

CITY OF PORTLAND, MAINE

PLANNING BOARD



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

AGENDA PORTLAND PLANNING BOARD MEETING

The Portland Planning Board will hold a remote meeting on Tuesday, April 28, 2020 at 4:30 p.m. This meeting will take place using Zoom.

Virtual meetings are allowed using emergency legislation approved by LD 2167; 1 M.R.S. §403-A, that authorizes cities and towns to conduct meetings online.

Allow your computer to install the free Zoom app to get the best meeting experience.

ZOOM MEETING INSTRUCTIONS

You are invited to a Zoom webinar.

When: Apr 28, 2020 04:30 PM Eastern Time (US and Canada)

Topic: Planning Board Public Hearing 4/28/2020

Please click the link to join the webinar: <https://zoom.us/j/91417491566>

For public comment, you will need to use the "raise your hand" feature. To raise your hand via the telephone, please hit *9. You will be un--muted by the host when it is time for public comment.

Or iPhone one-tap :

US: +13126266799,,898815380# or +19292056099,,898815380#

Or Telephone:

Dial(for higher quality, dial a number based on your current location):

**US: +1 312 626 6799 or +1 929 205 6099 or +1 253 215 8782 or +1 301 715 8592 or
+1 346 248 7799 or +1 669 900 6833**

Webinar ID: 914 1748 1566

International numbers available: <https://zoom.us/j/91417491566>

For more information on how to use Zoom, please go to <https://www.portlandmaine.gov/remotepanningboard>

Public comments will be taken for each item on the agenda during the estimated allotted time and written comments should be submitted to planningboard@portlandmaine.gov.

AFTERNOON PUBLIC HEARING - 4:30 PM

1. ROLL CALL AND DECLARATION OF QUORUM

2. COMMUNICATION AND REPORTS

3. REPORT OF ATTENDANCE AT THE MEETING HELD ON 4-21-2020

104 Grant Street: Chann, Dundon, Dunfey, Mazer, Silk and Smith present; Stanley recused.

4. REPORTS OF DECISIONS AT THE MEETING HELD ON 4-21-2020

- i. Level III Site Plan, Subdivision and Inclusionary Zoning; 104 Grant Street; Renewal Housing Associates, LLC., Applicant. Dundon moved and Silk seconded a motion to waive the Technical Manual standard for parking space dimensions of 9 feet in width to allow parking spaces of 8.5 feet in width. Vote 6-0, Stanley recused. Dundon moved and Silk seconded a motion to waive the Technical Manual standard requiring the drive aisle width for right angle parking to be 24 feet to allow a width of 20 feet. Vote 6-0, Stanley recused. Dundon moved and Silk seconded a motion to waive the Technical Manual standard requiring the driveway width for right angle parking to be 24 feet to allow a driveway width measuring 16 feet. Vote 6-0, Stanley recused. Dundon moved and Silk seconded a motion to approve the site plan application with five conditions of approval. Vote 6-0, Stanley recused. Dundon moved and Silk seconded a motion to find the plan in conformance with the conditional use standards for Workforce Housing with two conditions of approval. Vote 6-0, Stanley recused. Dundon moved and Silk seconded a motion to approve the subdivision application with five conditions of approval. Vote 6-0, Stanley recused.

5. NEW BUSINESS

- i. Level III Site Plan; 100 Andover Road; MaineHealth dba Maine Behavioral Healthcare, Applicant. (estimated time 4:30 – 5:30 p.m.) The Planning Board will hold an afternoon public hearing to review a proposal for the development of a 28,200 square foot medical office building. The subject property is 9.3 acres in size and is zoned I-M.
- ii. Level III Site Plan and Subdivision; 77 Lambert Street; 75-81 Lambert, LLC., Applicant. (estimated time 5:30 p.m.) The Planning Board will hold an afternoon public hearing to review a proposal for three residential duplex condominiums. The subject property is a 38,332 square foot lot zoned R-5.

PLANNING BOARD REPORT

PORTLAND, MAINE



100 Andover Road Development

Level III Site Plan Review

Maine Behavioral Healthcare, LLC, Applicant

PL-000930-2019

CBL: 239 A003

Submitted to: Portland Planning Board
Public Hearing Date: April 28, 2020

Prepared by: Andrew Tufts, Planner
Date: April 24, 2020

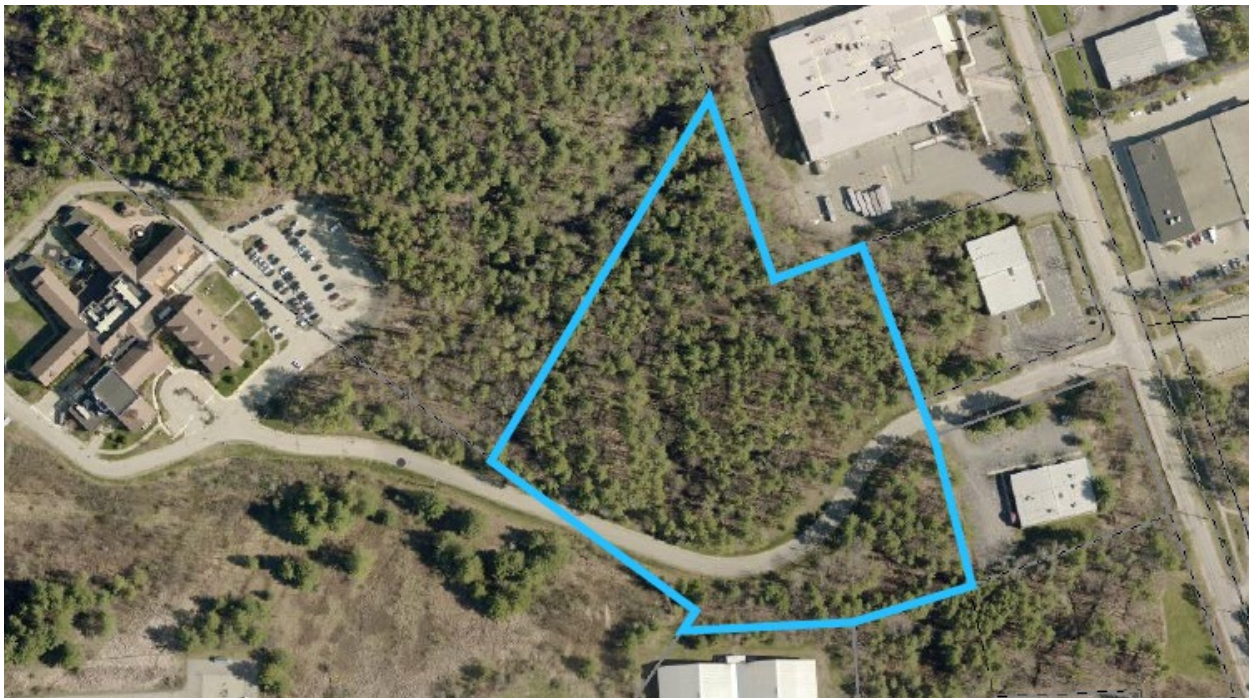


Figure 1: Parcel outline - Source: City of Portland Maine Parcel Viewer

I. INTRODUCTION

MaineHealth LLC, dba Maine Behavioral Healthcare has submitted a Level III Site Plan application for the development of the Center of Excellence in Autism and Developmental Disorders. The property is approximately 9.3 acres along 60' feet of street frontage on Andover Road. The site is located in the IM – Industrial Moderate zone. Medical clinics and professional offices are permitted uses in the IM Zone.

The Planning Department sent 41 notices advertising this meeting to property owners within 500 feet of the site. Legal advertisements ran in the February 15th & February 16th editions of the Portland Press Herald.

Applicant: Maine Behavioral Healthcare, LLC

Consultants: Barry J. Hosmer (Landscape Architect) David Titcomb (Titcomb Associates (Surveying))
Charlie Rizza (Architect) Maureen Mcglone (Ransom Consulting Engineers)

II. REQUIRED REVIEWS

<i>Waiver Requests</i>	<i>Applicable Standards</i>
<i>Review</i>	<i>Applicable Standards</i>
Site Plan	<i>Section 14-526</i>

III. PROJECT DATA

Existing Zoning	I-M Zone
Existing Use	<i>Undeveloped</i>
Proposed Use	<i>Professional Offices – Outpatient Services</i>
Parcel Size	405,480 SF

	<i>Existing</i>	<i>Proposed</i>	<i>Net Change</i>
Building Footprint	NA	28,200 SF	+ 28,200 SF
Building Floor Area	NA	28,200 SF	+ 28,200 SF
Impervious Surface Area	NA	94,100 SF	+ 94,100 SF
Parking Spaces	0	119	+ 119
Bicycle Parking Spaces	0	22	+ 22



Figure 2: Existing Conditions - Source: Andrew Tufts

IV. EXISTING CONDITIONS

The proposed development site is located on 100 Andover Road which is connected to outer Congress Street via Hutchins Drive. The parcel is approximately 9.3 acres in size. To the east of the property is Hydro International, the recently purchased MaineHealth warehouse and professional office building and Hutchins Drive. To the south is APEX Racket and Fitness Club, the American Red Cross and Cross Insurance.

The applicant is Maine Behavioral Healthcare and the owner of the parcel is MaineHealth, LLC. The site is currently undeveloped, and is part of the larger parcel of Spring Harbor Hospital, which was reviewed and approved by the City of Portland in 2002. The site is entirely forested, with a mix of pine and hardwood as the overstory, with wild blueberry and other acid loving shrubs covering much of the understory. Some invasive plants have been identified closer to Andover Road in areas of disturbance. The western portion of the property is a designated wetland. Approximately 1000' feet of wooded buffer is between the site and the Stroudwater River. The site is identified as a potential nesting/ roosting area of Long Nosed Bats, and as such any clearing must occur prior to April 19, 2020, or after September. Owen Haskell, Inc. completed a boundary and topographic survey of the site. There were no existing or proposed easements identified.

On March 27, 2020, the applicant requested advanced site work approval to allow work to proceed in a manner that accommodates a site clearing deadline associated with potential disturbance to the Long-Nose Bat Habitat. This request was approved by the Planning Authority. The applicant's letter of request is attached.



Figure 3: Proposed Site Plan - Source: Walsh Engineering Associates

V. PROPOSED DEVELOPMENT

The proposed development includes a single story, 28,200 square foot building which would house outpatient services, professional offices as well as day treatment services and classrooms. The facility would be called the Center of Excellence in Autism and Developmental Disorders. Much of the care in this type of facility is on a one to one basis of provider and patient. The facility will be open from 8 AM to 5PM, with the education facility running from 9 AM to 2 PM. There are anticipated to be approximately 85 employees. The school would operate in its own wing of the building with its own entrance, occupying roughly 20-40% of the floor area, with the professional offices occupying the remaining space. A playground is proposed at the rear of the building, and is designed with a circuitous path so as to avoid conflict between users of the space. The parking field consists of 113 standard spaces and 6 handicap accessible spaces (85 employees, 39 visitors) comprising 51,530 square feet of impervious and permeable paving. The total area of the project is 93,700 square feet.

VI. PUBLIC COMMENT AND NEIGHBORHOOD MEETING

The applicant team held a neighborhood meeting on the evening of January 29, 2020 from 5:15 PM until approximately 6:35 PM at Spring Harbor Hospital. No one from the public attended the meeting. Attending on behalf of the development team were Barry Hosmer, project Landscape Architect, and Richard Gavin from Maine Behavioral Healthcare. (See Attachment G)

VII. RIGHT, TITLE, & INTEREST AND FINANCIAL & TECHNICAL CAPACITY

The owner of the property is MaineHealth, LLC. The applicant provided a copy of the warranty deed, recorded at the Cumberland County Registry of Deeds in CCRD Book 1740 page 106, which demonstrates their right, title and interest in the property. The applicant team cited their experience and qualifications to demonstrate capacity to design and construct the project. The anticipated total cost of the project is projected to be \$11,900,000. (See Attachments C & D)

IX. ZONING ANALYSIS

Dimensional requirements for this project are dictated by the IM industrial zone.

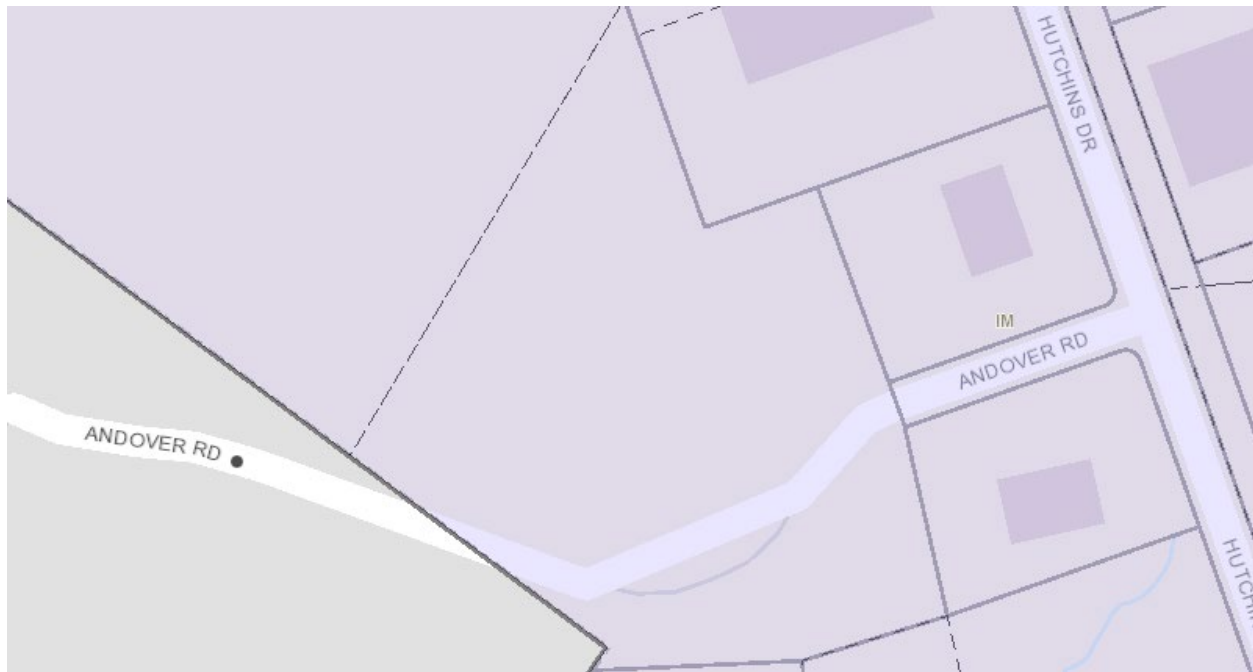


Figure 4: Zoning Map

Zoning Requirements	IM	Provided	+/-
Minimum Lot Size	None	9.3 AC	N/A
Minimum Street Frontage	60 ft	60 ft	+/-
Front Yard	Minimum: 27 ft	Minimum: 75 ft	+ 48 ft
Minimum Side Yard	25 ft	39 ft	+ 14 ft
Yard Left	25 ft	275 ft	+ 250 ft
Minimum Rear Yard	25 ft	125 ft	+ 100 ft
Maximum Lot Coverage	75%	23%	- 52%
Maximum Structure Height	75 ft	27 ft	- 48 ft
Parking	71	119	+ 48
Bicycle Parking	21 spaces	22 spaces	+1

IX. DEVELOPMENT REVIEW**A. SITE PLAN SUBMISSION REQUIREMENTS (Section 14-527)****SITE PLAN STANDARDS (Section 14-526)**

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's site plan ordinance and applicable regulations. Staff comments are listed below.

1. Transportation Standards**a. Impact on Surrounding Street Systems and Access and Circulation**

The site is located on Andover Street which is connected to outer Congress Street via Hutchins Drive. The site will be served primarily by passenger vehicles. A limited number of shuttle buses or vans may bring some students, and a trash vehicle will need to access the dumpster to the rear of the building. Deliveries would access the building through the front door. The parking lot system was designed to have a separate drop off lane for students and patients with limited parking just south of the building, for safety purposes. The main travel way for staff, patients and parents is located south of the landscaped island. The project has provided 6 universal handicap spaces.

Per ADA, an accessible route to a building entrance must be provided from the sidewalk serving the site. This has been addressed by the applicant since the planning board workshop. **(See Attachment L – TRAFFIC IMPACT STUDY)**

b. Sidewalks

Andover Street is a private way and sidewalks exist along the frontage of the site. Sidewalks must be repaired and brought to standards post construction.

c. Public Transit Access

Andover Street is private and does not currently fall within a METRO service route; therefore, service is not directly available at the site.

d. Parking

The proposed parking would provide 119 surface parking spaces consisting of 113 standard spaces and 6 handicap accessible spaces. The Land Use Code requires 71 spaces based on a ratio of 1 space/400 SF. All new surface parking shall be paved. Porous pavement is proposed for much of the surface parking field.

e. Bicycle Parking

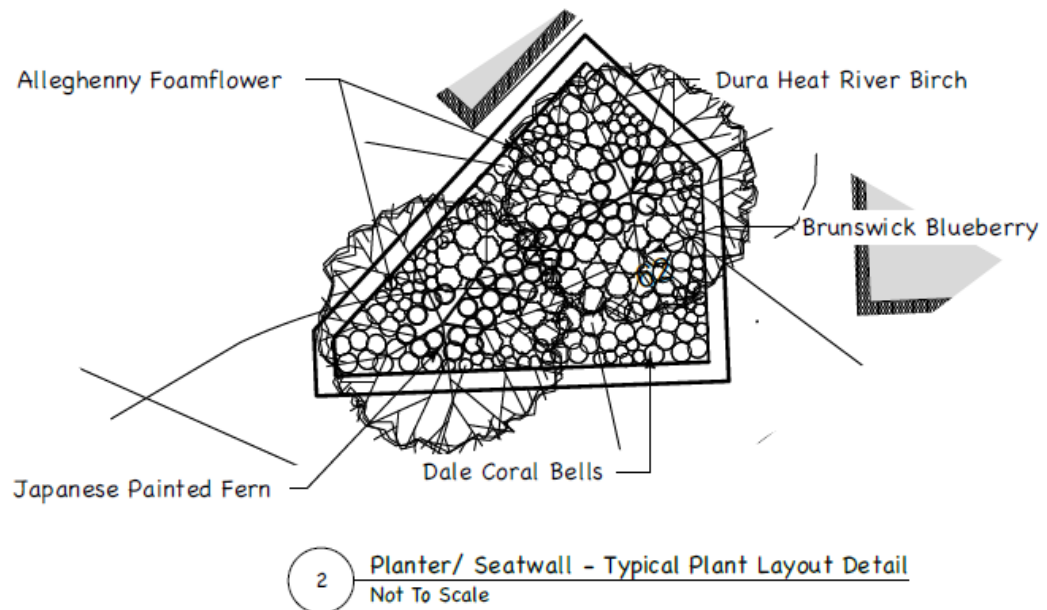
The applicant is proposing 22 bicycle spaces, meeting the requirement of 21 spaces.

2. Environmental Quality Standards**a. Preservation of Significant Natural Features**

The site has been identified as habitat for the Long Nose Bat, which is a threatened species. The applicant has received the necessary approval for advanced site work to

accommodate clearing so as to not disrupt the bat habitat and paid a fee in lieu. The conditions of the permit state that any clearing must occur before April 19, 2020, which is the anticipated time the bats would return. Approximately 55 acres have been preserved to the north of the site as deer bed habitat.

b. Landscaping and Landscape Preservation



A landscaping plan was submitted by Barry Hosmer Landscape Architects as part of the application. The proposed parking lots will contain landscaping that is consistent with the City's technical standards. The applicant has attempted to reduce the footprint of the proposed development so as to limit disturbance to the existing landscape. The landscaping incorporates a variety of native plantings as well as other varieties. The landscape plan includes a note mandating that under no conditions may snow be plowed and piled on planting areas. **(See Attachment P.4 LANDSCAPE)**

c. Water Quality, Storm Water Management and Erosion Control

The topography of the undeveloped site has several higher upland areas separated by pockets of wetlands. The native soil in this location are Hydrologic Soil Groups (HSG) C and D. Stormwater runoff from the site flows into the on-site wetlands and then off-site in 8 different locations. The site is in Zone X of FEMA's Flood Insurance Rate Map (FIRM), indicating that it is outside of the 500-year floodplain.

The proposed developed area which includes the proposed building, pavement and sidewalk totals 128,971 sf; of which 93,700 sf is new impervious surface and 35,270 sf is landscaped area. There will also be two outlet control structures that discharge to two analysis points. The runoff will discharge to the same points both pre and post development, with equal or decreased flows in the post development conditions with no

changes in existing channel geometry. Erosion and sedimentation control measures during construction are detailed within the design plans.

There is roughly 1,000 feet of vegetated buffer between the proposed site and the Stroudwater River, with pre-development flows exceeding the expected post-development flows for 2, 10, and 25-year storms. There is approximately 3,146 sf of wetland impact.

The project is required to comply with Maine DEP Chapter 500 and City of Portland Technical Manual Section 5 stormwater regulations. The project requires a Maine DEP Site Location of Development Act (SLODA) permit, and given the site's location abutting the City line, DEP conducted the SLODA review in-house and did not delegate to the City. The SLODA permit application and a Natural Resources Protection Act (NRPA) Tier 2 Wetland Alteration permit were submitted to DEP on August 27, 2019, and were determined complete on September 18, 2019. **(See Attachment O – STORMWATER FULL REPORT)**

On November 13, 2019, the Army Corps of Engineers authorized the placement of fill in freshwater wetlands as indicated on the NRPA Wetland Alteration Permit.

3. Public Infrastructure and Community Safety Standards

a. Public Safety and Fire Prevention

The site would provide access from the primary driveway for emergency vehicles. Fire hydrants would be located along Andover Street. The facility would be fully sprinklered.

b. Availability and Adequate Capacity of Public Utilities

The Applicant is securing letters from the applicable utilities stating their ability to serve the site. The project will require new electrical, gas, sewer, and water services to the facility. An ability to serve letter has been requested from the Portland Water District, and a Wastewater Capacity Application has been approved by Brad Roland, P.E., Senior Project Engineer, at the City of Portland. **(See Attachment P8. UTILITIES)**

4. Site Design Standards

a. Snow and Ice Loading

Snow will be removed from the parking lots and stockpiled within the site perimeter or if necessary, removed from the site.

b. View Corridors

The site is not located within any corridors identified in the Downtown Vision View Corridor Protection Plan.

c. Historic Resources

The development is not located within a designated historic district.

d. Exterior Lighting

The applicant has submitted a photometric plan and has demonstrated that no light trespass will occur to neighboring properties. **(See Attachment P.9 Lighting Photometric Plan)**

e. Noise and Vibration

All heating, ventilation, air conditioning equipment including air handlers and generators are designed to meet local, state, and federal emissions and noise requirements. Most of the HVAC equipment is mounted in the middle of the roofs to minimize visibility. Any additional ground mounted equipment for the buildings will be screened.

f. Signage and Wayfinding

All signage shall meet the requirements of the Manual on Uniform Traffic Devices (MUTCD) and Division 22 of the City Code. The proposed hotel and commercial signage can be seen on the architectural renderings.

g. Zoning Related Design Standards

N/A

h. Construction Management Plan

The construction management plan was reviewed and approved by city staff. **(See Attachment P16. CONSTRUCTION MANAGEMENT PLAN)**

X. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Division staff recommends that the Planning Board find the 100 Andover Road development project meets the applicable standards of Portland's Land Use Code.

XI. PROPOSED MOTIONS FOR THE BOARD TO CONSIDER**A. 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 April 28, 2020, for application #PL-000930-2019, 100 Andover Road 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.

XIII. ATTACHMENTS
PLANNING BOARD REPORT ATTACHMENTS

1. COMMENT RESPONSE LETTER

APPLICANT'S SUBMITTALS

A - PROJECT DESCRIPTION
B - SUBMISSION CHECKLIST
C - RIGHT, TITLE, & INTEREST
D - FINANCIAL CAPACITY
E - LIGHTING
F - CONSTRUCTION MANAGEMENT PLAN
G - FIRE
H - NEIGHBORHOOD MEETING
I - SOLID WASTE
J - UTILITIES
K - TRAFFIC STUDY
L - TRAFFIC IMPACT STUDY
M - ZONING ASSESSMENT
N - STATE & FEDERAL APPROVALS
O - STORMWATER MANAGEMENT PLAN FULL REPORT
P - STORMWATER MANAGEMENT PLAN FULL REPORT

PLANS

P1. COVER SHEET
P2. SITE PLAN
P3. EXISTING CONDITIONS
P4. LANDSCAPE
P5. LANDSCAPE PLAN DETAILS
P6. LIGHTING PHOTOMETRIC PLAN
P7. TRAFFIC STUDY
P8. UTILITIES
P9. GRADING AND DRAINAGE PLAN
P10. CONSTRUCTION MANAGEMENT PLAN
P11. BOUNDARY SURVEY
P12. ARCHITECTURAL DRAWINGS
P13. FIRE
P14. DETAILS



Andrew Tufts <atufts@portlandmaine.gov>

100 Andover Street

1 message

Mike Tremblay <mtremblay@portlandmaine.gov>
To: Andrew Tufts <atufts@portlandmaine.gov>

Fri, Feb 21, 2020 at 10:28 AM

Andrew,

Here are my additional comments on 100 Andover Street:

- Per ADA, [an accessible route to a building entrance must be provided from the sidewalk serving the site.](#)
- While the site driveway is served by a private roadway and is thus not subject to the City of Portland's Technical Manual the driveway width is significantly wider than the 24-foot maximum width described in those standards. Excess driveway width encourages faster turning maneuvers and can be a safety issue, especially for pedestrians. Narrowing the driveway width is recommended. Given that the design vehicle is primarily passenger cars with some box trucks, a smaller driveway should be possible.
- Pick-up/drop-off activity, assumed circulation patterns, etc. should be marked on the site plan or, for clarity, a separate plan.

Mike Tremblay, P.E.
Senior Engineer
Engineering Division
Department of Public Works
City of Portland, ME
mtremblay@portlandmaine.gov
P. 207.874.8881 F. 207.874.8852



Project Memo

Prepared for the City of Portland
Planning and Urban Development Department
Planning Division

Date: February 7, 2020

Project: 100 Andover Road – Maine Behavioral Healthcare
Project ID: PL-00030-2019

Attn: Andrew Tufts

Overview: This memo has been prepared in response to comments received from your office dated January 21, 2020 and amended on February 3, 2020. The responses follow the order in which that were written and will identify the reviewer and overall topic reviewed as well as a brief summary of the question with an answer to follow.

Mike Tremblay, DPW P.E. Senior Engineer

Site Plan/ Layout

Concrete sidewalk, north side of building: The site plan drawing has been revised and this revision is reflected on the January 22, 2020 submission.

Design vehicle: Passenger Vehicle: The site will be served primarily by passenger vehicles, a limited number of shuttle buses or vans may bring some students, and a trash vehicle will need to access the dumpster to the rear of the building. Deliveries are primarily anticipated to be from UPS, Fed Ex etc. and would access the building through the front door.

Mountable Curb: This is intended so that a service vehicle for the transformer or other mechanical equipment can back over the curb on to the path and proceed to the southeast corner of the building and park. Any vehicle will not block traffic.

Drop Off and Pick Up Circulation: The parking lot system was designed to have a separate drop off lane for students and patients with limited parking just south of the building, for safety purposes. The main travel way for staff, patients and parents is located south of the landscaped island. We feel for safety reasons this is a desirable layout.

Parking: The staff will use approximately 95 spaces, those would be to the rear of the building and along the periphery of the main travel way. The angular spaces in front, the handicap spaces, as well as a few spaces directly across from the handicap spaces will primary be used by patients, parents and visitors.

Sidewalk Ramp: This will be revised to 4' x 4' on the next drawing submission.

Bicycle Ramp: The project will utilize a "Dero" Bike Hitch and will be included in the next drawing submission.

ADA accessible parking spaces: This facility is not a hospital; it is a professional office building, medical use. Under US Access Board Chapter 5 Parking Spaces 208.2.1 *"Other types of medical facilities not located in hospitals, including doctors' offices, and independent clinics, are not subject to this requirement but to the regular scoping table"*. The regular scoping table is "Minimum Number of Accessible Parking Spaces" Section 208.2. Based on this table we are required to provide 4 accessible spaces with 1 additional van space. This project has provided 6 universal handicap spaces.

Snow Storage: Snow storage is not intended to be placed in a wetland and the outline of the snow storage areas on drawing C-101 will be revised so that it does not overlap the wetland edge. We also encourage limited use of salt and anticipate it primarily being used in the sidewalk areas.

Grading and Drainage

Spot Grades: Most of the conflicts have been revised on the January 22, 2020 submission, but a couple more need to be revised.

Porous Pavement: We are aware that porous pavement requires maintenance and are entering into a 5 year maintenance agreement. The porous pavement was not considered pervious in the drainage calculations. See full stormwater management report with calculations submitted on January 30, 2020.

Diagonal Parking Spot Grades/ Drainage: See revised C-102 drawing submitted revised on the January 22, 2020.

Traffic

TMP: A traffic study was submitted on January 28, 2020 and a Scoping Meeting was held on February 6, 2020.

Ben Pearson, PE Water Resources Compliance Coordinator

Construction Management Plan (CMP): A dewatering plan needs to be added to the text of the CMP.

Page 3
February 7, 2020

Lauren Swett - Civil

Building Footprint: These issues have been addressed and the revisions are reflected on drawing C-101 on the January 22, 2020 submission.

Grading/ Drainage structures: These issues have been addressed and the revisions are reflected on drawing C-102 on the January 22, 2020 submission.

Basic Standards: We will show the construction entrance on the Grading and Drainage plan in the next drawing submission.

General Standards: These issues have been addressed and the revisions are reflected on drawing C-102 on the January 22, 2020 submission.

Flooding Standards: See full stormwater management report with calculations submitted on January 30, 2020.



Barry J. Hosmer, ASLA
Landscape Architect

196 Whitney Avenue, Portland, Maine 04102 207-874-0248

November 20, 2019

Mr. James Rather
Development Review Services Manager
4th Floor, City Hall
389 Congress Street
Portland, Maine 04101

Subject: Maine Behavioral Healthcare
 Center of Excellence in Autism and Developmental Disorders
 123 Andover Road
 Chart, Block, Lot: 239A A003

Dear James,

On behalf of MaineHealth, dba Maine Behavioral Healthcare, we are pleased to submit this Level III Site Plan application along with supporting materials for your review and approval.

The subject property is part of the larger parcel of Spring Harbor Hospital, which was reviewed and approved by the City of Portland in 2002. The planned development will occupy a wooded and undeveloped portion of the site. The site is composed of a small knoll with surface water running off to the west to a small unnamed stream and to the north to the 50+ acre MDEP Deeryard. Approximately 1000' of wooded buffer is between the site and the Stroudwater River. To the east of the property is Hydro International, the recently purchased MaineHealth warehouse and professional office building and Hutchins Drive. To the south is APEX Racket and Fitness Club, the American Red Cross and Cross Insurance.

The proposed project consist of a 28,200 square foot single story building which will house outpatient services, professional offices as well as day treatment services and classrooms. Much of the care in this type of facility is on a one to one basis of provider and patient. The parking field consists of 113 standard spaces and 6 handicap accessible spaces comprising 51,530 square feet of impervious and permeable paving. The total area of the project is 93,700 square feet.

We look forward to working with the Planning Staff in the review of this project. Please feel free to contact me with any questions or concerns you may have regarding the uploaded application and materials.

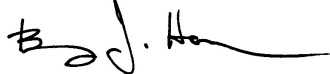
List of Uploaded Application and Documents

- Cover Letter - Project Description
- Level III Site Plan Application
- Right, Title and Interest

- Zoning Assessment Table
- Waiver Request – Waiver Table
- Financial Capability
- Technical Capability
- Construction Management Plan
- Fire Checklist and Plans
- Exterior Light Plan
- Boundary Survey
- Plans
 - Existing Conditions C-100
 - Site Plan C-101
 - Grading and Drainage C-102
 - Utilities C-103
 - Landscape L-100
 - Details C-200
 - Details C-201
 - Details C-202
 - Landscape Details L-200
 - Stormwater Plans
 - Existing Conditions SW-100
 - Post Development SW-101
- Architectural Plans, Elevations and Renderings

Additionally a Site Location of Development Act permit and a Natural Resources of Protection Act – Wetland Alteration permit were submitted to the Maine Department of Environmental Protection in September with a copy hand delivered to your office. The Traffic Analysis and Traffic Impact study is being prepared by James W. Sewall Co, and will be submitted under a separate application.

Sincerely,



Barry J. Hosmer LA
Maine Licensed Landscape Architect
Enc.

CITY OF PORTLAND
Planning & Urban Development Department

LEVEL II and LEVEL III SITE PLAN
GENERAL DOCUMENT AND DRAWINGS CHECKLIST

Please submit each document as a separate PDF file
Please confirm by electronically checking the boxes to the left

**** PLEASE FILL OUT AND UPLOAD SEPARATELY THE ZONING TABLE
AND WAIVER TABLE AS NOTED BELOW ****

GENERAL APPLICATION DOCUMENTS

Yes ☒	NA ☐	Project Description Cover Letter with detailed project description
Yes ☒	NA ☐	Completed Checklist – Level II and Level III Site Plan (this document)
Yes ☒	NA ☐	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 Table listing required and proposed uses and dimensional standards Zoning Assessment Table
Yes ☐	NA ☒	Existing and/or Proposed Easements or Covenants, applicable. Evidence of existing easements and any proposed easements
Yes ☒	NA ☐	Waiver Requests Written request for waiver describing request and reason Waiver Table
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

**LEVEL II AND LEVEL III SITE PLAN
STANDARDS AND SUBMISSION CHECKLIST**
Provide assessment of compliance with standards and include
supplemental documentation, as applicable
Please Submit each document as a separate PDF file

TRANSPORTATION

Yes ☒	NA ☐	Transportation Analysis- Traffic Impact (14-526 (a) 1) - Provisions for pedestrian, bicycle, vehicle, and loading circulation and incremental volume of traffic impacts - Traffic Impact Study (Technical Manual, Section 1) if applicable
Yes ☒	NA ☐	Access and Circulation (14-526 (a) 2 a) - Access and internal circulation, addressing ADA access - Access and egress impacts on traffic flows - Description and use of drive-up features, if applicable
Yes ☐	NA ☒	Loading and Servicing (14-526 (a) 2 b) - Loading and servicing needs, route and travel way geometrics for deliveries - Turning templates for delivery vehicles, if applicable
Yes ☒	NA ☐	Sidewalks (14-526 (a) 2 c) - Sidewalks and condition along street frontages and internal walkways - Engineered details for ADA ramps and public sidewalk details meeting sidewalk materials policy and ADA ramp construction details as applicable (Technical Manual, Section 1)
Yes ☐	NA ☒	Public Transit (14-526 (a) 3), if applicable - Existing available transit services - Proposed site plan design details, such as easement, pad base, and shelter
Yes ☒	NA ☐	Off-Street Parking: Vehicle & Motorcycle/Scooter) (14-526 (a) 4 a and c) - Expected parking demand, proposed parking supply, ADA parking, and applicable Zoning Requirements - Address Technical Manual standards (Section 1) for curb cut separation and parking lot layout and locate on site plan
Yes ☒	NA ☐	Bicycle Parking (14-526 (a) 4 b) - Address bicycle parking requirements and identify locations on-site - Construction details for bike racks (Technical Manual, Section 1)
Yes ☒	NA ☐	Snow Storage (14-526 (a) 4 d) Management plan for snow removal and locate snow storage areas on plan
Yes ☐	NA ☒	Traffic Demand Management (TDM) (14-526 (a) 5), if applicable Develop TDM with Trip Reduction Targets and Strategies

ENVIRONMENTAL AND LANDSCAPE FEATURES		
Yes ☐	NA ☒	Preservation of Significant Natural Features (14-526 (b) 1), if applicable • Trees, plants, habitats listed on State or Federal list of endangered or threatened • High and moderate value waterfowl and wading habitat • Aquifers on Casco Bay Islands • Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) • Proposed preservation areas and protection measures • Documentation from environmental consultants, determinations from applicable state agencies
Yes ☒	NA ☐	Landscaping and Landscape Preservation (14-526 (b) 2 a) • Preservation of trees and preservation within required zoning setbacks (Technical Manual, Section 4) • Protection measures of existing vegetation during construction • Protection measures within Shoreland Zone, if applicable
Yes ☒	NA ☐	Site Landscaping (14-526 (b) 2 b) • Screening and buffering of service areas and between non-residential and residential uses • Planting plans with plant schedule and sizes (Technical Manual, Section 4)
Yes ☒	NA ☐	Parking Lot Landscaping (14-526 (b) 2 b ii), if applicable • Landscaped islands within parking areas (Technical Manual, Section 4)
Yes ☐	NA ☒	Street Trees (14-526 (b) 2 b iii) • Existing Heritage or Feature Trees on site and measures to preserve • Identify street trees on the plan meeting the site plan and Technical Manual standards (Section 4) or identify alternative measures, if applicable
ENVIRONMENTAL AND STORMWATER		
Yes ☒	NA ☐	Water Quality, Stormwater Management and Erosion Control (14-526 (b)3 a) • Stormwater report in compliance with Section 5 of Technical Manual and DEP Chapter 500 stormwater for basic, general and flooding standards, as applicable • Erosion control plan and measures • Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater, as applicable • Subsurface sanitary sewage disposal and groundwater protection

PUBLIC INFRASTRUCTURE AND SAFETY		
Yes ☐	NA ☒	Consistency with City Master Plans (14-526 (c) 1) - Identify consistency with master plans - Proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
Yes ☒	NA ☐	Public Safety and Fire Prevention (14-526 (c)) - Address Crime Prevention through Environmental Design (CPTED) (Technical Manual, Section 3) - Emergency vehicle access - Address consistency with public safety standards (Technical Manual, Section 3) - Submit a code summary referring NFPA 1 and all Fire Department standards (Technical Manual, Section 3) – Fire Checklist
Yes ☒	NA ☐	Availability and Adequacy of Public Utilities (14-526 (c) 3) (Technical Manual, Sections 2 & 9) - Electrical services, including providing underground services - Identify existing and proposed connections for public utilities and required public utility upgrades - Sewer line connections are required, if there is a main within 200 feet - Proposed solid waste management facilities on-site and management for the site - Written evidence of the ability to serve from utility companies, as applicable
SITE DESIGN		
Yes ☐	NA ☒	Massing, Ventilations and Wind Impact (14-526 (d) 1) - Wind and ventilation impacts on adjoining structures and/or adjacent public spaces. Wind study, if applicable - Bulk, location or height impacts on adjoining structures - Identify and locate HVAC equipment and venting away from public spaces and residential properties - Identify screening and manufacturing specifications for noise, if applicable
Yes ☐	NA ☒	Shadows (14-526 (d) 2), if applicable Shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
Yes ☐	NA ☒	Snow and Ice Loading (14-526 (d) 3) Building design to prevent snow and ice from loading or falling onto adjacent properties or public ways
Yes ☐	NA ☒	View Corridors (14-526 (d) 4), if applicable Protection of designated view corridors (Portland Design Manual, Appen. 1)

Yes ☐	NA ☒	Historic Resources (14-526 (d) 5), if applicable • Identify developments within Historic Districts or affecting Designated Landmarks • Certificate of Appropriateness or other evidence • Identify Developments within 100 feet of Historic Districts or affecting Designated Landmarks. Advisory HP review may be required • Address preservation and documentation of Archaeological Resources
Yes ☒	NA ☐	Exterior Lighting (14-526 (d) 6) • Cut sheets of on-site light fixtures and any architectural or specialty lights (Technical Manual, Section 12) • Engineered details for any lights proposed in street right-of-way (Technical Manual, Section 10)
Yes ☐	NA ☒	Noise and Vibration (14-526 (d) 7) • Evidence of noise levels for equipment, such as equipment specifications, to demonstrate consistency with zoning requirements
Yes ☐	NA ☒	Signage and Wayfinding (14-526 (d) 8), if applicable • Signage plan showing the location, dimensions, height and setback of all existing and proposed signs. Signs in Historic Districts are reviewed by Historic Preservation staff • Proposed commercial and directional signage on site
Yes ☒	NA ☐	Zone Related Design Standards (14-526 (d) 5) • Address Historic Preservation Design Review, if applicable • Address any applicable design review standards by zone • Address submission requirements from Design Manual, page 1, addressing neighborhood context • Description of exterior materials, color, finish, and samples
Construction Management Plan		
Yes ☒	NA ☐	Construction Management Plan • Construction Management Document and Plan

**LEVEL II AND LEVEL III SITE PLAN
DRAWINGS CHECKLIST**

Please upload the following DRAWINGS with the listed details into e-Plan as separate pdfs

RECENT BOUNDARY SURVEY (stamped by Maine Licensed Surveyor)

- ☒ Must be in compliance with Technical Manual, Section 13

SITE PLAN(s) (stamped by Maine Licensed Engineer) including:

Existing Conditions

- ☒ Approximate location of structures on abutting property
- ☒ Topography
- ☒ Locate water courses
- ☒ Delineate wetlands
- ☒ Zone lines

Proposed Site Plan

- ☒ Ground floor area, and grade elevations for all buildings

Access, Circulation, and Parking

- ☐ Streets and intersections adjacent to site, any proposed geometric modifications
- ☒ Location, dimensions and materials of all existing and proposed driveways, vehicle, bicycle, & pedestrian access ways with corresponding curb lines
- ☒ Engineered specifications/ cross-sections for proposed driveways, sidewalks & paved areas
- ☐ Location and dimensions of proposed loading areas
- ☐ Existing and proposed transit infrastructure with dimensions/ engineering specifications
- ☒ Location of vehicle and bicycle parking with dimensions and engineering specifications

Site Considerations

- ☒ Identify snow storage areas
- ☒ Location of fire hydrants
- ☒ Location of solid waste management facilities

UTILITY PLAN including:

- ☒ Existing utilities on site and within public streets
- ☒ Location, sizing and directional flows of all existing and proposed utilities
- ☐ Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site
- ☒ Electric utility infrastructure

GRADING AND DRAINAGE PLAN including:

- ☒ Existing grades and drainage
- ☒ Proposed grades
- ☒ Proposed stormwater management meeting Technical Manual (Section 5), standards
- ☐ Location and proposed alteration of a water course
- ☒ Preservation or alteration of wetlands

EROSION CONTROL

- ☒ Must be in compliance with Technical Manual, Section 5

LANDSCAPE PLAN including:

- ☒ Existing vegetation to be preserved and preservation measures
- ☒ Proposed landscaping and buffers
- ☒ Planting schedule

RECORDING PLAT, if applicable
☐ If Subdivision, must be in compliance with requirements of Section 14-496 (b)
ARCHITECTURAL PLANS AND RENDERINGS including:
☒ Exterior building elevations, color renderings, illustrations of all sides
☒ Location and dimensions of all existing and proposed HVAC and mechanical equipment, all proposed screening
☐ Provide context drawings, if applicable (Design Manual, page 1)
☒ Floor plans

Section 2
Title, Right or Interest

Overview:

Chapter 372 §§ 9 of the Site Law Regulations requires that an applicant for approval has demonstrated sufficient title, right or interest in the property, which is proposed for development or use.

A. Conclusion

The deed between George M Hutchins and Spring Harbor Hospital, a member of MaineHealth, is attached Book 1740 Page 106 and executed and recorded on March 8 2002

B. Attachments

Warranty Deed with attached Exhibit A between George M Hutchins and Spring Harbor Hospital.

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K17401PG106

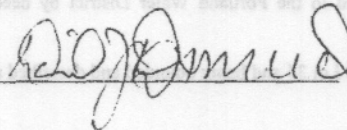
WARRANTY DEED

(Maine Statutory Short Form)

KNOW ALL MEN BY THESE PRESENTS, That GEORGE M. HUTCHINS, of Falmouth, Maine for consideration paid, grants to SPRING HARBOR HOSPITAL, a Maine Business Corporation with a place of business at 465 Congress St., Portland, Maine, with WARRANTY COVENANTS, the land located in Portland and Westbrook, County of Cumberland, State of Maine, bounded and described as follows:

SEE EXHIBIT "A" ATTACHED HERETO
MADE A PART HEREOF AND INCORPORATED BY REFERENCE HEREIN

WITNESS my hand and seal this 8th day of March, 2002

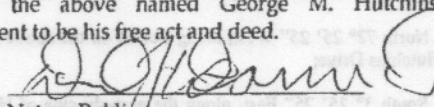
 George M. Hutchins
GEORGE M. HUTCHINS

STATE OF MAINE
CUMBERLAND, ss.

March 8, 2002

Then personally appeared the above named George M. Hutchins and acknowledged the foregoing instrument to be his free act and deed.

Before me,


Notary Public

Printed Name:

ATTORNEY
DANIEL J. DESMOND

MAINE REAL ESTATE TAX PAID

EXHIBIT A

Three lots or parcels of land being located partially in the City of Portland and partially in the City of Westbrook, in the County of Cumberland, State of Maine, bounded and described as follows:

PARCEL 1

Being Lot 100 as shown on plan entitled, "Master Plan Standard Boundary Survey - Subdivision - Stroudwater Estates on Hutchins Drive & Harry Harmon Drive Portland, Maine made for George Hutchins", dated October 29, 1998 and updated to June 26, 2001 by Owen Haskell, Inc. to be recorded in the Cumberland County Registry of Deeds.

EXCEPTING a 55,279 square foot parcel as shown on the above mentioned plan as to be added to Lot 9.

PARCEL 2

Being Lot 200 as shown on plan entitled, "Master Plan Standard Boundary Survey - Subdivision - Stroudwater Estates on Hutchins Drive & Harry Harmon Drive Portland, Maine made for George Hutchins", dated October 29, 1998 and updated to June 26, 2001 by Owen Haskell, Inc. to be recorded in the Cumberland County Registry of Deeds.

PARCEL 3

Being Lot 34 as shown on plan entitled, "Master Plan Standard Boundary Survey - Subdivision - Stroudwater Estates on Hutchins Drive & Harry Harmon Drive Portland, Maine made for George Hutchins", dated October 29, 1998 and updated to June 26, 2001 by Owen Haskell, Inc. to be recorded in the Cumberland County Registry of Deeds.

EXCEPTING from Lot 34 such portion as was conveyed to the Portland Water District by deeds recorded in Book 2411, Page 133 and Book 2411, Page 136.

TOGETHER with another Lot or parcel of land adjacent to Lot 34 and being bounded and described as follows:

Beginning on the easterly side of Hutchins Drive at the northwesterly corner of land formerly of Robert Pazolt as described in the deed recorded in Book 7559, Page 210 of the Cumberland County Registry of Deeds;

Thence, North 86° 34' 35" East, along land formerly of Robert Pazolt, 270.00 feet to Lot 34 on the above mentioned plan;

Thence, North 12° 18' 20" West, along Lot 34 on the above mentioned plan, 297.56 feet;

Thence, North 72° 25' 25" West, along Lot 34 on the above mentioned plan, 240.00 feet to the easterly side of Hutchins Drive;

Thence, South 3° 25' 25" East, along the easterly side of Hutchins Drive, 380.00 feet to the point of beginning.

Containing 1.89 acres, more or less

Parcel 3 (Lot 34 and adjacent parcel of 1.89 acres) is subject to a "conservation easement" granted to the State of Maine Department of Inland Fisheries and Wildlife as described in deeds recorded in the Cumberland County Registry of Deeds in Book 11061, Page 285 and Book 11306, Page 220.

Parcel 3 as described above is a gift from George M. Hutchins to Spring Harbor Hospital.

RECEIVED
RECORDED REGISTRY OF DEEDS
2002 MAR - 8 PM 46
CUMBERLAND COUNTY
John B. C. B. B.

Section 3 Financial Capacity

Overview:

Chapter 373 §§ 1 (B) of the Site Law Regulations requires that applications for project approval demonstrate that the developer has the financial capacity to construct, operate and maintain all aspects of the proposed development.

A. Estimated Cost

The total construction cost is anticipated to be 11,900,000

B. Financing

Attached is the Line of Credit Note from TD Bank, N.A. to MaineHealth in the amount of \$50,000,000.

Conclusion

MaineHealth has demonstrated that they have the financial capacity to construct, operate and maintain all aspects of the development.

LIBOR
LOAN # 857482 - 0101

LINE OF CREDIT LOAN NOTE

Date of Note: January 1, 2019

Principal Amount: \$50,000,000.00

Definitions

Business Day:	Any day of the year other than (i) a day that is a Saturday or Sunday, (ii) a day that is a legal holiday or a day on which banking institutions located in Portland, Maine are required or authorized to remain closed, (iii) a day on which the Federal Reserve System is not in operation; or (iv) any day on which commercial banks are not open for general business (including dealings in foreign exchange and foreign currency deposits) in London, England.
Default Rate:	A rate of interest equal to the Interest Rate provided herein plus four (4%) percent per annum, but in no event to exceed the maximum rate allowed by law.
Interest Rate: (LIBOR)	An interest rate equal to Fifty Five Basis Points (0.55%) per annum (the "Margin") in excess of the rate of interest per annum of the one (1) month LIBOR (as defined below) for any LIBOR Interest Period (as hereinafter defined). The Bank shall not be required to notify Borrower of adjustments in said interest rate. Notwithstanding the foregoing, or any other provision of this Note, if Bank shall reasonably determine (which determination shall be conclusive and binding absent manifest error) that, (i) by reason of circumstances affecting the relevant market, reasonable and adequate means do not exist for ascertaining LIBOR, or (ii) LIBOR does not adequately and fairly reflect the cost to Bank of funding the loan evidenced hereby, or (iii) it is unlawful for Bank to extend or maintain any loan evidenced hereby as a loan subject to LIBOR, Bank shall give prompt written notice thereof to Borrower and after the giving of such notice, until any such notice has been withdrawn by Bank, any loan evidenced hereby the shall bear interest at another index and margin or rate of interest then designated by Bank, in its reasonable discretion, that provides a comparable rate of interest.

LIBOR

The London Interbank Offered Rate rate of interest in U.S. Dollars (rounded upwards, at the Bank's option, to the next 1/8th of one percent) equal to the rate established by the Intercontinental Exchange Benchmark Administration, Ltd. ("ICE" or the successor thereto if ICE is no longer making a London Interbank Offered Rate available) as published by Bloomberg (or such other commercially available source providing quotations of LIBOR), as determined by the Bank (as hereafter defined) and in effect two (2) Business Days before the date of this Note and before the commencement of each LIBOR Interest Period (as defined below), provided however, if more than one LIBOR is specified, the applicable rate shall be the arithmetic mean of all such rates. London Business Days means any day on which commercial banks are open for general business (including dealings in foreign exchange and foreign currency deposits) in London, England. If, for any reason, such rate is not available, the term LIBOR shall mean, with respect to any LIBOR Interest Period, the rate of interest per annum determined by Bank to be the average rate per annum at which deposits in dollars are offered for such Interest Period by major banks in London, England at approximately 11:00 A.M. (London time) two (2) Business Days prior to the commencement of each LIBOR Interest Period.

