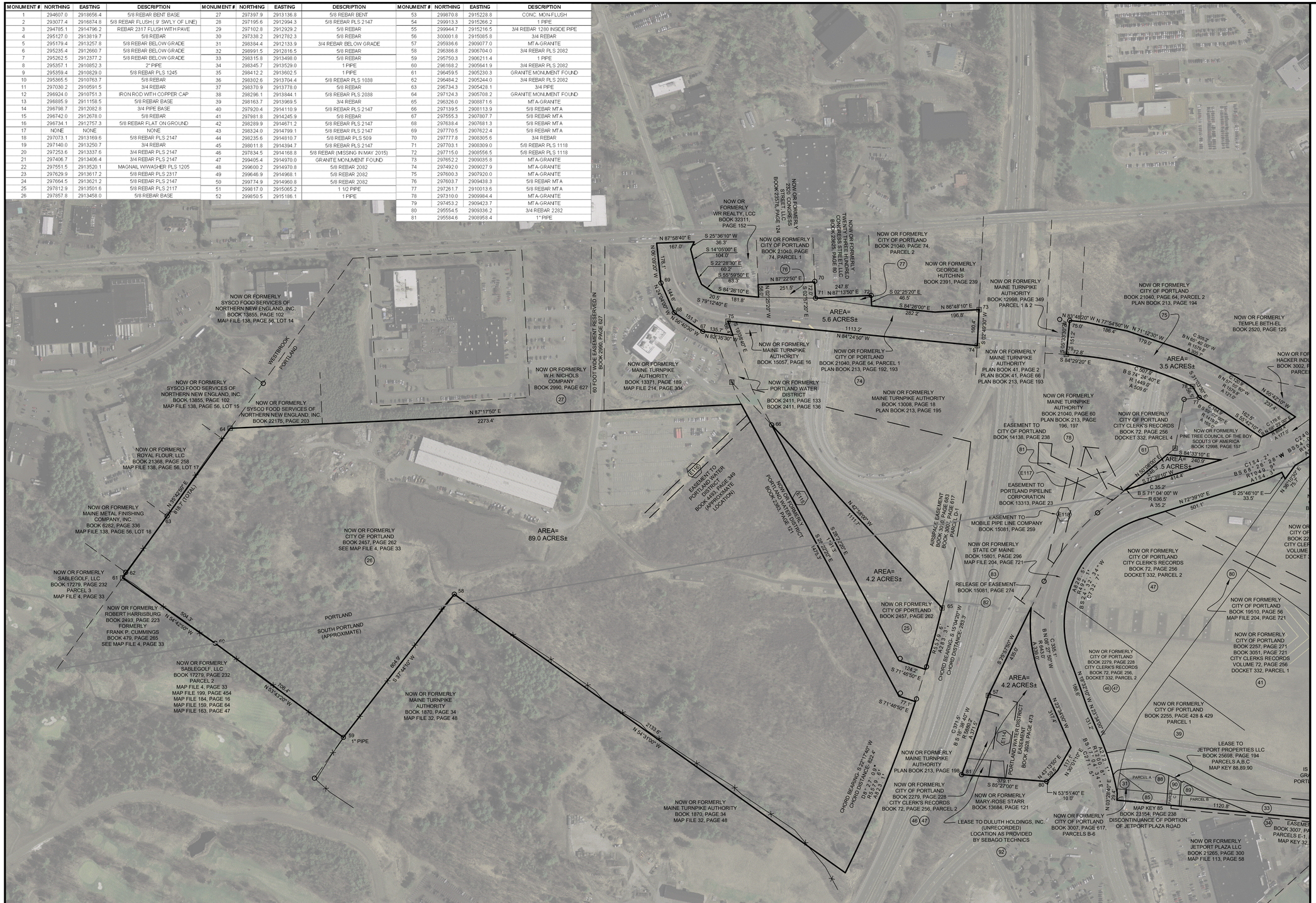
SCALE: 1"=200'

SHEET: 1 OF 5

MONUMENT #	NORTHING	EASTING	DESCRIPTION
1	294607.0	2918656.4	5/8 REBAR BENT BASE
2	293077.4	2916874.8	5/8 REBAR FLUSH (9' SWLY OF LINE)
3	294785.1	2914796.2	REBAR 2317 FLUSH WITH PAVE
4	295127.0	2913819.7	5/8 REBAR
5	295179.4	2913257.8	5/8 REBAR BELOW GRADE
6	295235.4	2912660.7	5/8 REBAR BELOW GRADE
7	295262.5	2912377.2	5/8 REBAR BELOW GRADE
8	295357.1	2910852.3	2" PIPE
9	295359.4	2910829.0	5/8 REBAR PLS 1245
10	295365.5	2910763.7	5/8 REBAR
11	297030.2	2910591.5	3/4 REBAR
12	296924.0	2910751.3	IRON ROD WITH COPPER CAP
13	296885.9	2911158.5	5/8 REBAR BASE
14	296798.7	2912082.8	3/4 PIPE BASE
15	296742.0	2912678.0	5/8 REBAR
16	296734.1	2912757.3	5/8 REBAR FLAT ON GROUND
17	NONE	NONE	NONE
18	297073.1	2913169.6	5/8 REBAR PLS 2147
19	297140.0	2913250.7	3/4 REBAR
20	297253.6	2913337.6	3/4 REBAR PLS 2147
21	297406.7	2913406.4	3/4 REBAR PLS 2147
22	297551.5	2913520.1	MAGNAIL WWASHER PLS 1205
23	297629.9	2913617.2	5/8 REBAR PLS 2317
24	297664.5	2913621.2	5/8 REBAR PLS 2147
25	297812.9	2913501.6	5/8 REBAR PLS 2117
26	297857.8	2913458.0	5/8 REBAR BASE
27	297397.9	2913136.8	5/8 REBAR BENT
28	297195.6	2912994.3	5/8 REBAR PLS 2147
29	297102.8	2912929.2	5/8 REBAR
30	297338.2	2912782.3	5/8 REBAR
31	298384.4	2912133.9	3/4 REBAR BELOW GRADE
32	298991.5	2912816.5	5/8 REBAR
33	298315.8	2913488.0	5/8 REBAR
34	298345.7	2913529.0	1 PIPE
35	298412.2	2913602.5	1 PIPE
36	298302.6	2913704.4	5/8 REBAR PLS 1038
37	298370.9	2913778.0	5/8 REBAR
38	298296.1	2913844.1	5/8 REBAR PLS 2038
39	298163.7	2913969.5	3/4 REBAR
40	297920.4	2914110.9	5/8 REBAR PLS 2147
41	297981.8	2914245.9	5/8 REBAR
42	298299.9	2914671.2	5/8 REBAR PLS 2147
43	298324.0	2914799.1	5/8 REBAR PLS 2147
44	298235.6	2914810.7	5/8 REBAR PLS 509
45	298011.8	2914394.7	5/8 REBAR PLS 2147
46	297834.5	2914168.8	5/8 REBAR (MISSING IN MAY 2015)
47	299405.4	2914970.0	GRANITE MONUMENT FOUND
48	299600.2	2914970.8	5/8 REBAR 2082
49	299646.9	2914968.1	5/8 REBAR 2082
50	299774.9	2914960.8	5/8 REBAR 2082
51	299817.0	2915065.2	1 1/2 PIPE
52	299850.5	2915186.1	1 PIPE
53	299870.8	2915228.8	CONC. MON-FLUSH
54	299913.3	2915266.2	1 PIPE
55	299944.7	2915216.5	3/4 REBAR 1280 INSIDE PIPE
56	300001.8	2915085.8	3/4 REBAR
57	295936.6	2909077.0	MT A GRANITE
58	296388.8	2906704.0	3/4 REBAR PLS 2082
59	295750.3	2906211.4	1 PIPE
60	296168.2	2905641.9	3/4 REBAR PLS 2082
61	296459.5	2905230.3	GRANITE MONUMENT FOUND
62	296484.2	2905244.0	3/4 REBAR PLS 2082
63	296734.3	2905428.1	3/4 PIPE
64	297124.3	2905708.2	GRANITE MONUMENT FOUND
65	296326.0	2908871.6	MT A GRANITE
66	297139.5	2908113.9	5/8 REBAR MT A
67	297555.3	2907807.7	5/8 REBAR MT A
68	297638.4	2907681.3	5/8 REBAR MT A
69	297770.5	2907622.4	5/8 REBAR MT A
70	297777.8	2908305.6	3/4 REBAR
71	297703.1	2908309.0	5/8 REBAR PLS 1118
72	297715.0	2908556.5	5/8 REBAR PLS 1118
73	297652.2	2909035.8	MT A GRANITE
74	297492.0	2909027.9	MT A GRANITE
75	297600.3	2907920.0	MT A GRANITE
76	297603.7	2909438.3	5/8 REBAR MT A
77	297261.7	2910013.6	5/8 REBAR MT A
78	297310.0	2909984.4	MT A GRANITE
79	297453.2	2909423.7	MT A GRANITE
80	295554.5	2909336.2	3/4 REBAR 2282
81	295584.6	2908958.4	1" PIPE