Interest shall be computed on an actual/360 day basis (i.e., interest for each day during which the Principal Amount, or any part thereof, is outstanding shall be computed at Interest Rate divided by 360).

Notwithstanding the foregoing, LIBOR rate loans shall be deemed to constitute "**eurocurrency liabilities**" and as such shall be deemed subject to reserve requirements without benefits of credits for proration, exceptions or offsets that may be available from time to time to Bank. The LIBOR rate shall be adjusted automatically on and as of the effective date of any change in the LIBOR Reserve Percentage or the LIBOR Interest Period for each LIBOR rate loan comprising part of the same borrowing (including conversions, extensions and renewals), to a per annum interest rate determined pursuant to the following formula:

$$\text{Adjusted LIBOR Rate} = \frac{\text{LIBOR Rate}}{1 - \text{LIBOR Reserve Percentage}}$$

For purposes of this calculation **LIBOR Reserve Percentage** is defined as, for any day, that percentage (expressed as a decimal) which is in effect from time to time under Regulation D, as such regulation may be amended from time to time or any successor regulation, as the maximum reserve requirement (including, without limitation, any basic, supplemental, emergency, special, or marginal

	reserves) applicable with respect to eurocurrency liabilities as that term is defined in Regulation D (or against any other category of liabilities that includes deposits by reference to which the interest rate of LIBOR rate loans is determined), whether or not Bank has any eurocurrency liabilities subject to such reserve requirement at that time.
LIBOR Interest Period:	Initially, the first (1st) LIBOR Interest Period hereunder shall be the period (A) commencing on the date hereof and ending on (and including) the last day of the calendar month in which this Note is dated; or (B) the first day of the month selected by Borrower as the first month for which LIBOR will be the Interest Rate hereunder and ending on (and including) the last day of such calendar month. Thereafter, each LIBOR Interest Period shall commence on the first (1st) day of the calendar month immediately following the previous LIBOR Interest Period and shall end on (and include) the last calendar day of each such calendar month thereafter, provided however, no LIBOR Interest Period shall extend beyond the Maturity Date.
Maturity Date:	June 30, 2020
State:	The State of Maine

FOR VALUE RECEIVED, MaineHealth, a Maine nonprofit corporation (the "**Borrower**"), having an address as indicated below, **HEREBY PROMISES TO PAY** to the order of TD Bank, N.A., a national banking association, (hereinafter, together with its successors and assigns, referred to as the "**Bank**") at P.O. Box 5600, Lewiston, Maine 04243-5600, or at such other place as the holder hereof may from time to time designate in writing, in immediately available federal funds, the Principal Amount, which Principal Amount shall be due and payable on the Maturity Date, together with interest on the outstanding Principal Amount from time to time at the Interest Rate until this Note is paid in full, which interest shall be payable monthly commencing on the first day of the month following the Date of the Note and on the first day of each successive month thereafter until this Note is paid in full. On the Maturity Date the then outstanding Principal Amount, together with all accrued interest thereon, shall be due and payable.

If any present or future law, governmental rule, regulation, policy, guideline, directive or similar requirement (whether or not having the force of law) imposes, modifies, or deems applicable any capital adequacy, capital maintenance or similar requirement which affects the manner in which Bank allocates capital resources to its commitments (including any commitments hereunder), and as a result thereof, in the opinion of Bank, the rate of return on Bank's capital with regard to this Note is reduced to a level below that which Bank could have achieved but for such circumstances, then in such case and, upon notice from Bank to Borrower, from time to time, Borrower shall pay Bank such additional amount or amounts as shall compensate Bank for such

reduction in Bank's rate of return; provided, however, that Bank shall do so only if it is assessing such additional amount or amounts with respect to similarly situated borrowers. Such notice shall contain the statement of Bank with regard to any such amount or amounts which shall, in the absence of manifest error, be binding upon Borrower. Provided that Bank is acting as set forth above with respect to assessing such amount or amounts, in determining such amount, Bank may use any reasonable method of averaging and attribution that it deems applicable. For the avoidance of doubt, the foregoing provisions shall apply to all requests, rules, regulations, guidelines or directives concerning capital adequacy issued in connection with the Dodd-Frank Wall Street Reform and Consumer Protection Act and all requests, rules, regulations, guidelines or directives concerning capital adequacy promulgated by the Bank for International Settlements, the Basel Committee on Banking Regulations and Supervisory Practices (or any successor or similar authority) or the United States financial regulatory authorities, regardless of the date adopted, issued, promulgated or implemented.

If, after the date hereof, any (a) adoption of, or change in, United States federal, state or foreign laws, regulations or treaties, or any governmental or quasi-governmental rules, regulations, policies, guidelines, requests or directives (whether or not having the force of law), including the Dodd-Frank Wall Street Reform and Consumer Protection Act and all requests, rules, regulations, guidelines or directives issued in connection therewith regardless of the date enacted, adopted or issued, or (b) change in the interpretation, promulgation, implementation or administration of or under any United States federal, state or foreign laws, regulations or treaties, or any governmental or quasi-governmental rules, regulations, policies, guidelines, requests or directives (whether or not having the force of law), including the Dodd-Frank Wall Street Reform and Consumer Protection Act and all requests, rules, regulations, guidelines or directives issued in connection therewith regardless of the date enacted, adopted or issued, by any court, governmental, quasi-governmental, central bank or comparable agency or monetary authority that is charged with the interpretation or administration thereof, shall (1) subject Bank to any tax of any kind whatsoever with respect to any loans made by it, or change the basis of taxation of payments to Bank in respect thereof (except for changes in the rate of tax on the overall net income of Bank); (2) impose, modify, or hold applicable, any reserve, special deposit, compulsory loan, or similar requirement against assets held by, deposits or other liabilities in, or for the account of, advances, loans, or other extension of credit (including participations therein) by, or any other acquisition of funds by, any office of Bank which is not otherwise included in the determination of rate under the Note; or (3) shall impose on such Bank any other condition; and the result of any of the foregoing is to materially increase the cost to Bank of making or maintaining the loan evidenced by the Note, or to reduce any amount receivable under the Note, or any other Loan Document, then, in any such case, Borrower shall promptly pay Bank, upon its demand, any additional amounts necessary to compensate Bank for such additional costs or reduced amount receivable which Bank reasonably deems to be material as determined by Bank, with respect to the Loan. A certificate as to any additional amounts payable pursuant to this paragraph submitted by Bank to Borrower shall be presumptive evidence of such amounts owing.

Bank agrees to use reasonable efforts to avoid, or to minimize, any amounts which might otherwise be payable pursuant to this paragraph provided however, that such efforts shall not cause the imposition on Bank of any additional costs or legal regulatory burdens deemed by Bank in good faith to be material.

The Borrower and each endorser and guarantor hereof grant to the Bank a continuing lien on and security interest in any and all deposits or other sums at any time credited by or due from the Bank or any Bank Affiliate (as hereinafter defined) to the Borrower and/or each endorser or guarantor hereof and any cash, securities, instruments or other property of the Borrower and each endorser and guarantor hereof in the possession of the Bank or any Bank Affiliate, whether for safekeeping or otherwise, or in transit to or from the Bank or any Bank Affiliate (regardless of the reason the Bank or Bank Affiliate had received the same or whether the Bank or Bank Affiliate has conditionally released the same) as security for the full and punctual payment and performance of all of the liabilities and obligations of the Borrower and/or any endorser or guarantor hereof to the Bank or any Bank Affiliate and such deposits and other sums may be applied or set off against such liabilities and obligations of the Borrower or any endorser or guarantor hereof to the Bank or any Bank Affiliate at any time, whether or not such are then due, whether or not demand has been made and whether or not other collateral is then available to the Bank or any Bank Affiliate.

Notwithstanding anything to the contrary herein, whenever any payment to be made under this Note shall be stated to be due on a day that is not a Business Day, such payment may be made on the next succeeding Business Day, and such extension of time shall in such case be included in the computations of payment of interest.

This Note is secured by, and the holder is entitled to the benefits and security of, that certain Line of Credit Agreement (the "**Loan Agreement**") of even date herewith between Borrower and Bank.

Upon the occurrence of any Event of Default (as defined in the Loan Agreement), Bank may exercise any and all rights and remedies under the Loan Agreement (including without limitation, rights to accelerate the Loan), or available at law or equity, or both. Borrower shall be obligated to reimburse Bank for Bank's Expenses (as defined and provided for in the Loan Agreement), incurred by Bank. From and after the occurrence of any Event of Default, the interest rate of this Note shall be at the Default Rate.

In no event shall the total of all charges payable under this Note, the Loan Agreement and any other documents executed and delivered in connection herewith and therewith that are or could be held to be in the nature of interest exceed the maximum rate permitted to be charged by applicable law. Should Bank receive any payment that is or would be in excess of that permitted to be charged under any such applicable law, such payment shall have been, and shall be deemed to have been, made in error and shall thereupon be applied to reduce the principal balance outstanding on this Note.

This Note may be prepaid, in whole or in part without a prepayment premium, so long as (i) Bank is given not less than three (3) Business Days' notice of such prepayment, (ii) each prepayment is accompanied by the payment of accrued and unpaid interest on the principal amount prepaid together with all costs and expenses attributable to such prepayment (iii) each prepayment is made in immediately available federal funds and (iv) the prepayment occurs on the last day of a LIBOR Interest Period.

Borrower waives demand, presentment for payment, notice of dishonor, protest and notice of protest of this Note.

Any notice, demand or request relating to any matter set forth in this Note shall be given in the manner provided for in the Loan Agreement. Time is of the essence as to all dates set forth herein.

This Note may not be waived, changed, modified, terminated or discharged orally, but only by an agreement in writing signed by the party against whom enforcement of any such waiver, change, modification, termination or discharge is sought.

Bank is subject to the requirements of the USA Patriot Act (Title III of Pub. L. 107-56) (signed into law October 26, 2001)) (the "Act") and hereby notifies the Borrower that pursuant to the requirements of the Act, it is required to obtain, verify and record information that identifies the Borrower, which information includes the name and address of the Borrower and other information that will allow Bank to identify the Borrower in accordance with the Act.

BORROWER HEREBY KNOWINGLY, VOLUNTARILY AND INTENTIONALLY WAIVES THE RIGHT TO A TRIAL BY JURY TO THE EXTENT THAT ANY SUCH RIGHT SHALL NOW OR HEREAFTER EXIST IN RESPECT OF ANY LITIGATION BASED ON THIS NOTE, ARISING OUT OF, UNDER OR IN CONNECTION WITH THIS NOTE OR ANY OTHER LOAN DOCUMENTS CONTEMPLATED TO BE EXECUTED IN CONNECTION HERewith, OR ANY COURSE OF CONDUCT, COURSE OF DEALINGS, STATEMENTS (WHETHER VERBAL OR WRITTEN) OR ACTIONS OF ANY PARTY. THIS WAIVER IS INTENDED TO ENCOMPASS INDIVIDUALLY EACH INSTANCE AND EACH ISSUE AS TO WHICH THE RIGHT TO A TRIAL BY JURY WOULD OTHERWISE ACCRUE CONSTITUTES A MATERIAL INDUCEMENT FOR BORROWER AND BANK TO ENTER INTO THE TRANSACTIONS CONTEMPLATED HEREBY. BANK IS HEREBY AUTHORIZED TO FILE A COPY OF THIS PARAGRAPH IN ANY PROCEEDING AS CONCLUSIVE EVIDENCE OF THIS WAIVER.

BORROWER HEREBY EXPRESSLY AND UNCONDITIONALLY WAIVES, IN CONNECTION WITH ANY SUIT, ACTION OR PROCEEDING BROUGHT BY OR ON BEHALF OF BANK ON THIS NOTE, ANY AND EVERY RIGHT BORROWER MAY HAVE (I) TO OBJECT TO THE JURISDICTION OR VENUE OF ANY STATE COURT

SITTING IN PORTLAND, MAINE OR ANY FEDERAL COURT LOCATED IN THE STATE, (II) TO INJUNCTIVE RELIEF, (III) TO INTERPOSE ANY COUNTERCLAIM THEREIN (OTHER THAN COMPULSORY COUNTERCLAIMS), AND (IV) TO HAVE THE SAME CONSOLIDATED WITH ANY OTHER OR SEPARATE SUIT, ACTION OR PROCEEDING. BORROWER HEREBY AGREES AND CONSENTS, IN ADDITION TO ANY METHODS OF SERVICE OF PROCESS PROVIDED FOR UNDER APPLICABLE LAW, ALL TO SERVICE OF PROCESS IN ANY SUCH SUIT BEING MADE UPON BORROWER BY MAIL AT THE ADDRESS SET FORTH IN THE LOAN AGREEMENT, AND SERVICE SO MADE SHALL BE COMPLETE TEN (10) DAYS AFTER THE SAME SHALL HAVE BEEN SO MAILED. THE FOREGOING WAIVERS ARE GIVEN KNOWINGLY AND VOLUNTARILY BY BORROWER. BANK IS HEREBY AUTHORIZED TO FILE A COPY OF THIS PARAGRAPH IN ANY PROCEEDING AS CONCLUSIVE EVIDENCE OF ANY OR ALL OF THE FOREGOING WAIVERS.

This Note and the rights and obligations of the parties hereunder shall in all respects be governed by, and construed and enforced in accordance with, the laws of the State (without giving effect to the State's principles of conflicts of law).

This Note evidences a loan for business and commercial purposes, and not for personal, family or household purposes. No invalidity or unenforceability of any portion of this Note shall affect the validity or enforceability of the remaining portions hereof. This Note shall take effect as a sealed instrument, as of the date first set forth above, regardless of the actual date of execution and delivery.

[NO FURTHER TEXT ON THIS PAGE]

IN WITNESS WHEREOF, the Borrower has executed and delivered this Note on the Date set forth above.

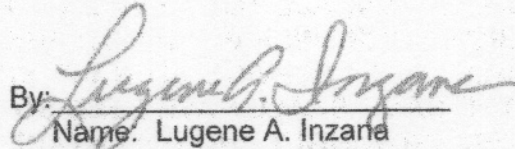
Address:

22 Bramall Street
Portland, Maine 04102

Borrower:

MAINEHEALTH

By:



Name: Lugene A. Inzana

Title: Senior Vice President, Finance
and Chief Financial Officer

MaineHealth – Center of Excellence
City of Portland Construction Management Plan
Amended February 11, 2020

A. Construction Management Principles

Langford and Low understands the requirements of this section and plans to incorporate them into the project.

B. Development Review of Construction Management Plan

Langford and Low understands the requirements of this section and plans to incorporate them into the project

C. Performance Guarantees, Inspection Fees, Construction Management Plan

Langford and Low and its subcontractors will apply for and obtain all required permits including but not limited to:

- Building permit and MEP trade permits
- Utility connection (chapter 24 and 32)
- Street openings and or closing permits (Chapter 25).
- Blasting - Is not anticipated on this project
- Building Code – Best practices will be employed in accordance with chapter 33.

Langford and Low will facilitate a preconstruction meeting following the issuance of the building permit.

D. Construction Administration and Communication

Applicant Contact
Dennis Morelli 207-662-6149

Construction Manager Contact
Project Manager Jared Ballard 207-317-3187
Site Superintendent Darren Crawford 207-318-0074

The construction manager will establish a site sign that will include the CM and applicant contact information. These will be removed at the end of the project.

E. Construction Schedule

1. A construction Schedule has been attached to this CM plan.
2. All hours of construction will be in accordance with attachment 1 and 2 in section 25-129 of the permit application.
3. N/A
4. Material delivery areas are defined in the attached CM site plan.

F. Security and Public Safety

1. Fencing, Barriers and Gates have been identified on the CM site management plan.
2. N/A – All construction related to this project is new.
3. Fire Safety –
4. Blasting – Not anticipated on this project.
5. Temp Security Lighting - Not anticipated on this project.

G. Construction Permitting and Traffic Control Plans

1. All construction activity will be licensed and permitted and executed in accordance with Chapter 25 article VII of the City Code of Ordinances.
2. All sewer and stormwater connections will be licensed and permitted and executed in accordance with Chapter 24 and 32 of the City Code of Ordinances.
3. Traffic Control – The site contractor will submit MOT plans prior to undertaking any work in the public street system.

H. Site Management and Controls

1. Trash and debris removal – Will be handled by a wastemen management company specializing in this work. Dumpsters will be located onsite at various locations depending on the state of completion of the project.
2. Street cleaning and damage control – A construction entrance to the site will be constructed in accordance with the city standards. The site contractor will be responsible to maintain the entrance and removal any debris from vehicle tired exiting the site. A street sweeping machine will be located onsite to clean the public street periodically as needed.
3. Dust – Will be managed in accordance with Section 25-129 of the city standards.
4. Noise – Will be managed in accordance with Section 17-18 of the city standards.
5. N/A
6. Snow removal – We do not anticipate any snow removal in the public street to be associated with this project.

I. Erosion Control

1. Erosion control measures will be established around the perimeter of the site as shown in the CM plan and in accordance with the drawing C100 attached to the CM plan.
2. It is not anticipated that any existing trees will remain within the work area. All trees will be installed as new near the completion of the project.
3. N/A

J. Construction Staging Area

1. See attached CM plan for location of material staging areas.
2. See attached CM plan for location of delivery truck holding areas.
3. None anticipated.

K. Parking During Construction

1. There is adequate space within the construction site for construction parking.

L. Dewatering

1. It is not anticipated that significant groundwater will be encountered however, if it is, the goal of the team is to protect adjacent water resources. Should groundwater be encountered during excavation activities the site contractor will employ the following dewatering measures.
 - a. Excavate a sump adjacent to the work area deeper than the elevation of the work area.
 - b. Place a perforated pipe system encased in crushed stone and lined with filter fabric into the sump.
 - c. Pump water from the sump into a silt separation bag sized in accordance with applicable standards. The bag will be located in an approved location and surrounded with appropriate watershed protection measures.

Should a dewatering condition arise that requires special consideration, the CM will mobilize a storage tank (frac tank) to the site to handle the groundwater while additional dewatering measures are being developed by the engineering and water resource teams.



**PORTLAND FIRE DEPARTMENT
SITE REVIEW
FIRE DEPARTMENT CHECKLIST**



for
The Center of Excellence in Autism and Developmental Disorders

A separate drawing[s] shall be provided as part of the site plan application for the Portland Fire Department's review. [Please refer to the following drawings included with this checklist](#)

1. Name, address, telephone number of applicant [\(Cover Sheet\)](#)
- 2.
3. Name address, telephone number of architect [\(Cover Sheet\)](#)
4. Proposed uses of any structures [NFPA and IBC classification] [\(A-001\)](#)
- 5.
6. Square footage of all structures [total and per story] [\(A-001\)](#)
7. Elevation of all structures [\(A-200, A-201\)](#)
8. Proposed fire protection of all structures
 - **As of September 16, 2010 all new construction of one and two family homes are required to be sprinkled in compliance with NFPA 13D. This is required by City Code. (NFPA 101 2009 ed.)**
9. Hydrant locations [\(C-100, C-101\)](#)
10. Water main[s] size and location [\(C-103\)](#)
11. Access to all structures [min. 2 sides] [\(C-101\)](#)
12. A code summary shall be included referencing NFPA 1 and all fire department. Technical standards. [\(A-001\)](#)

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

DESCRIPTION

The EPIC Collection delivers custom luminaire flexibility with high quality, yet availability expectations of standard specification grade product. The EPIC Collection can be dressed to suit any application. Recognizing evolving environmental and legislative trends, the EPIC Collection delivers world class LED optical and performance solutions to the decorative luminaire marketplace.

Catalog #		Type
Project		SP3 / SP5
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction

TOP: Cast aluminum top housing attaches to cast aluminum mounting arm hub with four stainless steel fasteners. One-piece silicone gasket between mounting hub and top casting seals out moisture and contaminants. (See the mounting accessories section for a full selection of mounting arms. (Only these arms are compatible with the Epic luminaire). **MIDSECTION:** Continuous silicone gaskets seal lens to top casting and shade. The mid section features cast aluminum construction and stainless steel assembly. **SHADES:** Heavy gauge precision spun aluminum shades offer superior surface finish and consistency in form. **DOORFRAME:** Die-cast aluminum 1/8" thick door and doorframe seal to underside of shade with a thick wall continuous silicone gasket. Mounting hub ships attached to mounting arm.

Optics

Choice of twelve patented, high-efficiency AccuLED Optic™ technology manufactured from

injection-molded acrylic. Optics are precisely designed to shape the optics, maximizing efficiency and application spacing. AccuLED Optic technology, creates consistent distributions with the scalability to meet customized application requirements. Offered Standard in 4000K (+/- 275K) CCT and nominal 70 CRI. Optional 3000K CCT and 5000K CC. For the ultimate level of spill light control, an optional house-side shield accessory can be field or factory installed. The house-side shield is designed to seamlessly integrate with the SL2, SL3 or SL4 optics.

Electrical

LED drivers mount to die-cast aluminum back housing for optimal heat sinking, operation efficacy, and prolonged life. Standard drivers feature electronic universal voltage (120-277V 50/60Hz), 347V 60Hz or 480V 60Hz operation, greater than 0.9 power factor, less than 20% harmonic distortion, and is suitable for operation in -40°C to 40°C ambient environments. All fixtures are shipped standard

with 10kV/10kA common – and differential – mode surge protection. LightBARs feature and IP66 enclosure rating and maintain greater than 95% lumen maintenance at 60,000 hours per IESNA TM-21. Occupancy sensor and dimming options available.

Finish

Housing is finished in five-stage super TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. LightBAR™ cover plates are standard white and may be specified to match finish of luminaire housing. Standard colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult Outdoor Architectural Colors brochure for a complete selection.

Warranty

Five-year warranty.



ECM/EMM EPIC MEDIUM LED

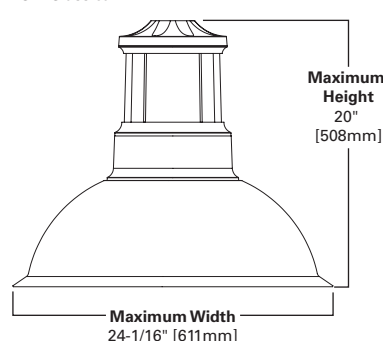
1 - 4 LightBARs

Solid State LED

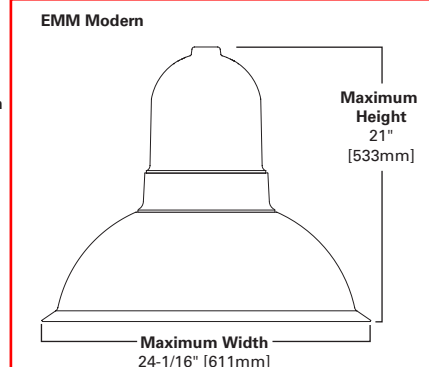
DECORATIVE AREA LUMINAIRE

DIMENSIONS

ECM Classical



EMM Modern



See configurations for more detailed information.

CERTIFICATION DATA

UL/cUL Listed
IP66 LightBARs
LM79 / LM80 Compliant
2G Vibration Tested
ISO 9001

ENERGY DATA

Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V 50/60Hz, 347V/60Hz,
480V/60Hz
-40°C Minimum Temperature
40°C Ambient Temperature Rating

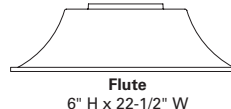
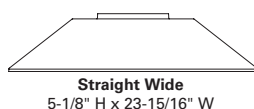
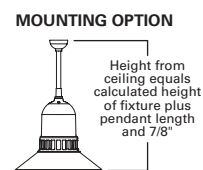
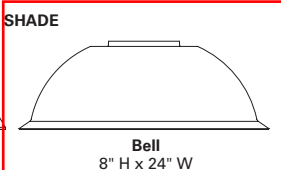
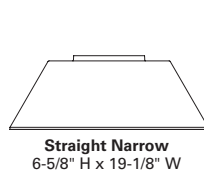
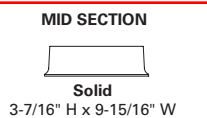
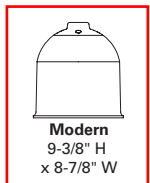
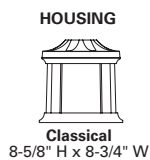
EPA

Effective Projected Area: (Sq. Ft.) 0.94

SHIPPING DATA

Approximate Net Weight:
45 lbs. [20 kgs.]

CONFIGURATIONS



POWER AND LUMENS BY BAR COUNT (21 LED LIGHTBARS)

Number of LightBARs		E01	E02	E03	E04
Drive Current		350mA Drive Current			
Power (Watts)		25W	52W	75W	97W
Current @ 120V (A)		0.22	0.44	0.63	0.82
Current @ 277V (A)		0.10	0.20	0.28	0.36
Power (Watts)		31W	58W	82W	99W
Current @ 347V (A)		0.11	0.19	0.28	0.29
Current @ 480V (A)		0.09	0.15	0.20	0.21
T2	Lumens	2,948	5,896	8,844	11,792
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G3	B3-U0-G3
T3	Lumens	2,936	5,873	8,809	11,745
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G3	B3-U0-G3
T4	Lumens	2,876	5,752	8,627	11,503
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G3
5MQ	Lumens	3,054	6,108	9,161	12,215
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2
5WQ	Lumens	2,987	5,975	8,962	11,949
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2
5XQ	Lumens	2,982	5,963	8,945	11,926
	BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G3	B4-U0-G3
SL2	Lumens	2,878	5,756	8,634	11,512
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2
SL3	Lumens	2,894	5,788	8,682	11,576
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2
SL4	Lumens	2,823	5,647	8,470	11,294
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2
RW	Lumens	2,957	5,915	8,872	11,829
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3
SLL/SLR	Lumens	2,616	5,231	7,847	10,462
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G3	B2-U0-G3

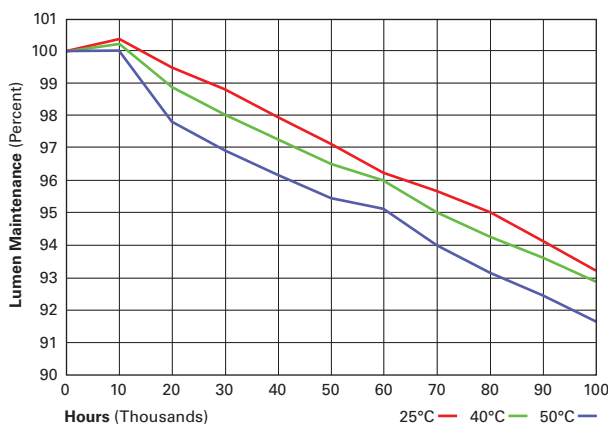
POWER AND LUMENS BY BAR COUNT (7 LED LIGHTBARS)

Number of LightBARs		F01	F02	F03	F04
Drive Current		1A Drive Current			
Power (Watts)		26W	55W	78W	102W
Current @ 120V (A)		0.22	0.46	0.66	0.86
Current @ 277V (A)		0.10	0.21	0.29	0.37
Power (Watts)		32W	60W	85W	105W
Current @ 347V (A)		0.11	0.19	0.28	0.30
Current @ 480V (A)		0.09	0.15	0.21	0.22
T2	Lumens	2,434	4,867	7,301	9,735
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3
T3	Lumens	2,424	4,848	7,272	9,696
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3
T4	Lumens	2,374	4,748	7,122	9,496
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2
5MQ	Lumens	2,521	5,042	7,563	10,084
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2
5WQ	Lumens	2,466	4,932	7,398	9,864
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2
5XQ	Lumens	2,461	4,923	7,384	9,845
	BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G2	B4-U0-G3
SL2	Lumens	2,376	4,752	7,127	9,503
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2
SL3	Lumens	2,389	4,778	7,167	9,556
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G2	B2-U0-G2
SL4	Lumens	2,331	4,662	6,993	9,323
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2
RW	Lumens	2,441	4,883	7,324	9,765
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G3	B3-U0-G3
SLL/SLR	Lumens	2,159	4,318	6,478	8,637
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G3	B1-U0-G3

LUMEN MAINTENANCE

Ambient Temperature	25,000 Hours*	50,000 Hours*	60,000 Hours*	100,000 Hours	Theoretical L70 (Hours)
25°C	> 99%	> 97%	> 96%	> 93%	> 450,000
40°C	> 98%	> 97%	> 96%	> 92%	> 425,000
50°C	> 97%	> 96%	> 95%	> 91%	> 400,000

* Per IESNA TM-21 data.



LUMEN MULTIPLIER

Ambient Temperature	Lumen Multiplier
10°C	1.02
15°C	1.01
25°C	1.00
40°C	0.99
50°C	0.96

CONTROL OPTIONS

0-10V (DIM)

This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (PC, PER and PER7)

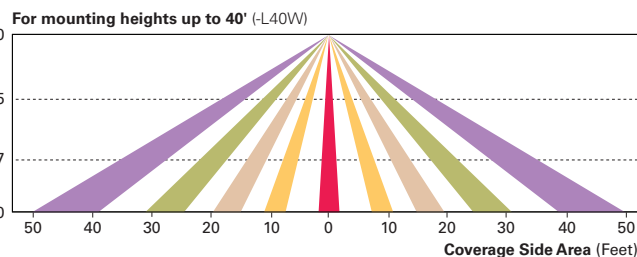
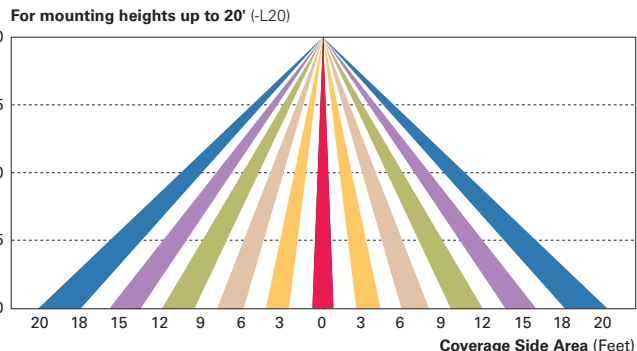
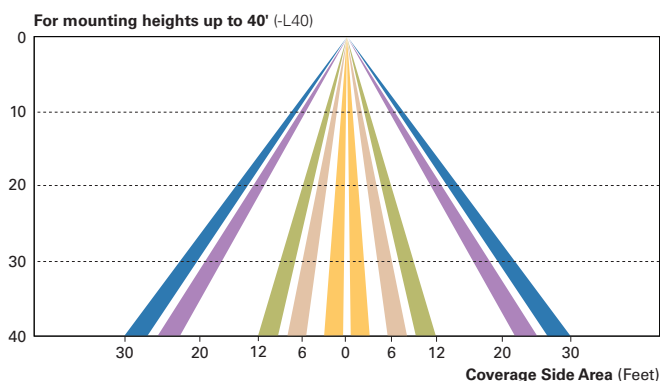
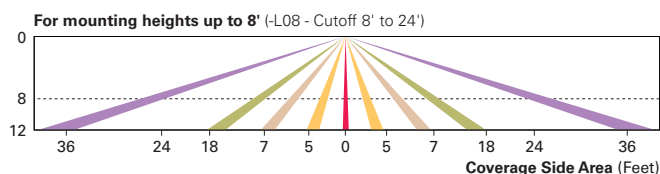
Optional button-type photocontrol (PC) and photocontrol receptacles (PER and PER7) provide a flexible solution to enable “dusk-to-dawn” lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PER7 receptacle.

Dimming Occupancy Sensor (MS/DIM-LXX, MS/X-LXX and MS-LXX)

These sensors are factory installed in the luminaire housing. When the MS/DIM-LXX sensor option is selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The MS/DIM sensor is factory preset to dim down to approximately 50 percent power with a time delay of five minutes. The MS-LXX sensor is factory preset to turn the luminaire off after five minutes of no activity. The MS/X-LXX is also preset for five minutes and only controls the specified number of light engines to maintain steady output from the remaining light engines.

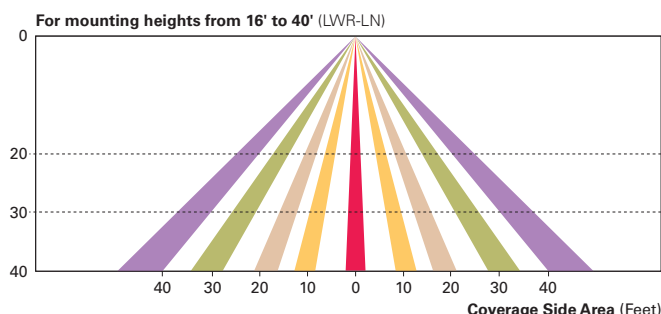
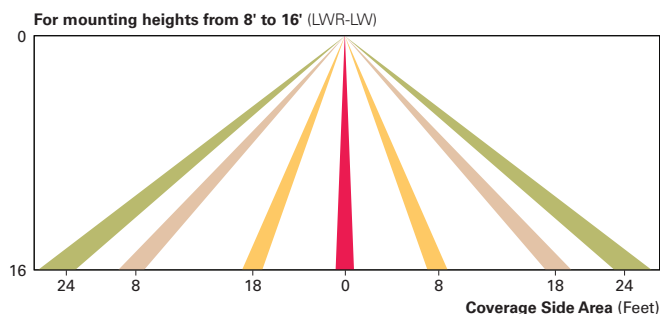
These occupancy sensors includes an integral photocell that can be activated with the FSIR-100 accessory for “dusk-to-dawn” control or daylight harvesting - the factory preset is OFF. The FSIR-100 is a wireless tool utilized for changing the dimming level, time delay, sensitivity and other parameters.

A variety of sensor lens are available to optimize the coverage pattern for mounting heights from 8'-40'.

**LumaWatt Pro Wireless Control and Monitoring System (LWR-LW and LWR-LN)**

The LumaWatt Pro system is a peer-to-peer wireless network of luminaire-integral sensors for any sized project. Each sensor is capable of motion and photo sensing, metering power consumption and wireless communication. The end-user can securely create and manage sensor profiles with browser-based management software. The software will automatically broadcast to the sensors via wireless gateways for zone-based and individual luminaire control. The LumaWatt Pro software provides smart building solutions by utilizing the sensor to provide easy-to-use dashboard and analytic capabilities such as improved energy savings, traffic flow analysis, building management software integration and more.

For additional details, refer to the LumaWatt Pro product guides.



ORDERING INFORMATION

Sample Number: ECM-E04-LED-E1-T2-FL-GM

Product Family ¹	Number of LightBARs ^{2,3}	Lamp Type	Voltage	Distribution	Mid Section Type	Shade Type	Color ⁵
ECM=Epic Classical Medium EMM=Epic Modern Medium	E01=(1) 21 LED LightBAR E02=(2) 21 LED LightBARs E03=(3) 21 LED LightBARs E04=(4) 21 LED LightBARs F01=(1) 7 LED LightBAR F02=(2) 7 LED LightBARs F03=(3) 7 LED LightBARs F04=(4) 7 LED LightBARs	LED=Solid State Light Emitting Diodes	E1=Electronic (120-277V) 347=347V 480=480V ⁴	T2=Type II T3=Type III T4=Type IV SL2=Type II w/Spill Control SL3=Type III w/Spill Control SL4=Type IV w/Spill Control 5MQ=Type V Square Medium 5WQ=Type V Square Wide 5XQ=Type V Square Extra Wide RW=Rectangular Wide SLL=90° Spill Light Eliminator Left SLR=90° Spill Light Eliminator Right	SO=Solid SR=Solid Rings	SN=Straight Narrow SW=Straight Wide BL=Bell FL=Flute	AP=Grey BZ=Bronze BK=Black DP=Dark Platinum GM=Graphite Metallic WH=White
Options (Add as Suffix)		Accessories (Order Separately) ¹⁴					
2L=Two Circuits ⁶ 7030=70 CRI / 3000K CCT ⁷ 7050=70 CRI / 5000K CCT ⁷ 8030=80 CRI / 3000K CCT ⁷ LCF=LightBAR Cover Plate Matches Housing Finish MS-LXX=Motion Sensor for ON/OFF Operation ⁸ MS/X-LXX=Motion Sensor for Bi-Level Switching ⁹ PMXX=Pendant Mount (XX=Pendant Length in Inches, 9.5" min - 48.0" max) ¹⁰ HSS=Factory Installed House Side Shield ¹¹ DIM=0-10V Dimming Driver ¹² LWR-LW=LumaWatt Pro Wireless Sensor, Wide Lens for 8' - 16' Mounting Height ¹³ LWR-LN=LumaWatt Pro Wireless Sensor, Narrow Lens for 16' - 40' Mounting Height ¹³		Classical VA6150-XX=Bishop Wall Mount Arm VA6151-XX=Bishop Wall Mount Arm with Cross Rod VA6152-XX=Traditional Wall Mount Arm VA6153-XX=Traditional Wall Mount Arm with 45° Strap VA6154-XX=Bishop Single Pole Mount Arm VA6155-XX=Bishop Single Pole Mount Arm with Cross Rod VA6156-XX=Bishop Twin Pole Mount Arm VA6157-XX=Bishop Twin Pole Mount Arm with Cross Rods VA6158-XX=Traditional Single Pole Mount Arm VA6159-XX=Traditional Single Pole Mount Arm with Rounded Upper Bar VA6160-XX=Traditional Single Pole Mount Arm with Rounded Lower Bar ¹⁵ VA6161-XX=Traditional Single Pole Mount Arm with 45° Upper Bar VA6162-XX=Traditional Single Pole Mount Arm with 45° Lower Bar ¹⁵ VA6163-XX=Traditional Single Pole Mount Arm with 45° Upper Strap VA6165-XX=Traditional Twin Pole Mount Arm VA6166-XX=Traditional Twin Pole Mount Arm with Rounded Upper Bars VA6167-XX=Traditional Twin Pole Mount Arm with Rounded Lower Bars ¹⁵ VA6168-XX=Traditional Twin Pole Mount Arm with 45° Upper Bars VA6169-XX=Traditional Twin Pole Mount Arm with 45° Lower Bars ¹⁵ VA6170-XX=Traditional Twin Pole Mount Arm with 45° Upper Straps VA6171-XX=Mast Arm Adapter Modern VA6101-XX=Bishop Wall Mount Arm VA6102-XX=Bishop Wall Mount Arm with Cross Rod VA6103-XX=Traditional Wall Mount Arm VA6104-XX=Traditional Wall Mount Arm with 45° Strap VA6105-XX=Bishop Single Pole Mount Arm VA6106-XX=Bishop Single Pole Mount Arm with Cross Rod VA6107-XX=Bishop Twin Pole Mount Arm VA6108-XX=Bishop Twin Pole Mount Arm with Cross Rods VA6109-XX=Traditional Single Pole Mount Arm VA6110-XX=Traditional Single Pole Mount Arm with Rounded Upper Bar VA6111-XX=Traditional Single Pole Mount Arm with Rounded Lower Bar ¹⁵ VA6112-XX=Traditional Single Pole Mount Arm with 45° Upper Bar VA6113-XX=Traditional Single Pole Mount Arm with 45° Lower Bar ¹⁵ VA6114-XX=Traditional Single Pole Mount Arm with 45° Upper Strap VA6116-XX=Traditional Twin Pole Mount Arm VA6117-XX=Traditional Twin Pole Mount Arm with Rounded Upper Bars VA6118-XX=Traditional Twin Pole Mount Arm with Rounded Lower Bars ¹⁵ VA6119-XX=Traditional Twin Pole Mount Arm with 45° Upper Bars VA6120-XX=Traditional Twin Pole Mount Arm with 45° Lower Bars ¹⁵ VA6121-XX=Traditional Twin Pole Mount Arm with 45° Upper Straps VA6122-XX=Mast Arm Adapter					
		OA/RA1016=NEMA Twistlock Photocontrol - Multi-Tap OA/RA1027=NEMA Twistlock Photocontrol - 480V OA/RA1201=NEMA Twistlock Photocontrol - 347V OA/RA1013=Photocontrol Shorting Cap LB/HSS-21=Field Installed House Side Shield for "E" LightBARs ^{11, 16} LB/HSS-07=Field Installed House Side Shield for "F" LightBARs ^{11, 16} Accessory Options ¹⁷ V=Victorian Finial ¹⁸ M=Modern Finial ¹⁸ A=Architectural Finial ¹⁸ N=Nostalgic Finial ¹⁸ R=NEMA Twistlock Photocontrol Receptacle ¹⁹					

NOTES:

1. Arm not included. Order separately. See accessories.

2. Standard 4000K CCT and greater than 70 RI.

3. 21 LED LightBAR powered by 350mA and 7 LED LightBAR powered by 1A.

4. Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems).

5. Custom and RAL color matching available upon request. Consult your lighting representative at Eaton for more information.

6. Low-level output varies by bar count. Consult factory. Requires quantity of two or more LightBARs.

7. Consult customer service for lead times and multiplier.

8. Sensor mounted to the luminaire. Available in E01-E04 and F01-F04 configurations. Replace "XX" with mounting height in feet for proper lens selection, (e.g., MS-L25). Consult factory for additional information.

9. Sensor mounted to the luminaire. Available in E02-E04 and F02-F04 configurations. Replace "X" with number of LightBARs operating in low output mode and replace XX with mounting height in feet for proper lens selection, (e.g., MS/3-L25). Maximum four bars in low output mode. Consult factory for additional information.

10. Pendant mount option "PMXX" must be used with Invue Pendant mount kit only. Includes pendant pipe, swivel hangar and canopy cover. Other pendant lengths can be specified in inches (XX). Minimum pendant length is 9-1/2". For lengths above 48", consult your lighting representative at Eaton for more information.

11. Only for use with SL2, SL3 and SL4 distributions.

12. Dimming leads provide for external 0-10V control system (by others).

13. LumaWatt wireless sensors are factory installed only, requiring network components LWP-EM-1, LWP-GW-1, and LWP-PoE8 in appropriate quantities. See www.eaton.com/lighting for LumaWatt application information.

14. Replace XX with color suffix.

15. Only available with traditional arms.

16. One required for each LightBAR.

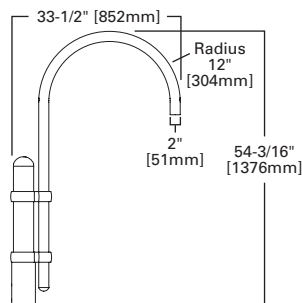
17. Add as suffix to accessory. Example: VA6109-BK-R.

18. Not available with finials, pendant mount "PM48" or bishop wall mounts.

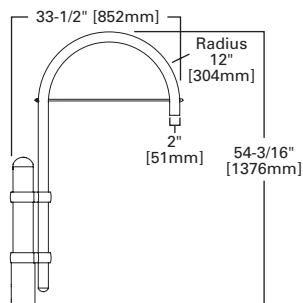
19. Requires use of 4" O.D. round straight pole.

MOUNTING ACCESSORIES

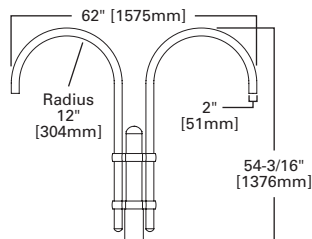
Pole mount arms are designed to fit both medium ECM/EMM housings. (Only these arms are compatible with the Epic luminaire). Arms feature a precision welded cast aluminum mounting hub for attachment of fixture head to arm with four stainless steel fasteners. Wall mount arms compliment pole mount luminaires and attractively transition fixture scale in lower mounting height pedestrian environments. Wall mount arms are designed to fit both medium ECM/EMM housings. Arms feature a precision welded cast aluminum mounting hub for attachment of fixture head to arm with four stainless steel fasteners.

**BISHOP SINGLE POLE MOUNT ARM**

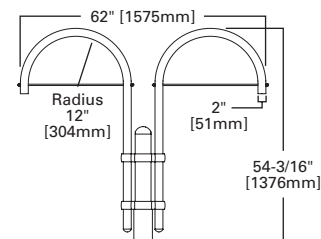
VA6105 (Modern), VA6154 (Classical)
Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.
Weight: 24 lbs. E.P.A: 0.92

**BISHOP SINGLE POLE MOUNT ARM WITH CROSS ROD**

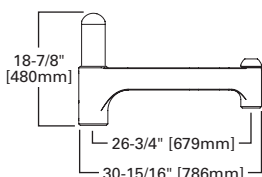
VA6106 (Modern), VA6155 (Classical)
Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.
Weight: 25 lbs. E.P.A: 0.98

**BISHOP TWIN POLE MOUNT ARM**

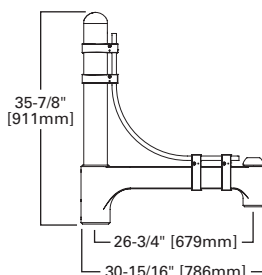
VA6107 (Modern), VA6156 (Classical)
Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.
Weight: 37 lbs. E.P.A: 1.43

**BISHOP TWIN POLE MOUNT ARM WITH CROSS RODS**

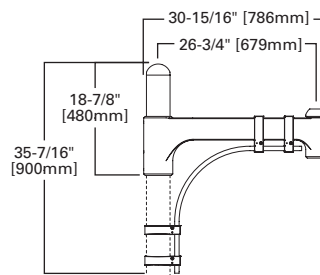
VA6108 (Modern), VA6157 (Classical)
Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.
Weight: 39 lbs. E.P.A: 1.55

**TRADITIONAL SINGLE POLE MOUNT ARM**

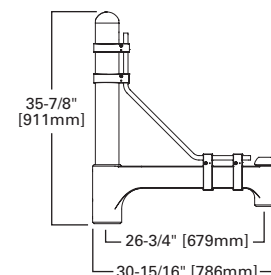
VA6109 (Modern), VA6158 (Classical)
Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.
Weight: 20 lbs. E.P.A: 0.86

**TRADITIONAL SINGLE POLE MOUNT ARM WITH ROUNDED UPPER BAR**

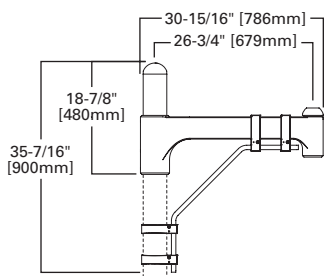
VA6110 (Modern), VA6159 (Classical)
Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.
Weight: 28 lbs. E.P.A: 1.4

**TRADITIONAL SINGLE POLE MOUNT ARM WITH ROUNDED LOWER BAR**

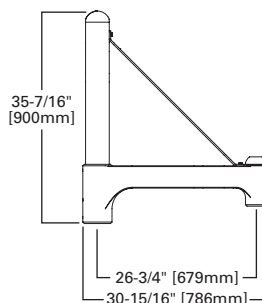
VA6111 (Modern), VA6160 (Classical)
Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.
Weight: 25 lbs. E.P.A: 1.16

**TRADITIONAL SINGLE POLE MOUNT ARM WITH 45° UPPER BAR**

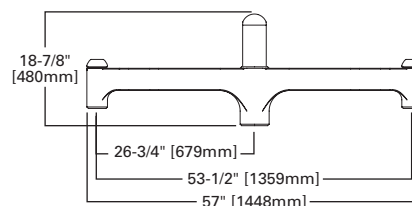
VA6112 (Modern), VA6161 (Classical)
Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.
Weight: 28 lbs. E.P.A: 1.38

**TRADITIONAL SINGLE POLE MOUNT ARM WITH 45° LOWER BAR**

VA6113 (Modern), VA6162 (Classical)
Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.
Weight: 24 lbs. E.P.A: 1.17

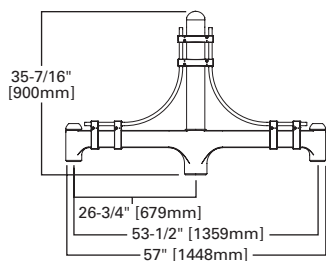
**TRADITIONAL SINGLE POLE MOUNT ARM WITH 45° UPPER STRAP**

VA6114 (Modern), VA6163 (Classical)
Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.
Weight: 24 lbs. E.P.A: 1.17

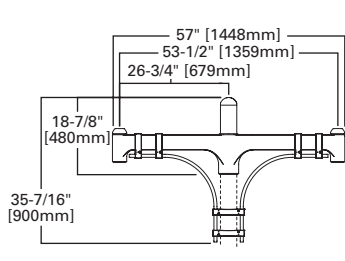
**TRADITIONAL TWIN POLE MOUNT ARM**

VA6116 (Modern), VA6165 (Classical)
Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.
Weight: 30 lbs. E.P.A: 1.44

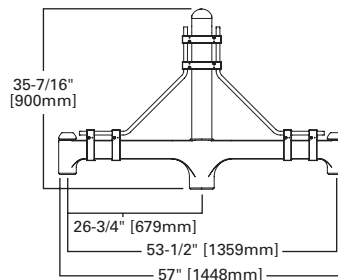
MOUNTING ACCESSORIES


**TRADITIONAL TWIN POLE
MOUNT ARM WITH ROUNDED
UPPER BARS**

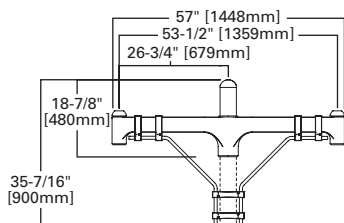
VA6117 (Modern), VA6166 (Classical)
Slipfits over 4" round straight pole,
or 4" O.D. by 6" tall tenon.
Weight: 43 lbs. E.P.A: 2.28


**TRADITIONAL TWIN POLE
MOUNT ARM WITH ROUNDED
LOWER BARS**

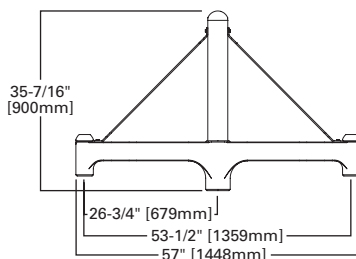
VA6118 (Modern), VA6167 (Classical)
Slipfits over 4" round straight pole,
or 4" O.D. by 6" tall tenon.
Weight: 40 lbs. E.P.A: 2.04


**TRADITIONAL TWIN POLE
MOUNT ARM WITH 45° UPPER BARS**

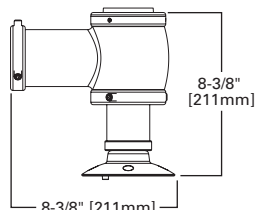
VA6119 (Modern), VA6168 (Classical)
Slipfits over 4" round straight pole,
or 4" O.D. by 6" tall tenon.
Weight: 43 lbs. E.P.A: 2.24


**TRADITIONAL TWIN POLE
MOUNT ARM WITH 45° LOWER BARS**

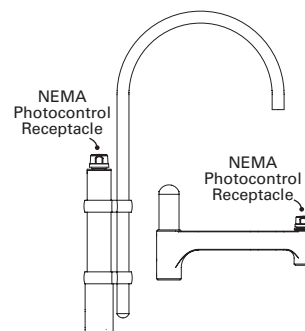
VA6120 (Modern), VA6169 (Classical)
Slipfits over 4" round straight pole,
or 4" O.D. by 6" tall tenon.
Weight: 40 lbs. E.P.A: 2.0


**TRADITIONAL TWIN POLE
MOUNT ARM WITH 45° UPPER STRAPS**

VA6121 (Modern), VA6170 (Classical)
Slipfits over 4" round straight pole,
or 4" O.D. by 6" tall tenon.
Weight: 37 lbs. E.P.A: 1.81

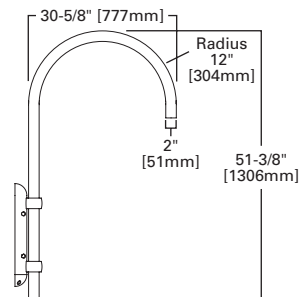

MAST ARM ADAPTER

VA6122 (Modern), VA6171 (Classical)
Secures fixture to nominal 2" pipe
(2-3/8" horizontal O.D.)
Weight: 4 lbs.