CONGRESS STREET IS DEPICTED AS 66 FEET WIDE ON M.D.O.T. RIGHT OF WAY MAP FILE NO. 3-362 DATED FEBRUARY 1978. RIGHT OF WAY SHOWN IS BASED ON SUBJECT DEED
NOW OR FORMERLY CITY OF PORTLAND BOOK 9492, PAGE 231
NOW OR FORMERLY BROOKLAWN MEMORIAL PARK BOOK 2380, PAGE 222
NOW OR FORMERLY MAINE LAWN MEMORIAL PARK BOOK 1468, PAGE 421
NOW OR FORMERLY TEMPLE BETH-EL BOOK 2520, PAGE 125
NOW OR FORMERLY CITY OF PORTLAND BOOK 21040, PAGE 64, PARCEL 2 PLAN BOOK 213, PAGE 194
NOW OR FORMERLY HACKER INDUSTRIES BOOK 3002, PAGE 279 PARCEL 1
NOW OR FORMERLY STATE OF MAINE BOOK 16257, PAGE 89
NOW OR FORMERLY MAINE TURNPIKE AUTHORITY BOOK 21040, PAGE 60 PLAN BOOK 213, PAGE 196, 197
NOW OR FORMERLY CITY OF PORTLAND CITY CLERK'S RECORDS BOOK 72, PAGE 256 DOCKET 332, PARCEL 4
NOW OR FORMERLY PINE TREE COUNCIL OF THE BOY SCOUTS OF AMERICA BOOK 12898, PAGE 157
NOW OR FORMERLY CITY OF PORTLAND BOOK 2241, PAGE 473
NOW OR FORMERLY CITY OF PORTLAND CITY CLERK'S RECORDS BOOK 72, PAGE 256, DOCKET 332, PARCEL 2
NOW OR FORMERLY CITY OF PORTLAND BOOK 2257, PAGE 271 CITY CLERKS RECORDS VOLUME 72, PAGE 256 DOCKET 332. PARCEL 1
NOW OR FORMERLY CITY OF PORTLAND BOOK 19510, PAGE 56 MAP FILE 204, PAGE 721
NOW OR FORMERLY CITY OF PORTLAND BOOK 2279, PAGE 228 CITY CLERK'S RECORDS BOOK 72, PAGE 256, DOCKET 332, PARCEL 2
NOW OR FORMERLY CITY OF PORTLAND BOOK 2257, PAGE 271 BOOK 3051, PAGE 721 CITY CLERKS RECORDS VOLUME 72, PAGE 256 DOCKET 332, PARCEL 1
NOW OR FORMERLY CITY OF PORTLAND BOOK 2255, PAGE 426 & 429 PARCEL 1
NOW OR FORMERLY JETPORT PLAZA LLC BOOK 21265, PAGE 300 MAP FILE 113, PAGE 58
NOW OR FORMERLY CITY OF PORTLAND BOOK 3007, PAGE 617, PARCELS B-6
NOW OR FORMERLY FAIRCHILD SEMICONDUCTOR CORPORATION BOOK 12984, PAGE 15 MAP FILE 197, PAGE 69
NOW OR FORMERLY TRANSPORT LEASING CORP. BOOK 2960, PAGE 648 MAP FILE 199, PAGE 530 MAP FILE 214, PAGE 120 MAP FILE 214, PAGE 211
NOW OR FORMERLY CITY OF PORTLAND CITY CLERK'S RECORDS BOOK 72, PAGE 256 RECORDS DOCKET 332 PARCEL 1
NOW OR FORMERLY CITY OF PORTLAND BOOK 3007, PAGE 617
NOW OR FORMERLY JETPORT STATE BUILDING BOOK 31393, PAGE 343
NOW OR FORMERLY CITY OF PORTLAND BOOK 13395, PAGE 305
NOW OR FORMERLY CITY OF PORTLAND BOOK 3007, PAGE 617 PARCEL B-3
NOW OR FORMERLY CITY OF PORTLAND BOOK 2255,PAGE 428 & 429 PARCEL 2 PORTLAND CITY CLERK'S RECORDS VOLUME 72, PAGE 256 DOCKET 332, PARCEL 1 (PORTION)
NOW OR FORMERLY CITY OF PORTLAND PORTLAND CITY CLERK'S RECORDS VOLUME 72, PAGE 256 DOCKET 332, PARCEL 1 (PORTION)
NOW OR FORMERLY CITY OF PORTLAND PORTLAND CITY CLERK'S RECORDS VOLUME 72, PAGE 256 DOCKET 332, PARCEL 1 (PORTION)
NOW OR FORMERLY TEXAS INSTRUMENTS INCORPORATED BOOK 29292, PAGE 39, TRACT 3 MAP FILE 197, PAGE 69
NOW OR FORMERLY TEXAS INSTRUMENTS INCORPORATED BOOK 29292, PAGE 39, TRACT 4
NOW OR FORMERLY CITY OF PORTLAND BOOK 10203, PAGE 192, PARCEL 1
NOW OR FORMERLY CITY OF PORTLAND BOOK 10203, PAGE 192, PARCEL TWO
NOW OR FORMERLY CITY OF PORTLAND BOOK 16971, PAGE 190
NOW OR FORMERLY CITY OF PORTLAND BOOK 16971, PAGE 184 PARCEL 2
NOW OR FORMERLY CITY OF PORTLAND BOOK 3009, PAGE 666
NOW OR FORMERLY CITY OF PORTLAND BOOK 16971, PAGE 194 PARCEL 1
NOW OR FORMERLY CITY OF PORTLAND BOOK 2361, PAGE 436
NOW OR FORMERLY TOYE REALTY HOLDINGS II, LLC BOOK 15976, PAGE 325 MAP FILE 201, PAGE 22
NOW OR FORMERLY TOYE REALTY HOLDINGS II, LLC BOOK 15976, PAGE 327, MAP FILE 201, PAGE 22
NOW OR FORMERLY CITY OF PORTLAND BOOK 13434, PAGE 286 MAP FILE 201, PAGE 22
NOW OR FORMERLY KTB HOSPITALITY, LLC BOOK 29455, PAGE 188 MAP FILE 201, PAGE 22
NOW OR FORMERLY DONALD C. PHILBRICK BOOK 3114, PAGE 273
NOW OR FORMERLY TOYE AIRPORT PARK, LLC BOOK 16971, PAGE 160 PARCEL 1
NOW OR FORMERLY TOYE AIRPORT PARK, LLC BOOK 16971, PAGE 160 PARCEL 4
NOW OR FORMERLY TOYE AIRPORT PARK, LLC BOOK 16971, PAGE 193 PARCEL 2
NOW OR FORMERLY CITY OF PORTLAND BOOK 16971, PAGE 194 PARCEL 1
NOW OR FORMERLY CITY OF PORTLAND BOOK 10203, PAGE 192, PARCEL TWO
NOW OR FORMERLY CITY OF PORTLAND BOOK 9492, PAGE 231
NOW OR FORMERLY CITY OF PORTLAND THE SALVATION ARMY BOOK 18, PAGE 270 MAP FILE 6, PAGE 33 LOTS 30 & 31
NOW OR FORMERLY TIMOTHY W. & JUDITH P. RAYMOND BOOK 30603, PAGE 206 MAP FILE 15, PAGE 38 LOTS 60 & 61
NOW OR FORMERLY TIMOTHY W. & JUDITH P. RAYMOND BOOK 31664, PAGE 236
NOW OR FORMERLY TOYE REALTY HOLDINGS II, LLC BOOK 15976, PAGE 325 MAP FILE 201, PAGE 22
NOW OR FORMERLY CITY OF PORTLAND BOOK 9492, PAGE 231
AVIGATION EASEMENT BOOK 13395, PAGE 309 EXHIBIT A
AVIGATION EASEMENT BOOK 13395, PAGE 309 EXHIBIT B
EASEMENT FOR JETPORT PLAZA ROAD TO CITY OF SOUTH PORTLAND BOOK 23141, PAGE 44 ALSO DRAINAGE RIGHTS OUTSIDE OF EASEMENT
KEY MAP 84 BOOK 23141, PAGE 42 IS RELEASE OF EASEMENT GRANTED TO CITY OF SOUTH PORTLAND BY CITY OF PORTLAND
LEASE TO JETPORT PROPERTIES LLC BOOK 25698, PAGE 194 PARCELS A,B,C MAP KEY 88,89,90
MAP KEY 85 BOOK 23154, PAGE 238 DISCONTINUANCE OF PORTION OF JETPORT PLAZA ROAD
EASEMENT BOOK 3007, PAGE 617 PARCELS E-1, E-2, E-3 MAP KEY 32.34.60
EASEMENT BOOK 3007, PAGE 617 PARCELS E-1, E-2, E-3 KEY NUMBER 32.34.60
EASEMENT BOOK 3007, PAGE 617 PARCELS E-1, E-2, E-3 MAP KEY 32.34.60
EASEMENT FOR JETPORT PLAZA ROAD TO CITY OF SOUTH PORTLAND BOOK 23141, PAGE 44 ALSO DRAINAGE RIGHTS OUTSIDE OF EASEMENT
EASEMENT BOOK 3007, PAGE 617, PARCEL D-17
EASEMENT BOOK 3007, PAGE 617, PARCEL D-18
2 ROD (33 FOOT) WIDE EASEMENT TO PORTLAND PIPE LINE COMPANY BOOK 1655, PAGE 161 (ASSUMED LOCATION)
EASEMENT OF UNSPECIFIED WIDTH AND LOCATION PORTLAND PIPE LINE COMPANY BOOK 1646, PAGE 4 (ASSUMED LOCATION)
EASEMENT PORTLAND CITY CLERK'S RECORDS VOLUME 72, PAGE 256, PARCEL 7 DOCKET 332, PARCEL 7
EASEMENT PORTLAND CITY CLERK'S RECORDS VOLUME 72, PAGE 256, PARCEL 6 DOCKET 332, PARCEL 6
EASEMENT OF UNSPECIFIED WIDTH AND LOCATION PORTLAND PIPE LINE COMPANY BOOK 1646, PAGE 4 (ASSUMED LOCATION)
EASEMENT OF UNSPECIFIED WIDTH AND LOCATION PORTLAND PIPE LINE COMPANY BOOK 1646, PAGE 4 (ASSUMED LOCATION)
PORTLAND PIPE LINE COMPANY 30' WIDE EASEMENT (APPROXIMATE LOCATION) BOOK 1655, PAGE 161 BOOK 1646, PAGE 4 BOOK 1708 (INCLUDES SHORT SECTION OF BOOK 1646, PAGE 4-E.(19))
PORTLAND WATER DISTRICT 30' WIDE EASEMENT BOOK 12451, PAGE 119, STRIP 3
DRAINAGE EASEMENT CHAPLIN CORP. BOOK 2392, PAGE 289 (GENERAL LOCATION)
NOW OR FORMERLY PACKAGING CORPORATION OF AMERICA BOOK 6293, PAGE 193
WESTBROOK STREET DISCONTINUED SOUTH PORTLAND CITY CLERK'S RECORDS BOOK 72, PAGE 226 SOUTH PORTLAND ENGINEERING DEPARTMENT WESTBROOK STREET DEED FILE
THE PORTLAND GAS LIGHT COMPANY PIPELINE EASEMENT
PORTLAND
SOUTH PORTLAND (APPROXIMATE)
AREA= 3.5 ACRES±
AREA= .5 ACRES±
N 83°49'20" W
N 77°54'50" W
N 71°12'30" W
N 55°42'00" W
N 31°49'20" W
N 47°23'00" E
N 49°15'10" E
N 46°02'10" E
N 43°49'50" E
N 34°09'10" E
N 54°22'30" E
S 84°36'20" E
S 84°38'00" W
N 84°38'00" W
S 84°33'10" E
N 72°39'10" E
S 25°46'10" E
N 53°51'40" E
N 03°28'40" E
N 27°43'30" W
N 23°43'00" W
N 12°30'10" W
N 08°07'00" E
N 08°48'20" E
N 08°37'00" E
N 01°56'30" W
N 08°37'00" E
S 08°37'00" E
S 83°30'30" E
S 81°02'40" E
S 78°54'10" E
S 64°36'50" E
S 51°00'40" E
S 43°25'40" E
S 35°35'00" W
S 27°22'00" W
S 08°22'00" W
S 03°07'30" E
S 01°07'44" E
S 09°00'00" E
S 84°38'00" W
S 84°36'20" E
2012.5' (TOTAL)
2736.8' (TOTAL)
N 84°34'30" W
1120.8'
1527.0'
1006.6'
564.3'
599.8'
928.4'
597.9'
409.1'
284.8'
240.7'
162.5'
186.6'
179.0'
186.4'
C 307.0'
R 1449.9'
A 309.6'
C 309.9'
R 1449.9'
A 310.1'
C 178.8'
R 1449.9'
A 177.0'
C 240.3'
R 1400.0'
A 240.0'
C 154.2'
R 1044.3'
A 154.3'
C 35.2'
R 636.5'
A 35.2'
C 62.5'
BN 44° 08' 05" W
R 316.0'
A62.6'
C34.8'
BN 06° 37' 32" E
R24.0'
A39.0'
C143.1'
BS 37° 24' 03" W
R 316.0'
A144.3'
C 224.4'
B N 68°57'30" E
R 383.0'
A 227.7'
C 28.1'
B N 64°18'10" E
R 38.0'
A 28.8'
C 144.9'
B N 51°13'20" E
R 314.0'
A 148.2'
C 188.2'
B S 69°14'42" W
R 315.8'
A 191.1'
C 29.5'
B N 71°46'50" w
R 40.1'
A 30.2'
C 395.9'
R 1449.9'
A 398.0'
C 335.1'
R 643.0'
A 338.0'
C 235.1'
R 643.0'
A 237.0'
C 40.1'
R 25.5'
A 32.0'
C 39.3'
R 25.5'
A 35.1'
C 39.3'
R 25.5'
A 35.1

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NOTES

1. BOOK AND PAGE CITATIONS SHOWN HEREON REFER TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. NO MONUMENTS WERE SET AS OF THE DATE OF THIS PLAN.
3. A WRITTEN REPORT OF FINDINGS AND OPINIONS AS REQUIRED BY SECTION 10.A.3.D OF THE TECHNICAL STANDARDS OF PRACTICE OF THE STATE OF MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS WAS NOT PREPARED.
4. THE PURPOSE OF THIS SURVEY WAS TO DEFINE THE PERIMETER BOUNDARY OF THE PORTLAND INTERNATIONAL JETPORT PARCEL AND ACCESSORY PARCELS IN THE VICINITY OF THE JETPORT. INTERIOR PARCEL BOUNDARIES WERE NOT RESEARCHED OR DEFINED EXCEPT WHERE REQUIRED TO DEFINE THE PERIMETER BOUNDARY. EASEMENTS DEPICTED ON THIS PLAN WERE NOT COMPLETELY RESEARCHED OR LOCATED IN THE FIELD BUT SHOW THEIR GENERAL LOCATION RELATIVE TO THE PERIMETER BOUNDARY.
5. AERIAL PHOTOGRAPHY SHOWN WAS TAKEN IN 2015.
6. CURRENT OWNER: CITY OF PORTLAND
   389 CONGRESS ST.
   PORTLAND, MAINE 04101

LEGEND

- 1 — MONUMENT FOUND WITH REFERENCE NUMBER
- 79 (H) — HIGHWAY MONUMENT FOUND WITH REFERENCE NUMBER
- 64 □ — STONE/GRANITE FOUND WITH REFERENCE NUMBER
- ——— EASEMENT BOUNDARY
- ——— PROPERTY LINE
- ——— INTERIOR PARCEL BOUNDARY
- — — — APPROXIMATE ABUTTER BOUNDARY
- (E105) (12) — PARCEL NUMBERING CORRESPONDS WITH DRAWING "PORTLAND INTERNATIONAL JETPORT EXHIBIT "A" DATED 7-9-2018, BY COFFMAN ASSOCIATES

SHEET INDEX

NOT TO SCALE

GRID NORTH

MAINE COORDINATE SYSTEM OF 1983 (2011) WEST ZONE

SCALE: 1"= 200'

200' 0 200' 400' 600' 800'

SURVEY STANDARD

THIS PLAN WAS PREPARED FROM INFORMATION OBTAINED BY A SURVEY CONFORMING SUBSTANTIALLY TO THE REQUIREMENTS OF TECHNICAL STANDARDS CONTAINED IN CHAPTER 90, PART 2, OF THE RULES OF THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS, EFFECTIVE APRIL 1, 2001.