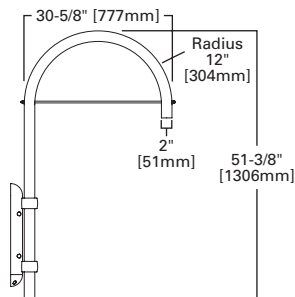

NEMA TWISTLOCK PHOTOCONTROL (R)

Order separately (Not compatible with
finials or wall mount bishop arms)

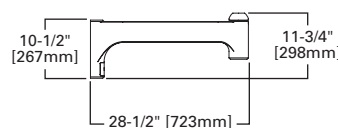
Wall Mount Accessories


BISHOP WALL MOUNT ARM

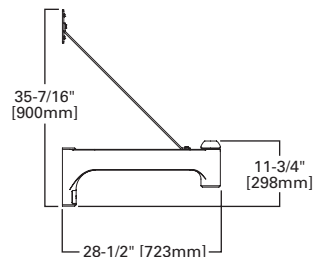
VA6101 (Modern), VA6150 (Classical)
Mounts to wall with four stainless
steel lag bolts (provided by other).
Weight: 16 lbs.


**BISHOP WALL MOUNT ARM
WITH CROSS ROD**

VA6102 (Modern), VA6151 (Classical)
Mounts to wall with four stainless
steel lag bolts (provided by other).
Weight: 17 lbs.


TRADITIONAL WALL MOUNT ARM

VA6103 (Modern), VA6152 (Classical)
Mounts to wall with four stainless
steel lag bolts (provided by other).
Weight: 17 lbs.


**TRADITIONAL WALL MOUNT ARM
WITH 45° STRAP**

VA6104 (Modern), VA6153 (Classical)
Mounts to wall with four stainless
steel lag bolts (provided by other).
Weight: 18 lbs.

DESCRIPTION

The Galleon™ LED luminaire delivers exceptional performance in a highly scalable, low-profile design. Patented, high-efficiency AccuLED Optics™ system provides uniform and energy conscious illumination to walkways, parking lots, roadways, building areas and security lighting applications. IP66 rated and UL/cUL Listed for wet locations.

Catalog #		Type
Project		SL
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction

Extruded aluminum driver enclosure thermally isolated from Light Squares for optimal thermal performance. Heavy-wall, die-cast aluminum end caps enclose housing and die-cast aluminum heat sinks. A unique, patent pending interlocking housing and heat sink provides scalability with superior structural rigidity. 3G vibration tested and rated. Optional tool-less hardware available for ease of entry into electrical chamber. Housing is IP66 rated.

Optics

Patented, high-efficiency injection-molded AccuLED Optics technology. Optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 275K) CCT 70 CRI. Optional 3000K, 5000K and 6000K CCT.

Electrical

LED drivers are mounted to removable tray assembly for ease

of maintenance. 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Standard with 0-10V dimming. Shipped standard with Eaton proprietary circuit module designed to withstand 10kV of transient line surge. The Galleon LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Light Squares are IP66 rated. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 600mA, 800mA and 1200mA drive currents (nominal).

Mounting

STANDARD ARM MOUNT: Extruded aluminum arm includes internal bolt guides allowing for easy positioning of fixture during mounting. When mounting two or more luminaires at 90° and 120° apart, the EA extended arm may be required. Refer to the arm mounting requirement table. Round pole adapter included. For wall mounting, specify wall mount

bracket option. **QUICK MOUNT ARM:** Adapter is bolted directly to the pole. Quick mount arm slide into place on the adapter and is secured via two screws, facilitating quick and easy installation. The versatile, patent pending, quick mount arm accommodates multiple drill patterns ranging from 1-1/2" to 4-7/8". Removal of the door on the quick mount arm enables wiring of the fixture without having to access the driver compartment. A knock-out enables round pole mounting.

Finish

Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Heat sink is powder coated black. Standard housing colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available.

Warranty

Standard five-year warranty. Optional ten-year warranty, please see your Eaton Streetworks sales representative for more information.



GAN GALLEON LED

1-10 Light Squares

Solid State LED

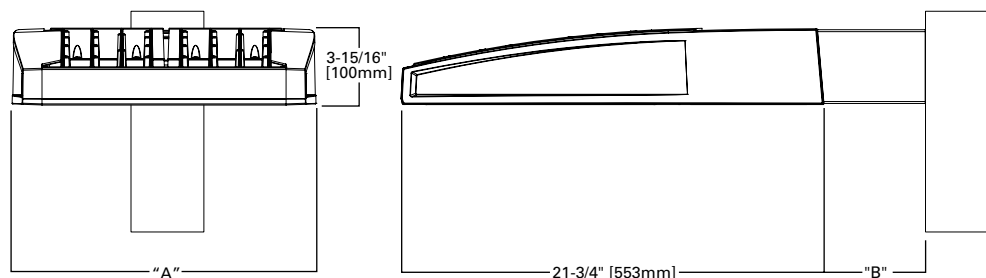
AREA / ROADWAY LUMINAIRE



LumenSafe Technology

[CLICK HERE](#)

DIMENSIONS

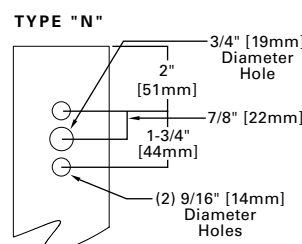


DIMENSION DATA

Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Optional Arm Length ¹	Weight with Arm (lbs.)	EPA with Arm ² (Sq. Ft.)
1-4	15-1/2" (394mm)	7" (178mm)	10" (254mm)	33 (15.0 kgs.)	0.96
5-6	21-5/8" (549mm)	7" (178mm)	10" (254mm)	44 (20.0 kgs.)	1.00
7-8	27-5/8" (702mm)	7" (178mm)	13" (330mm)	54 (24.5 kgs.)	1.07
9-10	33-3/4" (857mm)	7" (178mm)	16" (406mm)	63 (28.6 kgs.)	1.12

NOTES: 1. Optional arm length to be used when mounting two fixtures at 90° on a single pole. 2. EPA calculated with optional arm length.

DRILLING PATTERN



CERTIFICATION DATA

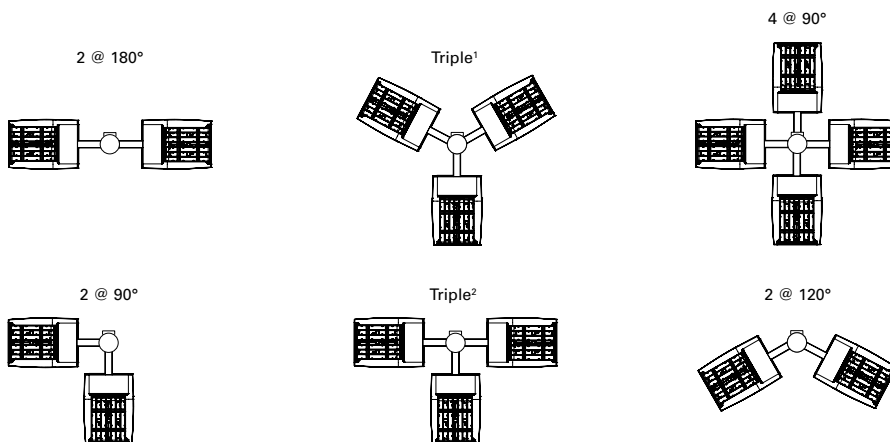
UL/cUL Wet Location Listed
ISO 9001
LM79 / LM80 Compliant
3G Vibration Rated
IP66 Rated
DesignLights Consortium® Qualified*

ENERGY DATA

Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120V-277V 50/60Hz
347V & 480V 60Hz
-40°C Min. Temperature
40°C Max. Temperature
50°C Max. Temperature (HA Option)

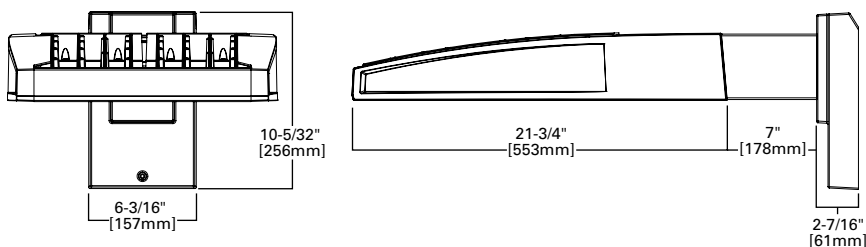
STANDARD ARM MOUNTING REQUIREMENTS

Configuration	90° Apart	120° Apart
GAN-AF-01	7" Arm (Standard)	7" Arm (Standard)
GAN-AF-02	7" Arm (Standard)	7" Arm (Standard)
GAN-AF-03	7" Arm (Standard)	7" Arm (Standard)
GAN-AF-04	7" Arm (Standard)	7" Arm (Standard)
GAN-AF-05	10" Extended Arm (Required)	7" Arm (Standard)
GAN-AF-06	10" Extended Arm (Required)	7" Arm (Standard)
GAN-AF-07	13" Extended Arm (Required)	13" Extended Arm (Required)
GAN-AF-08	13" Extended Arm (Required)	13" Extended Arm (Required)
GAN-AF-09	16" Extended Arm (Required)	16" Extended Arm (Required)
GAN-AF-10	16" Extended Arm (Required)	16" Extended Arm (Required)

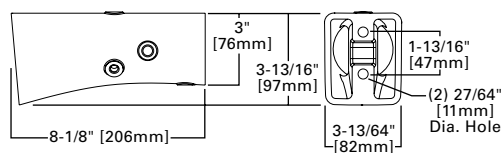


NOTES: 1 Round poles are 3 @ 120°. Square poles are 3 @ 90°. 2 Round poles are 3 @ 90°.

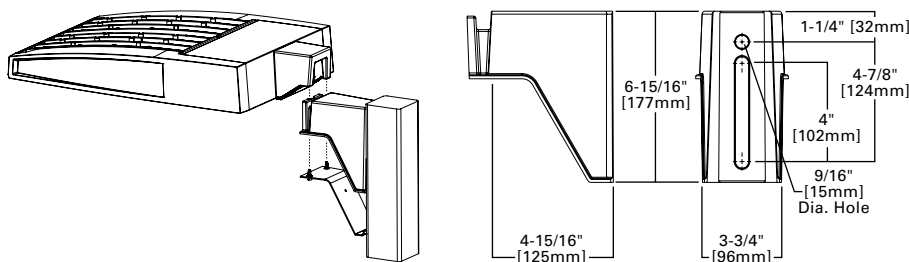
STANDARD WALL MOUNT



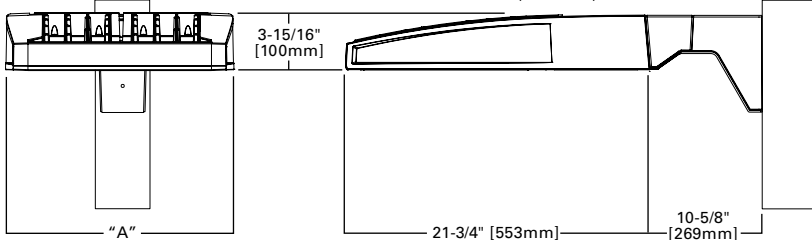
MAST ARM MOUNT



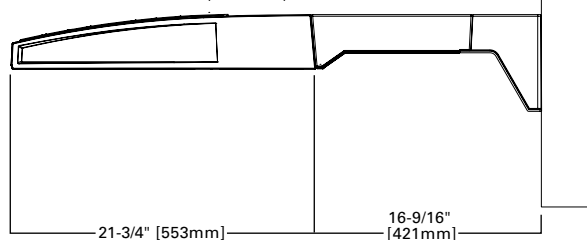
QUICK MOUNT ARM (INCLUDES FIXTURE ADAPTER)



QM Quick Mount Arm (Standard)



QMEA Quick Mount Arm (Extended)

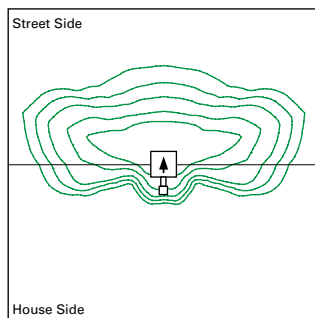


QUICK MOUNT ARM DATA

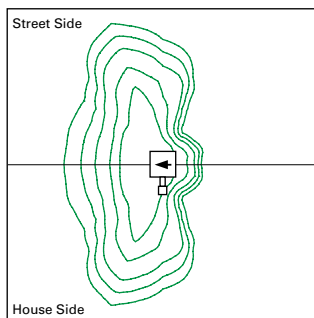
Number of Light Squares ^{1,2}	"A" Width	Weight with QM Arm (lbs.)	Weight with QMEA Arm (lbs.)	EPA (Sq. Ft.)
1-4	15-1/2" (394mm)	35 (15.91 kgs.)	38 (17.27 kgs.)	1.11
5-6 ³	21-5/8" (549mm)	46 (20.91 kgs.)	49 (22.27 kgs.)	
7-8	27-5/8" (702mm)	56 (25.45 kgs.)	59 (26.82 kgs.)	

NOTES: 1 QM option available with 1-8 light square configurations. 2 QMEA option available with 1-6 light square configurations. 3 QMEA arm to be used when mounting two fixtures at 90° on a single pole.

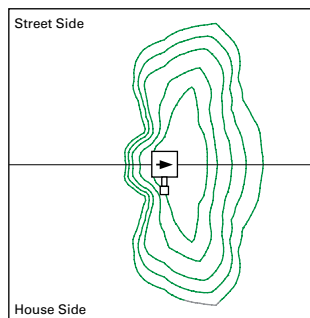
OPTIC ORIENTATION



Standard

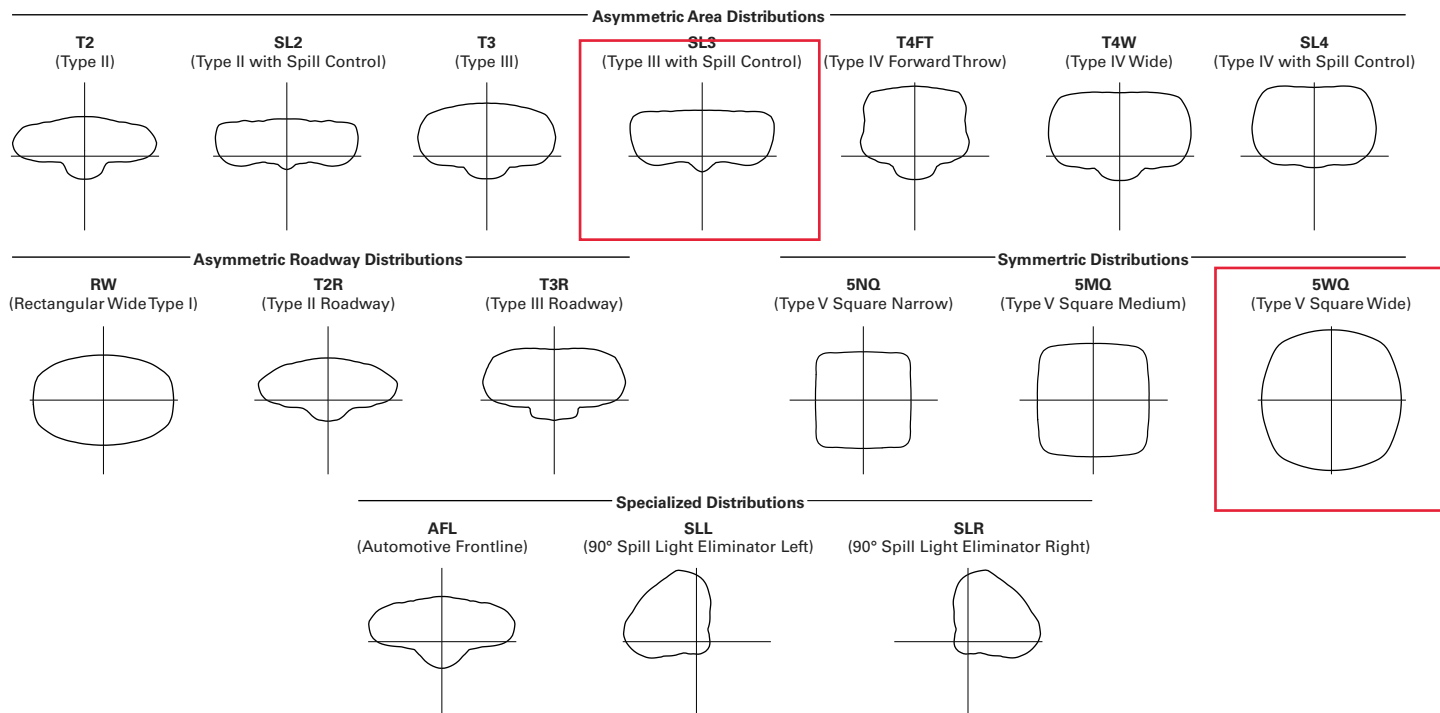


Optics Rotated Left @ 90° [L90]



Optics Rotated Right @ 90° [R90]

OPTICAL DISTRIBUTIONS

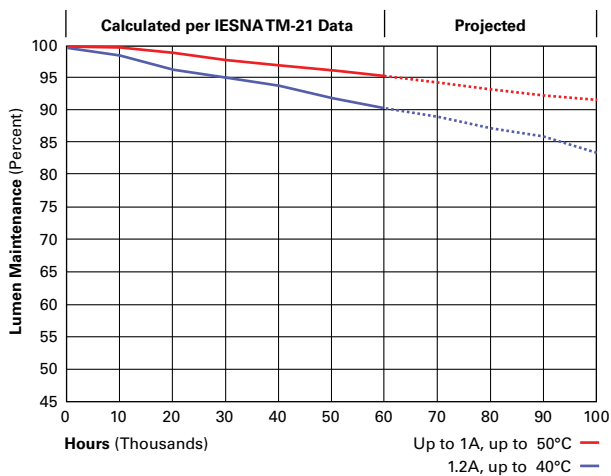


LUMEN MAINTENANCE

Drive Current	Ambient Temperature	TM-21 Lumen Maintenance (60,000 Hours)	Projected L70 (Hours)
Up to 1A	Up to 50°C	> 95%	416,000
1.2A	Up to 40°C	> 90%	205,000

LUMEN MULTIPLIER

Ambient Temperature	Lumen Multiplier
0°C	1.02
10°C	1.01
25°C	1.00
40°C	0.99
50°C	0.97



NOMINAL POWER LUMENS (1.2A)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		67	129	191	258	320	382	448	511	575	640
Input Current @ 120V (A)		0.58	1.16	1.78	2.31	2.94	3.56	4.09	4.71	5.34	5.87
Input Current @ 208V (A)		0.33	0.63	0.93	1.27	1.57	1.87	2.22	2.52	2.80	3.14
Input Current @ 240V (A)		0.29	0.55	0.80	1.10	1.35	1.61	1.93	2.18	2.41	2.71
Input Current @ 277V (A)		0.25	0.48	0.70	0.96	1.18	1.39	1.69	1.90	2.09	2.36
Input Current @ 347V (A)		0.20	0.39	0.57	0.78	0.96	1.15	1.36	1.54	1.72	1.92
Input Current @ 480V (A)		0.15	0.30	0.43	0.60	0.73	0.85	1.03	1.16	1.28	1.45
Optics											
T2	4000K/5000K Lumens	6,863	13,412	20,011	26,441	32,761	39,205	46,364	52,534	58,601	64,880
	3000K Lumens	6,489	12,681	18,919	25,000	30,974	37,066	43,836	49,668	55,405	61,341
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	7,285	14,238	21,246	28,072	34,780	41,621	49,221	55,770	62,212	68,878
	3000K Lumens	6,888	13,462	20,087	26,541	32,884	39,351	46,537	52,729	58,819	65,122
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3	4000K/5000K Lumens	6,995	13,670	20,397	26,951	33,391	39,959	47,256	53,544	59,728	66,130
	3000K Lumens	6,613	12,924	19,284	25,480	31,570	37,780	44,679	50,624	56,471	62,524
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	7,150	13,973	20,850	27,549	34,134	40,846	48,307	54,734	61,056	67,598
	3000K Lumens	6,761	13,212	19,713	26,046	32,272	38,619	45,673	51,750	57,726	63,911
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4FT	4000K/5000K Lumens	7,036	13,748	20,515	27,107	33,586	40,191	47,530	53,854	60,074	66,512
	3000K Lumens	6,652	12,999	19,397	25,629	31,754	37,999	44,938	50,917	56,797	62,885
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4W	4000K/5000K Lumens	6,945	13,571	20,249	26,756	33,152	39,671	46,917	53,160	59,298	65,653
	3000K Lumens	6,566	12,831	19,146	25,297	31,344	37,508	44,358	50,260	56,064	62,072
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	6,851	13,388	19,977	26,396	32,704	39,137	46,283	52,444	58,498	64,768
	3000K Lumens	6,477	12,658	18,888	24,957	30,920	37,003	43,759	49,584	55,308	61,235
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	6,994	13,668	20,394	26,947	33,388	39,953	47,249	53,537	59,720	66,119
	3000K Lumens	6,612	12,922	19,281	25,477	31,567	37,774	44,673	50,618	56,463	62,514
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL4	4000K/5000K Lumens	6,645	12,986	19,378	25,603	31,723	37,962	44,893	50,868	56,743	62,824
	3000K Lumens	6,282	12,279	18,321	24,207	29,993	35,892	42,445	48,094	53,648	59,398
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	7,214	14,097	21,036	27,795	34,437	41,210	48,734	55,220	61,597	68,199
	3000K Lumens	6,820	13,329	19,888	26,279	32,558	38,962	46,077	52,208	58,237	64,479
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
5MQ	4000K/5000K Lumens	7,347	14,356	21,423	28,306	35,071	41,969	49,632	56,237	62,730	69,454
	3000K Lumens	6,947	13,573	20,254	26,762	33,158	39,680	46,925	53,170	59,309	65,667
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5
5WQ	4000K/5000K Lumens	7,366	14,396	21,480	28,381	35,164	42,080	49,765	56,386	62,898	69,639
	3000K Lumens	6,964	13,610	20,308	26,833	33,247	39,786	47,050	53,311	59,468	65,842
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	6,147	12,010	17,921	23,679	29,339	35,109	41,521	47,046	52,478	58,102
	3000K Lumens	5,811	11,355	16,944	22,388	27,739	33,194	39,256	44,479	49,617	54,933
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	7,149	13,970	20,846	27,543	34,126	40,837	48,295	54,722	61,042	67,582
	3000K Lumens	6,760	13,208	19,709	26,041	32,264	38,610	45,661	51,738	57,713	63,897
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
AFL	4000K/5000K Lumens	7,175	14,021	20,921	27,643	34,249	40,986	48,470	54,920	61,262	67,828
	3000K Lumens	6,784	13,256	19,780	26,136	32,381	38,750	45,827	51,925	57,922	64,129
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (1A)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		59	113	166	225	279	333	391	445	501	558
Input Current @ 120V (A)		0.51	1.02	1.53	2.03	2.55	3.06	3.56	4.08	4.60	5.07
Input Current @ 208V (A)		0.29	0.56	0.82	1.11	1.37	1.64	1.93	2.19	2.46	2.75
Input Current @ 240V (A)		0.26	0.48	0.71	0.96	1.19	0.41	1.67	1.89	2.12	2.39
Input Current @ 277V (A)		0.23	0.42	0.61	0.83	1.03	1.23	1.45	1.65	1.84	2.09
Input Current @ 347V (A)		0.17	0.32	0.50	0.64	0.82	1.00	1.14	1.32	1.50	1.68
Input Current @ 480V (A)		0.14	0.24	0.37	0.48	0.61	0.75	0.91	0.99	1.12	1.28
Optics											
T2	4000K/5000K Lumens	6,256	12,225	18,242	24,104	29,865	35,739	42,265	47,888	53,420	59,144
	3000K Lumens	5,915	11,559	17,248	22,789	28,236	33,790	39,960	45,277	50,506	55,919
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	6,642	12,979	19,366	25,589	31,705	37,941	44,870	50,840	56,711	62,789
	3000K Lumens	6,280	12,271	18,311	24,193	29,976	35,872	42,423	48,068	53,619	59,365
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
T3	4000K/5000K Lumens	6,377	12,461	18,593	24,568	30,439	36,426	43,077	48,810	54,447	60,282
	3000K Lumens	--	--	--	--	--	--	--	--	--	--
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	6,518	12,739	19,006	25,113	31,116	37,235	44,036	49,895	55,658	61,622
	3000K Lumens	6,029	11,781	17,579	23,229	28,779	34,440	40,729	46,148	51,478	56,995
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4FT	4000K/5000K Lumens	6,414	12,533	18,702	24,710	30,616	36,637	43,328	49,093	54,763	60,631
	3000K Lumens	6,064	11,849	17,681	23,363	28,946	34,638	40,966	46,417	51,776	57,325
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
T4W	4000K/5000K Lumens	6,331	12,372	18,459	24,391	30,221	36,163	42,769	48,459	54,056	59,849
	3000K Lumens	5,986	11,697	17,452	23,061	28,572	34,192	40,436	45,817	51,108	56,585
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	6,245	12,205	18,212	24,062	29,813	35,677	42,192	47,807	53,326	59,042
	3000K Lumens	5,904	11,539	17,218	22,750	28,187	33,732	39,891	45,199	50,418	55,822
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	6,376	12,460	18,591	24,564	30,436	36,421	43,072	48,803	54,439	60,273
	3000K Lumens	6,028	11,780	17,578	23,224	28,776	34,435	40,723	46,141	51,471	56,986
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL4	4000K/5000K Lumens	6,058	11,838	17,664	23,340	28,918	34,605	40,924	46,370	51,727	57,269
	3000K Lumens	5,727	11,193	16,701	22,067	27,341	32,718	38,692	43,841	48,906	54,146
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	6,577	12,851	19,176	25,336	31,392	37,566	44,426	50,337	56,151	62,170
	3000K Lumens	6,218	12,151	18,131	23,955	29,680	35,517	42,003	47,592	53,089	58,779
	BUG Rating	B2-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
5MQ	4000K/5000K Lumens	6,697	13,088	19,528	25,803	31,970	38,258	45,243	51,264	57,185	63,313
	3000K Lumens	6,332	12,374	18,463	24,395	30,227	36,171	42,776	48,468	54,066	59,861
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5
5WQ	4000K/5000K Lumens	6,715	13,122	19,580	25,871	32,055	38,360	45,365	51,401	57,337	63,482
	3000K Lumens	6,348	12,406	18,513	24,461	30,307	36,268	42,891	48,599	54,210	60,021
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	5,604	10,949	16,337	21,586	26,745	32,004	37,850	42,886	47,838	52,965
	3000K Lumens	5,298	10,351	15,446	20,409	25,287	30,258	35,786	40,547	45,229	50,077
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	6,517	12,735	19,002	25,107	31,109	37,227	44,025	49,883	55,644	61,607
	3000K Lumens	6,162	12,040	17,965	23,738	29,413	35,197	41,623	47,163	52,609	58,247
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
AFL	4000K/5000K Lumens	6,541	12,781	19,072	25,199	31,221	37,362	44,185	50,065	55,846	61,831
	3000K Lumens	6,184	12,084	18,032	23,825	29,519	35,325	41,775	47,334	52,801	58,459
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (800MA)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		44	85	124	171	210	249	295	334	374	419
Input Current @ 120V (A)		0.39	0.77	1.13	1.54	1.90	2.26	2.67	3.03	3.39	3.80
Input Current @ 208V (A)		0.22	0.44	0.62	0.88	1.06	1.24	1.50	1.68	1.87	2.12
Input Current @ 240V (A)		0.19	0.38	0.54	0.76	0.92	1.08	1.30	1.46	1.62	1.84
Input Current @ 277V (A)		0.17	0.36	0.47	0.72	0.83	0.95	1.19	1.31	1.42	1.67
Input Current @ 347V (A)		0.15	0.24	0.38	0.49	0.63	0.77	0.87	1.01	1.15	1.52
Input Current @ 480V (A)		0.11	0.18	0.29	0.37	0.48	0.59	0.66	0.77	0.88	0.96
Optics											
T2	4000K/5000K Lumens	5,054	9,878	14,739	19,475	24,129	28,875	34,148	38,691	43,159	47,785
	3000K Lumens	4,779	9,338	13,935	18,412	22,813	27,301	32,286	36,581	40,805	45,179
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5
T2R	4000K/5000K Lumens	5,366	10,486	15,647	20,675	25,616	30,654	36,252	41,076	45,819	50,730
	3000K Lumens	5,074	9,914	14,794	19,548	24,218	28,982	34,276	38,835	43,320	47,964
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
T3	4000K/5000K Lumens	5,153	10,068	15,022	19,849	24,593	29,430	34,805	39,436	43,990	48,705
	3000K Lumens	4,872	9,519	14,203	18,766	23,251	27,825	32,907	37,285	41,591	46,048
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5
T3R	4000K/5000K Lumens	5,266	10,292	15,356	20,290	25,140	30,084	35,578	40,312	44,968	49,786
	3000K Lumens	4,979	9,731	14,518	19,184	23,769	28,443	33,638	38,114	42,516	47,071
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4FT	4000K/5000K Lumens	5,182	10,126	15,109	19,964	24,736	29,600	35,006	39,664	44,245	48,987
	3000K Lumens	4,899	9,574	14,285	18,876	23,387	27,986	33,097	37,501	41,832	46,315
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4W	4000K/5000K Lumens	5,115	9,995	14,914	19,706	24,417	29,218	34,554	39,152	43,674	48,354
	3000K Lumens	4,836	9,450	14,100	18,631	23,085	27,624	32,670	37,017	41,292	45,717
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
SL2	4000K/5000K Lumens	5,046	9,860	14,713	19,441	24,087	28,825	34,089	38,625	43,085	47,702
	3000K Lumens	4,771	9,322	13,911	18,381	22,774	27,253	32,229	36,518	40,735	45,101
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5
SL3	4000K/5000K Lumens	5,152	10,067	15,020	19,846	24,591	29,426	34,800	39,431	43,984	48,698
	3000K Lumens	4,871	9,518	14,200	18,764	23,249	27,822	32,902	37,280	41,585	46,042
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
SL4	4000K/5000K Lumens	4,894	9,565	14,271	18,857	23,364	27,959	33,065	37,465	41,792	46,270
	3000K Lumens	4,627	9,043	13,492	17,829	22,090	26,434	31,261	35,422	39,513	43,746
	BUG Rating	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	5,313	10,383	15,493	20,470	25,363	30,351	35,893	40,669	45,367	50,229
	3000K Lumens	5,024	9,817	14,647	19,354	23,980	28,696	33,936	38,452	42,893	47,490
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G3
5MQ	4000K/5000K Lumens	5,411	10,574	15,778	20,848	25,830	30,911	36,554	41,418	46,202	51,154
	3000K Lumens	5,117	9,997	14,917	19,710	24,421	29,225	34,561	39,160	43,682	48,364
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
5WQ	4000K/5000K Lumens	5,426	10,603	15,820	20,903	25,899	30,992	36,652	41,529	46,325	51,290
	3000K Lumens	5,130	10,025	14,958	19,763	24,486	29,302	34,654	39,263	43,799	48,493
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
SLL/SLR	4000K/5000K Lumens	4,528	8,846	13,199	17,440	21,609	25,858	30,580	34,649	38,651	42,792
	3000K Lumens	4,281	8,364	12,480	16,489	20,430	24,448	28,912	32,759	36,543	40,459
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	5,265	10,289	15,353	20,285	25,134	30,077	35,569	40,303	44,958	49,775
	3000K Lumens	4,978	9,727	14,516	19,179	23,763	28,437	33,629	38,105	42,506	47,060
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4
AFL	4000K/5000K Lumens	5,285	10,327	15,409	20,360	25,225	30,186	35,699	40,450	45,120	49,956
	3000K Lumens	4,996	9,763	14,569	19,249	23,849	28,540	33,752	38,244	42,659	47,232
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3

* Nominal data for 70 CRI.

NOMINAL POWER LUMENS (600MA)

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		34	66	96	129	162	193	226	257	290	323
Input Current @ 120V (A)		0.30	0.58	0.86	1.16	1.44	1.73	2.03	2.33	2.59	2.89
Input Current @ 208V (A)		0.17	0.34	0.49	0.65	0.84	0.99	1.14	1.30	1.48	1.63
Input Current @ 240V (A)		0.15	0.30	0.43	0.56	0.74	0.87	1.00	1.13	1.30	1.43
Input Current @ 277V (A)		0.14	0.28	0.41	0.52	0.69	0.81	0.93	1.04	1.22	1.33
Input Current @ 347V (A)		0.11	0.19	0.30	0.39	0.49	0.60	0.69	0.77	0.90	0.99
Input Current @ 480V (A)		0.08	0.15	0.24	0.30	0.38	0.48	0.53	0.59	0.71	0.77
Optics											
T2	4000K/5000K Lumens	4,121	8,055	12,019	15,881	19,676	23,547	27,847	31,552	35,196	38,967
	3000K Lumens	3,896	7,615	11,363	15,015	18,604	22,263	26,328	29,831	33,276	36,842
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4
T2R	4000K/5000K Lumens	4,376	8,552	12,760	16,860	20,890	24,998	29,563	33,497	37,365	41,369
	3000K Lumens	4,138	8,085	12,064	15,941	19,751	23,635	27,951	31,670	35,328	39,113
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4
T3	4000K/5000K Lumens	4,201	8,210	12,251	16,187	20,055	23,999	28,383	32,159	35,873	39,718
	3000K Lumens	3,973	7,763	11,583	15,304	18,961	22,691	26,835	30,406	33,916	37,552
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
T3R	4000K/5000K Lumens	4,294	8,393	12,523	16,546	20,501	24,532	29,014	32,875	36,671	40,600
	3000K Lumens	4,060	7,936	11,840	15,644	19,383	23,195	27,432	31,082	34,671	38,386
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
T4FT	4000K/5000K Lumens	4,226	8,257	12,321	16,280	20,172	24,139	28,547	32,346	36,082	39,948
	3000K Lumens	3,996	7,807	11,649	15,392	19,071	22,822	26,990	30,582	34,114	37,770
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
T4W	4000K/5000K Lumens	4,171	8,151	12,162	16,071	19,912	23,827	28,178	31,928	35,615	39,432
	3000K Lumens	3,943	7,706	11,498	15,194	18,825	22,527	26,642	30,187	33,673	37,281
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
SL2	4000K/5000K Lumens	4,114	8,041	11,998	15,854	19,643	23,506	27,799	31,498	35,135	38,901
	3000K Lumens	3,890	7,603	11,344	14,989	18,572	22,224	26,282	29,780	33,219	36,779
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
SL3	4000K/5000K Lumens	4,200	8,209	12,249	16,184	20,053	23,996	28,379	32,154	35,869	39,712
	3000K Lumens	3,972	7,762	11,580	15,302	18,960	22,688	26,831	30,400	33,913	37,546
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
SL4	4000K/5000K Lumens	3,992	7,799	11,638	15,378	19,053	22,801	26,964	30,552	34,081	37,733
	3000K Lumens	3,774	7,374	11,003	14,539	18,015	21,557	25,493	28,886	32,222	35,674
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G4	B2-U0-G5	B2-U0-G5	B3-U0-G5
5NQ	4000K/5000K Lumens	4,333	8,467	12,634	16,694	20,683	24,751	29,271	33,166	36,996	40,961
	3000K Lumens	4,097	8,005	11,945	15,784	19,555	23,401	27,674	31,357	34,978	38,727
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3
5MQ	4000K/5000K Lumens	4,413	8,622	12,867	17,000	21,064	25,207	29,810	33,777	37,677	41,715
	3000K Lumens	4,173	8,152	12,165	16,073	19,915	23,832	28,185	31,934	35,623	39,440
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
5WQ	4000K/5000K Lumens	4,424	8,646	12,900	17,046	21,120	25,274	29,890	33,866	37,778	41,826
	3000K Lumens	4,182	8,175	12,197	16,117	19,968	23,896	28,260	32,018	35,717	39,545
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
SLL/SLR	4000K/5000K Lumens	3,692	7,214	10,763	14,222	17,621	21,086	24,937	28,256	31,519	34,897
	3000K Lumens	3,491	6,820	10,176	13,447	16,660	19,937	23,577	26,715	29,800	32,994
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
RW	4000K/5000K Lumens	4,293	8,390	12,520	16,542	20,496	24,527	29,007	32,866	36,662	40,591
	3000K Lumens	4,059	7,932	11,837	15,640	19,378	23,189	27,425	31,074	34,662	38,377
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3
AFL	4000K/5000K Lumens	4,310	8,421	12,566	16,602	20,571	24,616	29,112	32,986	36,795	40,738
	3000K Lumens	4,074	7,962	11,881	15,697	19,448	23,273	27,525	31,187	34,788	38,516
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3

* Nominal data for 70 CRI.

CONTROL OPTIONS

0-10V (DIM)

This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (P, 4 and 4N7)

Optional button-type photocontrol (P) and photocontrol receptacles (4 and 4N7) provide a flexible solution to enable “dusk-to-dawn” lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the 4N7 receptacle.

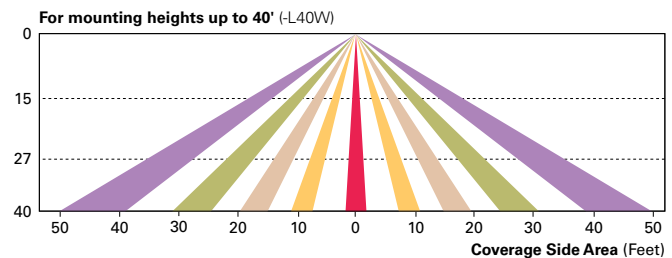
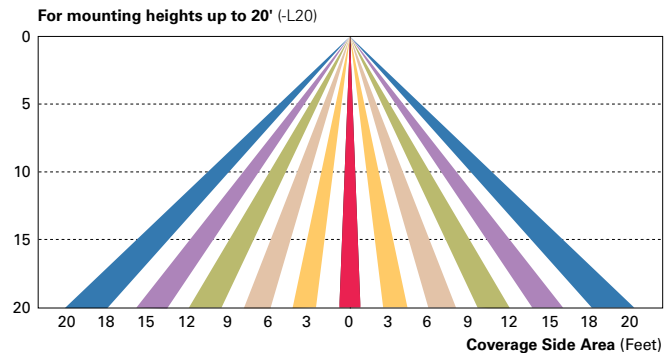
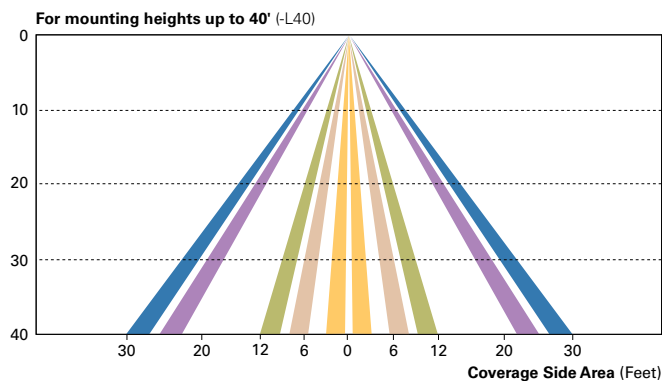
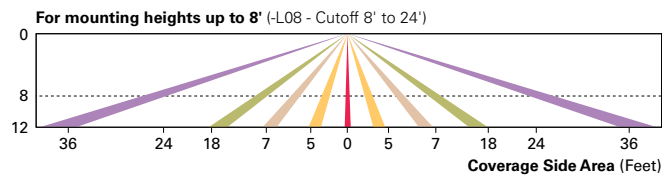
After Hours Dim (AHD)

This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a “dusk-to-dawn” period has been calculated from the photocontrol input. Specify the desired dimming profile for a simple, factory-shipped dimming solution requiring no external control wiring. Reference the After Hours Dim supplemental guide for additional information.

Dimming Occupancy Sensor (MS/DIM-LXX, MS/X-LXX and MS-LXX)

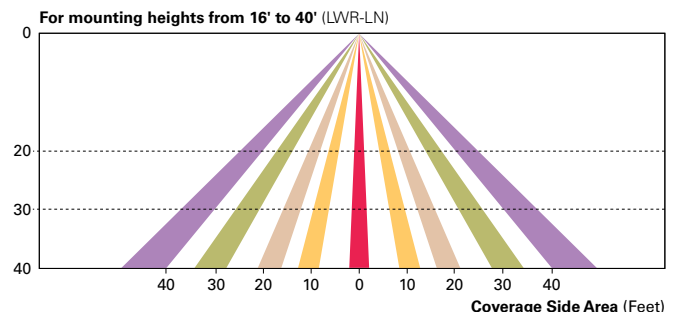
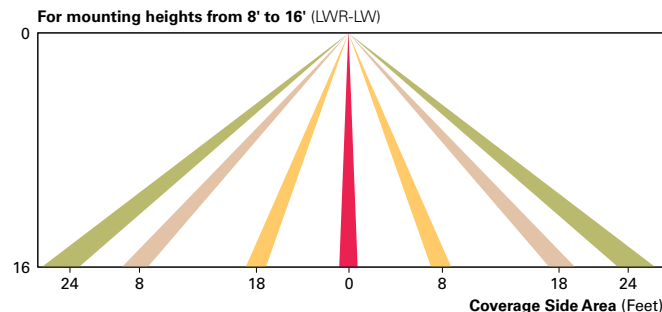
These sensors are factory installed in the luminaire housing. When the MS/DIM-LXX sensor option is selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The MS/DIM sensor is factory preset to dim down to approximately 50 percent power with a time delay of five minutes. The MS-LXX sensor is factory preset to turn the luminaire off after five minutes of no activity. The MS/X-LXX is also preset for five minutes and only controls the specified number of light engines to maintain steady output from the remaining light engines.

These occupancy sensors includes an integral photocell that can be activated with the FSIR-100 accessory for “dusk-to-dawn” control or daylight harvesting - the factory preset is OFF. The FSIR-100 is a wireless tool utilized for changing the dimming level, time delay, sensitivity and other parameters. A variety of sensor lens are available to optimize the coverage pattern for mounting heights from 8'-40'.



LumaWatt Pro Wireless Control and Monitoring System (LWR-LW and LWR-LN)

The LumaWatt Pro system is a peer-to-peer wireless network of luminaire-integral sensors for any sized project. Each sensor is capable of motion and photo sensing, metering power consumption and wireless communication. The end-user can securely create and manage sensor profiles with browser-based management software. The software will automatically broadcast to the sensors via wireless gateways for zone-based and individual luminaire control. The LumaWatt Pro software provides smart building solutions by utilizing the sensor to provide easy-to-use dashboard and analytic capabilities such as improved energy savings, traffic flow analysis, building management software integration and more. For additional details, refer to the LumaWatt product guides.



LumenSafe Integrated Network Security Camera (LD)

Eaton brings ease of camera deployment to a whole new level. No additional wiring is needed beyond providing line power to the luminaire. A variety of networking options allows security integrators to design the optimal solution for active surveillance. As the ideal solution to meet the needs for active surveillance, the LumenSafe integrated network camera is a streamlined, outdoor-ready fixed dome that provides HDTV 1080p video. This IP camera is optimally designed for deployment in the video management system or security software platform of choice.

ORDERING INFORMATION

Sample Number: GAN-AF-04-LED-U-T3R-BZ

Product Family ^{1,2}	Light Engine	Number of Light Squares ³	Lamp Type	Voltage	Distribution	Color	Mounting
GAN=Galleon	AF=1A Drive Current	01=1 02=2 03=3 04=4 05=5 ⁴ 06=6 07=7 ⁵ 08=8 ⁵ 09=9 ⁶ 10=10 ⁶	LED=Solid State Light Emitting Diodes	U=Universal (120-277V) 8=480V ^{7,8} 9=347V ⁷	T2=Type II T2R=Type II Roadway T3=Type III T3R=Type III Roadway T4FT=Type IV Forward Throw T4W=Type IV Wide 5NQ=Type V Narrow 5MQ=Type V Square Medium 5WQ=Type V Square Wide SL2=Type II w/Spill Control SL3=Type III w/Spill Control SL4=Type IV w/Spill Control SLL=90° Spill Light Eliminator Left SLR=90° Spill Light Eliminator Right RW=Rectangular Wide Type I AFL=Automotive Frontline	AP=Grey BZ=Bronze BK=Black DP=Dark Platinum GM=Graphite Metallic WH=White	[Blank]=Arm for Round or Square Pole EA=Extended Arm ⁹ MA=Mast Arm Adapter ¹⁰ WM=Wall Mount QM=Quick Mount Arm (Standard Length) ¹¹ QMEA=Quick Mount Arm (Extended Length) ¹²
Options (Add as Suffix)					Accessories (Order Separately)		
7027=70 CRI 2700K ¹³ 7030=70 CRI 3000K ¹³ 7050=70 CRI 5000K ¹³ 7060=70 CRI 6000K ¹³ 8030=80 CRI 3000K ¹³ 600=Drive Current Factory Set to 600mA ¹⁴ 800=Drive Current Factory Set to 800mA ¹⁴ 1200=Drive Current Factory Set to 1200mA ^{14, 15} 2L=Two Circuits ^{16, 17} DIM=External 0-10V Dimming Leads 3=Three-Position Terminal Block P=Button Type Photocontrol (120, 208, 240 or 277V) 4=NEMA Twistlock Photocontrol Receptacle 4N7=NEMA 7-PIN Twistlock Photocontrol Receptacle AHD145=After Hours Dim, 5 Hours ¹⁸ AHD245=After Hours Dim, 6 Hours ¹⁸ AHD255=After Hours Dim, 7 Hours ¹⁸ AHD355=After Hours Dim, 8 Hours ¹⁸ HA=50°C High Ambient MS/DIM-L08=Motion Sensor for Dimming Operation, Maximum 8' Mounting Height ¹⁹ MS/DIM-L20=Motion Sensor for Dimming Operation, 9' - 20' Mounting Height ¹⁹ MS/DIM-L40=Motion Sensor for Dimming Operation, 21' - 40' Mounting Height ¹⁹ MS/X-L08=Bi-Level Motion Sensor, Maximum 8' Mounting Height ^{19, 20} MS/X-L20=Bi-Level Motion Sensor, 9' - 20' Mounting Height ^{19, 20} MS/X-L40=Bi-Level Motion Sensor, 21' - 40' Mounting Height ^{19, 20} LWR-LW=LumaWatt Pro Wireless Sensor, Wide Lens for 8' - 16' Mounting Height ^{21, (A)} LWR-LN=LumaWatt Pro Wireless Sensor, Narrow Lens for 16' - 40' Mounting Height ^{21, (A)} L90=Optics Rotated 90° Left R90=Optics Rotated 90° Right MT=Factory Installed Mesh Top TH=Tool-less Door Hardware LCF=Light Square Trim Plate Painted to Match Housing ²² HSS=Factory Installed House Side Shield ²³ CE=CE Marking ²⁴					OA/RA1016=NEMA Photocontrol Multi-Tap - 105-285V OA/RA1027=NEMA Photocontrol - 480V OA/RA1201=NEMA Photocontrol - 347V OA/RA1013=Photocontrol Shorting Cap OA/RA1014=120V Photocontrol SA1252=10kV Surge Module Replacement SA1036-XX=Single Tenon Adapter for 2-3/8" O.D. Tenon SA1037-XX=2 @ 180° Tenon Adapter for 2-3/8" O.D. Tenon SA1197-XX=3 @ 120° Tenon Adapter for 2-3/8" O.D. Tenon SA1188-XX=4 @ 90° Tenon Adapter for 2-3/8" O.D. Tenon SA1189-XX=2 @ 90° Tenon Adapter for 2-3/8" O.D. Tenon SA1190-XX=3 @ 90° Tenon Adapter for 2-3/8" O.D. Tenon SA1191-XX=2 @ 120° Tenon Adapter for 2-3/8" O.D. Tenon SA1038-XX=Single Tenon Adapter for 3-1/2" O.D. Tenon SA1039-XX=2 @ 180° Tenon Adapter for 3-1/2" O.D. Tenon SA1192-XX=3 @ 120° Tenon Adapter for 3-1/2" O.D. Tenon SA1193-XX=4 @ 90° Tenon Adapter for 3-1/2" O.D. Tenon SA1194-XX=2 @ 90° Tenon Adapter for 3-1/2" O.D. Tenon SA1195-XX=3 @ 90° Tenon Adapter for 3-1/2" O.D. Tenon FSIR-100=Wireless Configuration Tool for Occupancy Sensor ²⁵ GAN-MT1=Field Installed Mesh Top for 1-4 Light Squares GAN-MT2=Field Installed Mesh Top for 5-6 Light Squares GAN-MT3=Field Installed Mesh Top for 7-8 Light Squares GAN-MT4=Field Installed Mesh Top for 9-10 Light Squares GLEON-QM=Quick Mount Arm Kit ¹¹ GLEON-QMEA=Quick Mount Extended Length Arm Kit ¹² LS/HSS=Field Installed House Side Shield ^{25, 26}		

NOTES:

- Customer is responsible for engineering analysis to confirm pole and fixture compatibility for all applications. Refer to our white paper WP513001EN for additional support information.
- DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.
- Standard 4000K CCT and minimum 70 CRI.
- Not compatible with MS/4-LXX or MS/1-LXX sensors.
- Not compatible with extended quick mount arm (QMEA).
- Not compatible with standard quick mount arm (QM) or extended quick mount arm (QMEA).
- Requires the use of a step down transformer when combined with sensor options. Not available with sensor at 1200mA. Not available in combination with the HA high ambient and sensor options at 1A.
- Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems).
- May be required when two or more luminaires are oriented on a 90° or 120° drilling pattern. Refer to arm mounting requirement table.
- Factory installed.
- Maximum 8 light squares.
- Maximum 6 light squares.
- Use dedicated IES files for 2700K, 3000K, 5000K, 6000K when performing layouts. These files are published on the Galleon luminaire product page on the website.
- 1 Amp standard. Use dedicated IES files for 600mA, 800mA and 1200mA when performing layouts. These files are published on the Galleon luminaire product page on the website.
- Not available with HA option.
- 2L is not available with MS/X or MS/DIM at 347V or 480V. 2L in AF-02 through AF-04 requires a larger housing, normally used for AF-05 or AF-06.
- Not available with LumaWatt Pro wireless sensors.
- Requires the use of P photocontrol or the 4N7 or 4 photocontrol receptacle with photocontrol accessory. See After Hours Dim supplemental guide for additional information.
- The FSIR-100 accessory is required to adjust parameters.
- Available in 2, 3, 4 or 6 Light Square configurations. Replace "X" with number of Light Squares in low output mode. Not available with dimming leads. No terminal block with bi-level operation.
- LumaWatt Pro wireless sensors are factory installed only requiring network components LWP-EM-1, LWP-GW-1, and LWP-PoE in appropriate quantities. See www.eaton.com/lighting for LumaWatt Pro application information.
- Not available with house side shield (HSS).
- Only for use with SL2, SL3, SL4 and AFL distributions. The Light Square trim plate is painted black when the HSS option is selected.
- CE is not available with the LWR, MS, MS/X, MS/DIM, P, 4 or 4N7 options. Available in 120-277V only.
- This tool enables adjustment of parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Eaton for more information.
- One required for each Light Square.

LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

Product Family	Camera Type	Data Backhaul
L=LumenSafe Technology* 	D=Dome Camera, Standard H=Dome Camera, Hi-Res Z=Dome Camera, Remote PTZ	C=Cellular, Customer Installed SIM Card A=Cellular, Factory Installed AT&T SIM Card V=Cellular, Factory Installed Verizon SIM Card S=Cellular, Factory Installed Sprint SIM Card W=Wi-Fi Networking w/ Omni-Directional Antenna E=Ethernet Networking

*Consult LumenSafe system pages for additional details and compatibility.

Aluminum Poles



SSA SQUARE STRAIGHT ALUMINUM

Catalog #		Type
Project		SL
Comments		
Prepared by		Date

FEATURES

- Straight square shaft 6005-T6 aluminum alloy polished
- 356-T6 cast aluminum alloy base with aluminum knock-in bolt covers
- 8'-35' mounting heights
- Drilled or tenon (specify)

DESIGN CONSIDERATIONS

Wind induced vibrations resulting from steady, unidirectional winds and other aerodynamic forces, as well as vibration and coefficient of height factors for non-grounded mounted installations (e.g., installations on bridges or buildings) are not included in this document. The information contained herein is for general guidance only and is not a replacement for professional judgement. Consult with a professional, and local and federal standards, before ordering to ensure product is appropriate for the intended purpose and installation location. Also, please review Eaton's Light Pole White Paper for risk factors and design considerations. [Learn more.](#)

Specifications and dimensions subject to change without notice. Consult your lighting representative at Eaton or visit www.eaton.com/lighting for available options, accessories and ordering information.

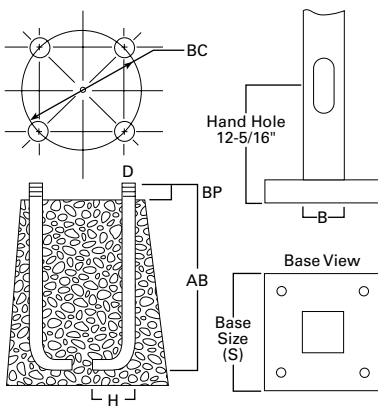
ORDERING INFORMATION

SAMPLE NUMBER: SSA4T08WXM1G

Product Family	Shaft Size (Inches) ¹	Wall Thickness (Inches)	Mounting Height (Feet)	Base Type	Finish	Mounting Type	Number and Location of Arms	Options (Add as Suffix)
SSA=Square Straight Aluminum	4=4"	T=0.125" M=0.188" X=0.250"	08=8'	W=Aluminum	A=Satin Brushed Aluminum B=Clear Anodized C=Dark Bronze Anodized D=Black Anodized E=Medium Bronze Anodized F=Dark Bronze J=Summit White K=Carbon Bronze L=Dark Platinum R=Hartford Green S=Silver T=Graphite Metallic V=Grey W=White X=Custom Color Y=Black	2=2-3/8" O.D. Tenon (4" Long) 3=3-1/2" O.D. Tenon (5" Long) 4=4" O.D. Tenon (6" Long) 9=3" O.D. Tenon (4" Long) 6=2-3/8" O.D. Tenon (6" Long) 7=4" O.D. Tenon (10" Long) A=Type A Drilling C=Type C Drilling E=Type E Drilling F=Type F Drilling G=Type G Drilling J=Type J Drilling K=Type K Drilling M=Type M Drilling N=Type N Drilling R=Type R Drilling	1=Single 2=2 at 180° 3=Triple ² 4=4 at 90° 5=2 at 90° X=None	A=1/2" Tapped Hub ³ B=3/4" Tapped Hub ³ C=Convenience Outlet ⁴ E=GFCI Convenience Outlet ⁴ F=Vibration Pad G=Ground Lug H=Additional Hand Hole ⁵ V=Vibration Dampener
	5=5" 6=6" 9=9" Steel; 6-3/4" Aluminum		10=10' 12=12' 15=15' 18=18' 20=20' 25=25' 30=30' 35=35'					

NOTES: 1. All shaft sizes nominal. 2. Square poles are 3 at 90°, round poles are 3 at 120°. 3. Tapped Hub is located 5' below the pole top and on the same side of pole as hand hole, unless specified otherwise. 4. Outlet is located 4' above base and on same side of pole as hand hole, unless specified otherwise. Receptacle not included, provision only. 5. Additional hand hole is located 12" below pole top and 90° from standard hand hole location, unless otherwise specified.

ANCHORAGE DATA



See technical information.

Pole	Anchor Bolt and Template Package	Template Only	Bolt Circle (inches)	Number of Bolts	Anchor Bolt Size (inches)
SSA4TxxW	317QB404	229354D	9	4	3/4 x 17 x 3
SSA4MxxW	317QB404	229354D	9	4	3/4 x 17 x 3
SSA5TxxW	317QB405	229357D	11	4	3/4 x 17 x 3
SSA5MxxW	317QB405	229357D	11	4	3/4 x 17 x 3
SSA6MxxW	436QB406	229243D	12-1/2	4	1 x 36 x 4
SSA6XxxW	436QB406	229243D	12-1/2	4	1 x 36 x 4
SSA9XxxW	436QB468	228520D	14-1/4	4	1 x 36 x 4

Effective Projected Area (At Pole Top)

Mounting Height (Feet)	Catalog Number ^{1,2}	Wall Thickness (Inches)	Base Square ³ (Inches)	Bolt Circle Diameter (Inches)	Anchor Bolt Projection ³ (Inches)	Shaft Size ³ (Inches)	Anchor Bolt Diameter x Length x Hook (Inches)	Net Weight (Pounds)	Maximum Effective Projected Area (Square Feet) ⁴				Max. Fixture Load - Includes Bracket (Pounds)
MH			S	BC	BP	B	D x AB x H		70 mph	80 mph	90 mph	100 mph	
8	SSA4T08W	0.125	10	9	3-1/8	4	3/4 x 17 x 3	23	26.6	19.9	15.2	11.9	350
12	SSA4T12W	0.125	10	9	3-1/8	4	3/4 x 17 x 3	32	16.0	11.5	8.5	6.3	260
15	SSA4T15W	0.125	10	9	3-1/8	4	3/4 x 17 x 3	39	9.1	6.2	4.2	2.8	200
15	SSA4M15W	0.188	10	9	3-1/8	4	3/4 x 17 x 3	55	14.8	10.6	7.7	5.6	200
15	SSA5T15W	0.125	11-9/16	11	3-1/4	5	3/4 x 17 x 3	52	16.0	11.3	8.1	5.8	260
18	SSA4T18W	0.125	10	9	3-1/8	4	3/4 x 17 x 3	46	6.4	4.0	2.3	1.1	100
18	SSA4M18W	0.188	10	9	3-1/8	4	3/4 x 17 x 3	66	11.0	7.4	5.0	3.3	150
18	SSA5T18W	0.125	11-9/16	11	3-1/4	5	3/4 x 17 x 3	61	11.8	7.8	5.1	3.2	150
18	SSA5M18W	0.188	11-9/16	11	3-1/4	5	3/4 x 17 x 3	85	19.2	13.5	9.6	6.8	260
20	SSA4M20W	0.188	10	9	3-1/8	4	3/4 x 17 x 3	72	8.8	5.6	3.5	1.9	150
20	SSA5T20W	0.125	11-9/16	11	3-1/4	5	3/4 x 17 x 3	66	9.5	5.9	3.5	1.7	100
20	SSA5M20W	0.188	11-9/16	11-1/8	3-1/4	5	3/4 x 17 x 3	94	16.4	11.2	7.6	5.0	150
25	SSA5M25W	0.188	11-1/2	11	3-1/4	5	3/4 x 17 x 3	115	10.2	6.0	3.2	1.1	100
25	SSA6M25W	0.188	12-3/4	12-1/2	4	6	1 x 36 x 4	140	16.6	10.6	6.5	3.5	260
30	SSA6X30W	0.250	12-3/4	12-1/2	4	6	1 x 36 x 4	215	14.8	9.0	5.0	2.1	260
30	SSA9X30W ⁵	0.250	15-1/8	14-5/8	4-1/8	6-3/4	1 x 36 x 4	237	21.1	13.5	8.2	4.5	260
35	SSA9X35W ⁵	0.250	15-1/8	14-5/8	4-1/8	6-3/4	1 x 36 x 4	274	14.1	7.6	3.1	--	150

Effective Projected Area (18" Above Pole Top)

Mounting Height (Feet)	Catalog Number ^{1,2}	Wall Thickness (Inches)	Base Square ³ (Inches)	Bolt Circle Diameter (Inches)	Anchor Bolt Projection ³ (Inches)	Shaft Size ³ (Inches)	Anchor Bolt Diameter x Length x Hook (Inches)	Net Weight (Pounds)	Maximum Effective Projected Area (Square Feet) ⁴				Max. Fixture Load - Includes Bracket (Pounds)
MH			S	BC	BP	B	D x AB x H		70 mph	80 mph	90 mph	100 mph	
8	SSA4T08W	0.125	10	9	3-1/8	4	3/4 x 17 x 3	23	22.2	16.6	12.7	10	350
12	SSA4T12W	0.125	10	9	3-1/8	4	3/4 x 17 x 3	32	14.1	10.1	7.4	5.5	260
15	SSA4T15W	0.125	10	9	3-1/8	4	3/4 x 17 x 3	39	8.2	5.6	3.8	2.5	200
15	SSA4M15W	0.188	10	9	3-1/8	4	3/4 x 17 x 3	55	13.4	9.6	6.9	5.1	200
15	SSA5T15W	0.125	11-9/16	11	3-1/4	5	3/4 x 17 x 3	52	14.4	10.2	7.3	5.2	260
18	SSA4T18W	0.125	10	9	3-1/8	4	3/4 x 17 x 3	46	5.9	3.6	2.1	0.9	100
18	SSA4M18W	0.188	10	9	3-1/8	4	3/4 x 17 x 3	66	10.0	6.8	4.6	3.0	150
18	SSA5T18W	0.125	11-9/16	11	3-1/4	5	3/4 x 17 x 3	61	10.8	7.2	4.7	2.9	150
18	SSA5M18W	0.188	11-9/16	11	3-1/4	5	3/4 x 17 x 3	85	17.6	12.4	8.8	6.2	260
20	SSA4M20W	0.188	10	9	3-1/8	4	3/4 x 17 x 3	72	8.1	5.2	3.2	1.7	150
20	SSA5T20W	0.125	11-9/16	11	3-1/4	5	3/4 x 17 x 3	66	8.8	5.5	3.2	1.5	100
20	SSA5M20W	0.188	11-9/16	11-1/8	3-1/4	5	3/4 x 17 x 3	94	15.2	10.3	7.0	4.7	150
25	SSA5M25W	0.188	11-1/2	11	3-1/4	5	3/4 x 17 x 3	115	9.5	5.6	3.0	1.0	100
25	SSA6M25W	0.188	12-3/4	12-1/2	4	6	1 x 36 x 4	140	15.6	9.9	6.1	3.3	260
30	SSA6X30W	0.250	12-3/4	12-1/2	4	6	1 x 36 x 4	215	14.0	8.5	4.7	2.0	260
30	SSA9X30W ⁵	0.250	15-1/8	14-5/8	4-1/8	6-3/4	1 x 36 x 4	237	20.0	12.8	7.8	4.3	260
35	SSA9X35W ⁵	0.250	15-1/8	14-5/8	4-1/8	6-3/4	1 x 36 x 4	274	13.5	7.2	2.9	--	150

NOTES:

1. Catalog number includes pole with hardware kit. Anchor bolts not included. Before installing, make sure proper anchor bolts and templates are obtained.
2. Tenon size or machining for rectangular arms must be specified. Hand hole position relative to drill location.
3. Shaft size, base square, anchor bolts and projections may vary slightly. All dimensions nominal.
4. EPAs based on shaft properties with wind normal to flat. EPAs calculated using base wind velocity as indicated plus 30% gust factor.
5. Factory installed vibration damper.

JOB NAME

CONTACT

ORDERING CODE



LM-79

EcoNU6"

Round Adjustable

COB

eldoLED[®]
your product | our drive

SS



DESCRIPTION

The EcoNU6RA is an economical and highly efficient spec grade 6" recessed adjustable with thoughtful construction and pleasing aesthetics. Standard with premium dimming using EldoLED 1% flicker free drivers in 120V, 277V, and step down transformer for 347V. A minimalistic look is achieved with an ultrathin 1/16" trim that is only 5/16" wide. Color choices of both trim and bezel are offered for a customized look. An adjustable hot-aiming system allows tilt adjustments from 0° to 40° with 360° rotation. The aiming adjustment and locking mechanisms are accessible from below the ceiling while the reflector is installed. A complex tilting mechanism positions the tilting axis for the maximum optical performance at all angles.

HOUSING

Electrocoated 16-gauge cold-rolled steel provides enhanced structural reinforcement and rust prevention. Superior, flame-retardant, UL-certified, injection-molded commercial-grade Lexan[™] (PC) is used for the frame and regressed bezel trim. Lexan provides unmatched durability and impact resistance, 270°F heat deflection temperature, and is tested for UV resistance and water exposure in outdoor applications. The thermally-advanced, anodized heat sink uses 6063 aluminum alloy. A 90-minute constant-power IOTA emergency battery backup is available.

MOUNTING

An advanced mounting system allows for quick and secure installation with LED and driver serviceability from below the ceiling. The LED assembly uses die-cast aluminum mounting clamp grips (MCG) that swing out to tighten onto variable ceiling thicknesses ranging from 1/8" to 1-5/8". Integrated rubber feet on each MCG provide a non-slip vibration-resistant installation. The hidden MCG system is accessible from below ceiling by removing the snap-in lens/bezel assembly with either the included suction cup or a screwdriver blade. Integrated bar hangers feature integral toothed nails, T-bar mounting slots with locking holes, tabs for joist positioning, and extendibility from 14-3/4" to 26". Retrofit mounting option allows for installation from below ceiling by use of compact driver box. Ceiling cutout size is 6-3/8" diameter.

LISTINGS

- ETLus Listed to UL1598, cETL Listed to CSA C22.2 #250.0
- Type Non-IC, IC, CP, Airtight ASTM Standard E283
- Suitable for damp locations without lens
- Non-conductive, Lexan dead-front construction
- Made in the USA – meets the requirements of the Buy American provision within the ARRA

LED INFO

- 90 CRI: SDCM = 2-step MacAdam Ellipse, Lumen Maintenance: $L_{70} > 38,500$ hrs
- 80 CRI: SDCM = 3-step MacAdam Ellipse, Lumen Maintenance: $L_{70} > 38,500$ hrs

ORDERING CODE

SERIES	NU6	
TYPE	RA	round adjustable
LED	SW	static white
DELIVERED LUMENS (3000K 80CRI SS30)	07LM	630 lm
	10LM	830 lm
	13LM	1025 lm
	20LM	1635 lm
	30LM	2465 lm
CCT	2200K	Calculated Delivered Lumens = [Delivered Lumen Value] x [CCT Multiplier] x [Reflector Multiplier]
	2700K	
	3000K	
	3500K	
	4000K	
CRI	80	80CRI 90CRI
	90 ¹	
	80CRI	
	90CRI	
	90CRI	
REFLECTOR & LM MULTIPLIER	SS30	30° semi-specular (1.00)
	SS45	45° semi-specular (0.89)
	SS60	60° semi-specular (0.98)
	D40	40° diffused (0.93)
	D50	50° diffused (0.94)
VOLTAGE	120	120V
	277	277V
	See Electrical Options for 347V.	
DIMMING	DIM10 ³	standard driver with flicker free 0-10V dimming to 1%
	DIM10Z ³	flicker free 0-10V dimming to 0%
	DALI ³	flicker free DALI dimming to 1%
	DALIZ ³	flicker free DALI dimming to 0%
	DMXZ	flicker free DMX dimming to 0%
MOUNTING OPTIONS	LTE	Lutron Hi-lume 2-Wire (Triac) dimming to 1%
	LUT	Lutron Hi-lume EcoSystem dimming to 1%, Soft-on & Fade-to-Black
	LUTP ⁶	Lutron Hi-lume Premier EcoSystem dimming to 0.1%, Soft-on & Fade-to-Black
	ELV ⁴	leading & trailing edge (Triac/ELV) dimming to <10%
	ELV1 ⁴	leading & trailing edge (Triac/ELV) dimming to 1%
TRIM COLOR	WH	white
	MC	matte chrome
	BK	black
	BZ	bronze
	WT	wheat
BEZEL COLOR	WH	white
	MC	matte chrome
	BK	black
	BZ	bronze
	WT	wheat
ELECTRICAL OPTIONS	EM7 ⁵	emergency battery backup, 90 minutes at 7 watts to LED
	EM12 ⁵	emergency battery backup, 90 minutes at 12 watts to LED
	FOR 347V OPTION	order separate "347 to 277V" step down transformer p/n: P70489

ORDERING CODE

Follow the steps to specify your fixture, example:

NU6 - RA - SW - 30LM - 35K - 90 - D50 - 120 - DIM10 - NC - WH - WH - EM7

SW (LED)	POWER
DELIVERED LM	W (80CRI)
630	7
830	8
1025	11
1635	16
2465	26
3320	32

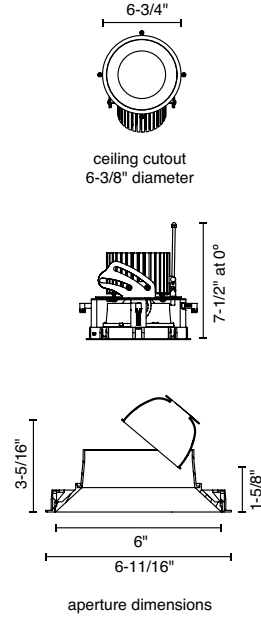
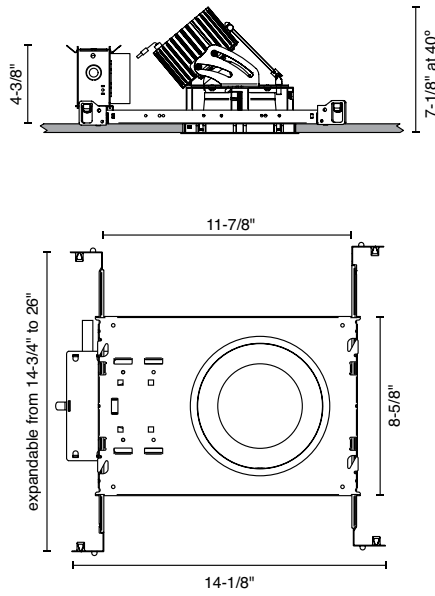
Power Factor ≥ 0.9

NOTES

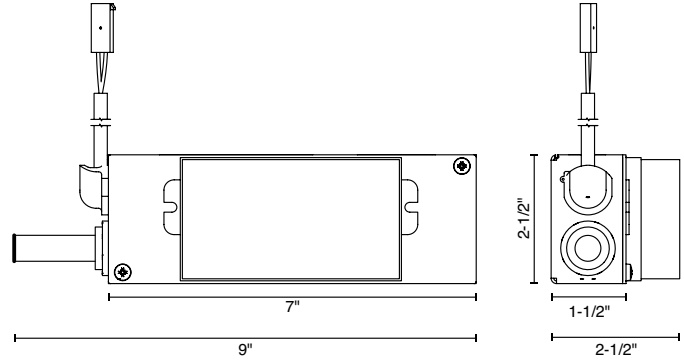
- 90 CRI not available in 5000K.
- IC/ICAT/CP not available in 40LM.
- Driver uses logarithmic dimming curve as standard. For linear dimming curve add "LIN" after dimming code, i.e. DIM10LIN.
- Triac/ELV dimming available in 120V only.
- For integrated test switch add "ITS" after emergency backup code, i.e. EM12ITS. Test switch is mounted in the bezel of the fixture.
- LUTP not available in 30LM or 40LM.

MOUNTING OPTIONS

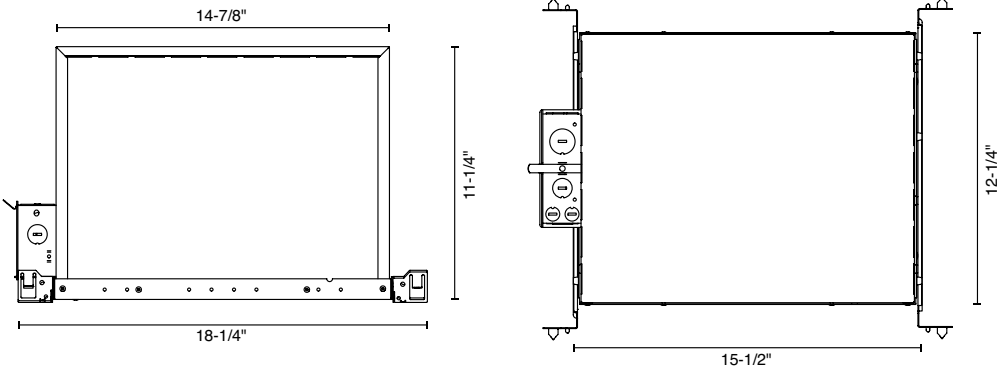
NC - NEW CONSTRUCTION



RET - RETROFIT

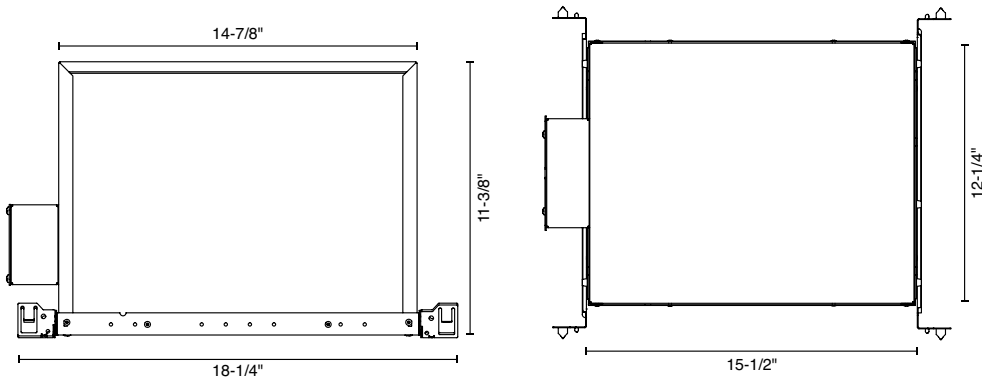


IC¹ - INSULATION CONTACT HOUSING



CP - CHICAGO PLENUM

ICAT - INSULATION CONTACT / AIR TIGHT



NOTES

1 Consult factory for smaller IC Housings when selecting lower lumen packages.

Wall Mount

LED Wall Sconce

101L



Project:	
Location:	
Cat.No:	
Type:	WL
Lamps:	Qty:
Notes:	

Gardco 101 LED wall sconces feature a low-profile design that provides wide flexibility in high performance exterior wall illumination. Full cutoff performance, usable illumination patterns, and powerful wattages combine into a compact and architecturally pleasing design. 101L sconces are available in Type 2, 3, and 4 distributions, and provide output of up to 9500 lumens. Energy saving control options increase energy savings and offer California Title 24 compliance. Emergency Battery Backup option available for path of egress.

Ordering guide

example: 101L-32L-700-NW-G1-3-120-IMRI2-BZ

							Options			
Prefix	Number of LEDs	Drive Current	LED Color – Generation	Distribution	Emergency	Voltage	Controls	Electrical	Finish	
101L	16L	530		3	EBPC	UNV				
101L 101L LED Wall Sconce	16L 16 LEDs (1 module)	530 530mA	CW-G1 Cool White 5700K, 70CRI Generation 1 NW-G1 Neutral White 4000K, 70CRI Generation 1 WW-G1 Warm White 3000K, 70CRI Generation 1	2 Type 2 3 Type 3 4 Type 4	EBPC Emergency Battery Pack Cold Weather ^{3,4,6,12} Leave blank to omit an emergency option	UNV 120-277V	DD 0-10V Dimming Driver ^{5,6} DCC Dual Circuit Control ^{6,7,8} DynaDimmer: Automatic Profile Dimming ^{7,9,10} CS50 Safety 50% Dimming (7 hours) ^{7,9,10} CM50 Median 50% Dimming (8 hours) ^{7,9,10} CE50 Economy 50% Dimming (9 hours) ^{7,9,10} DA50 All Night 50% Dimming ^{7,9,10} Photoelectric/Receptacle systems (Twist Lock Receptacle) PCB Photocontrol Button ^{5,10,11,12} TLRD5 Twist Lock Receptacle 5-Pin ¹³ TLRD7 Twist Lock Receptacle 7-Pin ¹³ TLRPC Twist Lock Receptacle w/ Photocell ^{11,12,16} Infrared Motion Response systems IMRI2 Integral with #2 lens ^{9,12,14} IMRI3 Integral with #4 lens ^{9,12,14} Network system (SiteWise) SW SW Integral module ^{4,17} Wireless system LLC2 Integral module with #2 lens ^{5,7,9,15} LLC3 Integral module with #3 lens ^{5,7,9,15}	Fusing F1 Single (120, 277, 347VAC) ¹² F2 Double (208, 240, 480VAC) ¹² F3 Canadian Double Pull (208, 240, 480VAC) ¹²	Textured BK Black WH White BZ Bronze DGY Dark Gray MGY Medium Gray Customer specified RAL Specify optional color or RAL (ex: OC-LGP or OC-RAL7024) CC Custom color (Must supply color chip for required factory quote)	
		650 650mA ¹				HVU 347-480V				
		700 700mA				120 120V				
		1000 1000mA				208 208V				
		1200 1200mA				240 240V				
	32L 32 LEDs (2 module)	530 530mA				277 277V				
		650 650mA ¹				347 347V				
		700 700mA				480 480V				
		1000 1000mA ²								

- 650mA only available with Emergency Battery Pack Cold Rated (EBPC) option
- 32L rated for 30°C at 1000mA
- Available for use with 16L and 32L in 530mA or 650mA only. Rated for -20°C to 35°C.
- Available in 120 or 277V only.
- Not available with Dual Circuit Control (DCC) option.
- EBPC is not available with DCC.
- Not available with Dimming Driver (DD) option.

- Available in 32L with 530mA. Consult technical support center for use with photocell and CS/CM/CE/DA.
- Available in 120-277V (UNV) only.
- Not available with LLC, TLR and DCC.
- Not available with 480V.
- Must specify input voltage.
- TLRD5/7 option not available with LLC, PCB, DCC. Works with 3 or 5 pin NEMA photocell dimming. Dimming will not be connected to TLR if ordering with DD, CS/CM/CE/DA and IMRI.
- Not available with DD, DCC or LLC.

- LLC2/3 Not available with TLR, PCB, IMRI, CS/CM/CE/DA. Ships with WS accessory attached to wireless module. Not for use with LLCR accessory.
- Not available with PCB, TLRD5/7, DCC, LLC.
- SW option is not available with any other control options with the exception of IMRI2, IMRI3 motion response options.

101L Sconce LED

Wall Mount

Luminaire Accessories (order separately)

Mounting accessories

Wall Mount

WS Wall Mounted Box for Surface Conduit

System accessories

Wireless system remote mount module

LLCR2-(F) #2 lens - specify finish in place of (F)
LLCR3-(F) #3 lens - specify finish in place of (F)

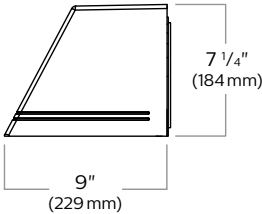
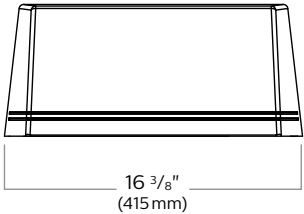
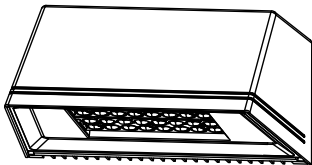
Central Remote Motion Response
(used connected to SiteWise main panel)

MS2-A-FVR-3
MS2-A-FVR-7

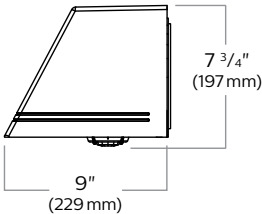
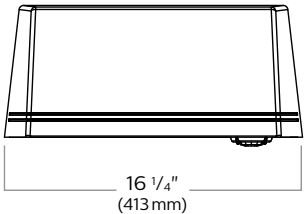
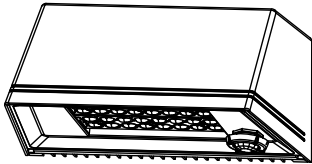
Wireless system remote controller accessory

Wireless system offers a remote radio/sensor module that allows to connected to a Limelight system (sold by other). Remote module can be mounted to wall or pole with j-box supplied. May be specified by choosing one of two different lenses to accommodate a variety of mounting heights/sensor detection ranges. Must specify option DD on luminaires that are planned to be used with remote mount controllers. See page 4 for Wireless system details.

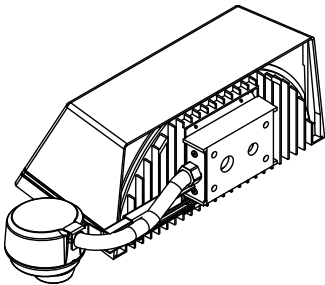
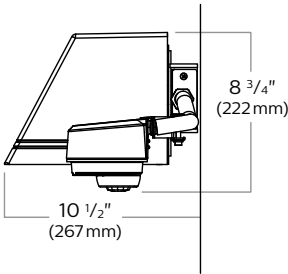
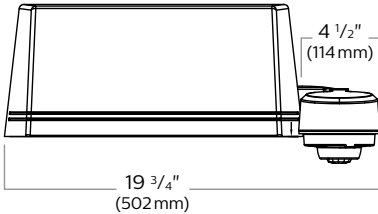
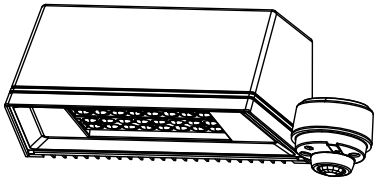
Dimensions



Motion Response



Wireless Controls



Luminaire Weights

LED Wall Sconce 101L	Weight
Luminaire	13.5 lbs
Luminaire - EBPC (EM battery pack)	17.0 lbs
Luminaire - Integrated system controls	16.3 lbs

101L Sconce LED

Wall Mount

LED Wattage and Lumen Values

Ordering Code	LED Qty	LED Current (mA)	Color Temp.	Average System Watts ¹	Type 2			Type 3			Type 4		
					Lumen Output ^{1,2}	BUG Rating	Efficacy (LPW)	Lumen Output ^{1,2}	BUG Rating	Efficacy (LPW)	Lumen Output ^{1,2}	BUG Rating	Efficacy (LPW)
101L-16L-530-NW-G1	16	530	4000K	28	2944	B1-U0-G0	106	2687	B1-U0-G1	97	2747	B1-U0-G1	99
101L-16L-700-NW-G1	16	700	4000K	37	3789	B1-U0-G1	103	3458	B1-U0-G1	94	3535	B1-U0-G1	96
101L-16L-1000-NW-G1	16	1000	4000K	55	5050	B1-U0-G1	92	4609	B1-U0-G1	84	4712	B1-U0-G1	86
101L-16L-1200-NW-G1	16	1200	4000K	65	5744	B2-U0-G1	89	5242	B1-U0-G2	81	5359	B1-U0-G2	83
101L-32L-530-NW-G1	32	530	4000K	52	5698	B2-U0-G1	110	5200	B1-U0-G2	100	5316	B1-U0-G2	102
101L-32L-700-NW-G1	32	700	4000K	70	7242	B2-U0-G1	103	6609	B1-U0-G2	94	6757	B1-U0-G2	96
101L-32L-1000-NW-G1	32	1000	4000K	107	9797	B2-U0-G1	92	8941	B2-U0-G2	84	9140	B2-U0-G2	86

LED Wattage and Lumen Values (Emergency Mode)³

Ordering Code	LED Qty	LED Current (mA)	Color Temp.	Ave. System Watts (charging mode)	Type 2	Type 3	Type 4
101L-16L-NW-EBPC	16	N/A	4000K	14	1345	1228	1255
101L-32L-NW-EBPC	32	N/A	4000K	14	1754	1600	1636

1. Wattage and lumen output may vary by +/- 8% due to LED manufacturer forward volt specification and ambient temperature. Wattage shown is average for 120V through 277V input. Actual wattage may vary by an additional +/- 10% due to actual input voltage.
2. Lumen values based on photometric tests performed in compliance with IESNA LM-79.
3. For emergency EBPC option, publish values are based on initial lumens.

Luminaire options

DD: 0-10V dimming driver with leads supplied through back of luminaire (for secondary dimming controls by others).

Dynadimmer Automatic Profile Dimming: Automatic dimming profiles (CS50/CM50/CE50) offer safety, median, or economy settings, for shorter or longer duration. Dimming profiles provide flexibility towards energy savings goals while optimizing light levels during specific dark hours. 50% dimming is standard. DA50 offers 50% instantaneous dimming all night (during all dark hours). Other dimming settings are also available if different light levels are required (contact Technical Support for details).

Profile	Dimming		
	Schedule	Duration	Level
Economy	9 PM - 6 AM	9 hours	50%
Median	10 PM - 6 AM	8 hours	50%
Safety	11 PM - 6 AM	7 hours	50%
Reactive 50	all night	dynamic	50%

TLRD5: Twist Lock Receptacle with 5 pins enabling dimming, can be used with a twistlock photoelectric cell or a shorting cap. Can also be used with third party control system.

TLRD7: Twist Lock Receptacle with 7 pins enabling dimming and additional functionality, can be used with twistlock photoelectric cell or a shorting cap. Can also be used with third party control system.

TLRDPC: Receptacle with twistlock photoelectric cell (must specify voltage). Receptacle located on top of luminaire housing.

IMRI2, IMRI3: Infrared Motion Response Integral (IMRI). IMRI module is mounted integral to the luminaire door and is available with two different sensor lens types to accommodate various mounting heights and occupancy detection ranges (see charts for approximate detection patterns). Motion response used in combination of Dynadimmer and SiteWise are not programmable and used to override controllers schedule when motion is detected. When used not combined with any controller, IMRI is set/operates in the following fashion: The motion sensor is set to a constant 50%. When motion is detected by the PIR sensor, the luminaire returns to 100% light output. Dimming on low is factory set to 50% with 5 minute default in "full power" prior to dimming back to low. When no motion is detected for 5 minutes, the motion response system reduces the wattage by 50% of the normal constant wattage reducing the light level. IMRI can also be specified with automatic profile dimming for the added benefit of a combined dimming profile with sensor detection, where the PIR sensor will override the dimming profile when occupancy is detected. Passive infrared (PIR) motion sensor, WattStopper FSP-211, equipped with lens choice specified. Available from 120V to 277V input only. Motion sensor off state power is 0.0 watts. The FSP-211 can also be reprogrammed with WattStopper's FSIR-100 remote programming tool accessory.

DCC: Dual Circuit Control permits separate switching of 32L models only, where a quantity of (2) 16 LED modules are controlled independently by use of two sets of leads, one for each module.

SW

SiteWise option is a fully integrated controller that connects to SiteWise system in order to offer a complete area lighting management system. The communication signal is based on patented central dimming technology. SiteWise delivers it deliver optimal energy savings using your site's existing cabling. No additional wiring required, installation and commissioning are simple. An intuitive, mobile app makes it easy for authorized users to set schedules to meet site specific lighting needs, local regulations, and energy codes.

Wireless system: 101L luminaires are available with optional wireless controllers ready to be connected to a Limelight system (sold by other). The system allows you to Wirelessly manage the entire site, independent lighting groups or individual luminaires while on-site or remotely. Based on a high density mesh network with an easy to use web-based portal, you can conveniently access, monitor and manage your lighting network remotely. Wireless System can be combined with site and area, pedestrian, and parking garage luminaires as well, for a completely connected outdoor.

101L Sconce LED

Wall Mount

Luminaire options (continued)

F1: Fusing Single (for 120, 277 or 347VAC)

F2: Fusing Double (for 208, 240 or 480VAC)

F3: Fusing Canadian Double Pull
(for 208, 240 or 480VAC)

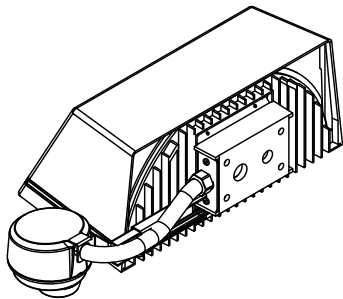
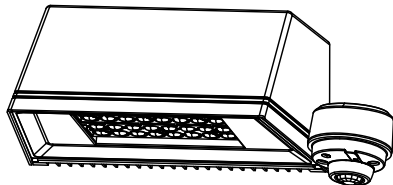
EBPC: Emergency battery pack is cold weather rated down to -20C (-4F) and integral to the luminaire, allowing for a consistent look between emergency and non-emergency sconces. A separate surface mount accessory box is not required. Dual light engines (32L) are wired in parallel, both operating in emergency mode to meet various redundancy lamp

requirements. Also available with single light engine (16L). Secondary driver with relay immediately detects AC power loss and powers luminaire for a minimum of 90 minutes from the time power is lost.

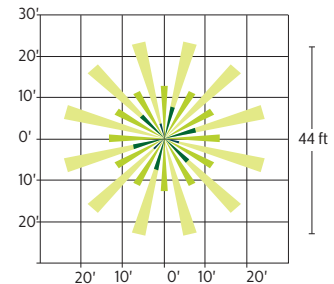
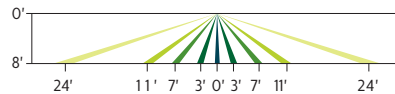
Infrared Motion Response and Wireless system sensor coverage patterns

LLC2/3 Luminaire mounted controller

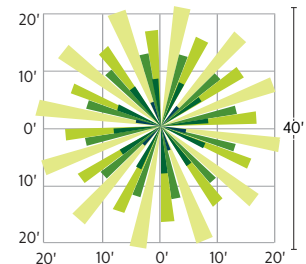
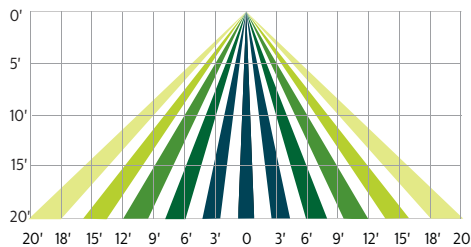
Controller attached to luminaire and Includes radio, photocell and motion sensor with #2 or #3 lens for 8-20' mounting heights.



IMRI2/LLC2/LLCR2

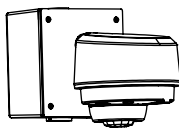


IMRI3/LLC3/LLCR3

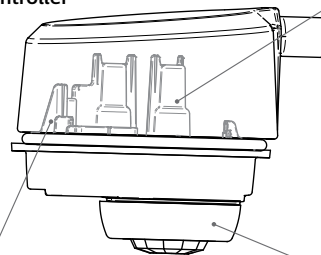


Remote Mount Wireless Controller

Used to extend the communication on site, to extend motion response and add other luminaires that are not pole mounted. Consult factory for more information.



Controller



Photocell

- Ambient light photocell on every wireless radio that averages the light levels of up to 5 controllers for an accurate reading and optimal light harvesting activity.
- Reports ambient light readings to 1500 Fc.

Wireless Radio

- 1.8 Watts max (no load draw)
- Operating voltage 120-277 VAC RMS
- Communicates using the ZigBee protocol
- Carries out dimming commands from Gateway
- Reports ambient light readings to 1500 Ft-Cd
- Transmission Systems Operating within the band 2400-2483.5Mhz
- ROHS Compliant

Motion Response

- Detects motion through passive infrared sensing technology with three different lens configurations
- Motion sensor coverage can be adjusted from a narrow to a wide detection range, which helps reduce false triggers to further increase energy savings.
- Sensing profiles can be updated to adapt to activity levels in the environment, such as occupancy level, wind, and mounting height

101L Sconce LED

Wall Mount

SiteWise system

SiteWise is a complete area lighting management system including a luminaire integrated controller, dimming signal transmitter cabinet, and locally accessible user interface. Installation and commissioning are simple. The cabinet communicates with the luminaires using a patented central dimming technology. The control signal is embedded on the existing electrical line – no new cabling is required. An intuitive, locally accessible interface makes it easy for authorized users to set schedules in order to meet site specific lighting needs, local regulations, and energy codes.

SiteWise system diagram



SiteWise system interface



SiteWise has an intuitive user interface that makes it easy to plan, edit, and implement lighting schedules for your site. Authorized users can access the interface via a local app.

To ensure that only authorized users can access your lighting, SiteWise offers two user types, each with different permissions. An advanced user, or administrator, can set and edit schedules using the ten pre-set scenes, assign those schedules to calendar days, and check system status.

For everyday use, a basic user can manually override a schedule that is currently running but cannot create or edit schedules.

SiteWise system specifications

The SiteWise system includes both luminaires and controls. The controls used for SiteWise are circuit load dependent. Required for a complete installation are the following SiteWise components: user interface, control kit, dimming signal transmitter cabinet, and dimming signal receiver located in the luminaire (**SW** option). Optional luminaire-integrated or external motion sensors may also be specified as required. Within the electrical closet, the control kit and dimming signal transmitter cabinet are installed into the electrical system between the existing breaker panel and the site luminaires. New LED luminaires containing the dimming signal receiver are installed on the site. Once completed, use of the interface allows for scheduling and override capabilities. Wireless access point and tablet should be supplied by others. Complete information on the control system can be found on the SiteWise website at philips.com/sitewise

101L Sconce LED

Wall Mount

Specifications

Housing

Main body cast housing and back plate made of a low copper die cast Aluminum alloy for a high resistance to corrosion, 0.100" (2.5mm) minimum thickness. Hinged door allows access to driver and LED compartment.

Mounting

Mounting is completed through integral back plate that features a separate recessed feature for hook and lock quick mount plate that secures with two set screws from bottom of luminaire. Mounting plate is located in the center of the luminaire width and 3.5" above the luminaire bottom (lens down position). Luminaire ships fully assembled, ready to install.

Light Engine

Composed of 4 main components: Heat Sink / LED Module / Optical System / Driver. Electrical components are RoHS compliant. IP66 sealed light engines. LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines extrapolations in accordance with IESNA TM-21. Metal core board ensures greater heat transfer and longer lifespan.

Heat Sink

Integral door/heat sink design made of low copper die cast Aluminum alloy for a high resistance to corrosion.

LED Module

Composed of high performance white LEDs. Color temperature as per ANSI/NEMA bin Neutral White, 4000K nominal (+/- 275K), CRI 70 Min. Available in other color temperatures including Cool White, 5700K and Warm White, 3000K.

SiteWise Network System

SiteWise system includes a controller fully integrated in the luminaire that enables the luminaires to communicate with a dimming signal transmitter cabinet located on site using patented central dimming technology. A locally accessible mobile app allows users to access the system and set functionalities such as ON/OFF, dimming levels and scheduling. SiteWise is available with motion response options in order to bring the light back to 100% when motion is detected. Additional functionalities are available such as communication with indoor lighting and connection to BMS systems.

Hardware

All exposed screws shall be stainless and/or corrosion resistant and captive.

Optical System

The advanced LED optical systems provide IES Types 2, 3, 4. Composed of high performance UV stabilized optical grade polymer refractor lenses to achieve desired distribution optimized to get maximum spacing, target lumens and a superior lighting uniformity. System is rated IP66. Performance shall be tested per LM-63, LM-79 and TM-15 (IESNA) certifying its photometric performance. Dark sky compliant with 0% uplight and U0 per IESNA TM-15.

Driver

High power factor of 90% min. Electronic driver, operating range 50/60 Hz. Auto adjusting universal voltage input from 120 to 277 VAC or 347 to 480 VAC rated for both application line to line or line to neutral, Class I, THD of 20% max. The current supplying the LEDs will be reduced by the driver if the driver experiences internal overheating as a protection to the LEDs and the electrical components. Output is protected from short circuits, voltage overload and current overload. Automatic recovery after correction. Standard built in driver surge protection of 2.5kV (min).

Surge Protection

Each luminaire is provided as standard with surge protector (designed SP1) tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure 10kV/5kA waveforms for Line Ground, Line Neutral and Neutral Ground, and in accordance with U.S. DOE (Department of Energy) MSSLC (Municipal Solid State Street Lighting Consortium) Model Specification for LED Roadway Luminaires Appendix D Electrical Immunity High Test Level 10kV / 5kA.

Wiring (supplied by others)

Splices must be made in the junction box.

Finish

Five standard colors offered in textured black, white, bronze, dark gray and medium gray. Color in accordance with the AAMA 2604 standard. Application of polyester powder coat paint 2.5 mils minimum. The thermosetting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as luster retention in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard. RAL and custom color matching available.

LED Products Manufacturing Standard

The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with EC61340-5-1 and ANSI/ESD S20.20 standards so as to eliminate ESD events that could decrease the useful life of the product.

LED Useful Life

Luminaire Useful Life accounts for LED lumen maintenance. Refer to IES files for energy consumption and delivered lumens for each option. Based on ISTMT in situ thermal testing in accordance with UL1598 and UL8750, LED LM-80/TM-21, expected to reach 100,000 + hours with >L70 lumen maintenance @ 25°C.

Certifications and Compliance

cULus Listed for Canada and USA suitable for wet locations when mounted downward facing. cULus Listed for Canada and USA suitable for damp locations when inverted upward facing when mounted in covered ceiling application. Emergency Battery Pack option is tested and listed to UL924 and CSA C22.2 No. 141-10 DesignLights Consortium qualified on models as listed on DLC QPL. Luminaire is rated for operation in ambient temperature of -40°C (-40°F) up to +40°C (+104°F).

Limited Warranty

5-year limited warranty. See [philips.com/warranties](https://www.philips.com/warranties) for details and restrictions. Visit our eCatalog or contact your local sales representative for more information.

101L Sconce LED

Wall Mount

LED Performance

Predicted lumen depreciation data ¹				
Ambient Temperature (°C)	Driver mA	Calculated L ₇₀ hours ^{1,2}	L ₇₀ per TM-21 ^{2,3}	Lumen Maintenance % @ 60,000 hours
25°C	up to 1200 mA	>100,000	>60,000	88%

1. Predicted performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions.
2. L₇₀ is the predicted time when LED performance depreciates to 70% of initial lumen output.
3. Calculated per IESNA TM21-11. Published L₇₀ hours limited to 6 times actual LED test hours.



Maine Behavioral Healthcare – Center for Autism and Developmental Disorders
100 Andover Road
Portland, Maine

Neighborhood Meeting Sign In Sheet

January 29, 2020
Spring Harbor Hospital, 123 Andover Road
Westbrook, Maine 04092

Members of the Public in Attendance	E-Mail
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
* NO ONE FROM THE	
PUBLIC CAME TO THE	
MEETING	
Developer and Consultant Team in Attendance	E-Mail
1. Barry Hosmer	barrybjhla@earthlink.net
2. Richard Gavin	Rgavin@MaineBehavioralHealthCare.org
3.	
4.	
5.	

Hosmer Arrived at 5:15 Left at 6:35

Overview:

Chapter 373 §§ 3 of the Site Law Regulations requires that applicant demonstrate that adequate provision for solid waste disposal.

A. Anticipated Solid Waste Narrative

The proposed Maine Behavioral Healthcare building will handle solid waste in the same fashion and with the same contractors as is currently contracted at the adjacent Spring Harbor Hospital.

The construction and operation of this project will result in the following types of solid waste.

- Stumps and Grubbings
- Construction Debris
- Commercial Solid Waste
- Medical Waste
- Recycled Waste
 - Cardboard and Paper
 - Shredded documents

B. Stumps and Grubbings

Based on a typical generation rate of 400 cubic yards (cy) of stumps and grubbings per acre for forested area, the development anticipates generating the following quantities.

- Forested areas – $3.40 \text{ acres} \times 400 \text{ cy/acre} = 1,360 \text{ cy}$

The selected contractor will contract for the transport and disposal of these materials debris to a MeDEP licensed local waste facility in accordance with all solid waste regulations.

C. Construction Debris

Due to the nature of the construction and waste management by the selected contractor, it is anticipated that 25 cubic yards or less will be produced. Based on an assumed generation rate of 10 cubic yards (cy)/ 1,500 sf of building area. The project is anticipated to produce the following quantities.

- $28,200 \text{ sf} \times 10 \text{ cy}/1,500 \text{ sf} = 188 \text{ cy}$

The selected contractor will utilize Waste Management for the disposal of all construction debris during the construction of this building. Waste Management will

transport all construction debris to a MeDEP licensed local waste facility in accordance with all solid waste regulations.

D. Commercial Solid Waste

Maine Behavioral Healthcare will be contracting with Waste Management for the ongoing disposal of all commercial solid waste generated in the operation of this proposed building. Waste Management will transport all commercial solid waste to an MeDEP licensed local waste facility in accordance with all solid waste regulations.

E. Medical Waste

Due to the nature of this building, very limited medical waste will be generated at this facility. Certified staff will transport sharps containers to be combined with Spring Harbor Hospital medical waste for disposal by Stericycle

E. Recyclable Waste

Secure Records Management Systems will provide secure collection, shredding and recycling of all confidential and non-confidential paper at the new Maine Behavioral Healthcare project. Cardboard will be collected and recycled by Waste Management.

F. Conclusion

The applicant has made adequate provisions for solid waste disposal by quantifying solid wastes that are anticipated to be generated by the project, specifying the methods of transport and disposal of the waste.

Attachments

Waste Management letter to Maine Behavioral Healthcare – July 22. 2019
Secure Records Management Systems letter to Maine Behavioral Healthcare –
July 8. 2019

**MAINE BEHAVIORAL HEALTH CENTER OF EXCELLENCE IN AUTISM
AND DEVELOPMENT DISORDERS
PORTLAND, MAINE**

**SECTIONS 1 – 6
TRAFFIC MOVEMENT PERMIT APPLICATION**

**Submitted to:
CITY OF PORTLAND
DEPARTMENT OF PLANNING AND URBAN DEVELOPMENT**

December 16, 2019

**Applicant:
Maine Behavioral Healthcare
22 Bramhall Street
Portland, ME 04102**

Prepared by:



A TFIC Company

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: Diane W. Morabito Re/Cert/Lic No.: Maine PE # 5077
PTOE # 571

Name(print): Diane W. Morabito

Date: 12/16/19

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."