CLARK G. STAPLES, MAINE LICENSED PROFESSIONAL LAND SURVEYOR No. 2332

STATE OF MAINE — CLARK G STAPLES — NO. 2332 — PROFESSIONAL LAND SURVEYOR

BOUNDARY SURVEY

OF LANDS OF

THE CITY OF PORTLAND

IN THE VICINITY OF

THE PORTLAND INTERNATIONAL JETPORT

-PORTLAND & SOUTH PORTLAND-

CUMBERLAND COUNTY, MAINE

FOR

Stantec

GOOD DEEDS

LAND SURVEYING • DEED RESEARCH

109 MAIN STREET
BELFAST, ME 04915
(207) 338-5743

DWG: 14078 MASTER PLAN 20220126.DWG

DATE: JANUARY 26, 2022

SCALE: 1"=200'

SHEET: 3 OF 5

MONUMENT #	NORTHING	EASTING	DESCRIPTION
1	294607.0	2918656.4	5/8 REBAR BENT BASE
2	293077.4	2916874.8	5/8 REBAR FLUSH (9' SWLY OF LINE)
3	294785.1	2914796.2	REBAR 2317 FLUSH WITH PAVE
4	295127.0	2913819.7	5/8 REBAR
5	295179.4	2913257.8	5/8 REBAR BELOW GRADE
6	295235.4	2912660.7	5/8 REBAR BELOW GRADE
7	295262.5	2912377.2	5/8 REBAR BELOW GRADE
8	295357.1	2910852.3	2" PIPE
9	295359.4	2910829.0	5/8 REBAR PLS 1245
10	295365.5	2910763.7	5/8 REBAR
11	297030.2	2910591.5	3/4 REBAR
12	296924.0	2910751.3	IRON ROD WITH COPPER CAP
13	296885.9	2911158.5	5/8 REBAR BASE
14	296798.7	2912082.8	3/4 PIPE BASE
15	296742.0	2912678.0	5/8 REBAR
16	296734.1	2912757.3	5/8 REBAR FLAT ON GROUND
17	NONE	NONE	NONE
18	297073.1	2913169.6	5/8 REBAR PLS 2147
19	297140.0	2913250.7	3/4 REBAR
20	297253.6	2913337.6	3/4 REBAR PLS 2147
21	297406.7	2913406.4	3/4 REBAR PLS 2147
22	297555.5	2913520.1	MAGNAIL W/WASHER PLS 1205
23	297629.9	2913617.2	5/8 REBAR PLS 2317
24	297664.5	2913621.2	5/8 REBAR PLS 2147
25	297812.9	2913501.6	5/8 REBAR PLS 2117
26	297857.8	2913458.0	5/8 REBAR BASE
27	297397.9	2913136.8	5/8 REBAR BENT
28	297195.6	2912994.3	5/8 REBAR PLS 2147
29	297102.8	2912929.2	5/8 REBAR
30	297338.2	2912782.3	5/8 REBAR
31	298384.4	2912133.9	3/4 REBAR BELOW GRADE
32	298991.5	2912816.5	5/8 REBAR
33	298315.8	2913498.0	5/8 REBAR
34	298345.7	2913529.0	1 PIPE
35	298412.2	2913602.5	1 PIPE
36	298302.6	2913704.4	5/8 REBAR PLS 1038
37	298370.9	2913778.0	5/8 REBAR
38	298296.1	2913844.1	5/8 REBAR PLS 2038
39	298163.7	2913969.5	3/4 REBAR
40	297920.4	2914110.9	5/8 REBAR PLS 2147
41	297981.8	2914245.9	5/8 REBAR
42	298289.9	2914671.2	5/8 REBAR PLS 2147
43	298324.0	2914799.1	5/8 REBAR PLS 2147
44	298235.6	2914810.7	5/8 REBAR PLS 509
45	298011.8	2914394.7	5/8 REBAR PLS 2147
46	297834.5	2914168.8	5/8 REBAR (MISSING IN MAY 2015)
47	299405.4	2914970.0	GRANITE MONUMENT FOUND
48	299600.2	2914970.8	5/8 REBAR 2082
49	299646.9	2914968.1	5/8 REBAR 2082
50	299774.9	2914960.8	5/8 REBAR 2082
51	299817.0	2915065.2	1 1/2 PIPE
52	299850.5	2915186.1	1 PIPE
53	299870.8	2915228.8	CONC. MON-FLUSH
54	299913.3	2915266.2	1 PIPE
55	299944.7	2915216.5	3/4 REBAR 1280 INSIDE PIPE
56	3000018	2915085.8	3/4 REBAR
57	295936.6	2909077.0	MT A-GRANITE
58	296386.8	2906704.0	3/4 REBAR PLS 2082
59	295750.3	2906211.4	1 PIPE
60	296168.2	2905641.9	3/4 REBAR PLS 2082
61	296459.5	2905230.3	GRANITE MONUMENT FOUND
62	296484.2	2905244.0	3/4 REBAR PLS 2082
63	296734.3	2905428.1	3/4 PIPE
64	297124.3	2905708.2	GRANITE MONUMENT FOUND
65	296326.0	2908871.6	MT A-GRANITE
66	297139.5	2908113.9	5/8 REBAR MTA
67	297555.3	2907807.7	5/8 REBAR MTA
68	297638.4	2907681.3	5/8 REBAR MTA
69	297710.5	2907622.4	5/8 REBAR MTA
70	297777.8	2908305.6	3/4 REBAR
71	297703.1	2908309.0	5/8 REBAR PLS 1118
72	297715.0	2908556.5	5/8 REBAR PLS 1118
73	297652.2	2909035.8	MT A-GRANITE
74	297492.0	2909027.9	MT A-GRANITE
75	297600.3	2907920.0	MT A-GRANITE
76	297603.7	2909438.3	5/8 REBAR MTA
77	297261.7	2910013.6	5/8 REBAR MTA
78	297310.0	2909984.4	MT A-GRANITE
79	297453.2	2909423.7	MT A-GRANITE
80	295554.5	2909336.2	3/4 REBAR 2282
81	295584.6	2908958.4	1" PIPE