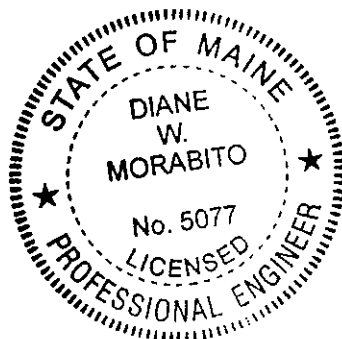
D Morabito

Signature of Applicant

12/12/19

Date

FORM C 7/97



NOTICE OF INTENT TO FILE

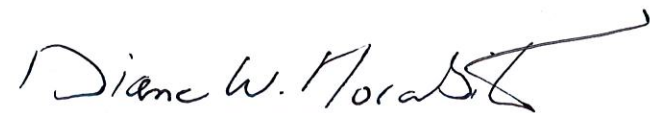
Please take notice that Maine Behavioral Healthcare, Attn: Dennis Morelli, 22 Bramhall Street, Portland, ME 04102 Telephone (207) 662-6149 is intending to file a Traffic Movement Permit application with the City of Portland Department of Planning and Urban Development pursuant to the provisions of 23 M.R.S.A. § 704-A on or about December 18, 2019.

The application is for the Maine Behavioral Health Center of Excellence in Autism and Development Disorders at 100 Andover Road in Portland, Maine. The proposed health center will be 29,104 square feet in size. Construction is expected to begin in April of 2020 with occupancy planned for July 2021. The health center is expected to generate approximately 114 one-way trips during their weekday AM peak hour and 128 trips during their PM peak hour.

A request for a public hearing must be received by The City of Portland, in writing, no later than 20 days after the application is found by the City to be complete and is accepted for processing. Public comment on the application will be accepted throughout the processing of the application.

The application will be filed for public inspection at Department of Planning and Urban Development, which is located Portland City Hall, 389 Congress Street, Portland, Maine 04101, during normal working hours. A copy of the application may also be seen at the Maine Department of Transportation Southern Region 1 Office, 51 Pleasant Hill Road, Scarborough, ME 04070-0358.

Written public comments may be sent to the Department of Planning and Urban Development, City of Portland, 389 Congress Street, Portland, Maine 04101.



Diane W. Morabito, P.E. PTOE

List of Abutting Property Owners

City of Portland

Map/ Lot Number	Name and Mailing Address	Return Receipt Received
<u>239A A001001</u>	APEX FITNESS & RACKET CENTER LLC 20 FOWLER FARM RD SCARBOROUGH ME 04074	2455 Congress Street X
<u>239A A002001</u>	MBAA SERVICES LLC 33 DOWD RD # 1 BANGOR ME 04401	X
<u>239A A004001</u>	AMERICAN NATIONAL RED CROSS 524 FOREST AVE PORTLAND ME 04101	X
<u>239A A004002</u>	SPINNAKER HOLDINGS LLC 113 FORESIDE RD FALMOUTH ME 04105	X
<u>238A B004001</u>	CBS REALTY LLC 10 ANDOVER RD PORTLAND ME 04102	X
<u>240 A001001</u>	HUTCHINS DRIVE LLC ONE CANAL PLAZA 5TH FLOOR PORTLAND ME 04101	X
<u>240 A002001</u>	BROWN J B & SONS & FORE RIVER WHR STOR CO INC PO BOX 207 PORTLAND ME 04112	X

City of Westbrook

Map/ Lot Number	Name and Mailing Address	Return Receipt Received
006-000-008	EHRLNBACH COLLINS INC 87 COUNTY ROAD WESTBROOK ME 04092	X
006-000-010	KIMCO REALTY LLC 65 GRAY ROAD STE #4 FALMOUTH ME 04105	73 County Road X
006-000-017A	MBAA SERVICES LLC 33 DOWD RD # 1 BANGOR ME 04401	11 County Road X
006-000-009	PLUMMER PROPERTIES LLC 81 COUNTY ROAD WESTBROOK ME 04092	81 County Road X
006-000-018	APEX FITNESS & RACKET	2455 Congress X

		CENTER LLC 20 FOWLER FARM RD SCARBOROUGH ME 04074	Street	
009-000-015		RANDALL, LLEWELLYN A JR 681 STROUDWATER ST. WESTBROOK ME 04092	681 Stroudwater St.	
006-000-011 000-012	006-	SNR CORPORATION C/O ALL AMERICAN SELF STORAGE 10 REGENCY RIDGE ANDOVER MA 01810	45 County Road 35 County Road	X
003-000-012 000-13	003-	SYSCO FOOD SVCS OF NO NEW ENGLAND INC ATTN: TAX DEPT 1390 ENCLAVE PARKWAY HOUSTON TX 77077	44 Thomas Drive 50 Thomas Drive	
006-000-014 000-015	006-	THOJOE PROPERTIES LLC 15 COUNTY ROAD WESTBROOK ME 04092	21County Road 15 County Road	X
City of Portland, Maine				X

INTRODUCTION

The purpose of this application is to summarize the information required in a Traffic Movement Permit application to request a Scoping Meeting for a proposed new medical facility on Andover Road in Portland, Maine. Trip generation analysis shows that the new Maine Behavioral Health Center of Excellence in Autism and Development Disorders will generate in excess of 100 new peak hour trips. As a result, the project requires a Traffic Movement Permit (TMP) from the Maine Department of Transportation (MaineDOT). The City of Portland has Delegated Review Authority to review the application materials and issue the TMP on behalf of MaineDOT.

SITE DESCRIPTION - SECTION 1A

The proposed site is located at 100 Andover Road in Portland. The overall parcel is approximately 10.16 acres in size, based upon the survey plan prepared by Owen Haskell, Inc., which is included with this application. The existing terrain has several small hills with wetlands located in between them towards the middle of the parcel.

EXISTING AND PROPOSED USES - SECTION 1B

This parcel is currently vacant. The proposed medical facility will be 29,104 square feet in size and is expected to employ 117 persons.

SITE VICINITY - SECTION 1C

The site location and vicinity are shown on the map in Figure 1.

OTHER DEVELOPMENT - SECTION 1D

The City of Portland Department of Planning and Urban Development was contacted to request information regarding other proposed or approved developments that are expected to significantly impact traffic volumes in the study area. The City has not yet responded so other development projects will be identified and discussed at the Scoping Meeting.

TRIP GENERATION - SECTION 1E

The number of trips to be generated by the new medical facility was estimated using both the Institute of Transportation Engineers (ITE) “Trip Generation, 7th Edition” report, the edition being utilized by MaineDOT for traffic permitting purposes, and the newer 10th edition report since it is based upon a greater amount of information and considered more current and up to date. The results, based upon land use code 720 – Medical-Dental Office Building, calculated on the bases of 29,104 sf and 117 employees, are shown below:

<u>Time Period</u>	ITE Trip Generation (one-way trip ends)					
	7th Ed.			10th Ed.		
	<u>Emp.</u>	<u>S.F.</u>	<u>Avg.</u>	<u>S.F.</u>	<u>Emp.</u>	<u>Avg.</u>
Weekday	1,042	1,052	1,048	1,012	1,018	1,016
AM Peak Hour – Adj. Street	62	72	67	81	80	80
Entering	49	57	53	61	62	62
Exiting	13	15	14	18	18	18
AM Peak Hour – Generator	94	105	100	103	125	114
Entering	61	69	65	64	76	70
Exiting	33	36	35	39	49	44
PM Peak Hour – Adj. Street	124	108	116	101	113	107
Entering	42	29	35	28	39	33
Exiting	82	79	81	73	74	74
PM Peak Hour – Generator	124	130	127	120	135	128
Entering	42	52	47	47	54	51
Exiting	82	78	80	73	81	77

As seen above, the employee and square footage bases yielded similar results so they were averaged. Based upon both the 7th Edition and the newer more current 10th Edition, the project is expected 100 or more trips during both the weekday AM and PM peak hour. As a result, the proposed medical facility requires a TMP. Given the proposed medical office type use it was assumed that all trips are primary (or new) trips with no pass-by trips. The newer 10th edition generally yielded higher results and is considered more current so it is expected that the traffic study and analysis will be based upon these trip estimates.

TRIP DISTRIBUTION AND ASSIGNMENT - SECTION 1F & G

Turning movement/classification counts were conducted by Sewall/Maine Traffic Resources during the AM (7:00 – 9:00 AM) and PM (3:00 – 6:00) peak hour periods at the intersection of Congress Street, Hutchins Drive and Skyway Drive. The AM peak hour occurred from 7:30 – 8:30 while the PM peak hour occurred from 4:15 – 5:15. The count records are included in this application.

The count data was factored to 30th highest hour volumes, the volumes typically used for design and traffic analysis purposes, using published MaineDOT group mean urban factors. The existing 2019 volumes, expected to be representative of peak summer volumes in late July or early August, are shown in Figure 2.

The trips for the AM and PM peak hour periods were assigned to the area intersections based upon the traffic patterns recorded during the counts. The resulting trip assignments are shown in Figure 3 for the AM and PM peak hours.



Figure 1

Site Location Map

Maine Behavioral Healthcare

Portland, Maine



- Signalized
- (XX) = AM Peak Hour
- XX = PM Peak Hour

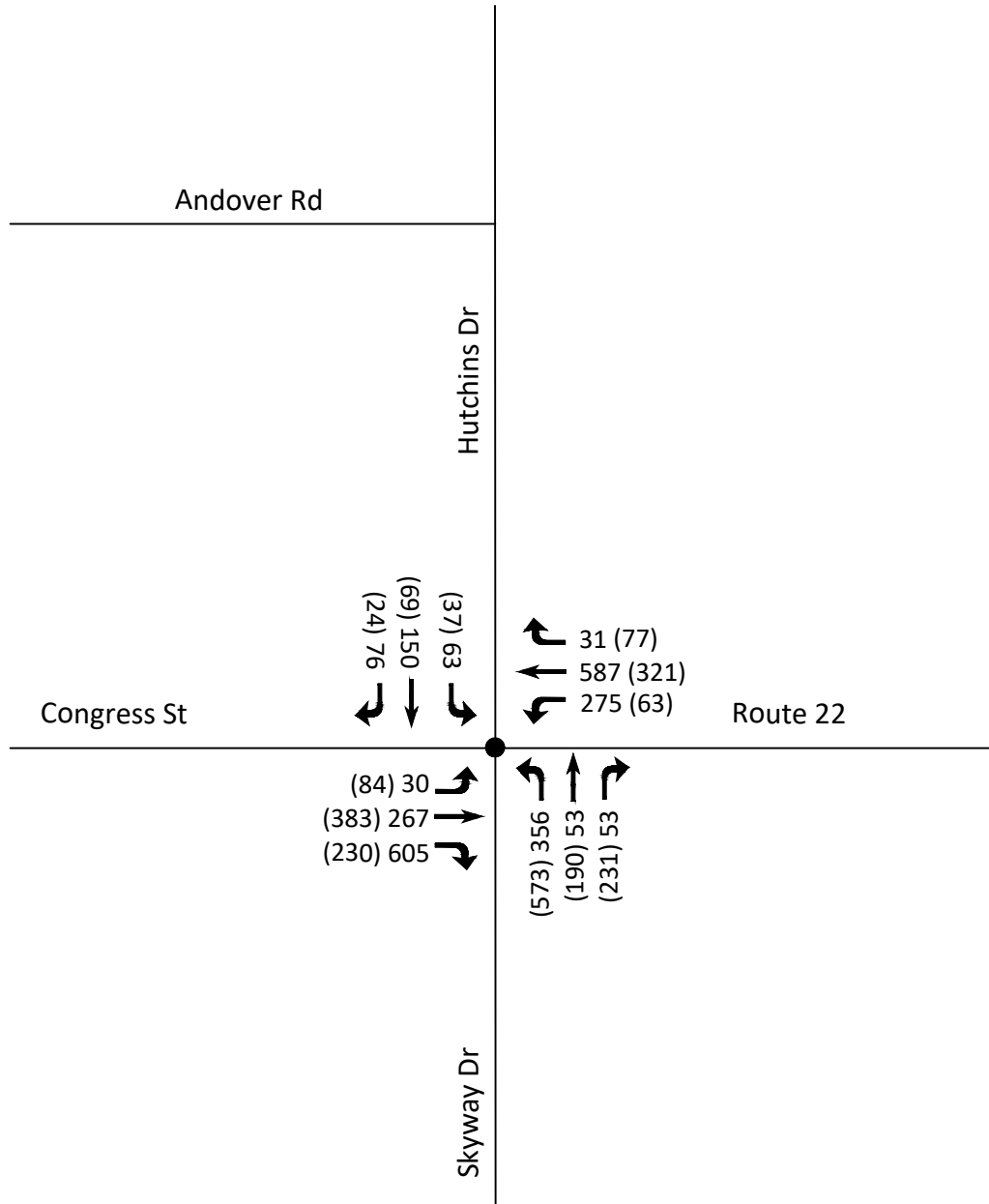


Figure 2

Existing 2019 30th H.H. Volumes

Maine Behavioral Healthcare

Portland, Maine





SITE

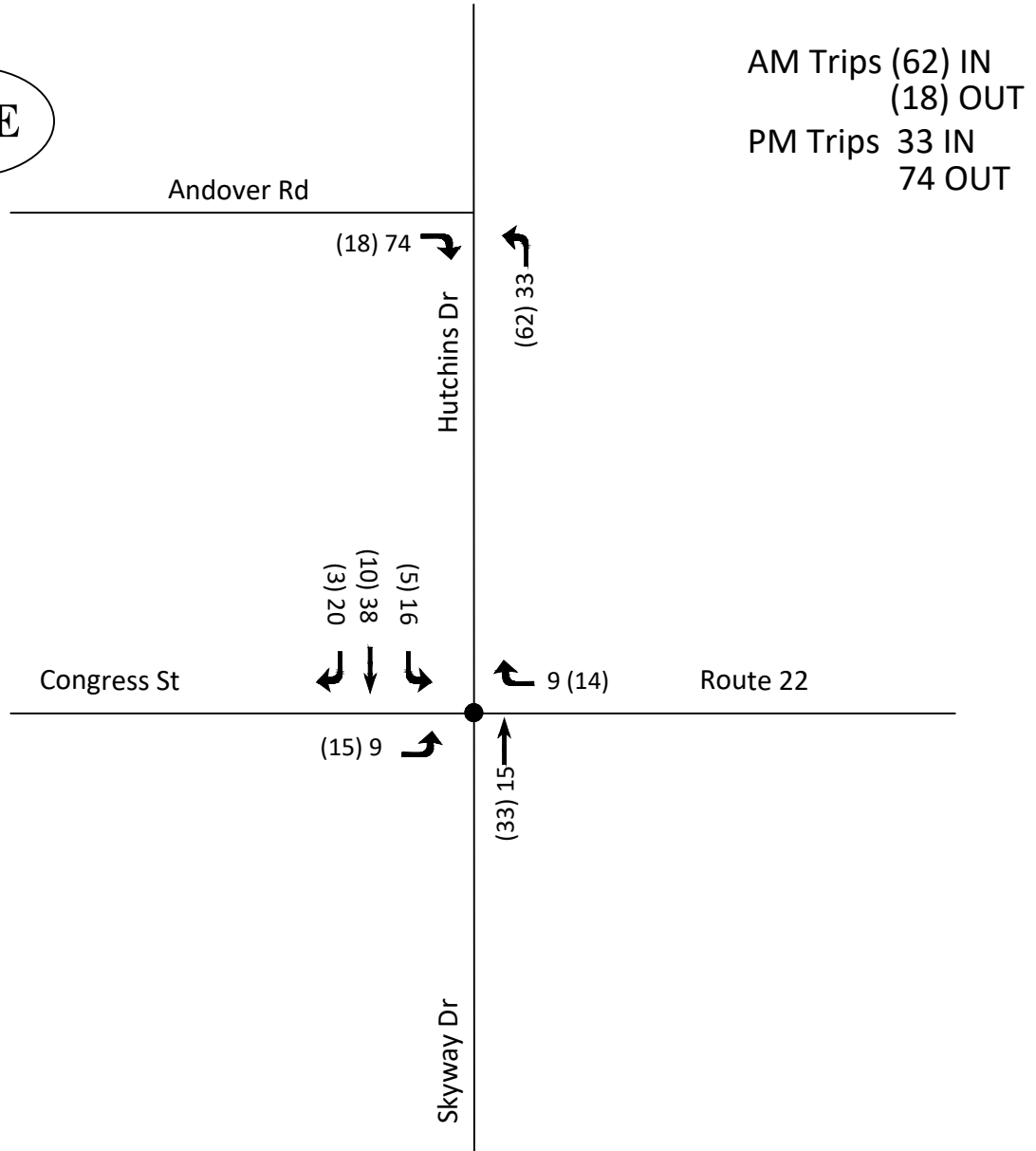


Figure 3

Trip Assignments

Maine Behavioral Healthcare

Portland, Maine

Maine Traffic Resources

40 Forest Falls Drive, Suite 2

Yarmouth, Maine 04096

www.mainetrafficresources.com

Title: Congress, Hutchins & Skyway

Town: Portland

Counter: JAM

Weather: Sunny

File Name : PortlandCongressHutchinsSky2019AM

Site Code : 12345551

Start Date : 9/19/2019

Page No : 1

Groups Printed- Passenger Cars - Light Trucks - Heavy Trucks

	Hutchins Drive From North					Congress St From East					Skyway Drive From South					Congress 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	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	3	8	6	0	17	12	61	10	0	83	34	23	101	1	159	85	77	16	0	178	437
07:15 AM	1	15	4	0	20	13	80	18	0	111	46	24	123	0	193	52	107	17	0	176	500
07:30 AM	8	12	7	0	27	16	72	10	0	98	54	31	126	0	211	63	86	24	0	173	509
07:45 AM	3	8	10	0	21	21	84	15	0	120	61	72	159	1	293	53	100	22	1	176	610
Total	15	43	27	0	85	62	297	53	0	412	195	150	509	2	856	253	370	79	1	703	2056
08:00 AM	1	13	10	0	24	17	75	16	0	108	60	41	153	1	255	52	87	20	2	161	548
08:15 AM	11	34	9	0	54	20	79	20	0	119	48	40	116	1	205	54	97	15	0	166	544
08:30 AM	2	14	12	0	28	6	71	17	0	94	34	19	101	0	154	58	90	9	0	157	433
08:45 AM	1	5	7	0	13	8	76	12	0	96	35	21	74	0	130	91	92	8	0	191	430
Total	15	66	38	0	119	51	301	65	0	417	177	121	444	2	744	255	366	52	2	675	1955

$$\text{Gr. I} = .83 / .85 = 1.025$$

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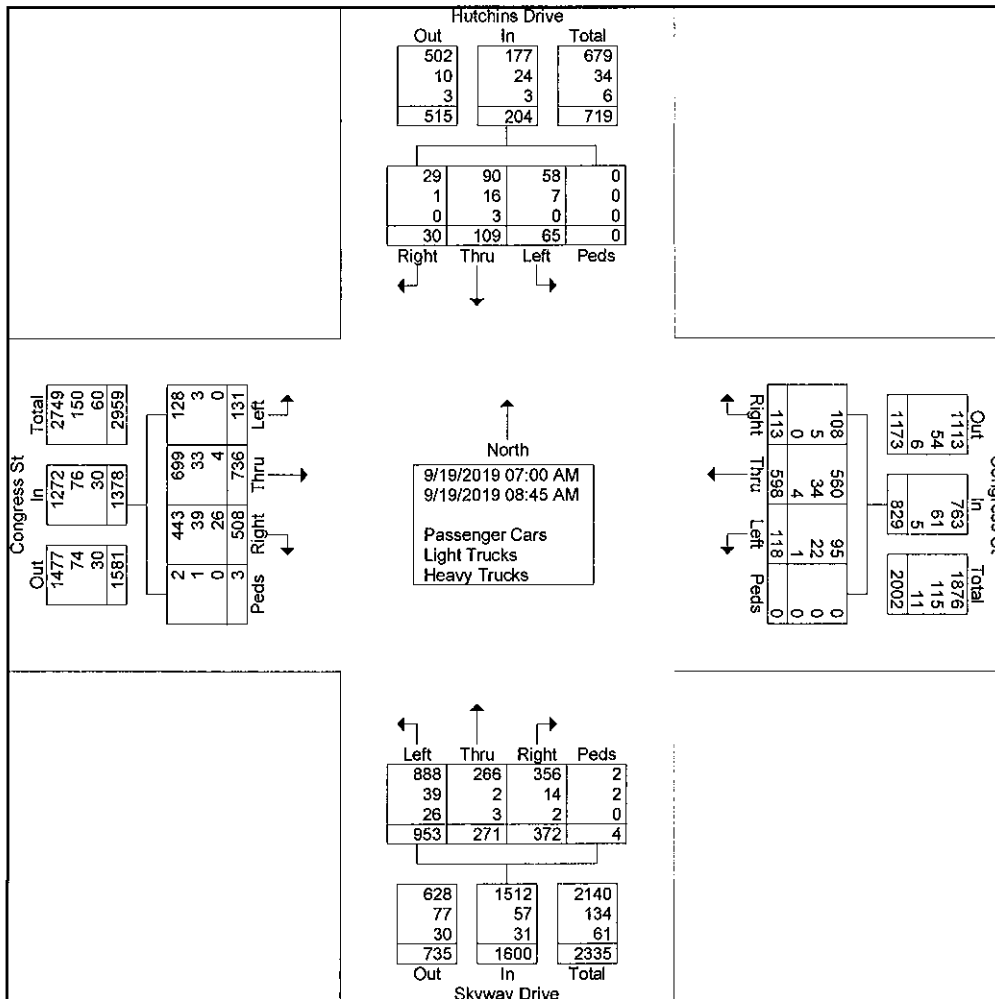
www.mainetrafficresources.com

Title: Congress, Hutchins & Skyway
Town: Portland
Counter: JAM
Weather: Sunny

File Name : PortlandCongressHutchinsSky2019AM
Site Code : 12345551
Start Date : 9/19/2019
Page No : 2

Groups Printed- Passenger Cars - Light Trucks - Heavy Trucks

	Hutchins Drive From North					Congress St From East					Skyway Drive From South					Congress St From West					
Factor	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	30	109	65	0	204	113	598	118	0	829	372	271	953	4	1600	508	736	131	3	1378	4011
Apprch %	14.7	53.4	31.9	0		13.6	72.1	14.2	0		23.2	16.9	59.6	0.2		36.9	53.4	9.5	0.2		
Total %	0.7	2.7	1.6	0	5.1	2.8	14.9	2.9	0	20.7	9.3	6.8	23.8	0.1	39.9	12.7	18.3	3.3	0.1	34.4	
Passenger Cars	29	90	58	0	177	108	560	95	0	763	356	266	888	2	1512	443	699	128	2	1272	3724
% Passenger Cars	96.7	82.6	89.2	0	86.8	95.6	93.6	80.5	0	92	95.7	98.2	93.2	50	94.5	87.2	95	97.7	66.7	92.3	92.8
Light Trucks	1	16	7	0	24	5	34	22	0	61	14	2	39	2	57	39	33	3	1	76	218
% Light Trucks	3.3	14.7	10.8	0	11.8	4.4	5.7	18.6	0	7.4	3.8	0.7	4.1	50	3.6	7.7	4.5	2.3	33.3	5.5	5.4
Heavy Trucks	0	3	0	0	3	0	4	1	0	5	2	3	26	0	31	26	4	0	0	30	69
% Heavy Trucks	0	2.8	0	0	1.5	0	0.7	0.8	0	0.6	0.5	1.1	2.7	0	1.9	5.1	0.5	0	0	2.2	1.7



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Site Code : 12345551

Start Date : 9/19/2019

Page No : 3

	Hutchins Drive From North					Congress St From East					Skyway Drive From South					Congress 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	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	8	12	7	0	27	16	72	10	0	98	54	31	126	0	211	63	86	24	0	173	509
07:45 AM	3	8	10	0	21	21	84	15	0	120	61	72	159	1	293	53	100	22	1	176	610
08:00 AM	1	13	10	0	24	17	75	16	0	108	60	41	153	1	255	52	87	20	2	161	548
08:15 AM	11	34	9	0	54	20	79	20	0	119	48	40	116	1	205	54	97	15	0	166	544
Total Volume	23	67	36	0	126	74	310	61	0	445	223	184	554	3	964	222	370	81	3	676	2211
% App. Total	18.3	53.2	28.6	0		16.6	69.7	13.7	0		23.1	19.1	57.5	0.3		32.8	54.7	12	0.4		
PHF	.523	.493	.900	.000	.583	.881	.923	.763	.000	.927	.914	.639	.871	.750	.823	.881	.925	.844	.375	.960	.906

24 69 37 77 321 63 231 190 573 230 383 84

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Title: Congress, Hutchins & Skyway

Town: Portland

Counter: JAM

Weather: Sunny

File Name : PortlandCongressHutchinsSky2019PM

Site Code : 12345552

Start Date : 9/19/2019

Page No : 1

Groups Printed- Passenger Cars - Light Trucks - Heavy Trucks

	Hutchins Drive From North					Congress Street From East					Skyway Drive From South					Congress Street 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
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
03:00 PM	7	21	10	0	38	8	104	39	0	151	13	9	71	1	94	106	69	1	0	176	459
03:15 PM	8	20	11	0	39	9	109	35	1	154	14	9	86	1	110	90	53	8	0	151	454
03:30 PM	15	40	13	0	68	8	109	39	0	156	17	18	70	0	105	117	66	3	0	186	515
03:45 PM	8	21	13	0	42	11	139	40	0	190	17	9	77	0	103	103	60	6	0	169	504
Total	38	102	47	0	187	36	461	153	1	651	61	45	304	2	412	416	248	18	0	682	1932
04:00 PM	17	30	10	0	57	5	127	54	0	186	12	15	87	1	115	157	67	8	0	232	590
04:15 PM	17	30	13	0	60	12	142	61	0	215	9	14	68	0	91	117	75	11	0	203	569
04:30 PM	14	34	23	0	71	8	159	78	0	245	10	13	87	2	112	147	63	7	0	217	645
04:45 PM	20	43	7	0	70	6	119	53	0	178	15	13	94	0	122	163	52	4	0	219	589
Total	68	137	53	0	258	31	547	246	0	824	46	55	336	3	440	584	257	30	0	871	2393
05:00 PM	22	38	18	0	78	4	147	74	0	225	17	11	95	0	123	158	68	7	0	233	659
05:15 PM	20	41	14	0	75	4	135	49	0	188	11	16	73	0	100	115	58	2	0	175	538
05:30 PM	14	23	13	0	50	8	109	38	1	156	13	11	74	2	100	106	50	4	0	160	466
05:45 PM	5	22	6	0	33	4	92	21	0	117	12	7	65	0	84	61	40	5	0	106	340
Total	61	124	51	0	236	20	483	182	1	686	53	45	307	2	407	440	216	18	0	674	2003

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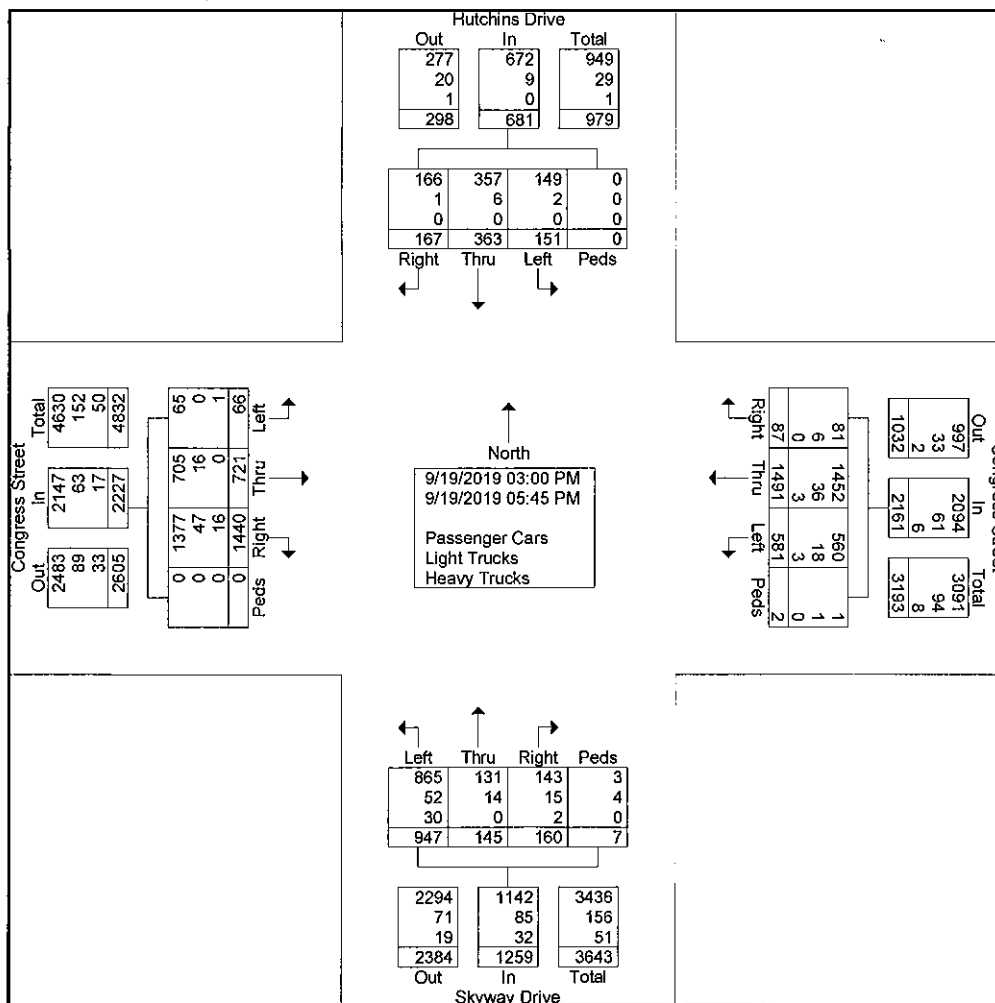
www.maintrafficresources.com

Title: Congress, Hutchins & Skyway
Town: Portland
Counter: JAM
Weather: Sunny

File Name : PortlandCongressHutchinsSky2019PM
Site Code : 12345552
Start Date : 9/19/2019
Page No : 2

Groups Printed- Passenger Cars - Light Trucks - Heavy Trucks

	Hutchins Drive From North					Congress Street From East					Skyway Drive From South					Congress Street From West					
Factor	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	167	363	151	0	681	87	1491	581	2	2161	160	145	947	7	1259	1440	721	66	0	2227	6328
Approch %	24.5	53.3	22.2	0		4	69	26.9	0.1		12.7	11.5	75.2	0.6		64.7	32.4	3	0		
Total %	2.6	5.7	2.4	0	10.8	1.4	23.6	9.2	0	34.1	2.5	2.3	15	0.1	19.9	22.8	11.4	1	0	35.2	
Passenger Cars	166	357	149	0	672	81	1452	560	1	2094	143	131	865	3	1142	1377	705	65	0	2147	6055
% Passenger Cars	99.4	98.3	98.7	0	98.7	93.1	97.4	96.4	50	96.9	89.4	90.3	91.3	42.9	90.7	95.6	97.8	98.5	0	96.4	95.7
Light Trucks	1	6	2	0	9	6	36	18	1	61	15	14	52	4	85	47	16	0	0	63	218
% Light Trucks	0.6	1.7	1.3	0	1.3	6.9	2.4	3.1	50	2.8	9.4	9.7	5.5	57.1	6.8	3.3	2.2	0	0	2.8	3.4
Heavy Trucks	0	0	0	0	0	0	3	3	0	6	2	0	30	0	32	16	0	1	0	17	55
% Heavy Trucks	0	0	0	0	0	0	0.2	0.5	0	0.3	1.2	0	3.2	0	2.5	1.1	0	1.5	0	0.8	0.9



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File Name : PortlandCongressHutchinsSky2019PM

Site Code : 12345552

Start Date : 9/19/2019

Page No : 3

	Hutchins Drive From North					Congress Street From East					Skyway Drive From South					Congress Street 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	17	30	13	0	60	12	142	61	0	215	9	14	68	0	91	117	75	11	0	203	569
04:30 PM	14	34	23	0	71	8	159	78	0	245	10	13	87	2	112	147	63	7	0	217	645
04:45 PM	20	43	7	0	70	6	119	53	0	178	15	13	94	0	122	163	52	4	0	219	589
05:00 PM	22	38	18	0	78	4	147	74	0	225	17	11	95	0	123	158	68	7	0	233	659
Total Volume	73	145	61	0	279	30	567	266	0	863	51	51	344	2	448	585	258	29	0	872	2462
% App. Total	26.2	52	21.9	0		3.5	65.7	30.8	0		11.4	11.4	76.8	0.4		67.1	29.6	3.3	0		
PHF	.830	.843	.663	.000	.894	.625	.892	.853	.000	.881	.750	.911	.905	.250	.911	.897	.860	.659	.000	.936	.934

76 150 63 31 587 275 53 53 356 605 267 30

$$Gr. I = 0.88 / .85 = 1.035$$

ACCIDENT REVIEW - SECTION 2

The Maine Department of Transportation uses two criteria to determine high crash locations (HCLs). The first is the critical rate factor (CRF), which is a measure of the accident rate. A CRF greater than one indicates a location which has a higher than expected accident rate. The expected rate is calculated as a statewide average of similar facilities.

The second criterion, which must also be met, is based upon the number of accidents that occur at a particular location. Eight or more accidents must occur over the three-year study period for the location to be considered a high crash location. Accident data was obtained from MaineDOT for Congress Street and Hutchins Drive within the expected study area. The CRF and number of accidents are summarized by location for the most recent three-year period, 2016 to 2018, below:

<u>Location Description</u>	<u># of Acc.</u>	<u>CRF</u>
Congress Street between Johnson Road and cut to Johnson Road	1	0.47
Congress Street cut to Johnson Road and Unum Drive	3	0.29
Intersection of Congress Street and Unum Drive	4	0.21
Congress Street between Unum Dr. and Blueberry Road	5	0.33
Intersection of Congress Street and Blueberry Road	6	1.10
Congress Street between Blueberry Road and Hutchins/Skyway	8	0.62
Intersection of Congress Street, Hutchins Drive & Skyway Drive	23	0.73
Congress Street between Hutchins/Skyway and Westbrook Town Line	12	0.52
County Road between town line and Thomas Drive	8	0.66
Intersection of County Road & Thomas Drive in Westbrook	3	0.39
County Road between Thomas Drive and Finch Street	19	0.49
Intersection of County Road & Finch Street in Westbrook	4	0.60
Intersection of County Road & Spring Street in Westbrook	28	0.73
Hutchins Drive between Congress Street and its dead end	2	0.41
At end of Hutchins Drive	1	2.94

As can be seen in the above accident table, there are no high crash locations on either Route 22 (Congress Street/County Road) or Hutchins Drive in the vicinity of the site. Hence, no additional accident analysis should be required.

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: Congress St and Hutchins Dr

REPORT PARAMETERS

Year 2016, Start Month 1 through Year 2018 End Month: 12

Route: 0022X	Start Node: 18488	Start Offset: 0	☐ Exclude First Node
	End Node: 15176	End Offset: 0	☐ Exclude Last Node
Route: 0561168	Start Node: 18490	Start Offset: 0	☒ Exclude First Node
	End Node: 18491	End Offset: 0	☐ Exclude Last Node

Crash Summary I

Nodes															
Node	Route - MP	Node Description		U/R	Total Crashes	K	Injury A	Crashes B	Crashes C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
18488	0022X - 3.58	Int of BLUEBERRY RD	CONGRESS ST	2	6	1	0	1	1	3	50.0	4.833	0.41	0.38	1.10
													Statewide Crash Rate: 0.15		
18490	0022X - 3.78	Int of CONGRESS ST	EXIT 7A CONN RD	9	23	0	0	2	6	15	34.8	9.187	0.83	1.13	0.00
													Statewide Crash Rate: 0.73		
15176	0022X - 4.05	TL	Portland Westbrook	2	0	0	0	0	0	0	0.0	3.981	0.00	0.40	0.00
													Statewide Crash Rate: 0.15		
18491	0561168 - 0.40	0508911 POR,	HUTCHINS DR,END	2	1	0	0	1	0	0	100.0	0.190	1.75	0.59	2.94
													Statewide Crash Rate: 0.15		
Study Years: 3.00		NODE TOTALS:			30	1	0	4	7	18	40.0	18.191	0.55	0.67	0.83

Crash Summary I

Sections																	
Start Node	End Node	Element	Offset Begin - End	Route - MP	Section U/R Length	Total Crashes	K	Injury A	Crashes B	Percent C	Annual PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF	
18488	18490	3106664	0 - 0.20	0022X - 3.58 Int of BLUEBERRY RD CONGRESS ST	0.20	2	8	0	0	0	4	4	50.0	0.01041	256.08	415.10	0.00
														Statewide Crash Rate: 216.61			
15176	18490	3106023	0 - 0.27	0022X - 3.78 TL Portland Westbrook	0.27	2	12	0	0	1	6	5	58.3	0.02150	186.07	358.15	0.00
														Statewide Crash Rate: 216.61			
18490	18491	193997	0 - 0.40	0561168 - 0 Int of CONGRESS ST EXIT 7A CONN RD HUTCHINS DR	0.40	2	2	0	0	0	1	1	50.0	0.00152	437.80	1063.11	0.00
														Statewide Crash Rate: 405.29			
Study Years: 3.00					Section Totals:	0.87	22	0	0	1	11	10	54.5	0.03343	219.34	342.28	0.64
					Grand Totals:	0.87	52	1	0	5	18	28	46.2	0.03343	518.44	476.08	1.09

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	K	Injury Crashes A B C PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
18488	18490	3106664	0 - 0.20	0022X - 3.58	8	0	0 0 4 4	2018-30370 2018-3506 2018-14777 2017-4432 2018-26801 2018-15959 2018-15010 2017-38387	10/24/2018 01/11/2018 05/22/2018 02/08/2017 09/20/2018 06/06/2018 05/30/2018 12/13/2017	3.59 3.60 3.61 3.65 3.65 3.68 3.69 3.76	C C PD C PD C PD PD
15176	18490	3106023	0 - 0.27	0022X - 3.78	12	0	0 1 6 5	2017-15915 2017-12287 2016-35233 2018-41158 2017-5357 2017-32991 2017-40046 2016-27143 2016-30950 2016-22494 2018-41298 2016-32326	05/16/2017 04/14/2017 12/05/2016 12/05/2018 02/10/2017 11/02/2017 12/23/2017 09/26/2016 11/01/2016 08/04/2016 12/19/2018 11/10/2016	3.84 3.84 3.87 3.87 3.87 3.88 3.89 3.93 3.95 3.96 3.97 4.01	C PD C C PD PD PD C C B PD C
18490	18491	193997	0 - 0.40	0561168 - 0	2	0	0 0 1 1	2018-6368 2016-28010	02/20/2018 09/28/2016	0.19 0.26	PD C
Totals:					22	0	0 1 11 10				

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary II - Characteristics

Crashes by Day and Hour

	AM											Hour of Day		PM												
Day Of Week	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	Un	Tot
SUNDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
MONDAY	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	0	1	2	0	0	0	0	0	7
TUESDAY	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	1	2	0	0	0	0	1	0	0	0	7
WEDNESDAY	0	1	0	0	0	0	0	4	2	1	0	0	0	0	1	1	4	0	1	1	0	0	0	0	0	16
THURSDAY	0	0	0	0	0	0	0	2	3	0	0	1	1	1	0	0	0	1	1	0	0	0	0	0	0	10
FRIDAY	0	0	0	0	0	0	0	1	1	1	0	0	0	2	0	0	2	1	0	0	0	1	0	0	0	9
SATURDAY	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Totals	0	1	1	1	0	0	0	8	8	2	0	1	2	4	1	3	10	2	3	3	0	2	0	0	0	52

Vehicle Counts by Type

Unit Type	Total	Unit Type	Total
1-Passenger Car	54	23-Bicyclist	0
2-(Sport) Utility Vehicle	30	24-Witness	10
3-Passenger Van	3	25-Other	0
4-Cargo Van (10K lbs or Less)	1	26-Construction	0
5-Pickup	6	27-Farm Vehicle	0
6-Motor Home	0	Total	116
7-School Bus	0		
8-Transit Bus	0		
9-Motor Coach	0		
10-Other Bus	0		
11-Motorcycle	0		
12-Moped	0		
13-Low Speed Vehicle	0		
14-Autocycle	0		
15-Experimental	0		
16-Other Light Trucks (10,000 lbs or Less)	0		
17-Medium/Heavy Trucks (More than 10,000 lbs)	9		
18-ATV - (4 wheel)	0		
20-ATV - (2 wheel)	0		
21-Snowmobile	0		
22-Pedestrian	3		

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

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	8	37	4	1	0	0	50
Ran Off Roadway	2	0	0	0	0	0	2
Failed to Yield Right-of-Way	12	1	0	0	0	0	13
Ran Red Light	1	0	0	0	0	0	1
Ran Stop Sign	1	0	0	0	0	0	1
Disregarded Other Traffic Sign	0	0	0	0	0	0	0
Disregarded Other Road Markings	0	0	0	0	0	0	0
Exceeded Posted Speed Limit	0	0	0	0	0	0	0
Drove Too Fast For Conditions	1	1	0	0	0	0	2
Improper Turn	0	0	0	0	0	0	0
Improper Backing	1	0	0	0	0	0	1
Improper Passing	3	0	0	0	0	0	3
Wrong Way	0	0	0	0	0	0	0
Followed Too Closely	20	4	0	0	0	0	24
Failed to Keep in Proper Lane	0	0	0	0	0	0	0
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	0	0	0	0	0	0	0
Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway	0	0	0	0	0	0	0
Over-Correcting/Over-Steering	0	0	0	0	0	0	0
Other Contributing Action	1	1	0	0	0	0	2
Unknown	1	2	0	0	0	0	3
Total	51	46	4	1	0	0	102

Crashes by Apparent Physical Condition And Driver

Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	49	46	4	1	0	2	102
Physically Impaired or Handicapped	0	0	0	0	0	0	0
Emotional(Depressed, Angry, Disturbed, etc.)	0	0	0	0	0	0	0
Ill (Sick)	0	0	0	0	0	0	0
Asleep or Fatigued	0	0	0	0	0	0	0
Under the Influence of Medications/Drugs/Alcohol	2	0	0	0	0	0	2
Other	0	0	0	0	0	1	1
Total	51	46	4	1	0	3	105

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	3	0	0	0	0	3
20-24	8	0	0	0	0	8
25-29	14	0	0	0	0	14
30-39	24	0	0	0	0	24
40-49	16	0	0	0	0	16
50-59	22	0	0	0	0	22
60-69	10	0	0	0	0	10
70-79	4	0	0	0	0	4
80-Over	1	0	0	0	0	1
Unknown	1	0	0	3	0	4
Total	103	0	0	3	0	106

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary II - Characteristics

Most Harmful Event			
Most Harmful Event	Total	Most Harmful Event	Total
1-Overturn / Rollover	0	38-Other Fixed Object (wall, building, tunnel, etc.)	0
2-Fire / Explosion	0	39-Unknown	20
3-Immersion	0	40-Gate or Cable	0
4-Jackknife	0	41-Pressure Ridge	0
5-Cargo / Equipment Loss Or Shift	0	Total	102
6-Fell / Jumped from Motor Vehicle	0		
7-Thrown or Falling Object	0		
8-Other Non-Collision	0		
9-Pedestrian	0		
10-Pedalcycle	0		
11-Railway Vehicle - Train, Engine	0		
12-Animal	0		
13-Motor Vehicle in Transport	80		
14-Parked Motor Vehicle	1		
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	0		
34-Traffic Signal Support	0		
35-Fence	0		
36-Mailbox	0		
37-Other Post Pole or Support	0		

Traffic Control Devices		
Traffic Control Device	Total	
1-Traffic Signals (Stop & Go)	23	
2-Traffic Signals (Flashing)	1	
3-Advisory/Warning Sign	0	
4-Stop Signs - All Approaches	0	
5-Stop Signs - Other	3	
6-Yield Sign	0	
7-Curve Warning Sign	0	
8-Officer, Flagman, School Patrol	0	
9-School Bus Stop Arm	0	
10-School Zone Sign	0	
11-R.R. Crossing Device	0	
12-No Passing Zone	2	
13-None	23	
14-Other	0	
Total	52	

Injury Data		
Severity Code	Injury Crashes	Number Of Injuries
K	1	1
A	0	0
B	5	6
C	18	22
PD	28	0
Total	52	29

Road Character	
Road Grade	Total
1-Level	43
2-On Grade	8
3-Top of Hill	0
4-Bottom of Hill	1
5-Other	0
Total	52

Light	
Light Condition	Total
1-Daylight	37
2-Dawn	0
3-Dusk	2
4-Dark - Lighted	10
5-Dark - Not Lighted	3
6-Dark - Unknown Lighting	0
7-Unknown	0
Total	52

Crash Summary II - Characteristics**Crashes by Year and Month**

Month	2016	2017	2018	Total
JANUARY	1	1	2	4
FEBRUARY	2	2	1	5
MARCH	1	0	1	2
APRIL	0	2	0	2
MAY	1	1	2	4
JUNE	1	2	1	4
JULY	0	0	2	2
AUGUST	3	2	1	6
SEPTEMBER	4	0	1	5
OCTOBER	0	2	3	5
NOVEMBER	3	2	1	6
DECEMBER	3	2	2	7
Total	19	16	17	52

Report is limited to the last 10 years of data.

Search...



ENTRANCES AND EXITS - SECTION 3

Access to and from the proposed facility will be provided by a single full movement drive to Andover Road. The sight distances were measured by Ransom Consulting, Inc. and are shown on their site plan, along with the posted speed limits, included in this application package.

TITLE, RIGHT OR INTEREST - SECTION 4

The deed for the parcel is included in this application package.

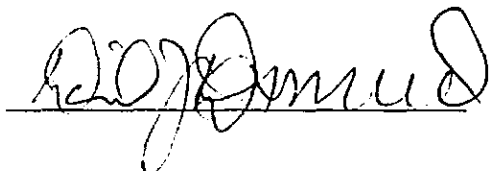
WARRANTY DEED

(Maine Statutory Short Form)

KNOW ALL MEN BY THESE PRESENTS, That GEORGE M. HUTCHINS, of Falmouth, Maine for consideration paid, grants to SPRING HARBOR HOSPITAL, a Maine Business Corporation with a place of business at 465 Congress St., Portland, Maine, with WARRANTY COVENANTS, the land located in Portland and Westbrook, County of Cumberland, State of Maine, bounded and described as follows:

SEE EXHIBIT "A" ATTACHED HERETO
MADE A PART HEREOF AND INCORPORATED BY REFERENCE HEREIN

WITNESS my hand and seal this 8th day of March, 2002

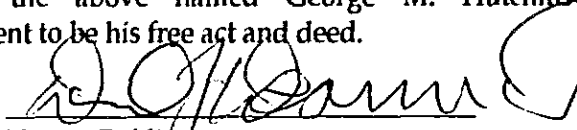
 
GEORGE M. HUTCHINS

STATE OF MAINE
CUMBERLAND, ss.

March 8, 2002

Then personally appeared the above named George M. Hutchins and acknowledged the foregoing instrument to be his free act and deed.

Before me,


Notary Public

Printed Name:

ATTORNEY
DANIEL J. DESMOND

MAINE REAL ESTATE TAX PAID

EXHIBIT A

Three lots or parcels of land being located partially in the City of Portland and partially in the City of Westbrook, in the County of Cumberland, State of Maine, bounded and described as follows:

PARCEL 1

Being Lot 100 as shown on plan entitled, "Master Plan Standard Boundary Survey - Subdivision - Stroudwater Estates on Hutchins Drive & Harry Harmon Drive Portland, Maine made for George Hutchins", dated October 29, 1998 and updated to June 26, 2001 by Owen Haskell, Inc. to be recorded in the Cumberland County Registry of Deeds.

EXCEPTING a 55,279 square foot parcel as shown on the above mentioned plan as to be added to Lot 9.

PARCEL 2

Being Lot 200 as shown on plan entitled, "Master Plan Standard Boundary Survey - Subdivision - Stroudwater Estates on Hutchins Drive & Harry Harmon Drive Portland, Maine made for George Hutchins", dated October 29, 1998 and updated to June 26, 2001 by Owen Haskell, Inc. to be recorded in the Cumberland County Registry of Deeds.

PARCEL 3

Being Lot 34 as shown on plan entitled, "Master Plan Standard Boundary Survey - Subdivision - Stroudwater Estates on Hutchins Drive & Harry Harmon Drive Portland, Maine made for George Hutchins", dated October 29, 1998 and updated to June 26, 2001 by Owen Haskell, Inc. to be recorded in the Cumberland County Registry of Deeds.

EXCEPTING from Lot 34 such portion as was conveyed to the Portland Water District by deeds recorded in Book 2411, Page 133 and Book 2411, Page 136.

TOGETHER with another Lot or parcel of land adjacent to Lot 34 and being bounded and described as follows:

Beginning on the easterly side of Hutchins Drive at the northwesterly corner of land formerly of Robert Pazolt as described in the deed recorded in Book 7559, Page 210 of the Cumberland County Registry of Deeds;

Thence, North 86° 34' 35" East, along land formerly of Robert Pazolt, 270.00 feet to Lot 34 on the above mentioned plan;

Thence, North 12° 18' 20" West, along Lot 34 on the above mentioned plan, 297.56 feet;

Thence, North 72° 25' 25" West, along Lot 34 on the above mentioned plan, 240.00 feet to the easterly side of Hutchins Drive;

Thence, South 3° 25' 25" East, along the easterly side of Hutchins Drive, 380.00 feet to the easterly side of beginning.

Containing 1.89 acres, more or less

Parcel 3 (Lot 34 and adjacent parcel of 1.89 acres) is subject to a "conservation easement" granted to the State of Maine Department of Inland Fisheries and Wildlife as described in deeds recorded in the Cumberland County Registry of Deeds in Book 11061, Page 285 and Book 11306, Page 220.

Parcel 3 as described above is a gift from George M. Hutchins to Spring Harbor Hospital.

RECEIVED
RECORDED REGISTRY OF DEEDS
2002 MAR - 8 PM 16 46
CUMBERLAND COUNTY
John B. O'Brien

PUBLIC OR PRIVATE RIGHTS-OF-WAY - SECTION 5

No new public or private right-of-ways are proposed for this project.

SCHEDULE - SECTION 6

Construction of the new medical center is expected to begin in April of 2020 with occupancy planned for July of 2021.

TRAFFIC IMPACT STUDY
MAINE BEHAVIORAL HEALTH CENTER OF EXCELLENCE IN AUTISM
AND DEVELOPMENT DISORDERS
PORTLAND, MAINE

April 2, 2020



Prepared for:
Ransom Consulting, Inc.
400 Commercial Street, Suite 404
Portland, ME 04101



A TFC Company

Introduction

The purpose of this report is to summarize the information requested by the City of Portland for a proposed new medical facility. The Maine Behavioral Health Center of Excellence in Autism and Development Disorders will be located at 100 Andover Road in Portland. The site location is shown on the map in Figure 1. A meeting with City staff to discuss the required traffic study was held on Thursday, February 6th, 2020 in the Planning Conference Room at Portland City Hall at 9:00 AM.