STATE OF MAINE
MAP FILE 194/405
MAP FILE 194/406
LEASE TO
164 REALTY, INC
BOOK 14715, PAGE 1
NOW OR FORMERLY
NORTHERN NEW ENGLAND
TELEPHONE OPERATIONS LLC
BOOK 25946, PAGE 126
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 3909, PAGE 306
NOW OR FORMERLY
164 REALTY, INC
BOOK 11022, PAGE 141
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AREA= 2.6 ACRES±
CUMBERLAND AND
OXFORD CANAL
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 7715, PAGE 172
NOW OR FORMERLY
PORTLAND WATER DISTRICT
BOOK 4862, PAGE 288
51
NOW OR FORMERLY
KENNETH I. & KAREN C. PARKER
BOOK 6147, PAGE 294
PARCEL 2
56
AREA= .3 ACRES±
NOW OR FORMERLY
KENNETH I. & KAREN C. PARKER
BOOK 6147, PAGE 294
PARCEL 1
NOW OR FORMERLY
JAMES E. & DEBRA W.
ROBBINS
BOOK 13170, PAGE 121
NOW OR FORMERLY
DAVID P. SILK &
LYNNE A. CRANDALL
BOOK 12849, PAGE 307
N 41°18'50" E
56.7'
N 64°37'20" E
47.3'
N 74°29'30" E
125.4'
N 75°45'00" E
108.7'
N 03°22'20" W
46.9'
NOW OR FORMERLY
ANDREA C. & DONALD A. HAWKES
BOOK 25474, PAGE 139
NOW OR FORMERLY
KEITH R. & ROSEMARY B. MASON
BOOK 3839, PAGE 277
BOOK 13005, PAGE 288
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 3420, PAGE 256
50
NOW OR FORMERLY
MARK S. HIDER
BOOK 28702, PAGE 84
N 02°50'20" E
17.7'
NOW OR FORMERLY
NANCY S. SMITH
BOOK 4586, PAGE 277
103.4'
N 72°09'10" E
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 3984, PAGE 331
55
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 1634, PAGE 492
PARCEL 3
9
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 1503, PAGE 212
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 1543, PAGE 277
BOOK 1532, PAGE 305
7
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 1496, PAGE 354
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 1639, PAGE 63
4
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 1543, PAGE 277
BOOK 1532, PAGE 305
7
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 1503, PAGE 216
21
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 1543, PAGE 277
BOOK 1532, PAGE 305
7
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 1634, PAGE 492
PARCEL 1
8
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 1543, PAGE 277
BOOK 1532, PAGE 305
7
END OF WESTBROOK STREET
CCCR DOCKET 1175
19
PORTLAND WATER DISTRICT
30' WIDE EASEMENT
BOOK 8333, PAGE 36, STRIP 2
MAP FILE 166, PAGE 60
(APPROXIMATE LOCATION)
E103
APPROXIMATE LOCATION
OF RIGHTS IN
EASEMENTS
BOOK 1532, PAGE 301
FIRST PARCEL
10
NOW OR FORMERLY
TOYE REALTY HOLDINGS, LLC
BOOK 14471, PAGE 316
MAP FILE 201, PAGE 22
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CITY OF PORTLAND
BOOK 3009, PAGE 666
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NOW OR FORMERLY
CITY OF PORTLAND
BOOK 2361, PAGE 436
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 16971, PAGE 184
PARCEL 1
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 16971, PAGE 184
PARCEL 2
NOW OR FORMERLY
TOYE AIRPORT PARK, LLC
BOOK 16971, PAGE 193
PARCEL 1
NOW OR FORMERLY
TOYE AIRPORT PARK, LLC
BOOK 16971, PAGE 193
PARCEL 2
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 16971, PAGE 190
NOW OR FORMERLY
DONALD G. PHILBRICK
BOOK 3714, PAGE 273
NOW OR FORMERLY
TOYE AIRPORT PARK, LLC
BOOK 16971, PAGE 193
PARCEL 4
NOW OR FORMERLY
TOYE AIRPORT PARK, LLC
BOOK 16971, PAGE 193
PARCEL 3
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 10203, PAGE 192,
PARCEL TWO
66
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 9492, PAGE 231
64
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 9492, PAGE 231
64
NOW OR FORMERLY
BROOKLAWN MEMORIAL PARK
BOOK 2380, PAGE 222
NOW OR FORMERLY
MAINE LAWN MEMORIAL PARK
BOOK 1468, PAGE 421
NOW OR FORMERLY
JETPORT STATE BUILDING
BOOK 31393, PAGE 343
NOW OR FORMERLY
MAINE LAWN
MEMORIAL PARK
BOOK 1468, PAGE 421
NOW OR FORMERLY
PENOBSCOT INDIAN
BOOK 4154, PAGE 272
NOW OR FORMERLY
THE SALVATION ARMY
BOOK 4516, PAGE 270
MAP FILE 15, PAGE 33
LOTS 30 & 31
NOW OR FORMERLY
TIMOTHY W. & JUDITH P.
RAYMOND
BOOK 3053, PAGE 236
MAP FILE 15, PAGE 33
LOTS 60 & 61
NOW OR FORMERLY
TIMOTHY W. & JUDITH P.
RAYMOND
BOOK 3164, PAGE 236
AVIGATION EASEMENT
BOOK 13395, PAGE 309
EXHIBIT A
AVIGATION EASEMENT
BOOK 13395, PAGE 309
EXHIBIT B
NOW OR FORMERLY
CITY OF PORTLAND
BOOK 10203, PAGE 192
PARCEL 1
NOW OR FORMERLY
PORTLAND INTERNATIONAL
JETPORT
BOOK 13395, PAGE 185
BOOK 13395, PAGE 309
EXHIBIT C
2 ROD (33 FOOT) WIDE EASEMENT TO
PORTLAND PIPE LINE COMPANY
BOOK 1655, PAGE 161
(ASSUMED LOCATION)
EASEMENT OF UNSPECIFIED WIDTH
AND LOCATION
PORTLAND PIPE LINE COMPANY
E106
E105
12
CONGRESS STREET IS DEPICTED AS
66 FEET WIDE ON M.D.O.T. RIGHT OF
WAY MAP FILE NO. 3-362 DATED
FEBRUARY 1978. RIGHT OF WAY
SHOWN IS BASED ON SUBJECT DEED.
N 47°22'00" E
439.9'
N 49°15'10" E
474.3'
S 40°44'50" E
664.1'
N 46°02'10" E
43.1'
S 47°46'50" E
34.59'
S 41°54'20" E
422.6'
S 48°23'50" E
662.4'
S 39°06'40" E
201.4'
N 78°34'10" E
3.5'
S 39°06'40" E
228.8'
S 64°08'50" E
99.4'
S 25°11'10" E
N 38°52'00" W
199.6'
N 51°13'50" W
130.8'
A 180.9'
R 64.4'
CH 128.7'
N 38°52'00" W
S 35°05'00" W
44.7'
S 35°05'00" W
113.4'
N 54°49'00" W
277.6'
A 124.1'
R 101.6'
CH 116.2'
N 50°29'00" E
105.2'
C62.5'
BN 44° 08' 05" W
R316.0'
A62.6'
C34.8'
BN 06° 37' 32" E
R24.0'
A39.0'
C143.1'
BS 37° 24' 03" W
R316.0'
A144.3'
C 224.4'
B N 68°57'30" E
R 383.0'
A 227.7'
C 28.1'
B N 64°18'10" E
R 38.0'
A 28.8'
C 144.9'
B N 55°13'20" E
R- 314.0'
A- 148.2'
C 188.2'
B S 69°14'42" W
R 315.5'
A 191.1'
C 29.5'
B N 71°46'50" w
R 40.1'
A 30.2'
N 08°48'20" E
155.7'
N 08°07'20" E
389.2'
S 07°27'40" E
89.5'
N 01°56'30" W
153.8'
N 08°54'50" W
297.2'
N 08°07'20" W
774.3'
N 26°11'30" E
21.6'
S 83°30'30" E
362.4'
S 06°57'20" E
N 81°02'40" E
66.0'
S 81°02'40" E
50.0'
S 83°30'30" E
15.0'
S 81°02'40" E
22.4'
N 81°02'40" E
N 08°07'20" W
404.6'
N 57°55'10" E
268.4'
S 57°55'10" W
202.2'
S 32°04'50" W
N 08°07'20" W
N 08°07'20" W
N 08°07'20