The center will be 28,330 square feet (S.F.) in size. The center will provide both medical offices and an educational day treatment component. The facility will have a total of 85 staff, 50 professional and 35 educational. It is understood that the day treatment program will provide for 30 students and will occupy approximately 30 % of the building or 8,500 S.F. with the remaining 19,830 S.F. being medical office use.

Construction of the new facility is expected to begin in spring of 2020 with occupancy planned for July of 2021. Given this construction schedule, 2021 was selected as the build analysis year.

Trip Generation Analysis

The number of trips to be generated by the new medical facility was originally estimated using both the Institute of Transportation Engineers (ITE) “Trip Generation, 7th Edition” report, the edition that was being utilized by MaineDOT for traffic permitting purposes, and the newer 10th edition report which is based upon a greater amount of information and considered more current. The original calculations were done utilizing land use code (LUC) 720 – Medical-Dental Office Building on the bases of square footage and employees. Sewall used the newest 10th edition ITE report as the basis of analysis since it yielded slightly higher estimates.

The ITE trip generation analysis was based upon the currently proposed square footage and employee numbers assuming the entire facility is medical office use, on the basis of 85 employees and 28,330 S.F. It was also repeated examining the two separate uses, medical office and a day treatment educational component as requested at the city staff meeting. The day treatment calculations were done utilizing LUC 536 – Private School (K-12) on the basis of 30 students. The office use for this dual use scenario was based upon 50 employees and 19,830 S.F. of medical office space. The ITE results on these bases are summarized in the tables on the following page:

ALL MEDICAL OFFICE USE

<u>Time Period</u>	ITE Trip Generation (one-way trip ends)		
	<u>Emp.</u>	<u>S.F.</u>	<u>Avg.</u>
Weekday	740	936	838
AM Peak Hour – Adjacent Street	58	79	69
AM Peak Hour – Generator	91	100	96
PM Peak Hour – Adjacent Street	83	98	91
PM Peak Hour – Generator	98	116	107

As seen above, the employee and square footage bases yielded fairly similar results so they were averaged to best represent the expected trips. The all medical office building use results in an average of 107 one-way trips during the PM peak hour of the center. Trip generation in all other peak hours is under 100.

MEDICAL OFFICE AND SCHOOL USES

<u>Time Period</u>	ITE Trip Generation (one-way trip ends)				
	Medical Office and Educational Uses				
	<u>Emp.</u>	<u>S.F.</u>	<u>Avg.</u>	<u>School</u>	<u>Total</u>
Weekday	436	690	564	76	640
AM Peak Hour – Adj. Street	34	55	45	24	69
AM Peak Hour – Generator	54	70	62	24	86
PM Peak Hour – Adj. Street	49	69	59	5	64
PM Peak Hour – Generator	58	81	70	18	88

As seen above, under the dual use scenario, trip generation is under 100 trips in all peak hours. Discussion with Maine Behavioral Health indicates that the teaching staff are scheduled to leave between 3:00 and 3:30. Given this, it was Sewall's professional opinion that this dual use scenario for the peak hour of the adjacent street is the more appropriate.

ACTUAL TRIP GENERATION COUNTS

After the preceding trip generation was submitted to the City, the City requested actual trip generation counts at the existing facility to determine what trip generation method is most appropriate and representative of expected conditions for the day treatment program as well as the overall facility. As requested by the City, the existing Center for Autism and Development Disorders at 236 Gannett Drive in South Portland was counted. The existing day treatment program hours are as follows:

- Students 8:00 AM – 2:00 PM
- Staff 7:30 AM – 3:30 PM

Given the above hours, the counts were conducted as follows to obtain both staff and student arrivals and departures:

<u>Count Period</u>	<u>Count Time</u>	<u>Date</u>	<u>Peak Hour</u>
PM Peak Hour	1:30 – 4:00 PM	Wednesday, 2/26/2020	3:00 – 4:00 PM
AM Peak Hour	7:00 – 8:30 AM	Tuesday, 2/25/2020	7:30 – 8:30 AM

The existing day treatment program has capacity for 16 students but only 14 are currently enrolled. The existing facility has 50 staff, with 18 being dedicated to the educational day program and the remaining 32 being professional staff. The peak hour counts results are as follows:

AM Peak Hour – 7:30 – 8:30 AM	31 Trips, 25 in and 6 Out
PM Peak Hour – 3:00 – 4:00 PM	34 Trips, 15 in and 19 Out

The proposed facility will have space for 30 students, which would be a ratio of $30/14 = 2.14$. Utilizing this factor would result in 66 AM peak hour trips and 73 PM peak hour trips. Not all of the functions at this existing facility are related to the day treatment program. As noted above, a larger percentage of the staff are professional staff. The overall increase in staff at the new facility will be from 50 to 85 total staff. This factor would be a lesser $85/50 = 1.70$, resulting in fewer trips than the preceding estimate of 66 AM and 73 PM peak hour trips. Additionally, the specific professional staff are expected to increase from 32 existing to 50 at the new facility, resulting in an even smaller factor of 1.56. Hence, it is the professional opinion of Sewall that the ITE trip generation results obtained on the basis of medical office use and private school are most representative of the proposed facility and actually conservative. These dual use results were hence utilized as the basis of the traffic analysis.

The weekday AM and PM peak hours of the adjacent street system are the analysis periods. The trips to be generated by the proposed facility, based upon ITE data for the dual uses, during these periods are summarized below:

<u>Time Period</u>	ITE Trip Generation (one-way trip ends)				
	Medical Office and Educational Uses				
	<u>Emp.</u>	<u>S.F.</u>	<u>Avg.</u>	<u>School</u>	<u>Total</u>
AM Peak Hour – Adj. Street	34	55	45	24	69
Entering	27	43	35	15	50
Exiting	7	12	10	9	19
PM Peak Hour – Adj. Street	49	69	59	5	64
Entering	17	19	18	2	20
Exiting	32	50	41	3	44

Traffic Volumes

Turning movement/classification counts were conducted by Sewall during the AM (7:00 – 9:00 AM) and PM (3:00 – 6:00) peak hour periods at the intersection of Congress Street, Hutchins Drive and Skyway Drive on September 19, 2019. The AM peak hour occurred from 7:30 – 8:30 while the PM peak hour occurred from 4:15 – 5:15. The count records are included in the appendix.

The count data was factored to 30th highest hour volumes, the volumes typically used for design and traffic analysis purposes, using published MaineDOT group mean urban factors. The 2019 volumes, expected to be representative of peak summer volumes in late July or early August, are shown in Figure 2.

Existing average annual daily traffic (AADT) data for the vicinity of the site was obtained from "Traffic Volume Counts, 2017 and 2013 Annual Reports", published by MaineDOT. This data is summarized as follows:

<u>Location</u>	Average Annual Daily Traffic		
	<u>2010</u>	<u>2013</u>	<u>2016</u>
Congress Street, west of Hutchins Drive	17580	---	21300
Congress Street, west of Johnson Road	10700	11030	11560
County Road, east of Finch Street	15980	16510	17520
Skyway Drive, south of Congress Street	---	11950	---

As demonstrated in the preceding table, traffic volumes in the vicinity of the site have increased at an annual rate of approximately 2 % during the most recent short 2013 – 2016 period and also during the longer term 2010 – 2016 period. Hence, based upon this historical data, a 2 % annual growth rate was utilized to project the 2019 volumes to base 2021 conditions. Also, review of the Sebago Technics study for the Clark Insurance expansion, dated December 9, 2019, shows that a 2 % annual traffic growth rate was similarly utilized in that study.

Other area developments that need to be considered in the traffic analysis were identified at the meeting with City staff. Two projects were identified:

- Cross Insurance Expansion on Hutchins Drive
- IDEXX Expansion in Westbrook

Additionally, the City's Peer Review Traffic Engineer followed up with the City of Westbrook to assure there were no other developments in Westbrook that needed to be considered. None other than the IDEXX Expansion were identified. The trips to be generated by the IDEXX Expansion were obtained from the Section Traffic Study prepared by T.Y. Lin International and dated 2/27/2018. The trips to be generated by the Cross Insurance expansion were obtained from the Traffic Impact Study prepared by Sebago Technics and dated 12/9/2019. These other development trips are shown in Figure 3

The projected 2021 No Build volumes, considering both the 2 % annual traffic growth rate and the trips generated by the two development projects noted above, are shown in Figure 4. The trip assignments for the new medical facility's trips, for the AM and PM peak hour analysis periods, based upon the recorded traffic patterns, are shown in Figure 5. Based upon the trip assignments, the study areas was defined as extending from the site through the Hutchins Drive, Skyway Drive and Congress Street intersection. Lastly, the projected 2021 Build volumes with the new Center of Excellence in Autism and Development Disorders fully occupied are shown in Figure 6.

F. Capacity Analyses

Traffic operations are evaluated in terms of level of service (LOS). Level of service is a qualitative measure that describes operations by letter designation. The levels range from A - very little delay to F - extreme delays. Level of service "D" is generally considered acceptable in urban locations while LOS "E" is generally considered the capacity of a facility and the minimum tolerable level. The level of service for signalized intersections is based upon the average control or signal delay per vehicle. These criteria are defined in the following table excerpted from the 2010 "Highway Capacity Manual":

Signalized Intersection Level of Service

<u>LOS</u>	<u>Delay Range</u>
A	< = 10.0 seconds
B	> 10.0 and <= 20.0
C	> 20.0 and <= 35.0
D	> 35.0 and <= 55.0
E	> 55.0 and <= 80.0
F	> 80.0

Signalized Intersection Analysis

The level of service (LOS) was calculated for the signalized intersection of Congress Street, Hutchins Drive and Skyway Drive for existing 2020 and projected 2021 No Build and Build conditions using Synchro 10/SimTraffic. The existing signal timings and phasings were obtained from Sebago Technics from the Cross Insurance Study for the analysis. The average of the results of five (5) SimTraffic runs are provided in the appendix and are summarized below:

<u>Approach/Movement</u>	AM Peak Hour Level of Service Congress, Skyway and Hutchins	
	No Build <u>2021</u>	Build <u>2021</u>
Eastbound Congress Left	F (103.0)	F (102.4)
Eastbound Congress Through	D (40.9)	D (44.0)
Eastbound Congress Right	A (9.5)	A (8.7)
Eastbound Congress Overall	D (37.2)	D (43.5)
Westbound Congress Left	E (76.7)	E (77.6)
Westbound Congress Through/Right	E (75.5)	E (76.5)
Westbound Congress Overall	E (67.5)	E (75.1)
Northbound Skyway Left	D (46.1)	D (45.6)
Northbound Skyway Through/Right	B (15.6)	B (17.3)
Northbound Skyway Overall	C (26.3)	C (32.5)
Southbound Hutchins Left/Through	E (77.2)	D (52.0)
Southbound Hutchins Right	C (26.7)	B (19.8)
Southbound Hutchins Overall	E (65.0)	D (46.7)
Intersection Overall	D (45.9)	D (45.9)

<u>Approach/Movement</u>	PM Peak Hour Level of Service Congress, Skyway and Hutchins	
	No Build	Build
	<u>2021</u>	<u>2021</u>
Eastbound Congress Left	D (48.8)	D (48.6)
Eastbound Congress Through	D (37.8)	D (40.3)
Eastbound Congress Right	C (32.3)	C (32.7)
Eastbound Congress Overall	C (34.5)	C (33.0)
Westbound Congress Left	E (62.7)	E (61.8)
Westbound Congress Through/Right	C (27.8)	D (38.7)
Westbound Congress Overall	D (38.9)	D (38.7)
Northbound Skyway Left	D (37.8)	D (45.3)
Northbound Skyway Through/Right	B (15.3)	B (19.2)
Northbound Skyway Overall	C (31.6)	C (33.2)
Southbound Hutchins Left/Through	C (32.4)	D (39.8)
Southbound Hutchins Right	A (5.6)	B (16.7)
Southbound Hutchins Overall	C (27.3)	C (29.5)
Intersection Overall	D (39.5)	D (39.7)

As shown in the preceding tables, the level of service for the signalized intersection of Congress, Skyway and Hutchins is projected to be acceptable overall in 2021 with a LOS “D” under both No Build and Build volumes during both the AM and PM peak hours. Note that these results are better than those obtained in the Cross Insurance study where the intersection was projected to be at LOS “F” overall during both peak hours. The difference appears to be due to a difference in volumes due to seasonal factoring. The volumes utilized for the Cross Insurance study were obtained from the IDEXX study, which had been obtained in January 2018. January volumes are generally low and unpredictable when compared to other months which can result in a conservatively high seasonal factor. The volumes used in this study were obtained in 2019 in mid-September. Hence the seasonal factor was very low and these volumes are considered to be truly representative of actual peak summer conditions.

Based upon the analysis results, while the intersection will operate at LOS “D” overall, some movements and approaches are constrained at LOS “E”. One lane movement, the eastbound left from Congress, will be failing during the AM peak hour period under both No Build and Build volumes. The analysis shows that the proposed medical center will have minimal impact on operations at this intersection, with similar delays and LOS for all approaches as well as overall. This would generally be expected given the hourly lane increases are small (fewer than 35 lane hour trips).

The previous IDEXX and Cross Insurance studies identified more significant capacity constraints at this intersection given the higher volumes utilized. The solution identified by those studies is the addition of a second left-turn lane on Skyway Drive, which will require a second receiving lane on Congress Street. This is a major and costly intersection improvement project, which has not yet been funded so it is unlikely to be accomplished in the short-term. It is understood that impact fees have been assigned to the other development projects for potential future intersection improvements.

Sewall reviewed and reevaluated the intersection analysis to see if there were any short-term improvements, such as lane use changes or signal re-timing, which would improve operations. The review showed that the southbound approach could be reconfigured from a left-through & right turn lane to a left & through-right lane. Additionally, the AM cycle length is currently 110 seconds but Synchro showed the optimal cycle length to be 140 seconds. The PM cycle length is currently 100 seconds while Synchro showed 120 seconds to be optimal. Hence, both analyses were repeated with longer 120 second cycles to see if this would improve operations. The results are summarized for the AM and PM Build volumes in the following tables:

Congress, Skyway and Hutchins

AM Peak Hour Level of Service

<u>Approach/Movement</u>	<u>Build 2021</u>	<u>Build 2021 Alt. Lanes</u>	<u>Build 120 Sec.</u>
Eastbound Congress Overall	D (43.5)	D (38.5)	D (43.1)
Westbound Congress Overall	E (75.1)	E (68.3)	E (75.4)
Northbound Skyway Overall	C (32.5)	C (26.3)	C (25.8)
Southbound Hutchins Overall	D (46.7)	D (37.2)	D (41.8)
Intersection Overall	D (45.9)	D (45.3)	D (47.4)

PM Peak Hour Level of Service

<u>Approach/Movement</u>	<u>Build 2021</u>	<u>Build 2021 Alt. Lanes</u>	<u>Build 120 Sec.</u>
Eastbound Congress Overall	C (33.0)	C (33.9)	C (33.8)
Westbound Congress Overall	D (38.7)	D (37.3)	D (39.7)
Northbound Skyway Overall	C (33.2)	C (31.2)	D (41.6)
Southbound Hutchins Overall	C (29.5)	D (42.0)	D (37.7)
Intersection Overall	D (39.5)	D (41.3)	D (42.6)

As seen in the preceding tables, while changing the lane uses on Hutchins Drive would slightly improve AM operations it would slightly worsen PM operations so this action is not recommended. Additionally, lengthening the cycle lengths as suggested by Synchro slightly worsens operations and delays in both the AM and PM peak hours. Hence, there does not appear to be any minor actions that can be implemented to improve operations in the short-term.

Queue Analysis

In addition to level of service, queues were also evaluated using SimTraffic, to assure that the medical center will have minimal impact off-site on queue lengths and to evaluate existing turn lane storage lengths. The results averaging five (5) runs for existing projected 2021 No Build and Build conditions are summarized below:

AM Peak Hour - 95th Percentile Queues			
<u>Approach/Lane</u>	<u>Available</u>	No Build <u>2021</u>	Build <u>2021</u>
Eastbound Congress Left	120'	120'	119'
Eastbound Congress Through	---	322'	322'
Eastbound Congress Right	200'	311'	309'
Westbound Congress Left	975'	301'	328'
Westbound Congress Through/Right	---	383'	393'
Northbound Skyway Left	675'	408'	405'
Northbound Skyway Through/Right	---	398'	404'
Southbound Hutchins Left/Through	---	232'	161'
Southbound Hutchins Right	150'	47'	39'
PM Peak Hour - 95th Percentile Queues			
<u>Approach/Lane</u>	<u>Available</u>	No Build <u>2021</u>	Build <u>2021</u>
Eastbound Congress Left	120'	93'	96'
Eastbound Congress Through	---	336'	325'
Eastbound Congress Right	200'	247'	252'
Westbound Congress Left	975'	345'	349'
Westbound Congress Through/Right	---	401'	345'
Northbound Skyway Left	675'	258'	268'
Northbound Skyway Through/Right	---	78'	82'
Southbound Hutchins Left/Through	---	237'	229'
Southbound Hutchins Right	150'	83'	105'

As seen in the preceding tables, all 95th percentile queue lengths for the Build and No Build conditions are very similar, again demonstrating that the proposed medical center will have limited impact on operations at this signalized intersection. Adequate storage is available in all turn lanes with the exception of the right-turn lane on Congress Street. This turn lane is 200' long but the demand is 310' in the AM peak hour. However, the right-turn queue does not block any signal controlled movements so the lack of adequate storage just results in a longer queue in the through lane without significant impact. And again, there is no projected difference in queue length between No Build and Build conditions and the medical facility will not increase the demand for this right-turn movement.

To summarize, the signalized intersection of Congress Street, Skyway Drive and Hutchins Drive is expected to operate at LOS "D" overall in both the AM and PM peak hours, under both No Build and Build volumes. Some approaches and lanes are expected to operate at capacity or over capacity. The analysis did not show any significant increase in delays due to the proposed medical facility. Additionally, queues lengths were unchanged from No Build to Build conditions, again showing minimal project impact on this intersection. Evaluation of several alternative minor actions did not identify any potential short term improvements. Hence, it is suggested that the medical center also pay an impact fee towards future improvements. A precedent has already been set for this with the IDEXX project paying a \$ 35,000 impact fee for future improvements to accommodate long-term growth and development in this area.

Safety Analysis

Accident Review

The Maine Department of Transportation uses two criteria to determine high crash locations (HCLs). The first is the critical rate factor (CRF), which is a measure of the accident rate. A CRF greater than one indicates a location which has a higher than expected crash rate. The expected rate is calculated as a statewide average of similar facilities.

The second criterion, which must also be met, is based upon the number of accidents that occur at a particular location. Eight or more accidents must occur over the three-year study period for the location to be considered a high crash location. Accident data was obtained from MaineDOT for Congress Street and Hutchins Drive within the expected study area. The CRF and number of accidents are summarized by location for the most recent three-year period, 2016 to 2018, in the table on the following page:

<u>Location Description</u>	<u># of Acc.</u>	<u>CRF</u>
Congress Street between Johnson Road and cut to Johnson Road	1	0.47
Congress Street cut to Johnson Road and Unum Drive	3	0.29
Intersection of Congress Street and Unum Drive	4	0.21
Congress Street between Unum Dr. and Blueberry Road	5	0.33
Intersection of Congress Street and Blueberry Road	6	1.10
Congress Street between Blueberry Road and Hutchins/Skyway	8	0.62
Intersection of Congress Street, Hutchins Drive & Skyway Drive	23	0.73
Congress Street between Hutchins/Skyway and Westbrook Town Line	12	0.52
County Road between town line and Thomas Drive	8	0.66
Intersection of County Road & Thomas Drive in Westbrook	3	0.39
County Road between Thomas Drive and Finch Street	19	0.49
Intersection of County Road & Finch Street in Westbrook	4	0.60
Intersection of County Road & Spring Street in Westbrook	28	0.73
Hutchins Drive between Congress Street and its dead end	2	0.41
At end of Hutchins Drive	1	2.94

As can be seen above, there are no high crash locations on either Route 22 (Congress Street/County Road) or Hutchins Drive in the vicinity of the site. While there are no high crash locations, the City Traffic Reviewer requested additional analysis at the intersection of Congress Street, Hutchins Drive and Skyway Drive since twenty-three (23) collisions occurred there.

There were twenty-three (23) collisions over the three-year study period, 2016 – 2018, at the intersection of Congress Street, Hutchins Drive and Skyway Drive. While it does not meet high crash criteria MaineDOT had prepared a collision diagram for these accidents for the Cross Insurance expansion study. This diagram is included in the appendix and discussed below. Additionally, the City Traffic Consultant obtained the 2019 records from the City Police Department, which are also evaluated in the following review.

The collision diagram showed 11 accidents occurred in 2016, 5 in 2017 and 7 in 2018. Thirteen of the 23 collisions were rear-end collisions, all attributed to following too closely and typical of signalized intersections and generally considered uncorrectable. There were three angle collisions involving left turns that failed to yield to through traffic. Three other angle collisions occurred between through vehicles from Hutchins and Congress Street traffic, due to red light running or failure to yield. The remaining four accidents were sideswipe types, two of which were due to improper passes. Sideswipe type collisions are also generally considered uncorrectable and typical of multi-lane approaches.

Additionally, Sewall was provided six accident reports from the Portland Police Department for the intersection for 2019. One of these reports was actually for a different intersection (District Road) so there were only five accident reports. All five of these 2019 collisions were rear-ends, occurring on three of the four approaches. Again, some rear-end collisions at signalized intersections are generally expected and are considered uncorrectable. To summarize, no pattern of correctable type accidents was evident from the diagram or the individual 2019 reports so no potential improvement actions were identified. Again, payment of an impact fee towards future intersection improvements is recommended, which will also likely be designed to improve safety.

Summary and Recommendations

The Center of Excellence in Autism and Development Disorders is expected to generate 69 one-way trips during the AM and 64 during the PM peak hour analysis periods.

The primary access intersection of Hutchins, Congress and Skyway Drive is projected to operate at LOS “D” overall during both the AM and PM peak hours, during both the AM and PM peak hours. These results are better than those obtained in the Cross Insurance study where the intersection was projected to be at LOS “F” overall during both peak hours. The difference is due to a difference in volumes due to seasonal factoring. While the intersection will operate at an acceptable LOS “D” overall, some movements and approaches are constrained at LOS “E”. One minor lane movement will be failing during the AM peak hour period under both No Build and Build volumes. The analysis shows that the proposed medical center will have minimal impact on operations at this intersection, with similar delays and LOS for all approaches as well as overall.

The previous studies identified more significant capacity constraints at this intersection given the higher volumes utilized. The solution identified by those studies is the addition of a second left-turn lane on Skyway Drive, which will require a second receiving lane on Congress Street. This is a major and costly intersection improvement project, which has not yet been funded so it is unlikely to be accomplished in the short-term. Sewall evaluated lane use changes and signal timing changes as potential short term actions but they did not result in improved operations.

Since there are no minor improvements that can be implemented to improve operations it is suggested that the medical center also pay an impact fee towards future improvements. A precedent has already been set for this with the IDEXX project paying a \$ 35,000 impact fee for future improvements to accommodate long-term growth and development in this area.

In terms of queue lengths, all Build queue lengths are very similar to No Build queue lengths, again demonstrating that the proposed medical center will have limited impact on operations at this signalized intersection. Adequate storage is available in all turn lanes with the exception of the right-turn lane on Congress Street. Lack of adequate right-turn storage results in a longer queue in the through lane without significant impact. There is no projected difference in queue length between No Build and Build conditions and that the medical facility will not increase the demand for this right-turn movement.

In terms of safety, there are no high crash locations within the study area. The City requested analysis of the intersection of Hutchins, Skyway and Congress Street given the number of crashes that occurred there, twenty-three (23). The accident analysis did not identify any accident patterns that would be considered correctable so no potential improvements were identified. It is assumed that the future improvement project to improve operations and increase capacity will also be designed to improve safety.



Figure 1

Site Location Map

Maine Behavioral Healthcare

Portland, Maine



● Signalized
(XX) = AM Peak Hour
XX = PM Peak Hour

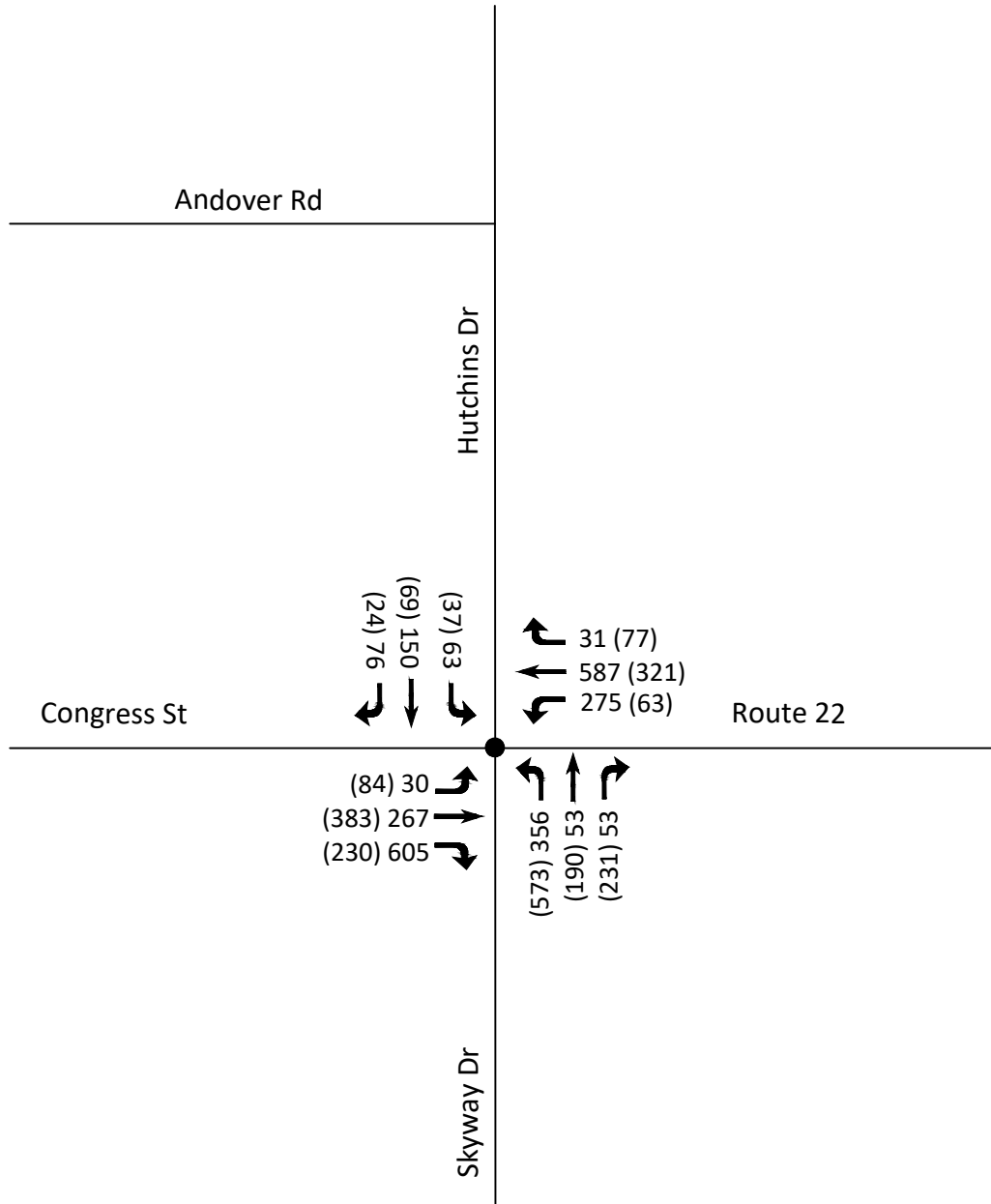


Figure 2

Existing 2019 30th H.H. Volumes
Maine Behavioral Healthcare
Portland, Maine





● Signalized

(XX) = AM Peak Hour

XX = PM Peak Hour

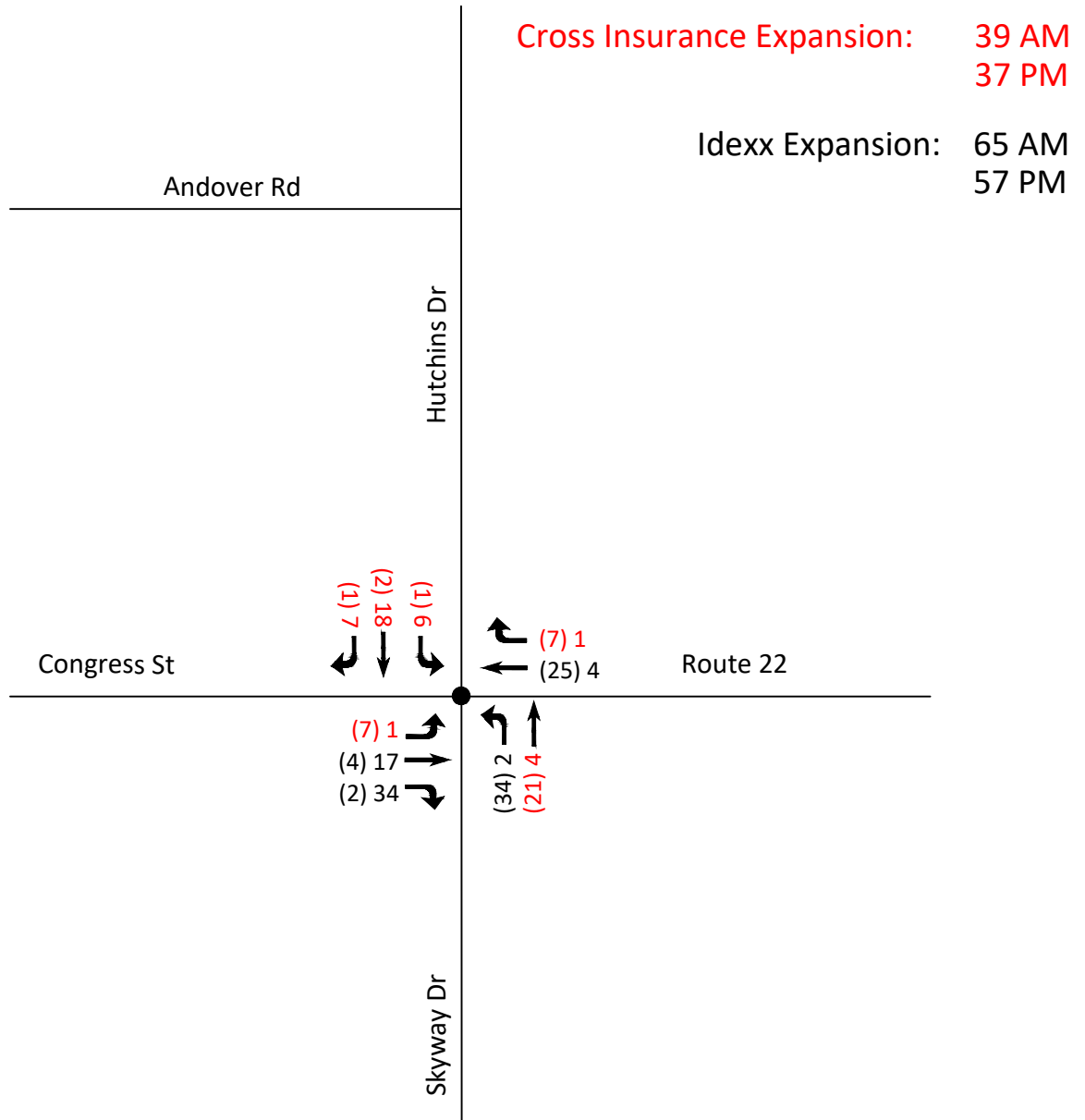


Figure 3

Other Development Trips
Maine Behavioral Healthcare
Portland, Maine





● Signalized
(XX) = AM Peak Hour
XX = PM Peak Hour

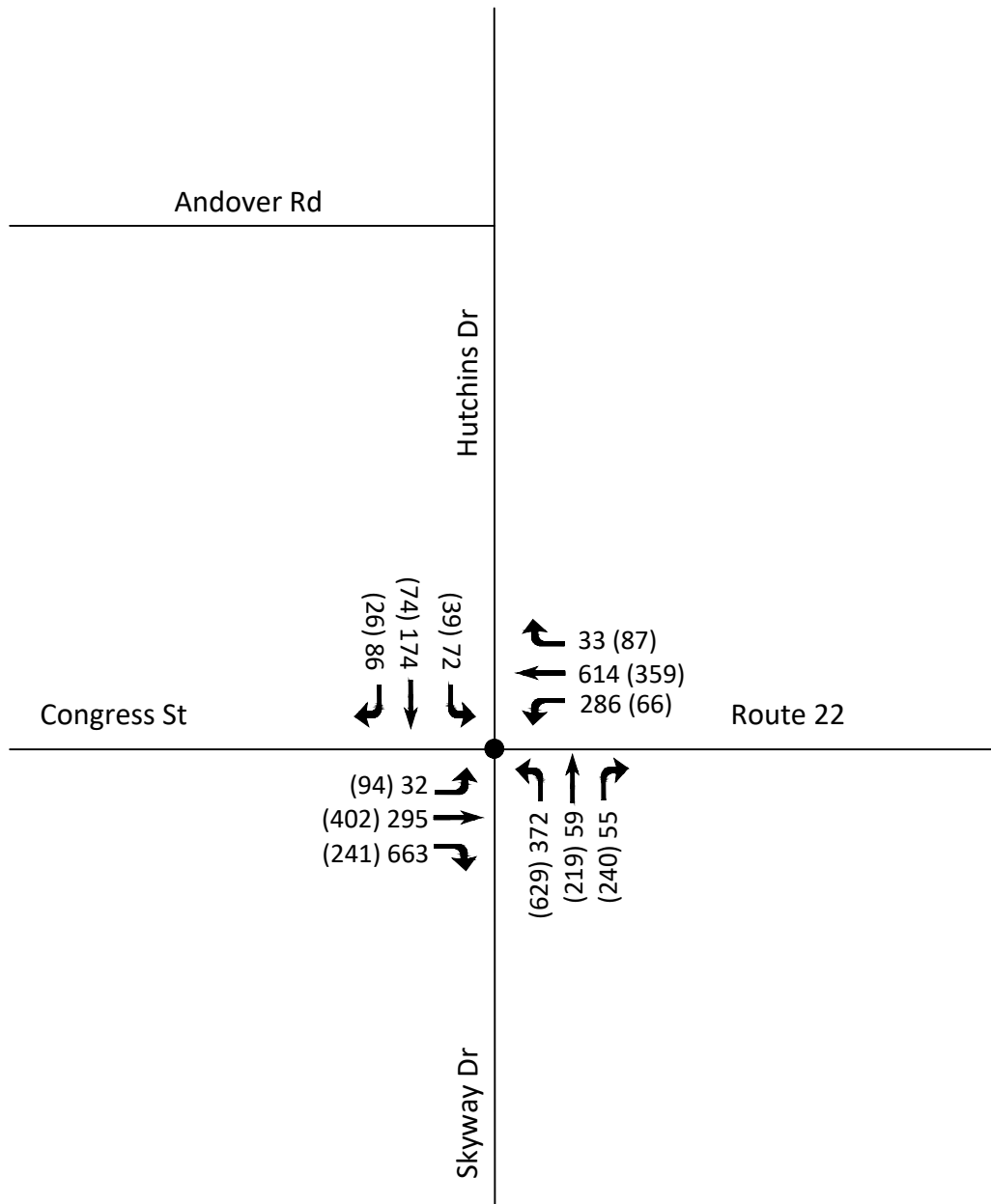


Figure 4

2021 No Build Volumes

Maine Behavioral Healthcare

Portland, Maine

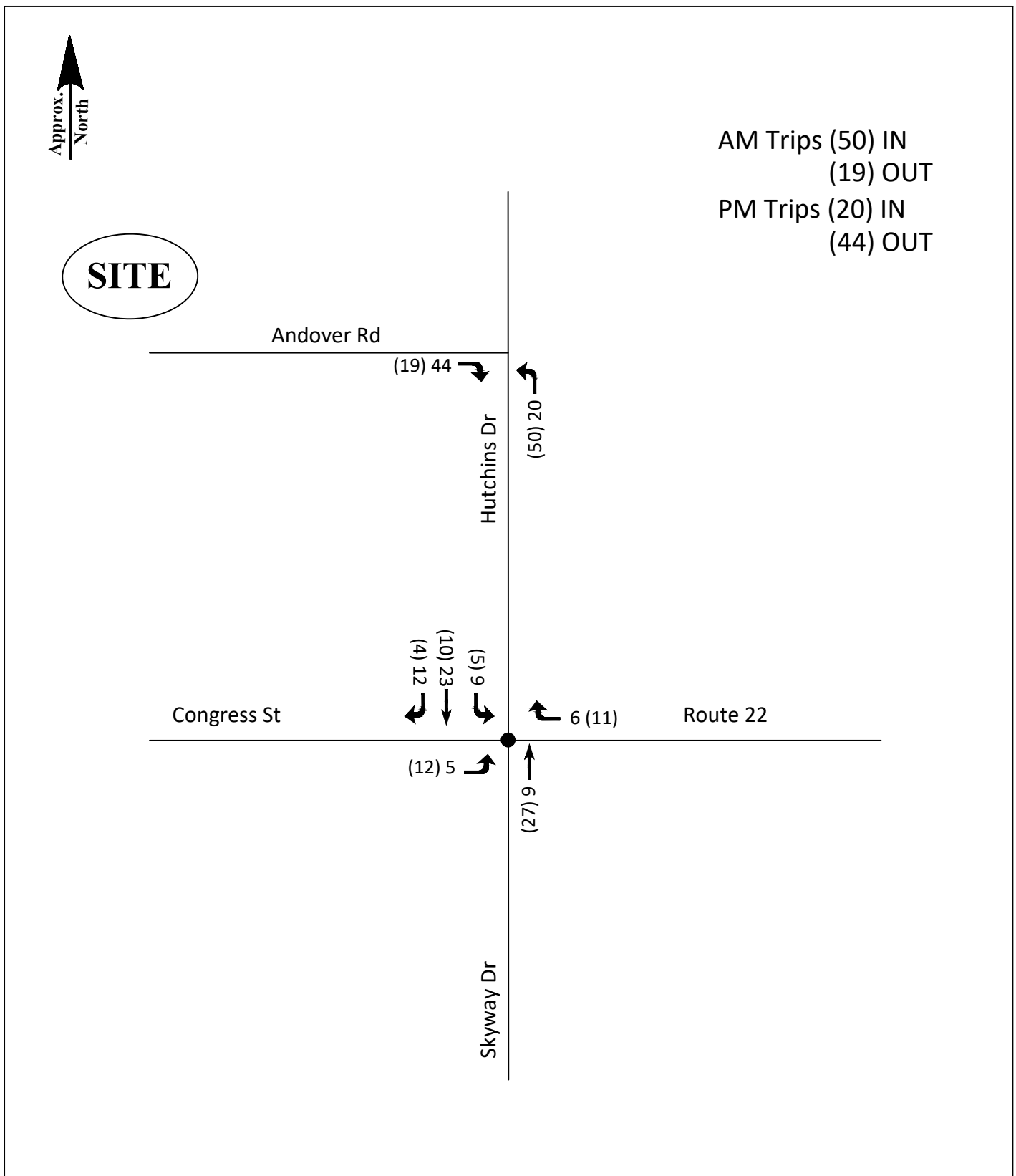


Figure 5

Trip Assignments

Maine Behavioral Healthcare

Portland, Maine



● Signalized
(XX) = AM Peak Hour
XX = PM Peak Hour

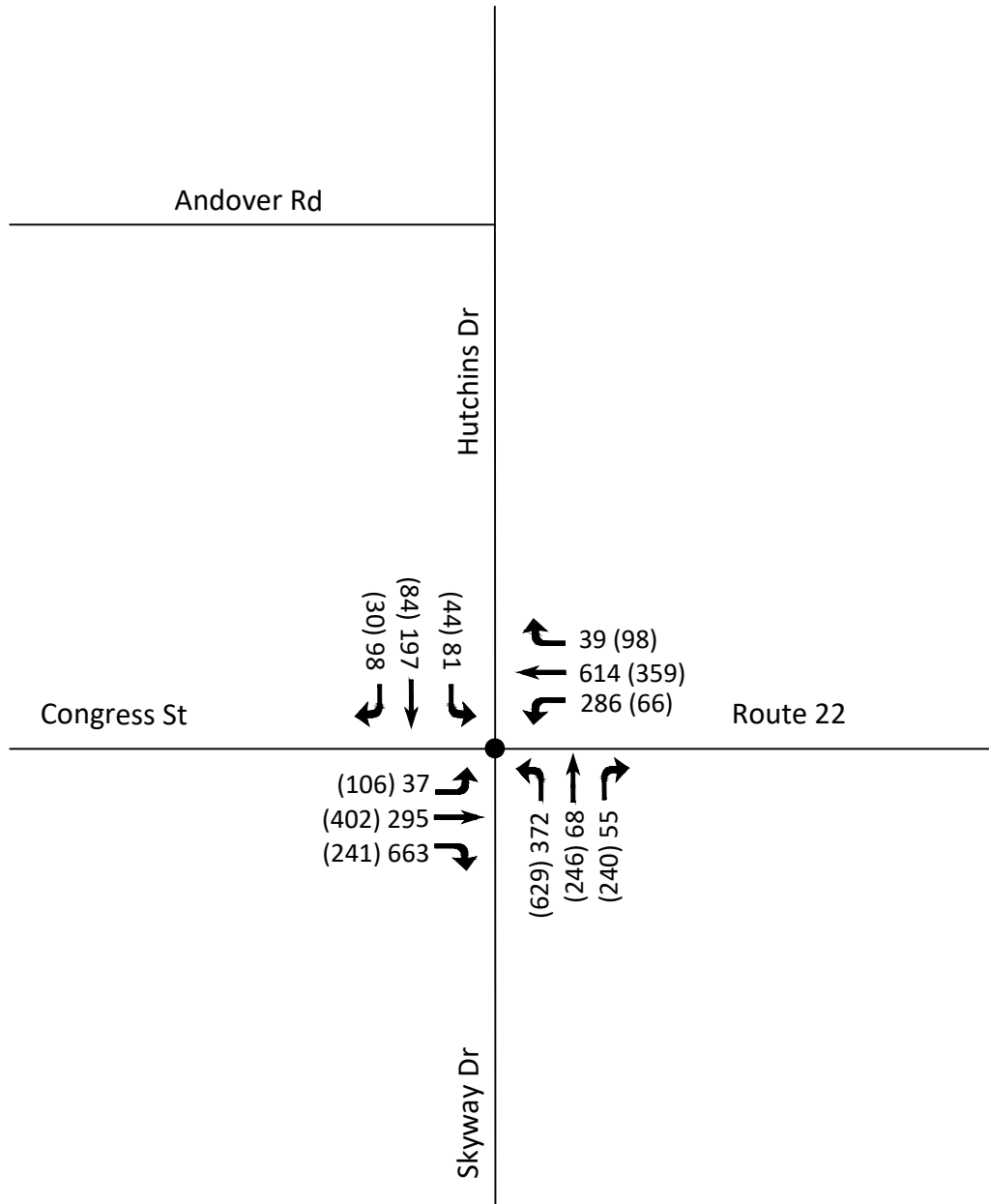


Figure 6

Existing 2021 Build Volumes
Maine Behavioral Healthcare
Portland, Maine



APPENDIX

Turning Movement Counts

Capacity Analysis

Accident Data

Collision Diagram

Maine Traffic Resources

40 Forest Falls Drive, Suite 2

Yarmouth, Maine 04096

www.mainetrafficresources.com

Title: Congress, Hutchins & Skyway

Town: Portland

Counter: JAM

Weather: Sunny

File Name : PortlandCongressHutchinsSky2019AM

Site Code : 12345551

Start Date : 9/19/2019

Page No : 1

Groups Printed- Passenger Cars - Light Trucks - Heavy Trucks

	Hutchins Drive From North					Congress St From East					Skyway Drive From South					Congress 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	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	3	8	6	0	17	12	61	10	0	83	34	23	101	1	159	85	77	16	0	178	437
07:15 AM	1	15	4	0	20	13	80	18	0	111	46	24	123	0	193	52	107	17	0	176	500
07:30 AM	8	12	7	0	27	16	72	10	0	98	54	31	126	0	211	63	86	24	0	173	509
07:45 AM	3	8	10	0	21	21	84	15	0	120	61	72	159	1	293	53	100	22	1	176	610
Total	15	43	27	0	85	62	297	53	0	412	195	150	509	2	856	253	370	79	1	703	2056
08:00 AM	1	13	10	0	24	17	75	16	0	108	60	41	153	1	255	52	87	20	2	161	548
08:15 AM	11	34	9	0	54	20	79	20	0	119	48	40	116	1	205	54	97	15	0	166	544
08:30 AM	2	14	12	0	28	6	71	17	0	94	34	19	101	0	154	58	90	9	0	157	433
08:45 AM	1	5	7	0	13	8	76	12	0	96	35	21	74	0	130	91	92	8	0	191	430
Total	15	66	38	0	119	51	301	65	0	417	177	121	444	2	744	255	366	52	2	675	1955

$$\text{Gr. I} = .88 / .85 = 1.035$$

Maine Traffic Resources

40 Forest Falls Drive, Suite 2

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Title: Congress, Hutchins & Skyway

Town: Portland

Counter: JAM

Weather: Sunny

File Name : PortlandCongressHutchinsSky2019AM

Site Code : 12345551

Start Date : 9/19/2019

Page No : 3

	Hutchins Drive From North					Congress St From East					Skyway Drive From South					Congress 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	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	8	12	7	0	27	16	72	10	0	98	54	31	126	0	211	63	86	24	0	173	509
07:45 AM	3	8	10	0	21	21	84	15	0	120	61	72	159	1	293	53	100	22	1	176	610
08:00 AM	1	13	10	0	24	17	75	16	0	108	60	41	153	1	255	52	87	20	2	161	548
08:15 AM	11	34	9	0	54	20	79	20	0	119	48	40	116	1	205	54	97	15	0	166	544
Total Volume	23	67	36	0	126	74	310	61	0	445	223	184	554	3	964	222	370	81	3	676	2211
% App. Total	18.3	53.2	28.6	0		16.6	69.7	13.7	0		23.1	19.1	57.5	0.3		32.8	54.7	12	0.4		
PHF	.523	.493	.900	.000	.583	.881	.923	.763	.000	.927	.914	.639	.871	.750	.823	.881	.925	.844	.375	.960	.906

24 69 37 77 321 63 231 190 573 230 333 84

Maine Traffic Resources

40 Forest Falls Drive, Suite 2

Yarmouth, Maine 04096

www.mainetrafficresources.com

Title: Congress, Hutchins & Skyway

Town: Portland

Counter: JAM

Weather: Sunny

File Name : PortlandCongressHutchinsSky2019PM

Site Code : 12345552

Start Date : 9/19/2019

Page No : 1

Groups Printed- Passenger Cars - Light Trucks - Heavy Trucks

	Hutchins Drive From North					Congress Street From East					Skyway Drive From South					Congress Street 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
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
03:00 PM	7	21	10	0	38	8	104	39	0	151	13	9	71	1	94	106	69	1	0	176	459
03:15 PM	8	20	11	0	39	9	109	35	1	154	14	9	86	1	110	90	53	8	0	151	454
03:30 PM	15	40	13	0	68	8	109	39	0	156	17	18	70	0	105	117	66	3	0	186	515
03:45 PM	8	21	13	0	42	11	139	40	0	190	17	9	77	0	103	103	60	6	0	169	504
Total	38	102	47	0	187	36	461	153	1	651	61	45	304	2	412	416	248	18	0	682	1932
04:00 PM	17	30	10	0	57	5	127	54	0	186	12	15	87	1	115	157	67	8	0	232	590
04:15 PM	17	30	13	0	60	12	142	61	0	215	9	14	68	0	91	117	75	11	0	203	569
04:30 PM	14	34	23	0	71	8	159	78	0	245	10	13	87	2	112	147	63	7	0	217	645
04:45 PM	20	43	7	0	70	6	119	53	0	178	15	13	94	0	122	163	52	4	0	219	589
Total	68	137	53	0	258	31	547	246	0	824	46	55	336	3	440	584	257	30	0	871	2393
05:00 PM	22	38	18	0	78	4	147	74	0	225	17	11	95	0	123	158	68	7	0	233	659
05:15 PM	20	41	14	0	75	4	135	49	0	188	11	16	73	0	100	115	58	2	0	175	538
05:30 PM	14	23	13	0	50	8	109	38	1	156	13	11	74	2	100	106	50	4	0	160	466
05:45 PM	5	22	6	0	33	4	92	21	0	117	12	7	65	0	84	61	40	5	0	106	340
Total	61	124	51	0	236	20	483	182	1	686	53	45	307	2	407	440	216	18	0	674	2003

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Title: Congress, Hutchins & Skyway

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Counter: JAM

Weather: Sunny

File Name : PortlandCongressHutchinsSky2019PM

Site Code : 12345552

Start Date : 9/19/2019

Page No : 3

	Hutchins Drive From North					Congress Street From East					Skyway Drive From South					Congress Street 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	17	30	13	0	60	12	142	61	0	215	9	14	68	0	91	117	75	11	0	203	569
04:30 PM	14	34	23	0	71	8	159	78	0	245	10	13	87	2	112	147	63	7	0	217	645
04:45 PM	20	43	7	0	70	6	119	53	0	178	15	13	94	0	122	163	52	4	0	219	589
05:00 PM	22	38	18	0	78	4	147	74	0	225	17	11	95	0	123	158	68	7	0	233	659
Total Volume	73	145	61	0	279	30	567	266	0	863	51	51	344	2	448	585	258	29	0	872	2462
% App. Total	26.2	52	21.9	0		3.5	65.7	30.8	0		11.4	11.4	76.8	0.4		67.1	29.6	3.3	0		
PHF	.830	.843	.663	.000	.894	.625	.892	.853	.000	.881	.750	.911	.905	.250	.911	.897	.860	.659	.000	.936	.934

76 150 63 31 587 275 53 53 356 605 267 30

$$Gr. I = 0.88 / .85 = 1.035$$

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13	13	13
Time Recorded (min)	10	10	10	10	10	10
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	397	422	377	385	401	397
Vehs Exited	403	399	354	366	390	383
Starting Vehs	53	28	33	27	32	34
Ending Vehs	47	51	56	46	43	48
Travel Distance (mi)	50	50	45	46	49	48
Travel Time (hr)	10.2	8.8	10.6	7.5	7.3	8.9
Total Delay (hr)	8.2	6.8	8.8	5.7	5.4	6.9
Total Stops	303	341	318	303	285	311
Fuel Used (gal)	4.4	4.2	4.4	3.7	3.7	4.1