MONUMENT #	NORTHING	EASTING	DESCRIPTION
1	294607.0	2916856.4	5/8 REBAR BENT BASE
2	293077.4	2916874.8	5/8 REBAR FLUSH (9' SWLY OF LINE)
3	294785.1	2914796.2	REBAR 2317 FLUSH WITH PAVE
4	295127.0	2913819.7	5/8 REBAR
5	295179.4	2913257.8	5/8 REBAR BELOW GRADE
6	295235.4	2912660.7	5/8 REBAR BELOW GRADE
7	295262.5	2912377.2	5/8 REBAR BELOW GRADE
8	295357.1	2910852.3	2" PIPE
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10	295365.5	2910763.7	5/8 REBAR
11	297030.2	2910591.5	3/4 REBAR
12	296924.0	2910751.3	IRON ROD WITH COPPER CAP
13	296885.9	2911158.5	5/8 REBAR BASE
14	296798.7	2912082.8	3/4 PIPE BASE
15	296742.0	2912678.0	5/8 REBAR
16	296734.1	2912757.3	5/8 REBAR FLAT ON GROUND
17	NONE	NONE	NONE
18	297073.1	2913169.6	5/8 REBAR PLS 2147
19	297140.0	2913250.7	3/4 REBAR
20	297253.6	2913337.6	3/4 REBAR PLS 2147
21	297406.7	2913406.4	3/4 REBAR PLS 2147
22	297551.5	2913520.1	MAGNAIL W/WASHER PLS 1205
23	297629.9	2913617.2	5/8 REBAR PLS 2317
24	297664.5	2913621.2	5/8 REBAR PLS 2147
25	297812.9	2913501.6	5/8 REBAR PLS 2117
26	297857.8	2913458.0	5/8 REBAR BASE
27	297397.9	2913136.8	5/8 REBAR BENT
28	297195.6	2912994.3	5/8 REBAR PLS 2147
29	297102.8	2912929.2	5/8 REBAR
30	297338.2	2912782.3	5/8 REBAR
31	298384.4	2912133.9	3/4 REBAR BELOW GRADE
32	298991.5	2912816.5	5/8 REBAR
33	298315.8	2913498.0	5/8 REBAR
34	298345.7	2913529.0	1 PIPE
35	298412.2	2913602.5	1 PIPE
36	298302.6	2913704.4	5/8 REBAR PLS 1038
37	298370.9	2913778.0	5/8 REBAR
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39	298163.7	2913969.5	3/4 REBAR
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41	297981.8	2914245.9	5/8 REBAR
42	298289.9	2914671.2	5/8 REBAR PLS 2147
43	298324.0	2914799.1	5/8 REBAR PLS 2147
44	298235.6	2914810.7	5/8 REBAR PLS 509
45	298011.8	2914394.7	5/8 REBAR PLS 2147
46	297834.5	2914168.8	5/8 REBAR (MISSING IN MAY 2015)
47	299405.4	2914970.0	GRANITE MONUMENT FOUND
48	299600.2	2914970.8	5/8 REBAR 2082
49	299646.9	2914968.1	5/8 REBAR 2082
50	299774.9	2914960.8	5/8 REBAR 2082
51	299817.0	2915065.2	1 1/2 PIPE
52	299650.5	2915186.1	1 PIPE

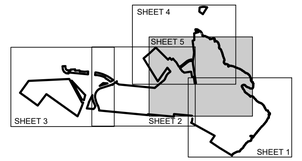
MONUMENT #	NORTHING	EASTING	DESCRIPTION
53	299870.8	2915228.8	CONC. MON-FLUSH
54	299913.3	2915266.2	1 PIPE
55	299944.7	2915216.5	3/4 REBAR 1280 INSIDE PIPE
56	300001.8	2915085.8	3/4 REBAR
57	295936.6	2909077.0	MT A-GRANITE
58	296386.8	2906704.0	3/4 REBAR PLS 2082
59	295750.3	2906211.4	1 PIPE
60	296168.2	2905641.9	3/4 REBAR PLS 2082
61	296459.5	2905230.3	GRANITE MONUMENT FOUND
62	296484.2	2905244.0	3/4 REBAR PLS 2082
63	296734.3	2905428.1	3/4 PIPE
64	297124.3	2905708.2	GRANITE MONUMENT FOUND
65	296326.0	2908871.6	MT A-GRANITE
66	297139.5	2908113.9	5/8 REBAR MT A
67	297555.3	2907807.7	5/8 REBAR MT A
68	297638.4	2907681.3	5/8 REBAR MT A
69	297770.5	2907622.4	5/8 REBAR MT A
70	297777.8	2908305.6	3/4 REBAR
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75	297600.3	2907920.0	MT A-GRANITE
76	297603.7	2909438.3	5/8 REBAR MT A
77	297261.7	2910013.6	5/8 REBAR MT A
78	297310.0	2909984.4	MT A-GRANITE
79	297453.2	2909423.7	MT A-GRANITE
80	295554.5	2909336.2	3/4 REBAR 2282
81	295584.6	2908958.4	1" PIPE

NOTES

1. BOOK AND PAGE CITATIONS SHOWN HEREON REFER TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. NO MONUMENTS WERE SET AS OF THE DATE OF THIS PLAN.
3. A WRITTEN REPORT OF FINDINGS AND OPINIONS AS REQUIRED BY SECTION 10.A.3.D OF THE TECHNICAL STANDARDS OF PRACTICE OF THE STATE OF MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS WAS NOT PREPARED.
4. THE PURPOSE OF THIS SURVEY WAS TO DEFINE THE PERIMETER BOUNDARY OF THE PORTLAND INTERNATIONAL JETPORT PARCEL AND ACCESSORY PARCELS IN THE VICINITY OF THE JETPORT. INTERIOR PARCEL BOUNDARIES WERE NOT RESEARCHED OR DEFINED EXCEPT WHERE REQUIRED TO DEFINE THE PERIMETER BOUNDARY. EASEMENTS DEPICTED ON THIS PLAN WERE NOT COMPLETELY RESEARCHED OR LOCATED IN THE FIELD BUT SHOW THEIR GENERAL LOCATION RELATIVE TO THE PERIMETER BOUNDARY.
5. AERIAL PHOTOGRAPHY SHOWN WAS TAKEN IN 2015.
6. CURRENT OWNER: CITY OF PORTLAND
389 CONGRESS ST.
PORTLAND, MAINE 04101

LEGEND

- 1 — MONUMENT FOUND WITH REFERENCE NUMBER
- 79 (H) — HIGHWAY MONUMENT FOUND WITH REFERENCE NUMBER
- 64 □ — STONE/GRANITE FOUND WITH REFERENCE NUMBER
- —— EASEMENT BOUNDARY
- ━━━ PROPERTY LINE
- ——— INTERIOR PARCEL BOUNDARY
- — — — APPROXIMATE ABUTTER BOUNDARY
- (E105) 12 — PARCEL NUMBERING CORRESPONDS WITH DRAWING "PORTLAND INTERNATIONAL JETPORT EXHIBIT "A" DATED 7-9-2018, BY COFFMAN ASSOCIATES



SHEET INDEX
NOT TO SCALE



GRID NORTH
MAINE COORDINATE SYSTEM OF 1983 (2011)
WEST ZONE

SCALE: 1"= 200'

200' 0 200' 400' 600' 800'

SURVEY STANDARD

THIS PLAN WAS PREPARED FROM INFORMATION OBTAINED BY A SURVEY CONFORMING SUBSTANTIALLY TO THE REQUIREMENTS OF TECHNICAL STANDARDS CONTAINED IN CHAPTER 90, PART 2, OF THE RULES OF THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS, EFFECTIVE APRIL 1, 2001.

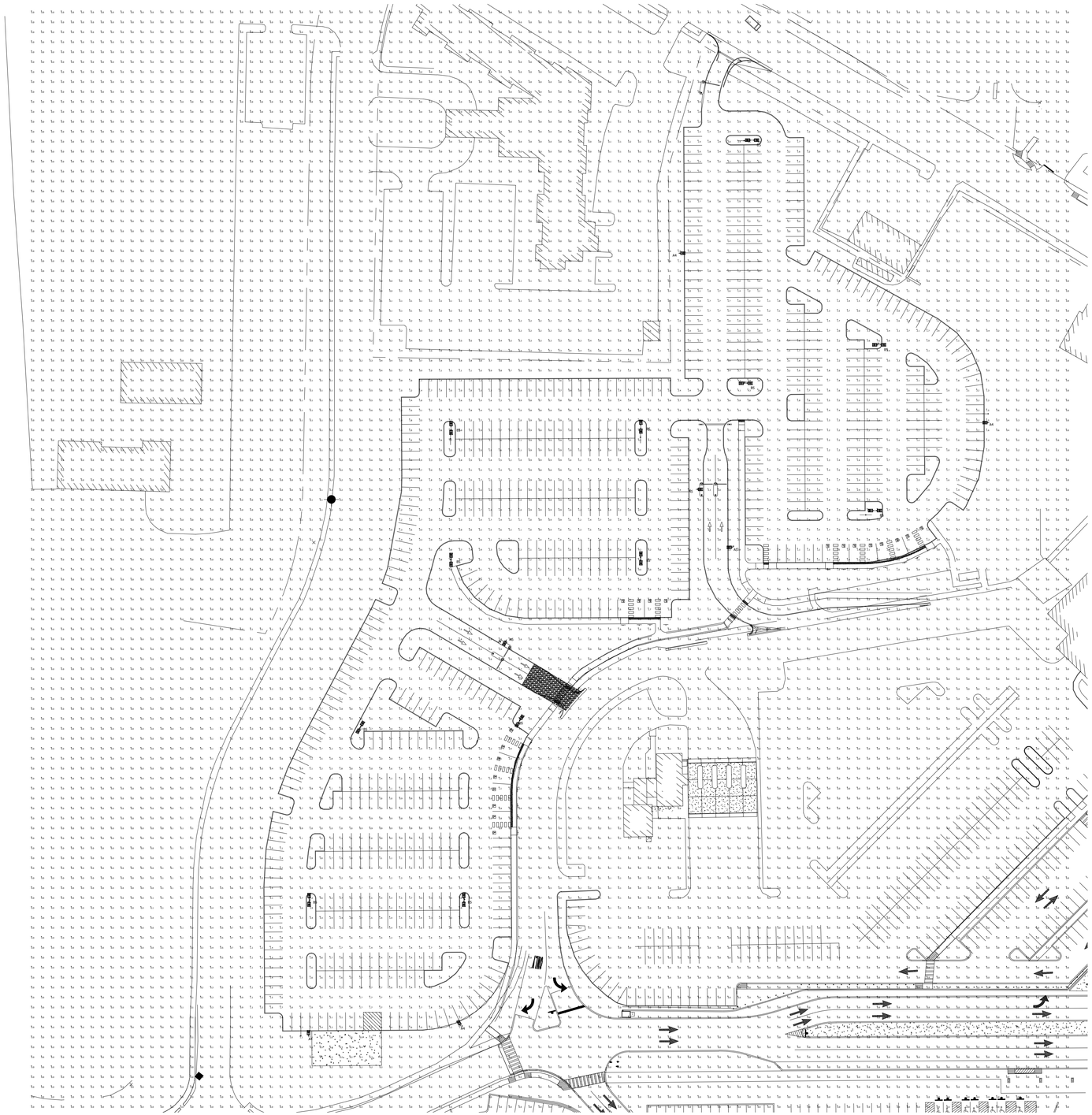
CLARK G. STAPLES, MAINE LICENSED
PROFESSIONAL LAND SURVEYOR No. 2332

STATE OF MAINE — CLARK G STAPLES — NO. 2332 — PROFESSIONAL LAND SURVEYOR

BOUNDARY SURVEY
OF LANDS OF
THE CITY OF PORTLAND
IN THE VICINITY OF
THE PORTLAND INTERNATIONAL JETPORT
-PORTLAND & SOUTH PORTLAND-
CUMBERLAND COUNTY, MAINE
FOR
Stantec

GOOD DEEDS
LAND SURVEYING • DEED RESEARCH
109 MAIN STREET
BELFAST, ME 04915
(207) 338-5743

DWG: 14078 MASTER PLAN 20220126.DWG
DATE: JANUARY 26, 2022
SCALE: 1"=200'
SHEET: 5 OF 5



Luminaire Schedule							
Symbol	Qty	Label	Mounting Height	LLF	Lum. Lumens	Lum. Watts	Description
	3	A5	30' - 0" AFG	0.900	23445	240	VP-2-72L-240-3K7-5QW
	12	B5	30' - 0" AFG	0.900	23445	240	VP-2-72L-240-3K7-5QW
	4	A4	30' - 0" AFG	0.900	21466	240	VP-2-72L-240-3K7-4W

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Overall Area	Illuminance	Fc	0.53	4.8	0.0	N.A.	N.A.
Parking Area	Illuminance	Fc	1.90	4.8	0.5	3.80	9.60

60 0 30 60 120 240

1 Inch = 60 - FT.

1. THIS LIGHTING DESIGN IS BASED ON LIMITED INFORMATION SUPPLIED BY OTHERS TO CURRENT. SITE DETAILS PROVIDED HEREON ARE REPRODUCED ONLY AS A VISUALIZATION AID. FIELD DEVIATIONS MAY SIGNIFICANTLY AFFECT PREDICTED PERFORMANCE. PRIOR TO INSTALLATION, CRITICAL SITE INFORMATION (POLE LOCATIONS, ORIENTATION, MOUNTING HEIGHT, ETC.) SHOULD BE COORDINATED WITH THE CONTRACTOR AND/OR SPECIFIER RESPONSIBLE FOR THE PROJECT.
2. LUMINAIRE DATA IS TESTED TO INDUSTRY STANDARDS UNDER LABORATORY CONDITIONS. OPERATING VOLTAGE AND NORMAL MANUFACTURING TOLERANCES OF LAMP, BALLAST, AND LUMINAIRE MAY AFFECT FIELD RESULTS.
3. CONFORMANCE TO FACILITY CODE AND OTHER LOCAL REQUIREMENTS IS THE RESPONSIBILITY OF THE OWNER AND/OR THE OWNER'S REPRESENTATIVE.

TITLE:

PORTLAND JETWAY
PORTLAND, ME
SITE PHOTOMETRIC PLAN

REVISED FROM DRAWING NUMBER(S):	
R1: 11/27/23	R5: 02/07/24
R2: 01/23/24	
R3: 01/30/24	
R4: 02/05/24	

Current

DN BY: DHK	DATE: 11/17/23	CHK BY: N/A
REV. BY: DHK	DATE: 02/05/24	SCALE: AS NOTED
QUOTE: N/A	DRAWING / DESIGN NO.: A232214R5	

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

January 28, 2025

Paul Bradbury
Portland International Jetport
1001 Westbrook Street
Portland, ME 04102

Project Name:	Major Site Plan
Project ID:	PL-002853-2024
Address:	1001 Westbrook Street
CBL:	447 A001001
Applicant:	Portland International Jetport
Planner:	Zach Powell

Dear Paul Bradbury:

On January 28, 2025, the Planning Board approved a major site plan project at 1001 Westbrook Street to facilitate the expansion of an existing short-term paved parking lot and unpaved surface parking area to create a paved parking lot with 667 long-term parking spaces and installation of a 1.9-megawatt storage system. The property is located in the A-B Airport Business Zone. Based on the information provided to the Board in the application, plans, reports, through testimony and other information submitted by the applicant, the Planning Board [adopts/does not adopt] the findings, conclusions and recommendations contained in the Planning Board Report for the public hearing on January 28, 2025, which is attached hereto and incorporated herein by reference. Based upon those findings, conclusions, and recommendations, the Planning Board found that the application met all relevant standards and voted [vote count] to approve the application with the following conditions as presented below.

A. WAIVERS

On the basis of the application, plans, reports, and other information submitted by the applicant, findings and recommendations contained in the Planning Board Report for the public hearing on January 28, 2025 for application 002853-2024 at 1001 Westbrook Street relevant to the Site Plan Standards of the Land Use Code and the City of Portland's Technical Manual, and other regulations, and the testimony presented at the Planning Board hearing:

1. Sidewalks on Jetport Boulevard & Westbrook Street
   The Planning Board [finds/does not find] based upon the City's Review, that extraordinary conditions exist or undue hardship may result from strict compliance with §14.6.1(B)(3)(a) of the Land Use Code, which requires the installation of a sidewalk along all site frontages, that substantial justice and the public interest are secured with the proposed variation in this standard, and that variation is consistent with the intent of the ordinance. The Planning Board [waives/does not waive] §14.6.1(B)(3)(a) of the Land Use Code to allow for no sidewalk to be installed on Jetport Boulevard and Westbrook Street.

2. Impacts to Significant Natural Features

The Planning Board [finds/does not find] based upon the City's Review, that extraordinary conditions exist or undue hardship may result from strict compliance with §14.6.2(A)(1) of the Land Use Code which requires the preservation and protection of significant natural features through incorporation into the site design, that substantial justice and the public interest are secured with the proposed variation in this standard, and that variation is consistent with the intent of the ordinance. The Planning Board [waives/does not waive] §14.6.2(A)(1) of the Land Use Code to allow the fill of ±11,151 square feet of wetlands.

3. Parking Lot Island Landscaping
   The Planning Board [finds/does not find] based upon the City's Review, that extraordinary conditions exist or undue hardship may result from strict compliance with §14.6.2(C)(3)(a) of the Land Use Code, which requires the planting of two trees (or one tree and three shrubs) per five parking spaces in landscaped islands, that substantial justice and the public interest are secured with the proposed variation in this standard, and that variation is consistent with the intent of the ordinance. The Planning Board [waives/does not waive] §14.6.2(C)(3)(a) of the Land Use Code to permit the planting of 24 trees in landscaped islands.