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	7:10
Total Time (min)	10
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	397	422	377	385	401	397
Vehs Exited	403	399	354	366	390	383
Starting Vehs	53	28	33	27	32	34
Ending Vehs	47	51	56	46	43	48
Travel Distance (mi)	50	50	45	46	49	48
Travel Time (hr)	10.2	8.8	10.6	7.5	7.3	8.9
Total Delay (hr)	8.2	6.8	8.8	5.7	5.4	6.9
Total Stops	303	341	318	303	285	311
Fuel Used (gal)	4.4	4.2	4.4	3.7	3.7	4.1

3: Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.3	0.2	0.0	0.3	0.1	0.2	0.1	0.1	0.0	0.0	0.0
Denied Del/Veh (s)	18.8	18.5	19.4	12.8	18.5	15.8	8.1	4.6	8.0	0.6	0.2	0.1
Total Delay (hr)	0.5	0.7	0.1	0.2	1.4	0.3	1.4	0.2	0.1	0.2	0.3	0.0
Total Del/Veh (s)	103.0	40.9	9.5	76.7	75.5	67.7	46.1	15.6	10.4	71.9	77.2	26.7
Stop Delay (hr)	0.5	0.6	0.1	0.2	1.2	0.2	1.2	0.1	0.1	0.2	0.3	0.0
Stop Del/Veh (s)	99.7	36.0	7.2	72.2	67.9	62.3	39.6	10.5	7.9	70.0	73.8	26.4

3: Performance by movement

Movement	All
Denied Delay (hr)	1.4
Denied Del/Veh (s)	12.4
Total Delay (hr)	5.3
Total Del/Veh (s)	45.3
Stop Delay (hr)	4.8
Stop Del/Veh (s)	40.2

Total Network Performance

Denied Delay (hr)	1.4
Denied Del/Veh (s)	12.4
Total Delay (hr)	5.5
Total Del/Veh (s)	45.9
Stop Delay (hr)	4.8
Stop Del/Veh (s)	39.8

Intersection: 3:

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	LT	R
Maximum Queue (ft)	103	262	225	274	348	360	316	173	40
Average Queue (ft)	83	234	177	124	323	336	214	108	18
95th Queue (ft)	120	322	311	301	383	408	398	232	47
Link Distance (ft)		247			318		341	239	239
Upstream Blk Time (%)		30			45	24	5	7	
Queuing Penalty (veh)		0			0	0	0	0	
Storage Bay Dist (ft)	80		200	250		675			
Storage Blk Time (%)	35	33	0		57	24	5		
Queuing Penalty (veh)	226	112	1		38	109	29		

Network Summary

Network wide Queuing Penalty: 514

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13	13	13
Time Recorded (min)	10	10	10	10	10	10
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	397	422	377	385	401	397
Vehs Exited	403	399	354	366	390	383
Starting Vehs	53	28	33	27	32	34
Ending Vehs	47	51	56	46	43	48
Travel Distance (mi)	50	50	45	46	49	48
Travel Time (hr)	10.2	8.8	10.6	7.5	7.3	8.9
Total Delay (hr)	8.2	6.8	8.8	5.7	5.4	6.9
Total Stops	303	341	318	303	285	311
Fuel Used (gal)	4.4	4.2	4.4	3.7	3.7	4.1

Interval #0 Information Seeding

Start Time 6:57
End Time 7:00
Total Time (min) 3
Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time 7:00
End Time 7:10
Total Time (min) 10
Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	397	422	377	385	401	397
Vehs Exited	403	399	354	366	390	383
Starting Vehs	53	28	33	27	32	34
Ending Vehs	47	51	56	46	43	48
Travel Distance (mi)	50	50	45	46	49	48
Travel Time (hr)	10.2	8.8	10.6	7.5	7.3	8.9
Total Delay (hr)	8.2	6.8	8.8	5.7	5.4	6.9
Total Stops	303	341	318	303	285	311
Fuel Used (gal)	4.4	4.2	4.4	3.7	3.7	4.1

3: Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.6	0.4	0.4	0.0	1.4
Denied Del/Veh (s)	18.8	17.3	7.3	0.3	12.4
Total Delay (hr)	1.4	1.8	1.7	0.5	5.3
Total Del/Veh (s)	41.0	74.4	31.6	67.4	45.3
Stop Delay (hr)	1.2	1.7	1.4	0.5	4.8
Stop Del/Veh (s)	37.2	67.5	26.3	65.0	40.2

Total Network Performance

Denied Delay (hr)	1.4
Denied Del/Veh (s)	12.4
Total Delay (hr)	5.5
Total Del/Veh (s)	45.9
Stop Delay (hr)	4.8
Stop Del/Veh (s)	39.8

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13	13	13
Time Recorded (min)	10	10	10	10	10	10
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	399	436	380	391	399	400
Vehs Exited	400	409	366	374	387	388
Starting Vehs	51	28	36	29	34	35
Ending Vehs	50	55	50	46	46	51
Travel Distance (mi)	50	52	46	47	48	48
Travel Time (hr)	13.4	9.1	10.5	8.1	7.3	9.7
Total Delay (hr)	11.4	7.0	8.6	6.2	5.4	7.7
Total Stops	331	344	315	310	279	317
Fuel Used (gal)	5.2	4.3	4.3	3.8	3.7	4.3

Interval #0 Information Seeding

Start Time 6:57
End Time 7:00
Total Time (min) 3
Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time 7:00
End Time 7:10
Total Time (min) 10
Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	399	436	380	391	399	400
Vehs Exited	400	409	366	374	387	388
Starting Vehs	51	28	36	29	34	35
Ending Vehs	50	55	50	46	46	51
Travel Distance (mi)	50	52	46	47	48	48
Travel Time (hr)	13.4	9.1	10.5	8.1	7.3	9.7
Total Delay (hr)	11.4	7.0	8.6	6.2	5.4	7.7
Total Stops	331	344	315	310	279	317
Fuel Used (gal)	5.2	4.3	4.3	3.8	3.7	4.3

3: Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.6	0.4	0.1	0.5	0.1	0.2	0.1	0.1	0.0	0.0	0.0
Denied Del/Veh (s)	29.1	32.0	32.5	22.8	27.2	25.1	7.5	5.3	7.9	0.2	0.2	0.1
Total Delay (hr)	0.6	0.7	0.1	0.3	1.4	0.3	1.4	0.2	0.2	0.1	0.2	0.0
Total Del/Veh (s)	102.4	44.0	8.7	77.6	76.5	67.5	45.6	17.3	14.3	51.5	52.0	19.8
Stop Delay (hr)	0.5	0.7	0.1	0.2	1.2	0.3	1.2	0.1	0.1	0.1	0.2	0.0
Stop Del/Veh (s)	99.0	39.0	6.5	73.3	68.6	62.2	39.2	11.6	11.1	49.0	48.2	19.5

3: Performance by movement

Movement	All
Denied Delay (hr)	2.1
Denied Del/Veh (s)	17.9
Total Delay (hr)	5.4
Total Del/Veh (s)	45.6
Stop Delay (hr)	4.8
Stop Del/Veh (s)	40.3

Total Network Performance

Denied Delay (hr)	2.1
Denied Del/Veh (s)	17.9
Total Delay (hr)	5.6
Total Del/Veh (s)	45.9
Stop Delay (hr)	4.8
Stop Del/Veh (s)	39.6

Intersection: 3:

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	LT	R
Maximum Queue (ft)	103	262	225	274	355	361	355	141	32
Average Queue (ft)	88	233	171	137	329	335	226	91	14
95th Queue (ft)	119	322	309	328	393	405	404	161	39
Link Distance (ft)		247			318		341	239	239
Upstream Blk Time (%)		32			53	25	3		
Queuing Penalty (veh)		0			0	0	0		
Storage Bay Dist (ft)	80		200	250		675			
Storage Blk Time (%)	40	38	0		61	25	3		
Queuing Penalty (veh)	259	132	1		40	121	19		

Network Summary

Network wide Queuing Penalty: 571

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13	13	13
Time Recorded (min)	10	10	10	10	10	10
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	399	436	380	391	399	400
Vehs Exited	400	409	366	374	387	388
Starting Vehs	51	28	36	29	34	35
Ending Vehs	50	55	50	46	46	51
Travel Distance (mi)	50	52	46	47	48	48
Travel Time (hr)	13.4	9.1	10.5	8.1	7.3	9.7
Total Delay (hr)	11.4	7.0	8.6	6.2	5.4	7.7
Total Stops	331	344	315	310	279	317
Fuel Used (gal)	5.2	4.3	4.3	3.8	3.7	4.3

Interval #0 Information Seeding

Start Time 6:57
End Time 7:00
Total Time (min) 3
Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time 7:00
End Time 7:10
Total Time (min) 10
Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	399	436	380	391	399	400
Vehs Exited	400	409	366	374	387	388
Starting Vehs	51	28	36	29	34	35
Ending Vehs	50	55	50	46	46	51
Travel Distance (mi)	50	52	46	47	48	48
Travel Time (hr)	13.4	9.1	10.5	8.1	7.3	9.7
Total Delay (hr)	11.4	7.0	8.6	6.2	5.4	7.7
Total Stops	331	344	315	310	279	317
Fuel Used (gal)	5.2	4.3	4.3	3.8	3.7	4.3

3: Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	1.1	0.7	0.4	0.0	2.1
Denied Del/Veh (s)	31.7	26.2	7.1	0.2	17.9
Total Delay (hr)	1.4	2.0	1.8	0.3	5.4
Total Del/Veh (s)	43.5	75.1	32.5	46.7	45.6
Stop Delay (hr)	1.3	1.8	1.5	0.3	4.8
Stop Del/Veh (s)	39.6	68.1	26.9	43.9	40.3

Total Network Performance

Denied Delay (hr)	2.1
Denied Del/Veh (s)	17.9
Total Delay (hr)	5.6
Total Del/Veh (s)	45.9
Stop Delay (hr)	4.8
Stop Del/Veh (s)	39.6

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13	13	13
Time Recorded (min)	10	10	10	10	10	10
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	441	431	439	446	410	433
Vehs Exited	434	408	440	422	405	422
Starting Vehs	39	35	46	24	31	35
Ending Vehs	46	58	45	48	36	45
Travel Distance (mi)	54	51	54	53	50	52
Travel Time (hr)	10.2	12.8	10.4	7.6	8.5	9.9
Total Delay (hr)	8.0	10.7	8.2	5.4	6.5	7.8
Total Stops	365	372	360	368	338	361
Fuel Used (gal)	4.6	5.1	4.7	4.0	4.1	4.5

Interval #0 Information Seeding

Start Time 6:57
End Time 7:00
Total Time (min) 3
Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time 7:00
End Time 7:10
Total Time (min) 10
Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	441	431	439	446	410	433
Vehs Exited	434	408	440	422	405	422
Starting Vehs	39	35	46	24	31	35
Ending Vehs	46	58	45	48	36	45
Travel Distance (mi)	54	51	54	53	50	52
Travel Time (hr)	10.2	12.8	10.4	7.6	8.5	9.9
Total Delay (hr)	8.0	10.7	8.2	5.4	6.5	7.8
Total Stops	365	372	360	368	338	361
Fuel Used (gal)	4.6	5.1	4.7	4.0	4.1	4.5

3: Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.4	0.8	0.5	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	30.5	26.4	24.7	36.6	32.7	30.1	0.3	0.1	0.1	0.3	0.6	0.2
Total Delay (hr)	0.1	0.6	1.0	0.9	1.0	0.1	0.7	0.1	0.0	0.1	0.3	0.1
Total Del/Veh (s)	52.6	42.6	33.7	67.7	34.4	32.1	42.7	18.3	5.9	34.4	36.5	14.1
Stop Delay (hr)	0.1	0.5	1.0	0.9	0.8	0.0	0.6	0.0	0.0	0.1	0.3	0.1
Stop Del/Veh (s)	48.8	37.8	32.3	62.7	27.8	26.8	37.8	15.3	5.6	31.2	32.4	13.4

3: Performance by movement

Movement	All
Denied Delay (hr)	2.7
Denied Del/Veh (s)	21.2
Total Delay (hr)	5.0
Total Del/Veh (s)	38.7
Stop Delay (hr)	4.4
Stop Del/Veh (s)	34.6

Total Network Performance

Denied Delay (hr)	2.7
Denied Del/Veh (s)	21.2
Total Delay (hr)	5.1
Total Del/Veh (s)	39.5
Stop Delay (hr)	4.5
Stop Del/Veh (s)	34.4

Intersection: 3:

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	LT	R
Maximum Queue (ft)	73	274	225	256	337	238	73	199	73
Average Queue (ft)	34	251	221	233	314	196	34	138	40
95th Queue (ft)	93	336	247	345	401	258	78	237	83
Link Distance (ft)		247			318		341	239	239
Upstream Blk Time (%)		36			39			2	
Queuing Penalty (veh)		0			0			0	
Storage Bay Dist (ft)	80		200	250		675			
Storage Blk Time (%)	2	44	42	20	26				
Queuing Penalty (veh)	15	306	136	127	74				

Network Summary

Network wide Queuing Penalty: 658

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13	13	13
Time Recorded (min)	10	10	10	10	10	10
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	441	431	439	446	410	433
Vehs Exited	434	408	440	422	405	422
Starting Vehs	39	35	46	24	31	35
Ending Vehs	46	58	45	48	36	45
Travel Distance (mi)	54	51	54	53	50	52
Travel Time (hr)	10.2	12.8	10.4	7.6	8.5	9.9
Total Delay (hr)	8.0	10.7	8.2	5.4	6.5	7.8
Total Stops	365	372	360	368	338	361
Fuel Used (gal)	4.6	5.1	4.7	4.0	4.1	4.5

Interval #0 Information Seeding

Start Time 6:57
End Time 7:00
Total Time (min) 3
Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time 7:00
End Time 7:10
Total Time (min) 10
Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	441	431	439	446	410	433
Vehs Exited	434	408	440	422	405	422
Starting Vehs	39	35	46	24	31	35
Ending Vehs	46	58	45	48	36	45
Travel Distance (mi)	54	51	54	53	50	52
Travel Time (hr)	10.2	12.8	10.4	7.6	8.5	9.9
Total Delay (hr)	8.0	10.7	8.2	5.4	6.5	7.8
Total Stops	365	372	360	368	338	361
Fuel Used (gal)	4.6	5.1	4.7	4.0	4.1	4.5

3: Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	1.2	1.4	0.0	0.0	2.7
Denied Del/Veh (s)	25.4	33.9	0.3	0.4	21.2
Total Delay (hr)	1.7	1.9	0.8	0.5	5.0
Total Del/Veh (s)	37.1	45.0	35.8	30.3	38.7
Stop Delay (hr)	1.6	1.7	0.7	0.5	4.4
Stop Del/Veh (s)	34.5	38.9	31.6	27.3	34.6

Total Network Performance

Denied Delay (hr)	2.7
Denied Del/Veh (s)	21.2
Total Delay (hr)	5.1
Total Del/Veh (s)	39.5
Stop Delay (hr)	4.5
Stop Del/Veh (s)	34.4

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13	13	13
Time Recorded (min)	10	10	10	10	10	10
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	441	443	438	452	427	441
Vehs Exited	441	422	442	439	429	434
Starting Vehs	49	38	41	35	31	38
Ending Vehs	49	59	37	48	29	44
Travel Distance (mi)	54	53	54	54	53	54
Travel Time (hr)	10.4	12.9	10.0	8.0	8.3	9.9
Total Delay (hr)	8.2	10.7	7.8	5.8	6.2	7.8
Total Stops	390	379	346	368	356	367
Fuel Used (gal)	4.7	5.2	4.6	4.2	4.2	4.6

Interval #0 Information Seeding

Start Time 6:57
End Time 7:00
Total Time (min) 3
Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time 7:00
End Time 7:10
Total Time (min) 10
Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	441	443	438	452	427	441
Vehs Exited	441	422	442	439	429	434
Starting Vehs	49	38	41	35	31	38
Ending Vehs	49	59	37	48	29	44
Travel Distance (mi)	54	53	54	54	53	54
Travel Time (hr)	10.4	12.9	10.0	8.0	8.3	9.9
Total Delay (hr)	8.2	10.7	7.8	5.8	6.2	7.8
Total Stops	390	379	346	368	356	367
Fuel Used (gal)	4.7	5.2	4.6	4.2	4.2	4.6

3: Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.4	0.9	0.4	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	29.9	27.2	27.1	27.9	26.2	27.5	0.3	0.1	0.2	0.3	0.4	0.2
Total Delay (hr)	0.1	0.6	1.0	0.8	1.1	0.1	0.7	0.1	0.0	0.2	0.4	0.1
Total Del/Veh (s)	48.6	40.3	32.7	61.8	38.7	26.9	45.3	19.2	6.8	39.8	38.3	16.7
Stop Delay (hr)	0.1	0.5	0.9	0.8	0.9	0.0	0.6	0.0	0.0	0.2	0.3	0.1
Stop Del/Veh (s)	45.2	35.6	31.1	56.6	31.8	21.9	40.1	16.0	6.3	36.3	33.8	16.0

3: Performance by movement

Movement	All
Denied Delay (hr)	2.5
Denied Del/Veh (s)	19.3
Total Delay (hr)	5.1
Total Del/Veh (s)	38.7
Stop Delay (hr)	4.5
Stop Del/Veh (s)	34.4

Total Network Performance

Denied Delay (hr)	2.5
Denied Del/Veh (s)	19.3
Total Delay (hr)	5.3
Total Del/Veh (s)	39.7
Stop Delay (hr)	4.6
Stop Del/Veh (s)	34.3

Intersection: 3:

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	LT	R
Maximum Queue (ft)	77	276	225	274	337	249	76	213	93
Average Queue (ft)	36	253	217	236	332	197	40	155	50
95th Queue (ft)	96	325	252	349	345	268	82	229	105
Link Distance (ft)		247			318		341	239	239
Upstream Blk Time (%)		33			37			0	
Queuing Penalty (veh)		0			0			0	
Storage Bay Dist (ft)	80		200	250		675			
Storage Blk Time (%)	0	45	38	13	34				
Queuing Penalty (veh)	1	314	125	84	99				

Network Summary

Network wide Queuing Penalty: 622

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13	13	13
Time Recorded (min)	10	10	10	10	10	10
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	441	443	438	452	427	441
Vehs Exited	441	422	442	439	429	434
Starting Vehs	49	38	41	35	31	38
Ending Vehs	49	59	37	48	29	44
Travel Distance (mi)	54	53	54	54	53	54
Travel Time (hr)	10.4	12.9	10.0	8.0	8.3	9.9
Total Delay (hr)	8.2	10.7	7.8	5.8	6.2	7.8
Total Stops	390	379	346	368	356	367
Fuel Used (gal)	4.7	5.2	4.6	4.2	4.2	4.6

Interval #0 Information Seeding

Start Time 6:57
End Time 7:00
Total Time (min) 3
Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time 7:00
End Time 7:10
Total Time (min) 10
Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	441	443	438	452	427	441
Vehs Exited	441	422	442	439	429	434
Starting Vehs	49	38	41	35	31	38
Ending Vehs	49	59	37	48	29	44
Travel Distance (mi)	54	53	54	54	53	54
Travel Time (hr)	10.4	12.9	10.0	8.0	8.3	9.9
Total Delay (hr)	8.2	10.7	7.8	5.8	6.2	7.8
Total Stops	390	379	346	368	356	367
Fuel Used (gal)	4.7	5.2	4.6	4.2	4.2	4.6

3: Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	1.3	1.2	0.0	0.0	2.5
Denied Del/Veh (s)	27.2	26.8	0.2	0.3	19.3
Total Delay (hr)	1.7	2.0	0.8	0.6	5.1
Total Del/Veh (s)	35.6	45.0	37.6	32.8	38.7
Stop Delay (hr)	1.5	1.7	0.7	0.6	4.5
Stop Del/Veh (s)	33.0	38.7	33.2	29.5	34.4

Total Network Performance

Denied Delay (hr)	2.5
Denied Del/Veh (s)	19.3
Total Delay (hr)	5.3
Total Del/Veh (s)	39.7
Stop Delay (hr)	4.6
Stop Del/Veh (s)	34.3

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13	13	13
Time Recorded (min)	10	10	10	10	10	10
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	407	436	380	390	399	404
Vehs Exited	404	409	368	374	387	389
Starting Vehs	47	28	36	29	34	34
Ending Vehs	50	55	48	45	46	48
Travel Distance (mi)	50	52	46	47	48	49
Travel Time (hr)	12.5	9.0	10.3	8.1	7.4	9.5
Total Delay (hr)	10.5	7.0	8.5	6.3	5.5	7.5
Total Stops	318	338	309	314	280	311
Fuel Used (gal)	5.0	4.3	4.3	3.8	3.7	4.2

Interval #0 Information Seeding

Start Time 6:57
End Time 7:00
Total Time (min) 3
Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time 7:00
End Time 7:10
Total Time (min) 10
Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	407	436	380	390	399	404
Vehs Exited	404	409	368	374	387	389
Starting Vehs	47	28	36	29	34	34
Ending Vehs	50	55	48	45	46	48
Travel Distance (mi)	50	52	46	47	48	49
Travel Time (hr)	12.5	9.0	10.3	8.1	7.4	9.5
Total Delay (hr)	10.5	7.0	8.5	6.3	5.5	7.5
Total Stops	318	338	309	314	280	311
Fuel Used (gal)	5.0	4.3	4.3	3.8	3.7	4.2

3: Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.5	0.3	0.1	0.5	0.1	0.2	0.1	0.1	0.0	0.0	0.0
Denied Del/Veh (s)	25.4	29.8	28.1	23.2	27.2	25.4	7.2	5.0	7.5	4.0	0.3	0.4
Total Delay (hr)	0.6	0.7	0.1	0.3	1.4	0.3	1.4	0.2	0.2	0.1	0.1	0.0
Total Del/Veh (s)	104.9	40.9	10.5	80.4	76.5	67.2	45.1	17.1	13.6	51.5	33.8	25.4
Stop Delay (hr)	0.6	0.6	0.1	0.3	1.2	0.3	1.2	0.1	0.1	0.1	0.1	0.0
Stop Del/Veh (s)	101.4	36.1	7.8	76.0	68.6	61.9	38.7	11.3	10.4	49.3	30.5	24.0

3: Performance by movement

Movement	All
Denied Delay (hr)	2.0
Denied Del/Veh (s)	17.0
Total Delay (hr)	5.3
Total Del/Veh (s)	44.7
Stop Delay (hr)	4.7
Stop Del/Veh (s)	39.4

Total Network Performance

Denied Delay (hr)	2.0
Denied Del/Veh (s)	17.0
Total Delay (hr)	5.5
Total Del/Veh (s)	45.3
Stop Delay (hr)	4.7
Stop Del/Veh (s)	39.0

Intersection: 3:

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	TR
Maximum Queue (ft)	103	272	225	274	354	361	355	51	99
Average Queue (ft)	89	242	167	136	328	335	225	34	61
95th Queue (ft)	119	333	305	328	391	405	404	64	116
Link Distance (ft)		257			318		341		239
Upstream Blk Time (%)		32			51	24	3		
Queuing Penalty (veh)		0			0	0	0		
Storage Bay Dist (ft)	80		200	250		675		150	
Storage Blk Time (%)	41	42	0		61	24	3		0
Queuing Penalty (veh)	265	145	1		40	119	17		0

Network Summary

Network wide Queuing Penalty: 587

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13	13	13
Time Recorded (min)	10	10	10	10	10	10
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	407	436	380	390	399	404
Vehs Exited	404	409	368	374	387	389
Starting Vehs	47	28	36	29	34	34
Ending Vehs	50	55	48	45	46	48
Travel Distance (mi)	50	52	46	47	48	49
Travel Time (hr)	12.5	9.0	10.3	8.1	7.4	9.5
Total Delay (hr)	10.5	7.0	8.5	6.3	5.5	7.5
Total Stops	318	338	309	314	280	311
Fuel Used (gal)	5.0	4.3	4.3	3.8	3.7	4.2

Interval #0 Information Seeding

Start Time 6:57
End Time 7:00
Total Time (min) 3
Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time 7:00
End Time 7:10
Total Time (min) 10
Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	407	436	380	390	399	404
Vehs Exited	404	409	368	374	387	389
Starting Vehs	47	28	36	29	34	34
Ending Vehs	50	55	48	45	46	48
Travel Distance (mi)	50	52	46	47	48	49
Travel Time (hr)	12.5	9.0	10.3	8.1	7.4	9.5
Total Delay (hr)	10.5	7.0	8.5	6.3	5.5	7.5
Total Stops	318	338	309	314	280	311
Fuel Used (gal)	5.0	4.3	4.3	3.8	3.7	4.2

3: Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	1.0	0.7	0.4	0.0	2.0
Denied Del/Veh (s)	28.6	26.3	6.8	1.5	17.0
Total Delay (hr)	1.4	2.0	1.7	0.3	5.3
Total Del/Veh (s)	42.5	75.3	31.8	40.0	44.7
Stop Delay (hr)	1.3	1.8	1.4	0.2	4.7
Stop Del/Veh (s)	38.5	68.3	26.3	37.2	39.4

Total Network Performance

Denied Delay (hr)	2.0
Denied Del/Veh (s)	17.0
Total Delay (hr)	5.5
Total Del/Veh (s)	45.3
Stop Delay (hr)	4.7
Stop Del/Veh (s)	39.0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13	13	13
Time Recorded (min)	10	10	10	10	10	10
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	442	434	434	442	428	437
Vehs Exited	441	419	438	432	423	431
Starting Vehs	50	38	41	36	30	39
Ending Vehs	51	53	37	46	35	45
Travel Distance (mi)	54	53	54	53	52	53
Travel Time (hr)	10.6	13.2	10.4	9.1	8.4	10.3
Total Delay (hr)	8.4	11.1	8.2	7.0	6.3	8.2
Total Stops	389	375	344	353	356	365
Fuel Used (gal)	4.8	5.3	4.6	4.4	4.2	4.7

Interval #0 Information Seeding

Start Time 6:57
End Time 7:00
Total Time (min) 3
Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time 7:00
End Time 7:10
Total Time (min) 10
Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	442	434	434	442	428	437
Vehs Exited	441	419	438	432	423	431
Starting Vehs	50	38	41	36	30	39
Ending Vehs	51	53	37	46	35	45
Travel Distance (mi)	54	53	54	53	52	53
Travel Time (hr)	10.6	13.2	10.4	9.1	8.4	10.3
Total Delay (hr)	8.4	11.1	8.2	7.0	6.3	8.2
Total Stops	389	375	344	353	356	365
Fuel Used (gal)	4.8	5.3	4.6	4.4	4.2	4.7

3: Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.5	1.0	0.3	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	38.6	34.1	33.1	26.0	25.0	27.6	0.3	0.1	0.2	4.3	1.6	2.7
Total Delay (hr)	0.1	0.6	1.0	0.8	1.1	0.1	0.7	0.1	0.0	0.2	0.5	0.2
Total Del/Veh (s)	45.0	43.0	34.3	56.9	38.1	27.0	42.6	19.5	6.3	44.5	48.9	44.6
Stop Delay (hr)	0.1	0.5	0.9	0.7	0.9	0.0	0.6	0.1	0.0	0.2	0.4	0.2
Stop Del/Veh (s)	41.2	38.1	31.9	51.8	31.2	22.0	37.6	16.4	5.7	40.8	43.8	41.7

3: Performance by movement

Movement	All
Denied Delay (hr)	2.7
Denied Del/Veh (s)	21.4
Total Delay (hr)	5.3
Total Del/Veh (s)	40.4
Stop Delay (hr)	4.7
Stop Del/Veh (s)	35.8

Total Network Performance

Denied Delay (hr)	2.7
Denied Del/Veh (s)	21.4
Total Delay (hr)	5.5
Total Del/Veh (s)	41.3
Stop Delay (hr)	4.7
Stop Del/Veh (s)	35.6

Intersection: 3:

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	TR
Maximum Queue (ft)	67	283	225	274	340	234	76	174	254
Average Queue (ft)	31	261	219	233	322	192	40	104	191
95th Queue (ft)	87	333	251	346	374	266	83	202	301
Link Distance (ft)		257			318		341		239
Upstream Blk Time (%)		36			35				12
Queuing Penalty (veh)		0			0				0
Storage Bay Dist (ft)	80		200	250		675		150	
Storage Blk Time (%)	0	48	41	10	34				31
Queuing Penalty (veh)	1	337	136	64	96				25

Network Summary

Network wide Queuing Penalty: 660

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13	13	13
Time Recorded (min)	10	10	10	10	10	10
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	442	434	434	442	428	437
Vehs Exited	441	419	438	432	423	431
Starting Vehs	50	38	41	36	30	39
Ending Vehs	51	53	37	46	35	45
Travel Distance (mi)	54	53	54	53	52	53
Travel Time (hr)	10.6	13.2	10.4	9.1	8.4	10.3
Total Delay (hr)	8.4	11.1	8.2	7.0	6.3	8.2
Total Stops	389	375	344	353	356	365
Fuel Used (gal)	4.8	5.3	4.6	4.4	4.2	4.7

Interval #0 Information Seeding

Start Time 6:57
End Time 7:00
Total Time (min) 3
Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time 7:00
End Time 7:10
Total Time (min) 10
Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	442	434	434	442	428	437
Vehs Exited	441	419	438	432	423	431
Starting Vehs	50	38	41	36	30	39
Ending Vehs	51	53	37	46	35	45
Travel Distance (mi)	54	53	54	53	52	53
Travel Time (hr)	10.6	13.2	10.4	9.1	8.4	10.3
Total Delay (hr)	8.4	11.1	8.2	7.0	6.3	8.2
Total Stops	389	375	344	353	356	365
Fuel Used (gal)	4.8	5.3	4.6	4.4	4.2	4.7

3: Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	1.6	1.1	0.0	0.0	2.7
Denied Del/Veh (s)	33.6	25.4	0.2	2.5	21.4
Total Delay (hr)	1.7	1.9	0.8	0.9	5.3
Total Del/Veh (s)	37.1	43.5	35.5	46.1	40.4
Stop Delay (hr)	1.5	1.6	0.7	0.8	4.7
Stop Del/Veh (s)	33.9	37.3	31.2	42.0	35.8

Total Network Performance

Denied Delay (hr)	2.7
Denied Del/Veh (s)	21.4
Total Delay (hr)	5.5
Total Del/Veh (s)	41.3
Stop Delay (hr)	4.7
Stop Del/Veh (s)	35.6

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13	13	13
Time Recorded (min)	10	10	10	10	10	10
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	385	442	383	385	400	400
Vehs Exited	391	414	371	371	390	387
Starting Vehs	59	33	36	33	34	38
Ending Vehs	53	61	48	47	44	50
Travel Distance (mi)	48	53	46	46	48	48
Travel Time (hr)	13.9	10.5	11.4	9.1	7.7	10.5
Total Delay (hr)	12.0	8.4	9.5	7.2	5.8	8.6
Total Stops	277	325	308	289	277	295
Fuel Used (gal)	5.2	4.6	4.6	4.0	3.8	4.4

Interval #0 Information Seeding

Start Time 6:57
End Time 7:00
Total Time (min) 3
Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time 7:00
End Time 7:10
Total Time (min) 10
Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	385	442	383	385	400	400
Vehs Exited	391	414	371	371	390	387
Starting Vehs	59	33	36	33	34	38
Ending Vehs	53	61	48	47	44	50
Travel Distance (mi)	48	53	46	46	48	48
Travel Time (hr)	13.9	10.5	11.4	9.1	7.7	10.5
Total Delay (hr)	12.0	8.4	9.5	7.2	5.8	8.6
Total Stops	277	325	308	289	277	295
Fuel Used (gal)	5.2	4.6	4.6	4.0	3.8	4.4

3: Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	1.4	1.0	0.4	0.0	2.8
Denied Del/Veh (s)	42.1	38.7	7.6	0.2	23.6
Total Delay (hr)	1.5	2.1	1.7	0.3	5.6
Total Del/Veh (s)	46.9	82.7	31.2	40.1	47.0
Stop Delay (hr)	1.4	1.9	1.4	0.3	5.0
Stop Del/Veh (s)	43.1	75.4	25.8	37.6	41.8

Total Network Performance

Denied Delay (hr)	2.8
Denied Del/Veh (s)	23.6
Total Delay (hr)	5.7
Total Del/Veh (s)	47.4
Stop Delay (hr)	5.0
Stop Del/Veh (s)	41.2

Intersection: 3:

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	LT	R
Maximum Queue (ft)	104	266	225	274	347	365	346	129	33
Average Queue (ft)	92	248	152	142	331	336	185	90	15
95th Queue (ft)	124	316	297	325	388	419	373	142	41
Link Distance (ft)		247			318		341	239	239
Upstream Blk Time (%)		40			59	28	5		
Queuing Penalty (veh)		0			0	0	0		
Storage Bay Dist (ft)	80		200	250		675			
Storage Blk Time (%)	50	36	0		68	28	5		
Queuing Penalty (veh)	323	124	2		45	135	34		

Network Summary

Network wide Queuing Penalty: 663

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13	13	13
Time Recorded (min)	10	10	10	10	10	10
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	436	414	434	453	419	431
Vehs Exited	445	406	427	446	420	429
Starting Vehs	61	43	40	47	38	44
Ending Vehs	52	51	47	54	37	46
Travel Distance (mi)	54	50	53	55	52	53
Travel Time (hr)	11.2	13.7	11.4	8.6	8.4	10.7
Total Delay (hr)	9.0	11.6	9.2	6.4	6.3	8.5
Total Stops	356	323	319	345	331	335
Fuel Used (gal)	4.9	5.3	4.8	4.3	4.2	4.7

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	7:10
Total Time (min)	10
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	436	414	434	453	419	431
Vehs Exited	445	406	427	446	420	429
Starting Vehs	61	43	40	47	38	44
Ending Vehs	52	51	47	54	37	46
Travel Distance (mi)	54	50	53	55	52	53
Travel Time (hr)	11.2	13.7	11.4	8.6	8.4	10.7
Total Delay (hr)	9.0	11.6	9.2	6.4	6.3	8.5
Total Stops	356	323	319	345	331	335
Fuel Used (gal)	4.9	5.3	4.8	4.3	4.2	4.7

3: Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	1.6	1.3	0.0	0.0	2.9
Denied Del/Veh (s)	32.1	30.7	1.3	0.4	22.6
Total Delay (hr)	1.7	2.0	1.0	0.7	5.4
Total Del/Veh (s)	36.3	45.5	46.1	41.4	41.8
Stop Delay (hr)	1.5	1.8	0.9	0.7	4.9
Stop Del/Veh (s)	33.8	39.7	41.6	37.8	37.7

Total Network Performance

Denied Delay (hr)	2.9
Denied Del/Veh (s)	22.6
Total Delay (hr)	5.6
Total Del/Veh (s)	42.6
Stop Delay (hr)	4.9
Stop Del/Veh (s)	37.4

Intersection: 3:

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	LT	R
Maximum Queue (ft)	66	273	225	274	346	298	117	249	81
Average Queue (ft)	33	246	220	247	337	228	56	179	46
95th Queue (ft)	85	333	245	328	353	352	202	265	92
Link Distance (ft)		247			318		341	239	239
Upstream Blk Time (%)		37			41	6	2	3	
Queuing Penalty (veh)		0			0	0	0	0	
Storage Bay Dist (ft)	80		200	250		675			
Storage Blk Time (%)	0	44	36	14	34	6	2		
Queuing Penalty (veh)	1	310	121	94	96	7	9		

Network Summary

Network wide Queuing Penalty: 638

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/Westbrook: Congress St/County Rd/Rte 22 from Johnson Rd (node 15536) to Spring St (node 15048), and Hutchins Dr (nodes 18490-18491)

REPORT PARAMETERS

Year 2016, Start Month 1 through Year 2018 End Month: 12

Route: 0022X

Start Node: 15536
End Node: 15048

Start Offset: 0
End Offset: 0

☐ Exclude First Node
☐ Exclude Last Node

Route: 0022S

Start Node: 15048
End Node: 15178

Start Offset: 0
End Offset: 0

☒ Exclude First Node
☒ Exclude Last Node

Route: 0561168

Start Node: 18490
End Node: 18491

Start Offset: 0
End Offset: 0

☒ Exclude First Node
☐ Exclude Last Node

Route: 0022S

Start Node: 19900
End Node: 19901

Start Offset: 0
End Offset: 0

☒ Exclude First Node
☒ Exclude Last Node

Crash Summary I

Nodes														
Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes			Percent Annual M			Crash Rate	Critical Rate	CRF	
				K	A	B	C	PD	Injury	Ent-Veh				
A15536	0022X - 3.02	Int of CONGRESS ST, JOHNSON ST	2	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00	0.00
A19898	0022X - 3.03	Int of CONGRESS ST JOHNSON ST WB	2	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00	0.00
A19899	0022X - 3.08	Int of CONGRESS ST CUT 9X TO 22X	2	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00	0.00
A19900	0022X - 3.10	Int of CONGRESS ST CUT 22X TO 9W ROUTE 22 SB	2	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00	0.00
10097	0022X - 3.28	Int of CONGRESS ST, ENT TO UNMUTUAL	9	4	0	0	1	1	2	50.0	5.174	0.26	1.26	0.00
18488	0022X - 3.58	Int of BLUEBERRY RD CONGRESS ST	2	6	1	0	1	1	3	50.0	4.833	0.41	0.38	1.10
18490	0022X - 3.78	Int of CONGRESS ST EXIT 7A CONN RD HUTCHINS DR	9	23	0	0	2	6	15	34.8	9.187	0.83	1.13	0.00
15176	0022X - 4.05	TL Portland Westbrook	2	0	0	0	0	0	0	0.0	3.981	0.00	0.40	0.00
14864	0022X - 4.17	Int of COUNTY RD, THOMAS DR	2	3	0	0	0	0	3	0.0	7.810	0.13	0.33	0.00
15178	0022X - 4.78	Int of COUNTY RD FINCH ST	2	4	0	0	0	0	4	0.0	6.375	0.21	0.35	0.00
15048	0022X - 4.85	Int of COUNTY RD SPRING ST	9	28	0	2	1	10	15	46.4	11.701	0.80	1.09	0.00
18491	0561168 - 0.40	0508911 POR,HUTCHINS DR,END	2	1	0	0	1	0	0	100.0	0.190	1.75	0.59	2.94
Study Years: 3.00			NODE TOTALS:											
			69	1	2	6	18	42	39.1	49.251	0.47	0.60	0.78	

Crash Summary I

Sections															CRF		
Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	K	A	B	C	PD	Percent Injury	Annual HMVM		Crash Rate	Critical Rate
15536	19898	3130193	0 - 0.01	0022X - 3.02 ST RTE 22	0.01	2	0	0	0	0	0	0	0.0	0.00038	0.00	898.72	0.00
Int of CONGRESS ST, JOHNSON ST																	
19898	19899	3106937	0 - 0.05	0022X - 3.03 ST RTE 22	0.05	2	1	0	0	0	0	1	0.0	0.00094	355.14	752.82	0.00
Int of CONGRESS ST, JOHNSON ST WB																	
19899	19900	3118715	0 - 0.02	0022X - 3.08 ST RTE 22	0.02	2	0	0	0	0	0	0	0.0	0.00044	0.00	878.99	0.00
Int of CONGRESS ST CUT 9X TO 22X																	
10097	19900	3105102	0 - 0.18	0022X - 3.10 ST RTE 22	0.18	2	3	0	0	0	0	3	0.0	0.00778	128.56	442.96	0.00
Int of CONGRESS ST, ENT TO UNMUTUAL																	
10097	18488	3105101	0 - 0.30	0022X - 3.28 ST RTE 22	0.30	2	5	0	0	0	4	1	80.0	0.01273	130.94	397.16	0.00
Int of CONGRESS ST, ENT TO UNMUTUAL																	
18488	18490	3106664	0 - 0.20	0022X - 3.58 ST RTE 22	0.20	2	8	0	0	0	4	4	50.0	0.01041	256.08	414.72	0.00
Int of BLUEBERRY RD CONGRESS ST																	
15176	18490	3106023	0 - 0.27	0022X - 3.78 ST RTE 22	0.27	2	12	0	0	1	6	5	58.3	0.02150	186.07	357.80	0.00
TL Portland Westbrook																	
14864	15176	3105943	0 - 0.12	0022X - 4.05 ST RTE 22	0.12	2	8	0	0	0	2	6	25.0	0.00955	279.10	422.71	0.00
Int of COUNTY RD, THOMAS DR																	
14864	15178	3117915	0 - 0.61	0022X - 4.17 ST RTE 22	0.61	2	19	0	1	1	3	14	26.3	0.03995	158.53	321.63	0.00
Int of COUNTY RD, THOMAS DR																	
15048	15178	3943892	0 - 0.07	0022X - 4.78 ST RTE 22	0.07	2	0	0	0	0	0	0	0.0	0.00231	0.00	599.46	0.00
Int of COUNTY RD SPRING ST																	
15048	15178	3123595	0 - 0.07	0022S - 0.09 ST RTE 22S	0.07	2	0	0	0	0	0	0	0.0	0.00213	0.00	612.45	0.00
Int of COUNTY RD SPRING ST																	
18490	18491	193997	0 - 0.40	0561168 - 0 RD INV 05 61168	0.40	2	2	0	0	0	1	1	50.0	0.00152	437.80	1062.43	0.00
Int of CONGRESS ST EXIT 7A CONN RD HUTCHINS DR																	
19900	19901	3118716	0 - 0.03	0022S - 0.16 ST RTE 22S	0.03	2	0	0	0	0	0	0	0.0	0.00055	0.00	845.45	0.00
Int of CONGRESS ST CUT 22X TO 9W ROUTE 22 SB																	

Study Years: 3.00

Section Totals:

2.33 58 0 1 2 20 35 39.7 0.11020 175.44 283.74 0.62

Grand Totals:

2.33 127 1 3 8 38 77 39.4 0.11020 384.16 405.77 0.95

Search...



Hutchins Dr.



Congress St.

Rt. 22

239456 8-24-16 7:28P D/C Fail to yield

34528 11-19-18 6:00P W/CL Fail to yield

78 1-1-18 4:08P D/C Fail to yield
34691 12-1-16 8:54A W/CL Fail to yield

21732 8-10-18 4:42P D/C Follow too close
20748 7-23-18 7:06P D/C Hit and run

6127 2-22-16 3:46P D/C Follow too close
15187 6-3-16 4:50P D/CL Follow too close
24593 8-25-16 5:17P D/C Follow too close

494 1-6-17 9:54A W/CL Unknown
4665 2-10-16 6:03P W/C Follow too close

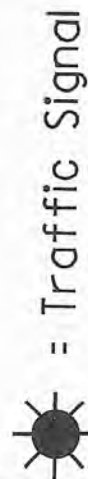
24883 8-18-17 1:04P W/R Follow too close
26126 9-13-16 12:34P D/C Follow too close
32988 11-17 9:28A D/CL Ran red light
26111-25-16 7:11P D/C Ran red light

9670 3-30-16 7:02A D/C Follow too close
29850 10-19-18 8:05A D/C Improper pass

31010 10-24-18 8:08A W/R Follow too close
117259 6-8-17 12:17P D/C Fail to yield
249318-20-17 1:04P W/R Follow too close

Congress St.
Rt. 22

28712 9-30-16 5:58P D/C Fail to yield
32880 11-17-16 7:23A D/CL Follow too close
20368 7-26-18 8:24A W/R Improper pass



Exit 7A
Connector Rd.

Portland
Node: 18490

Study Period: 2016-2018
of Crashes: 23 / CRF: .74

Prepared by Office of Safety
RFK3 8-15-19

History

Maureen McGlone PE of Ransom Environmental Consultants on August 2, 2019 applied for a wastewater capacity application form the City of Portland. She has additionally contacted Jon Giles, Bradley Roland and Keith Gray concerning both the water and sanitary sewer service to the site. It is my understating that ability to serve letters could not be prepared until the Site Plan application has actually been submitted. Once I receive letters from Public Works and the Portland Water District I will forward them to the Planning Staff.

State and Federal Approvals

History

A Site Location of Development Act (SLODA) permit and a Natural Resources Protection Act (NRPA) Tier 2 Wetland Alteration permit were submitted on August 27, 2019. These permits were determined complete on September 18, 2019 and Jenifer McGill has been assigned as the project manager from the MDEP. The project is currently being reviewed.

On November 13, 2019 Frank Del Giudice of the Army Corps of Engineers authorized the placement of fill in freshwater wetlands as indicated on the NRPA Wetland Alteration Permit. A copy of the approval is attached.

The SLODA and State NRPA approvals are still pending and will be forwarded when they are received.

Maine Behavioral Healthcare Stormwater Management Plan

LIST OF APPENDICES:

- Appendix A: Stormwater Treatment Calculations
- Appendix B: Stormwater BMP Inspection and Maintenance Requirements
- Appendix C: Pre-Development Calculations
- Appendix D: Post-Development Calculations

SITE DESCRIPTION:

The site (refer to Site Location Map) is an approximately 10.9-acre lot located on the west side of Hutchins Drive and adjacent to the Spring Harbor Hospital. The parcel is bisected by Andover Road. Both the Spring Harbor Hospital parcel and Andover Road were part of a previous development. The land north of Andover Road is primarily woods with heavy underbrush in good condition and the land south of Andover Road is primarily woods with light underbrush in good condition. The topography of the undeveloped site has several higher upland areas separated by pockets of wetlands. The native soil in this location are Hydrologic Soil Groups (HSG) C and D. Stormwater runoff from the site flows into the on-site wetlands and then off-site in 8 different locations. The site is in Zone X of FEMA's Flood Insurance Rate Map (FIRM), indicating that it is outside of the 500-year floodplain.

DEVELOPMENT DESCRIPTION:

Maine Behavioral Healthcare proposes to construct an approximately 30,000 sf, 1 story building as a Center for Autism and Developmental Delays. The site will have several parking lots with approximately 119 spaces (including 6 ADA spaces), 3 access aisles, sidewalks, outdoor sitting spaces, playground areas and landscaped areas. The proposed developed area which includes the proposed building, pavement and sidewalk (Post-Development sub catchments 9-20) totals 130333; of which 97,619 sf is new impervious surface and 32,714 sf is landscaped area. There will also be two outlet control structures that discharge to two analysis points. The runoff will discharge to the same points both pre and post development, with equal or decreased flows in the post development with no changes in existing channel geometry.

The Stroudwater River is north of the site, and the development is not expected to impact the water quality or quantity draining to the river. There is roughly 1,000 feet of vegetated buffer between proposed site and the Stroudwater River, with pre-development flows exceeding the expected post-development flows for 2, 10, and 25-year storms. Since post-developed flows are less than that of pre-developed flows

at all discharge points, and the parcel and abutting parcels are outside of the 500-year floodplain, site runoff from the developed site is not expected to impact flood-sensitive areas.

Grading of the site slopes away from the perimeter of the building, while maintaining ADA accessibility and matching into the existing landscape where possible. The site was designed to have slopes of 3:1 or shallower, thereby removing the need for slope stabilization materials. However, guard rails may be used at some locations of the parking lot, such as from the western parking lot area to along the northern parking lot area, though it is not required. There is approximately 3,146 sf of wetland impact.

STORMWATER MANAGEMENT – BASIC STANDARDS:

Erosion and sedimentation control measures during construction are detailed within the design plans. Post-Construction stormwater management practices and good housekeeping practices will be in accordance with Maine DEP Best Management Practices. A post construction stormwater management plan as well as inspection and maintenance requirements are provided in Appendix B of this Stormwater Management Plan.

STORMWATER MANAGEMENT – QUALITY (GENERAL STANDARDS):

A project must meet Maine's *Chapter 500, Stormwater Management* general standards if the project results in one or more acres of impervious area, or 5 acres or more of developed area for projects that are not within the direct watershed of an urban impaired stream or a lake most at risk (as defined by Chapter 502). To meet the general standards, the project's stormwater management system must include treatment measures that will provide pollutant removal or treatment (or both), mitigate for the increased frequency and duration of channel erosive flows due to runoff from smaller storms, and mitigate potential temperature impacts. To do that a project must provide treatment of 95% of the impervious area and no less than 80% of the developed area. In addition, runoff from upgradient areas must either be redirected away from the project's stormwater treatment measures or that measure must be sized to address the runoff volume of the upgradient area at 50% of the sizing requirements. Although the amount of on-site treatment provided may be reduced by providing treatment on a currently untreated off-site area in the same watershed, this is not proposed for this project at this time.

Treatment of stormwater is addressed using Maine's Best Management Practices (BMPs). These BMPs are focused on meeting the following water quality objectives:

- Effective pollutant removal – removal of fine particles that carry nutrient and heavy metal load as well as dissolved pollutants and hydrocarbons.
- Cooling – to protect aquatic life within a river, stream, or brook watershed discharge must effectively cool down.
- Channel protection – discharge within a river, stream, or brook watershed must be released slowly to avoid destabilization and resulting sedimentation of receiving channels.
- Flood control – detention for large, infrequent storm events to avoid flooding infrastructure.

The water quality volume is the initial depth of runoff that is considered to carry the bulk of pollutants deposited since the last rain event. Studies have indicated that the first inch of runoff distributed over the watershed carries 90% of the pollutant load from a storm event. Maine's BMPs identified in Volume III of the Maine Stormwater Management Design Manual consider this when establishing the treatment volume identified within each BMP. The BMPs chosen for this site to meet the water quality objectives include:

- **Bioretention: Filtration BMP** discussed in Maine's Stormwater Management Manual, Volume III, Chapter 7.2, Bioretention Filters.
- **Manmade Pervious Paver Systems: Filtration BMP** discussed in Maine's Stormwater Management Manual, Volume III, Chapter 7.7, Manmade Pervious Surfaces.

PROJECT SPECIFIC WATER QUALITY TREATMENT MEASURES:

The existing site is currently a mix of vegetated (wooded/scrub brush) upland areas and wetlands. The site currently drains to the wetlands on site. For water quality treatment, the site design incorporates a 13,950-sf porous paver filter system along the northern, middle, and southern parking lot areas, as well two FocalPoint bioretention filter systems.

- **Bioretention Filter/FocalPoint (FP):** The bioretention filters consist of FocalPoint systems that collect, filter, and treat stormwater runoff using conditioned planting soil beds, gravel, underdrained beds, and vegetation within shallow depressions. They capture and retain runoff and pass it through a filter that is comprised of 2-3" of mulch, underlain by an 18" layer of proprietary soil filter media and 6" of course gravel with R-Tank storage placed below grade. The systems are designed to remove a wide range of pollutants, including suspended solids, phosphorus, nitrogen, metals, hydrocarbons, and some dissolved pollutants. The filter also provides for attenuation of discharge which provides reduction of thermal impacts to the discharge points (Analysis Points A and G) as well as minimizing potential channel erosion. The system is sized to store the treatment volume (1.0 inches times the impervious area and 0.4 inches times the landscaped developed area). For larger storms, stormwater bypasses the filter through catch basin and grate to the R-Tank system below.