4. Minimum Parking Lot Island Width
   The Planning Board [finds/does not find] based upon the City's Review, that extraordinary conditions exist or undue hardship may result from strict compliance with §4.5.5 of the Technical Manual, which requires a minimum parking lot island width of 8 feet (not including curbing), that substantial justice and the public interest are secured with the proposed variation in this standard, and that variation is consistent with the intent of the ordinance. The Planning Board [waives/does not waive] §4.5.5 of the Technical Manual to allow for the installation of a landscaped island where a portion of the island is less than 8 feet in width (3.5 feet).

5. Direct Discharge of Treated Stormwater into Fore River
   The Planning Board [finds/does not find] based upon the City's Review, that extraordinary conditions exist or undue hardship may result from strict compliance with §5(III) of the Technical Manual which requires compliance with Chapter 500 Rules for Stormwater Management, that substantial justice and the public interest are secured with the proposed variation in this standard, and that variation is consistent with the intent of the ordinance. The Planning Board [waives/does not waive] §5(III) of the Technical Manual to allow the direct discharge of treated stormwater from the site into the Fore River.

B. SITE PLAN REVIEW

On the basis of the application, plans, reports, and other information submitted by the applicant, findings and recommendations contained in the Planning Board Report for the public hearing on January 28, 2025 for application PL-002853-2024 at 1001 Westbrook Street relevant to the site plan regulations and the testimony presented at the Planning Board hearing, the Planning Board [finds/does not find] that the plan is in conformance with the site plan standards of the Land Use Code subject to the following conditions of approval:

PRIOR TO THE ISSUANCE OF A BUILDING PERMIT

1. The applicant shall submit evidence of approvals from Maine DEP for the Site Location of Development & NRPA applications associated with the project.
2. The applicant shall provide an ability to serve letter from Central Maine Power (CMP).
3. The Applicant shall submit an updated site plan set detailing the materiality, height, and structural components of the proposed privacy fence screening the battery storage.

PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY

1. The Applicant shall submit verification that Level 1 chargers for 56 parking spaces have been installed in the structured parking at the Jetport.
2. The applicant shall contribute to the tree fund in the amount of $400 per tree for 127 trees, for a total of $50,800 associated with the waiver for parking lot island landscaping or the applicant shall provide the Planning Authority with documentation that the additional 127 trees have been planted throughout the Jetport property.

C. PLANNING BOARD DECISION

On the basis of the findings, conclusions, and recommendations contained in the Planning Board report for the public hearing on January 28, 2025 related to application PL-002853-2024 for 1001 Westbrook Street, which is attached to the draft approval letter and incorporated therein, the Planning Board [adopts/does not adopt] the approval letter as drafted as the Planning Board's decision for application PL-002853-2024, and authorizes the Planning Board Chair to sign the approval letter as drafted.

The approval is based on the submitted plans and findings related to site plan review as contained in the Planning Board report dated January 28, 2025 for application PL-002853-2024 which is attached.

Standard Procedures

Note: The following standard procedures and requirements apply to all approved site plans:

1. Site Plan Expiration The site plan approval will be deemed to have expired unless work has commenced within one (1) year of the approval or within a time period up to three (3) years from the approval date as agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the one (1) year expiration date.

2. Separate Building Permits Are Required This approval does not constitute approval of building plans, which must be reviewed and approved by the City of Portland's Permitting and Inspections Department.

3. Performance Guarantee and Inspection Fees A performance guarantee covering the site improvements and an inspection fee payment of 2.0% of the guarantee amount and three (3) final sets of plans must be submitted to and approved by the Planning and Urban Development Department and Public Works Department prior to the release of a building permit, street opening permit or certificate of occupancy for site plans.

4. Construction Management Plans The applicant, contractor and subcontractors are required to conform to the approved Construction Management Plan, and all conditions contained within the project's approval, for the entire duration of the project. Any amendments to the approved Construction Management Plan shall be reviewed and approved by the Department of Public Works prior to the execution. The Planning Authority and the Department of Public Works have the right to seek revisions to an approved Construction Management Plan. The applicant shall coordinate the project's construction schedule with the timing of nearby construction activities to avoid cumulative impacts on a neighborhood and prevent unsafe vehicle and pedestrian movements. Accordingly, nearby construction activities could involve a delay in the commencement of construction.

5. Preconstruction Meeting Prior to the release of a building permit and scheduling of a preconstruction meeting, a hard copy set of approved plans shall be submitted to the Development Review Coordinator. A pre-construction meeting shall be held at the project site with the contractor, Development Review Coordinator, Public Works representative, and owner to review the construction schedule and critical aspects of the site work. At that time, the Development Review Coordinator will confirm that the contractor is working from the approved site plan and the approved Construction Management Plan. The site/building contractor shall provide one (1) copy of a detailed construction schedule to the attending City representative. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre-construction meeting.

6. Department of Public Works Permits If work or obstructions will occur within the public right-of-way, such as utilities, curb, sidewalk, driveway construction, site deliveries and equipment siting, a Street Opening and/or Occupancy Permits are required for your site. Please contact the Department of Public Works Permit Clerk at (207) 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)

7. Develop Site According to Plan The site shall be developed and maintained as depicted on the site plan and in the written submission of the applicant. Any modifications of an approved site plan or alteration of a parcel, or of any approved exterior elevations, which were the subject of site plan approval after May 20, 1974, shall require the prior approval of an amended site plan by the Planning Board or Planning Authority pursuant to the terms of Chapter 14, Land Use, of the Portland City Code.

8. Stormwater Management The owner/operator of an approved stormwater management system, and all assigns shall comply with the conditions of Chapter 32, Stormwater including Article III, Post Construction Stormwater Management, which specifies the annual inspections and reporting requirements.

   A maintenance agreement for the stormwater drainage system, as attached, or in substantially the same form, shall be submitted for review by Corporation Counsel. Once approved, the document shall be signed and recorded at the Cumberland County Registry of Deeds prior to the issuance of a building permit. Final copies shall be submitted to both the Department of Planning and Urban Development and the Department of Public Works.

9. Third Party Inspections For all sites with one acre or greater of disturbance, the applicant shall retain the services of a third-party inspector for the duration of construction until final site stabilization is in place. The inspection is required in order to ensure that all construction and stabilization activities comply with the approved drawings and specifications; that field decisions regarding erosion control implementation, stormwater system installation, and natural resource protection are based on sound engineering and environmental considerations; and that any changes to the development's erosion control plan, stormwater management plan, or final stabilization plan is communicated to the City of Portland for additional review and approval.

   The inspector will submit weekly written reports to the Stormwater Coordinator(s) in the Water Resources Division of Public Works. Reports must include: project ID, project address, the date(s) and time(s) of inspection(s), site photographs of areas under construction, and the date(s) and approximate duration(s) of any rainfall events. The report will identify and describe any erosion problems or discharge of pollutants and what actions will be taken to address these issues and repair any damage to other properties or natural resources, actions to eliminate the erosion source, and actions to prevent future sediment discharges from the area.

10. Defect Guarantee A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.

11. As-Built Final Plans Final sets of as-built plans shall be submitted digitally to the Planning and Urban Development Department, on a CD or DVD, in AutoCAD format (.dwg), release AutoCAD 2005 or greater. Please provide one hard copy of the mylar.

12. Mylar Copies Mylar copies of the as-built drawings for the public streets and other public infrastructure in the subdivision must be submitted to Public Works prior to the issuance of a certificate of occupancy.

13. Impact Fees New development or changes of use that result in net new residential dwelling units, non-residential building square footage, or water meters, are subject to the City of Portland's impact fee ordinance (Chapter 14, Article XVII). Impact fees are calculated at the time of building permit and must be paid prior to the certificate of occupancy. For more information, visit https://www.portlandmaine.gov/2409/Impact-Fees

The Development Review Coordinator must be notified five (5) working days prior to the date required for final site inspection. The Development Review Coordinator can be reached at the Planning and Urban Development Department

at drc@portlandmaine.gov or (207)874-8901. All site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact Zach Powell at (207) 756-8083 or via email at zpowell@portlandmaine.gov.

Sincerely,

Brandon Mazer, Planning Board Chair

Attachments:
1. Planning Board Report
2. Portland City Code: Chapter 32
3. Sample Stormwater Maintenance Agreement
4. Performance Guarantee Packet