FocalPoint 1 (FP1) is a 900-sf system with 1,305 cf of surficial storage in a landscaped area northeast of the building just beyond the playground area. It is used for treatment of the paved sidewalk and path, patio, playground, southeast portion of the building roof, and proposed addition (sub catchments 14D, 15, and 18 on the Post-Development Plan). Runoff from the sloped roof discharges to the surface and flows to the level spreader ahead of FP1 with runoff from the playground. Runoff from the flat portion of the roof is collected and discharged through scuppers and downspouts above-ground to a stormwater channel which also directs the runoff to the level spreader ahead of FP1. The level-spreader is provided as pre-treatment. Stormwater filtered through the FocalPoint is conveyed to the R-Tank storage installed below grade, and stormwater above the treatment volume is transferred to R-Tank storage system through a catch basin and grate.

FocalPoint 2 (FP2) is a 386-sf system with 296 cf of surficial storage located on the northeast corner of the building between the parking lot and playground. It is being used exclusively to treat runoff from the flat portion of the northwest section of the building roof. The water from the roof will be captured and discharged using scuppers and downspouts to this FocalPoint system. Both filtration through the FocalPoint and bypass via catch basin and grate is directed to a subsurface R-Tank storage system. The R-Tank storage below FP2 is connected to a series of subsurface R-Tank storage areas below the multiple pervious paver systems and are interconnected with piping to provide common storage. The FocalPoint is next to the proposed staff patio. An ACF Environmental PRETX Drop Inlet is used as a pretreatment system and decreases the flow rate from the roof drains to the biofiltration system.

FocalPoint 3 (FP3) is a 325-sf with 203 cf of surficial storage located on the northwest side of the rear entrance. It is being used exclusively to treat runoff from the flat portion of the north-central section of the building roof. The water from the roof will be captured and discharged using scuppers and downspouts to this FocalPoint system. Both filtration through the FocalPoint and bypass via catch basin and grate is directed to a subsurface R-Tank storage system. The R-Tank storage below FP3 is connected to a series of subsurface R-Tank storage areas below FP 1, 3, and 4 in the playground area, and are interconnected with piping to provide common storage. The FocalPoint is next to the proposed staff patio. An ACF Environmental PRETX Drop Inlet is used as a pretreatment system and decreases the flow rate from the roof drains to the biofiltration system.

FocalPoint 4 (FP4) is a 158-sf system with 109 cf of surficial storage location on the southeast side of the rear entrance. It is being used exclusively to treat runoff from the flat portion of the south-central section of the building roof and the 3064 sf overhang of the north side of the building. The water from the roof will be captured and discharged using scuppers and downspouts to this FocalPoint system. Both filtration through the FocalPoint and bypass via catch basin and grate is directed to a subsurface R-Tank storage system. The R-Tank storage below FP3 is connected to a series of subsurface R-Tank storage areas below FP 1, 3, and 4 in the playground area, and are interconnected with piping to provide common storage. The FocalPoint is next to the proposed staff patio. An ACF Environmental PRETX Drop Inlet is used as a pretreatment system and decreases the flow rate from the roof drains to the biofiltration system.

- Manmade Pervious Pavers (MPP): Pervious paver systems are used almost exclusively for the treatment of paved areas on site, though some systems in parking areas may see some runoff from adjacent landscaped area discharging to the system. The MPP systems consist of the Power BLOCK porous paver system by ACF Environmental underlain by a layer of 3/8" stone, then a layer of 3/4" crushed stone and finally a layer of bio-filter media for filtration for the stormwater runoff. The Power BLOCK system overlays an R-Tank storage system that will be used for detention during larger storm events. Stormwater beyond the water quality volume will be captured by catch basins which discharge to the R-tank system. The area of pervious pavers must be no less than 20% of the area being treated and the flow path to the pervious paver section must be no greater than 50 feet. Catch basins in the pervious area capture overflow from larger storms and discharge to the R-Tank system below which is interconnected with piping to provide common storage.

The pervious pavers proposed are in sub catchments 9, 10a, 10b, 11a, 11b, 12, 13a, 13b, 13c, 16, 17, 19 shown on the Post-Development Plan and the depth of the paver systems were sized based on the magnitude of the impervious areas draining to those locations.

STORMWATER MANAGEMENT – QUANTITY (FLOODING STANDARDS):

A project must meet Maine's *Chapter 500, Stormwater Management* flooding standards if the project results in three or more acres of impervious area, or 20 acres or more of developed area. To meet the flooding standard, the project's stormwater management systems must:

- detain, retain, or result in the infiltration of stormwater from 24-hour storms of the 2-year, 10-year, and 25-year frequencies such that peak flow of stormwater from the project site do not exceed the peak flows of stormwater prior to undertaking the project;
- design the piped or open channel systems based on a 10-year, 24-hour storm without overloading or flooding beyond channel limits;
- not flood the primary access road to the project and any public roads bordering the project as a result of a 25-year, 24-hour storm event

A project is eligible for a waiver from the flooding standard for insignificant increases in peak flow rates from a project site. A waiver is also available for a project in the watershed of a coastal wetland, great pond, or major river segment provided the stormwater is conveyed via sheet flow, in a manmade open channel, or in a piped system directly into one of these resources.

The use of the R-Tank modules by ACF Environmental will detain the stormwater runoff to below pre-development conditions to comply with the Flooding Standard. The proposed detention system consists of a series of R-Tanks located below all pervious paver systems as well as FocalPoint filtration systems. The R-Tanks below the pavers and FP2 are interconnected with corrugated polyethylene, smooth interior pipe to capture and store the larger volume storms prior to discharge. A separate R-Tank system is used to store runoff from FP2.

Each storage system discharges through an outlet control structure that ultimately discharges to a plunge pool. For the northern R-Tank system (MPP and FP2), the R-Tanks were all placed at an elevation of 54 ft. Therefore, the water level throughout the system rises at an equal rate. The surface area of the R-Tank was sized as to not exceed the bottom of the filter layer of the paver system. Discharge from the R-Tank storage systems goes through an outlet control structure that uses orifices and a weir to release the discharge to Analysis Points A and G at a controlled rate; commensurate with a particular rainfall event.

Additionally, it should be noted that there is an existing 18" culvert at station 19+60 that drains from the southern to northern side of Andover Road. However, the flow rate discharged through the culvert has no affect on the development of Maine Behavioral Healthcare as the culvert drains to the same wetland both before and after the development. The project does not propose to upgrade the existing culvert because post-development flows are the same as pre-development flows. The site layout was designed to minimize impact on this wetland.

Stormwater runoff in the pre and post-development conditions are evaluated at Analysis Points A-H. The development of the site influences only Analysis Points A, F, G, and H. Sub catchments in the post-development condition were established based on subareas used to define treatment boundaries. The runoff at all analysis points in the post-development condition are either equal to or less than the flow in the pre-development condition. Pre-Development stormwater plans and pre-development HydroCAD calculations are included in Appendix C while Post-Development stormwater plans and post-development HydroCAD calculations are included in Appendix D.

- HydroCAD Modeling Assumptions: All soils in the developed areas have a Hydrologic Soil Group (HSG) rating of C/D or D. To provide a conservative estimate of expected flows discharging from the site, it was assumed that all soils had a HSG rating of D, since these soils have less permeability and higher runoff potential than that of C.
 - Areas of sub catchments were determined using AutoCAD.
 - Times of concentration beginning at Andover Road and ending at analyses points was assumed to flow 15 feet as sheet flow from the crown to the side of the road over a smooth surface with a Manning's number of 0.011 and a slope of 5%. The water then flows an additional 135 feet as sheet flow (150 feet of sheet flow total), and the remainder of the time of concentration path flowing as shallow concentrated flow.
 - Slopes of time of concentration paths were based on the survey conducted by Titcomb Associates in May of 1997, overlaid with the grading plan of Andover Road.
 - For flow over developed impervious areas with a curve number of 98, the time of concentration was assumed to be 6 minutes in accordance with Maine DEP guidance documents. The non-developed vegetated areas north of Andover Road was assumed to be in good condition with a curve number of 77, with sheet flow traveling over dense underbrush woods with a Manning number of 0.8, and shallow concentrated flow traveling over forest with heavy litter with a velocity factor of 2.5.
 - The non-developed vegetated areas south of Andover Road were assumed to be in good condition with a curve number of 77, with sheet flow traveling over light underbrush woods with a Manning number of 0.4, and shallow concentrated flow traveling over forest with heavy litter with a velocity factor of 2.5.
 - Developed landscaped areas were assumed to be >75% grass cover in good condition with a curve number of 80 and paved impervious areas were assumed to have a curve number of 98.
 - Because the playground material has not yet been finalized it was assumed to be impervious with a curve number of 98 as a conservative estimate to predict runoff.

HYDRAULIC ANALYSIS:

Stormwater runoff calculations for quantity were made using the HydroCAD 10.00 computer program, which is based on the Soil Conservation Service's TR-20 methodology. Runoff hydrographs are generated based on a standard Type III 24-hour storm for Cumberland County identified in Appendix H of *Maine DEP Chapter 500, Stormwater Management*.

Four storm events were evaluated as follows:

- 2-year frequency flood event: 3.1" rainfall
- 10-year frequency flood event: 4.6" rainfall
- 25-year frequency flood event: 5.8" rainfall

Runoff Curve numbers were determined based on land coverage and hydro-geological soil type D. Times of concentration were developed based on runoff flow paths for each subarea and shown on the Pre and Post-Development plans. A minimum Tc of 6 minutes was used in the HydroCAD model.

Peak runoff flow rates and runoff volumes are provided at the analysis points, which are identified on the Pre and Post-Development plans. Comparison of the runoff peak flow rates are provided at each analysis point on Tables 1-3 below :

Table 1 – 2-year, 24-hour Storm

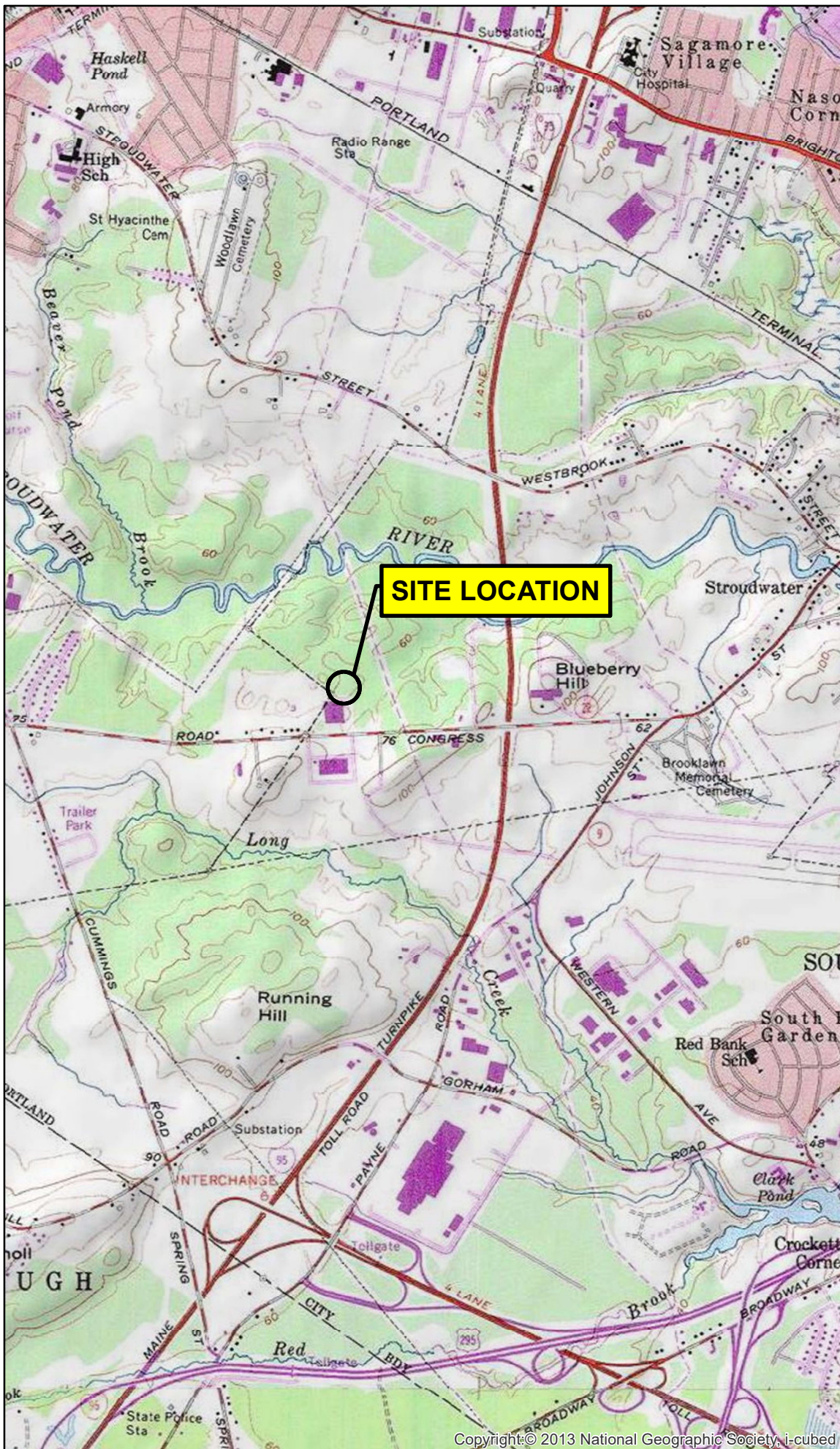
Analysis Point	Pre-Development	Post-Development
A	1.08 cfs	0.94 cfs
B	0.63 cfs	0.63 cfs
C	1.18 cfs	1.18 cfs
D	1.46 cfs	1.46 cfs
E	0.32 cfs	0.32 cfs
F	0.39 cfs	0.19 cfs
G	0.56 cfs	0.40 cfs
H	0.34 cfs	0.09 cfs

Table 2 – 10-year, 24-hour Storm

Analysis Point	Pre-Development	Post-Development
A	2.20 cfs	1.93 cfs
B	1.28 cfs	1.28 cfs
C	2.39 cfs	2.39 cfs
D	2.95 cfs	2.95 cfs
E	0.58 cfs	0.58 cfs
F	0.77 cfs	0.33 cfs
G	1.16 cfs	0.80 cfs
H	0.71 cfs	0.19 cfs

Table 3 – 25-year, 24-hour Storm

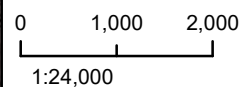
Analysis Point	Pre-Development	Post-Development
A	3.19 cfs	2.73 cfs
B	1.84 cfs	1.84 cfs
C	3.43 cfs	3.43 cfs
D	4.24 cfs	4.24 cfs
E	0.79 cfs	0.79 cfs
F	1.10 cfs	0.44 cfs
G	1.68 cfs	1.33 cfs
H	1.03 cfs	0.28 cfs



Notes

1. Data Source: USGS National Map Seamless Server, 24K DRG, 1/3" NED
2. USGS Quad Name: Portland
3. Latitude: 43° 39' 11" N
Longitude: 70° 20' 27" W
UTM Northing: 4834213 mN
UTM Easting: 391875 mE
UTM Zone: 19T

Scale and Orientation



Prepared For

e4h Environments for Health Architecture
163 Fore Street, 4th floor
Portland, Maine 04101

Site Address

Andover Road
Portland, Maine

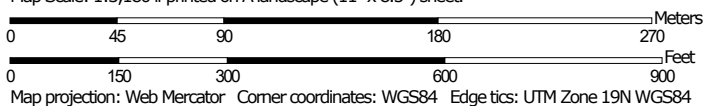
181.06068 July 2019

Figure 1
Site Location Map

Soil Map—Cumberland County and Part of Oxford County, Maine (MBH)



Map Scale: 1:3,180 if printed on A landscape (11" x 8.5") sheet.



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

7/23/2019
Page 1 of 3

Soil Map—Cumberland County and Part of Oxford County, Maine
(MBH)

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 15, Sep 6, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BuB	Lamoine silt loam, 3 to 8 percent slopes	5.3	19.3%
EmB	Elmwood fine sandy loam, 0 to 8 percent slopes	2.1	7.6%
Sn	Scantic silt loam, 0 to 3 percent slopes	19.9	72.9%
SuE2	Suffield silt loam, 25 to 45 percent slopes, eroded	0.1	0.2%
Totals for Area of Interest		27.3	100.0%

APPENDIX A

Stormwater Treatment Calculations

Table 1: Stormwater Treatment						
Subcatchment Area #	Total Area (sq.ft)	Impervious (sq. ft)	Treated Impervious (sq. ft)	Landscaped (sq. ft)	Treated Landscaped (sq. ft)	Treatment System
9	1858	1707	1707	151	151	MPP9
10a	2983	2901	2901	82	82	MPP10a
10b	2544	2473	2473	71	71	MPP10b
11a	2308	2226	2226	82	82	MPP11a
11b	2126	2055	2055	71	71	MPP11b
12	3472	3321	3321	151	151	MPP12
13a	5251	4911	4911	340	340	MPP13a
13b	9927	9865	9865	62	62	MPP13b
13c	3729	3695	3695	34	34	MPP13c
14a	7143	7143	7143	0	0	FP2
14b	6772	6772	6772	0	0	FP3
14c	6642	6642	6642	0	0	FP4
14d	3649	3649	3649	0	0	FP1
15	21848	9803	9803	12045	12045	FP1
16	11093	10738	10435	355	345	MPP16
17	4970	4769	4020	201	169	MPP17
18	9273	1354	1354	7919	7919	FP1
19	15647	9785	9785	5862	5862	MPP19
20	9098	3810	0	5288	0	-----
Total (sq. ft)	130333	97619	92757	32714	27384	-----

% Impervious Treated	95.0%
% Landscape Treated	83.7%

FOCALPOINT

HIGH PERFORMANCE MODULAR BIOFILTRATION SYSTEM

MAINE – CHAPTER 500 DESIGN WORKSHEET/CHECKLIST

1. FocalPoint Bed Area (min 174 square feet per acre of impervious area (e.g. 0.2 acres = 35 sf))

- Tributary Impervious area = _____ ac. (A)
- Tributary Pervious area = _____ ac. (B)
- Min FocalPoint bed area req'd = $(((A) \times 1.0) + ((B) \times 0.4)) \times 174$ = _____ sf.
- FocalPoint Bed Area provided * = _____ sf.
- Dimensions of Proposed FocalPoint = _____ ft x _____ ft

* see criteria 2. to determine if minimum size is appropriate.

2. A 0.95 inch Type III 24hr rainfall event shall be modelled to demonstrate the entire storm volume is treated prior to activation of the overflow (typically set at 6-12" above the mulch)

- Temporary storage depth provided = _____ inches (typ 6" to 12")
- Temporary storage volume provided at above depth = _____ cubic feet.
- Peak ponding depth from 0.95" 24hr storm event = _____ inches

3. Ratio of the surface area of the filter media (sf) to the temporary ponding volume (cf) shall be no less than 1:5

- Ratio of FocalPoint Bed Area : Temporary Storage Vol = _____ : _____

4. Subsurface R-Tank or Chamber Treatment Row must be sized to treat the peak flow from a 1 yr-24hr storm event.

- 1yr 24hr Peak Flowrate = _____ cfs
- Chamber model selected
 - o Cultec 330 XLHD (1 chamber per 0.227 cfs) ☐
 - o Cultec 150XLHD (1 chamber per 0.185 cfs) ☐
 - o R-Tank modules (1 module per 0.02 cfs) ☐
- Number of Chambers/modules required = _____

5. Controlled release of the Channel Protection over 24-48 hrs

- Controlled release of the channel protection volume is being achieved by:
 - o Expanded subsurface storage basin with OCS ☐
 - o Surface detention basin with OCS ☐

6. A landscape plan for the FocalPoint bed area has been prepared ☐

7. The Design shall be reviewed by the manufacturer's representative prior to submission and installation will be overseen by the manufacturer's representative.

- The Design has been reviewed by ACF Environmental ☐
- Engineer will coordinate installation inspection with ACF ☐

Focal Point Sizing - FP,

1 acre = 43560 sf

Subcatchments 15, 18,
14D

1/B Tributary Permeous Area = 16811 sf = 0.386 acre
A Tributary Impervious Area = 15858 sf = 0.364 acre

$$(1A + 0.41B) 174 = (0.364 + 0.41 \times 0.386) \times 174$$

$$= 90.21 \text{ sf} = \text{min Focal Point bed area}$$

Focal Point Bed Area Provided = 12 + 75 = 900 sf

2) Temporary Storage depth = 12" =
Temporary Storage volume = 1365 cf
Peak ponding depth from 0.95" 24-hr storm = 0"

3) FP Filter area: Temp storage volume = 900 : 1365 > 1.5 ✓

4) 1-R-tank module Per 0.02 cfs
1 yr 24 hr peak flow rate = 1.33 cfs

1.33 / 0.02 = 67 modules required

441 x 32 = 14108 modules provided

5) Expanded subsurface storage basin with OC,

Focal Point Sizing FP_a $1 \text{ acre} = 43,560 \text{ sf}$

1) Tributary Impervious Area = 0.175 acre
 $= 7641 \text{ sf}$

Min Focal Point bed Area = $0.175 \times 174 = 30.5 \text{ sf}$

Focal Point bed area Provided = 185 sf

2) Temporary storage depth = $9''$
Temporary storage volume = 296 CF
peak ponding depth from $0.95''$ 24 hr Storm = $0'$

3) FP Filter area: Temp storage volume = 183 ; $296 > 183$

4) 1 R-tank module per 0.02 cfs
1 yr 24 hr peak flow rate = 0.44 cfs
 $0.44 \text{ cfs} / 0.02 = 22$ modules required

$10 \times 10 = 100$ modules provided

5) Expanded subsurface storage basin with ocs

Focal Point 5.2mg - FP₃
1 acre = 43560 sf

1) Tributary Imperious Area = 6943 sf = 0.159 acre

min Focal Point bed Area = 0.159 acres $\times$ 174 = 28 sf

Focal Point bed area provided = 98 sf

2) Temporary storage depth = 9"
Temporary storage volume = 203 cf
Peak ponding depth from 0.95" 24 hr storm = 0"

3) FP Filter area: Temp storage volume = 98:203 > 1.5 ✓

4) 1 R-tank module per 0.02 cfs
1 yr 24 hr peak flow rate = 0.4 cfs

0.4 cfs / 0.02 = 20 modules required

20 $\times$ 15 = 300 modules provided

5) Expanded subsurface storage basin with OCS

Focal Point Sizing - FP₄

1 acre = 43560 sf

1) Tributary Impervious Area = 7724 sf
 = 0.177 acre

mm Focal Point bed area = $0.177 \times 174 = 31$ sf

Focal Point bed area provided = 32 sf

2) Temporary storage depth = 12"
 Temporary storage volume = 109 cf
 Peak ponding depth from 0.95" 24 hr storm = 4.68"

3) FP Filter area: Temp storage volume = 32:109 > 1.5 ✓

4) 1 R-tank module per 0.02 cfs
 1-yr 24 hr peak flow rate = 0.44 cfs
 $0.44 / 0.02 = 22$ modules required

$20 \times 9 = 180$ modules provided

5) Expanded subsurface storage basin with OC

Byfield, Massachusetts
 Providence, Rhode Island
 Portsmouth, New Hampshire
 Portland, Maine
 Hamilton, New Jersey

978-465-1822
 401-433-2160
 603-436-1490
 207-772-2891
 609-584-0090

PROJECT NO. MBH SITE _____
 SHEET NO. _____ OF _____
 CALCULATED BY JRP DATE _____
 CHECKED BY _____ DATE _____
 SCALE _____

5" Paver block
 3" bedding
 4" base course
 12" Subbase
 12" filter
 3" Stone
 39" = 3.25'

R-tank Single height = 17.3"
 R-tank mini height = 9.4"

$$\text{Total height} = 3.25' + \frac{17.3}{12} = 4.692$$

$$\text{Total height}_{0.5} = 4.03'$$

From geotech report, groundwater ranges from 45'-55'

Farthest distance from Paver to building = 145.93'

what grade do we need?

$$\text{HD}_1: 54 + 4.692 = 58.692$$

$$59.5 - 145.93 \times x = 58.692$$

$$x = 0.554\%$$

round down 0.1%

0.5%

$$\text{HD}_{0.5}: 54 + 4.03 = 58.03$$

$$59.5 - 145.93 \times x = 58.03$$

$$x = 1.055\%$$

1.3%

$$\frac{1''}{12 \text{ in/ft}} \times 20409 \text{ ft}^2 + \frac{0.4''}{12 \text{ in/ft}} \times 20528 \text{ SF} = 2385$$

Subcats 14b, 15, 18

Subcats 9, 10a, 10b, 11a, 11b, 12, 13a, 13b, 13c, 14a, 16, 17,

$$\begin{aligned} \text{Impervious} &= 71116 \text{ SF} \\ \text{Land} &= 9507 \text{ SF} \end{aligned}$$

$$\frac{0.4''}{12 \text{ in/ft}} \times 71116 + \frac{1''}{12 \text{ in/ft}} \times 9507 = 6243 \text{ CF}$$

Channel Sizing to FP,

Maine DEP Best management Practices
Chapter 8 - conveyance and distribution systems
8.1 - Vegetated Swale
Design and construction, Flow velocity
A velocity of 1 fps is the max design storm
flow velocity when being used as BMP
The max allowable 10-yr 24-hr storm velocity
should be less than 3 fps

Try ① 1fps @ 25-yr and ② 10-yr ③ 3fps

Subcat	Rainfall Event	Runoff (cfs)
14B	10-yr	1
14B	25-yr	1.27
15	10-yr	1.4
15	25-yr	2.52
18	10-yr	0.69
18	25-yr	0.95

$$\begin{aligned} 10\text{-yr Flow} &= 3.59 \text{ cfs} \\ 25\text{-yr flow} &= 4.74 \text{ cfs} \end{aligned}$$

Channel Sizing

$$Q = VA$$

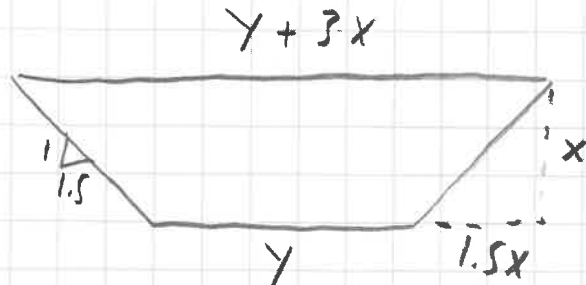
$$A = \frac{Q}{V}$$

$$10\text{-yr } (Q) \text{ } 3 \text{ fps} = \frac{3.59 \text{ ft}^3/\text{s}}{3 \text{ ft/s}} = 1.2 \text{ ft}^2$$

$$25\text{-yr } (Q) \text{ } 1 \text{ fps} = \frac{4.74 \text{ ft}^3/\text{s}}{1 \text{ ft/s}} = 4.74 \text{ ft}^2$$

$$25\text{-yr } (Q) \text{ } 3 \text{ fps} = \frac{4.74 \text{ ft}^3/\text{s}}{3 \text{ ft/s}} = 1.58 \text{ ft}^2$$

Trapezoidal
Channel



$$A = \frac{1}{2}(b_1 + b_2)h$$

$$1.58 = \frac{1}{2}(b_1 + b_2)h$$

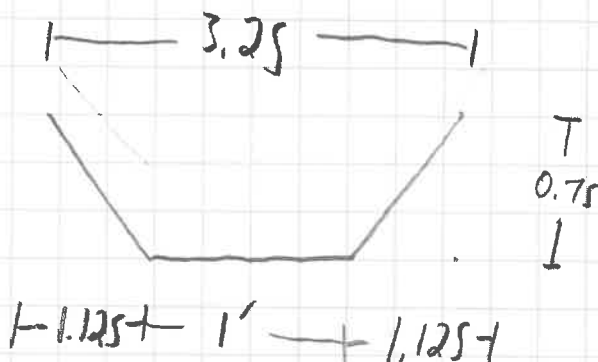
$$A = \frac{1}{2}(2y + 3x)x = 1.58$$

$$(y + \frac{3}{2}x)x = xy + 1.5x^2 - 1.58 = 0$$

Try 1 $y = 1'$

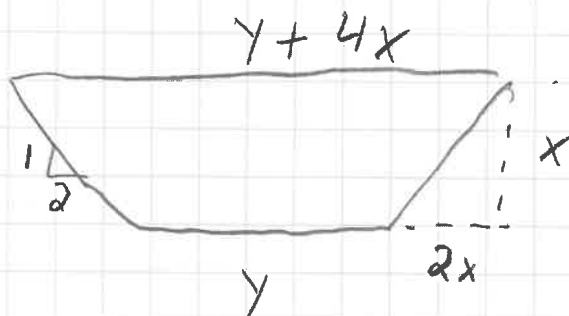
$$3.16 = (2y + 3x)x$$

$$x = 0.746 \text{ (0.75" or 9")}$$



$$A = \frac{1}{2}(b_1 + b_2)h = \frac{1}{2}(1 + 3.25)(0.75) = 1.59375 \text{ ft}^2 > 1.58 \text{ ft}^2 \checkmark$$

Try 2:1 side slopes



$$A = \frac{1}{2}(b_1 + b_2)h = 1.58$$

$$3.16 = (b_1 + b_2)h$$

$$3.16 = (2y + 4x)x$$

$$A = \frac{1}{2}(5)(0.75)$$

$$A = 1.875 \text{ ft}^2 > 1.58 \text{ ft}^2 \checkmark$$

Try $y = 1' \rightarrow x = 0.673 \rightarrow 0.75 = 9''$



APPENDIX B

Stormwater BMP Inspection and Maintenance

Maine Behavioral Healthcare Stormwater Post Construction Stormwater Inspection and Maintenance Plan

Note: This plan addresses Post Construction Inspection and Maintenance only. Inspection and Maintenance during construction can be found in Section 14 with the Sedimentation and Erosion Control Plan

Introduction:

This Post Construction Stormwater Inspection and Maintenance Plan outlines the anticipated inspection and maintenance procedures for the stormwater management devices proposed for the project. These procedures should be followed to ensure the intended function of the designed measures and to prevent unreasonable adverse impacts to the surrounding environment. These procedures 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, refer to the most recent edition of the “Maine Stormwater Best Practices Manual (BMPs)” as published by the Maine Department of Environmental Protection (MEDEP)

Inspection and Maintenance Contract:

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 shall be maintained in good operating condition. A person with knowledge of stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

Long-term inspection and maintenance by a DEP approved stormwater maintenance inspector shall be regularly provided under a five-year binding inspection and maintenance contract that must be renewed prior to contract expiration. A legal agreement shall be established with responsibility for inspection and maintenance and should list specific maintenance responsibilities (including timetables) as well as provide for funding for the long-term inspection and maintenance. As the project moves forward it is anticipated a contract for the provider of these services will be provided.

Parking Lot and Road:

Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. Accumulations on pavement must be removed with pure vacuum, vacuum assist, or

regenerative air. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Grading of gravel paths, or grading of the gravel shoulders of gravel or paved roads, must be routinely performed to ensure that stormwater drains immediately off the road surface to adjacent BMPs, and is not impeded by accumulations of graded material on the road shoulder or by excavation of false ditches in the shoulder. Snow must be removed from the road and parking lot at a location with a minimum of 25 feet from the wetlands.

Stormwater Management Devices:

During the first year of operation, filtration BMPs shall be inspected twice annually and following major storm events. Thereafter, the filter should be inspected every six months to ensure that it is draining no less than 24 hours and within 48 hours following a 1-inch storm or greater. Additionally, a storm that fills the system to overflow should be monitored to confirm in drains in no less than 36 hours and within 60 hours.

A. MANMADE PERVIOUS SURFACES:

Inspect bi-monthly during the first six months following construction, then inspect annually. Inspections should be made after significant storm events to check for surface ponding that could indicate failure due to clogging. Non-routine maintenance may require reconstruction of the surface treatment, and possibly the filter and reservoir layers, to relieve major clogging.

Maintenance criteria for manmade pervious surfaces are as follows:

- Debris and sediment buildup shall be removed from the paver system using a vac truck as needed and shall be disposed properly.
- Remove sediment when the surface infiltration rates of more than 75% of the surface area fall below 10% of the post-installation verified surface infiltration rate.
- Remove sediment when surface ponding remains for more than 24 hours after the storm event in an area larger than 10 square feet.
- Restrain vehicles with muddy wheels from accessing pervious pavement areas.
- Limit salt use for deicing and do not use sand.
- Remove leaves and organic debris in the fall.
- Sweep, vacuum and/or pressure wash pavement twice annually at a minimum.

B. FOCALPOINTS:

- A first inspection to determine if maintenance is necessary should be performed at least twice annually after storm events of greater than (1) one-inch total depth (subject to regional climate). Please refer to the maintenance checklist for specific conditions that indicate if maintenance is necessary.

Maine Behavioral Healthcare

- Check for standing water and that the bypass inlet is clear of debris.
- Check embankments for erosion.
- Check outlet control structure for accumulation of sediment.
- Dig out silt (if any) and mulch and remove trash & foreign items.
- After removal of mulch and debris, measure distance from the top of the FocalPoint® HPMBS engineered media soil to the flow line elevation of the adjacent overflow conveyance. If this distance is greater than that specified on the plans (typ. 6" - 12"), add media (not topsoil or other) to recharge to the distance specified.
- Replace mulch when/where necessary.
- Examine the plant's health and replace if dead or dying. Prune as necessary to encourage growth in the correct directions.
- The pond should drain in 24-48 hours. If the pond begins draining at a time approaching or exceeding 48 hours, the filter media must be removed and replaced.

C. R-TANK STORMWATER DETENTION:

Inspection and Maintenance of the R-Tank shall be in accordance with the recommended practices of the manufacture, ACF Environmental, to provide the performance required by the design. The R-Tank system includes inspection ports and maintenance ports, each of which has a cover at the surface. A visual inspection of all ports should be used to determine the depth of sediments deposited in the R-Tank system. The system should be backflushed once the sediment accumulation has reached the manufacturer's limits. Once removed, sediment-laden water must be disposed of properly.

Re-Certification:

Long-term inspection and maintenance by a DEP approved stormwater maintenance inspector shall be regularly provided under a five-year binding inspection and maintenance contract that must be renewed prior to contract expiration. Submit a certification of the following to the MEDEP within three months of the expiration of each five-year interval from the date of issuance of the permit. The form is provided below.

- Identification and repair of erosion problems. Certification that all areas of the development have been inspected for erosion, and appropriate steps have been taken to permanently stabilize these areas.
- Identification and repair of stormwater control system. Certification that all aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the failing systems.
- Maintenance. Certification that the erosion control and stormwater maintenance plan for the site is being implemented as written, and a maintenance log has been created and is being maintained.

FIVE-YEAR RECERTIFICATION FOR LONG-TERM MAINTENANCE OF STORMWATER MANAGEMENT SYSTEMS

For Site Location & Stormwater Projects

This form complies with the condition that requires reporting every 5 years on the long-term maintenance of stormwater management structures of projects permitted under the Stormwater Management Law since 2005. Complete the following sections, include appropriate photos if available, and use additional paper if needed. A copy of the report if the inspection was performed by a professional experienced in BMP maintenance should be included. This form is available on the Maine DEP website at: <http://www.maine.gov/dep/ODQG/stormwater/stormwaterbmeps/>

Please type or print in black ink only			
Owner/Licensee or Homeowners Association Representative:		Inspector/operator or preparer of report:	
Company:		Company:	
Mailing Address:		Mailing Address:	
Daytime Phone #:		Daytime Phone #:	

LOCATION OF DEVELOPMENT	
Name of Project:	
Address and Town:	
DEP Permit Number:	

PROJECT SPECIFICS	
If the project is unfinished, please describe its current status and your plans for the future of the development. Filing this report to the Department of on-site long-term maintenance activities is still required.	
If the project is within a MPDES Regulated Town and a maintenance report has been prepared for this project, please attach the existing report.	
If the project is a subdivision with a Homeowner's association, identify the responsible party.	
Confirm that the required recording of deed restrictions for the protection of buffers or conservation land has been done and that the buffers are being maintained in accordance with the restrictions.	
Identify the contractor for the renewed 5-year maintenance contract for the inspection, cleaning and maintenance of manufactured proprietary structures.	
Is a maintenance log available for review?	

LONG-TERM MAINTENANCE (please comment on the following):

All areas of the development have been inspected for erosion, and appropriate steps have been taken to permanently stabilize these areas.

All stormwater control structures have been inspected for damage, wear, malfunction, and appropriate steps have been taken to repair or replace the failing systems

The erosion control and stormwater maintenance plan for the site is being implemented as written, and a maintenance log has been created and is being maintained.

CERTIFICATIONS/SIGNATURES

By signing below, the owner (or authorized agent) certifies that all stormwater management structures at the project described above are stable and operational as designed.

Signed: _____ Title _____ Date: _____

This completed form and all supporting documents summarized above shall be sent to the following address. An emailed report is appropriate and should be sent to kerem.gungor@maine.gov

Kerem Gungor,
Bureau of Land and Water Quality
17 State House Station
Augusta, ME 04333
Tel: (207) 446-3915

STORMWATER INSPECTION AND MAINTENANCE LOG: MANMADE PERVIOUS PAVERS

Maine Behavioral Healthcare, Portland, ME

Inspector: _____

Date:

Maintenance Personnel: _____

[illegible]

Sediment/Debris Disposal

Sediment/Debris Disposal		
Location of Sediment/Debris Accumulation	Location of Sediment/Debris Disposal	Date of Disposal

STORMWATER INSPECTION AND MAINTENANCE LOG: BIORETENTION FILTER

Maine Behavioral Healthcare, Portland, ME

Inspector: _____

Date:

Maintenance Personnel: _____

[illegible]

Sediment/Debris Disposal

Sediment/Debris Disposal		
Location of Sediment/Debris Accumulation	Location of Sediment/Debris Disposal	Date of Disposal

APPENDIX C

Pre-Development HydroCAD and Backup Calculations

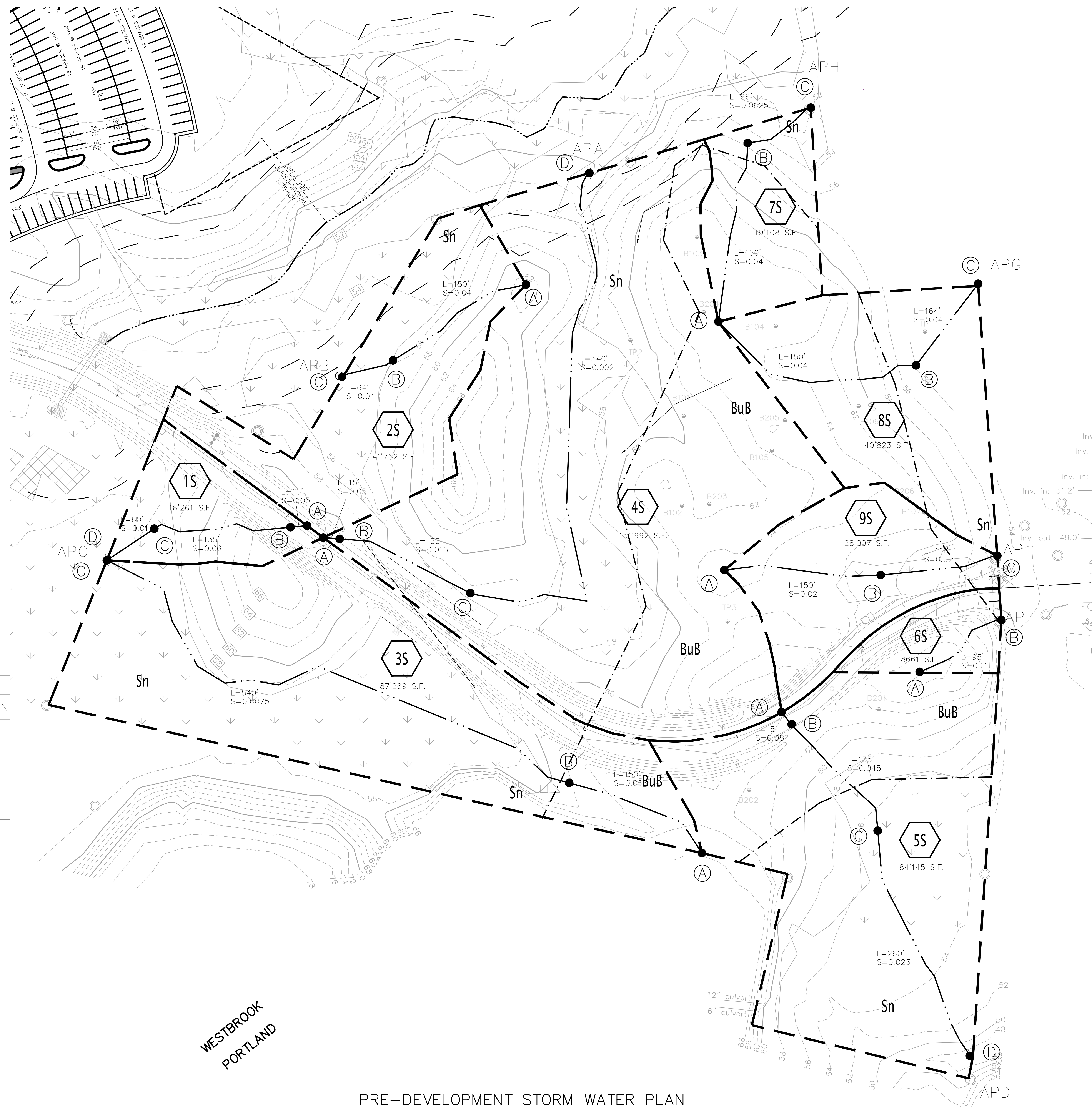
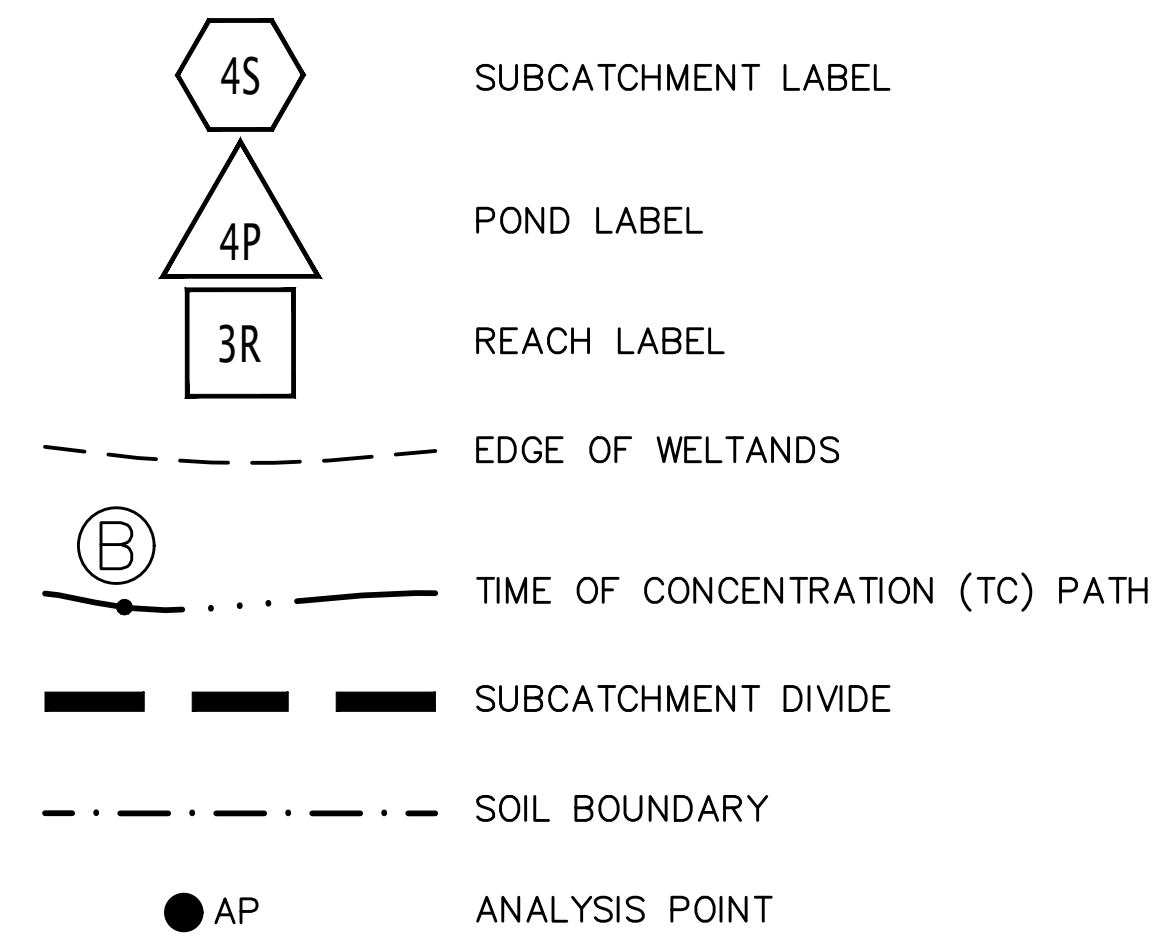


1. SITE AREA: 478,030 SF OR 10.97 ACRES

SOILS TABLE			
SOIL NAME	SYMBOL	HSG	DESCRIPTION
LAMOINE SILT LOAM, 3-8% SLOPES	BuB	C/D	POORLY DRAINED
SCANTIC SILT LOAM, 0-3% SLOPES	Sn	D	POORLY DRAINED

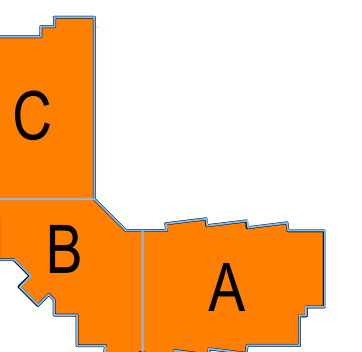
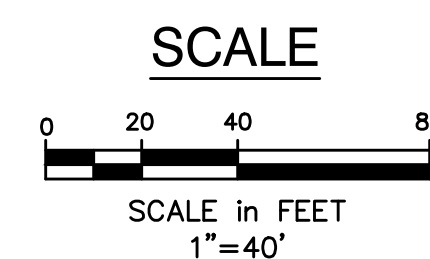
NOTE: SOIL DATA OBTAINED FROM USDA
WEB SOIL SURVEY

DRAINAGE LEGEND

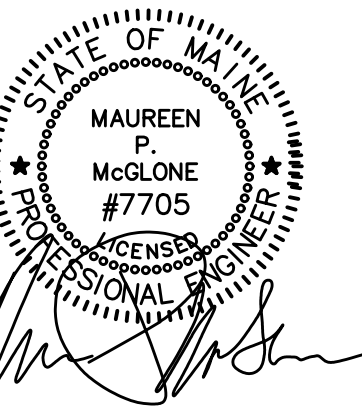


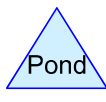
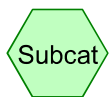
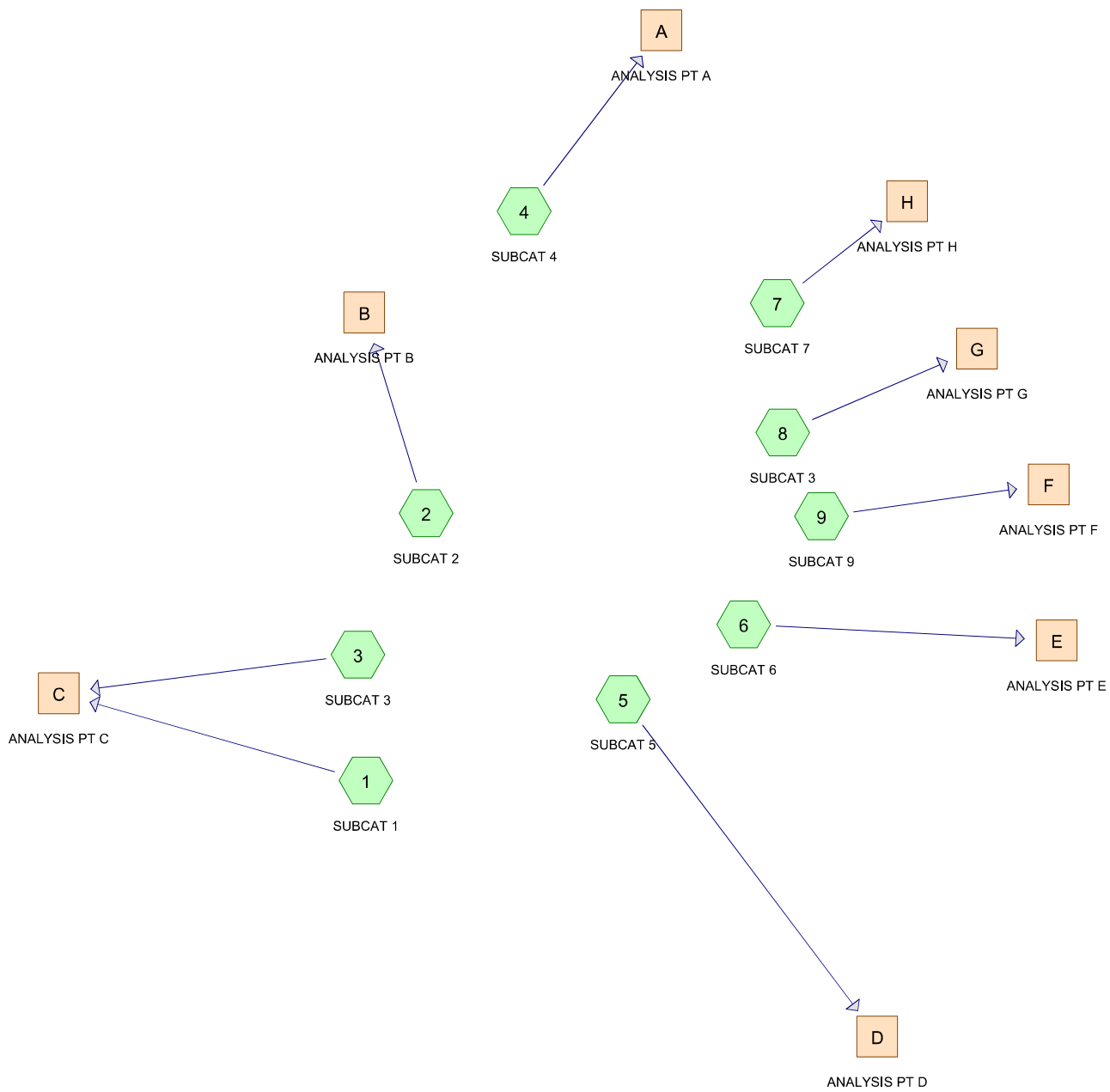
PRE-DEVELOPMENT STORM WATER PLAN

SCALE: 1" = 40'



Y PLAN

[illegible]



PRE-Development Conditions

Prepared by Ransom Consulting, Inc.

Printed 10/31/2019

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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.650	98	ROAD (1, 2, 3, 4, 5, 6, 9)
10.324	77	Woods, Good, HSG D (1, 2, 3, 4, 5, 6, 7, 8, 9)

PRE-Development Conditions

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Page 3

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
10.324	HSG D	1, 2, 3, 4, 5, 6, 7, 8, 9
0.650	Other	1, 2, 3, 4, 5, 6, 9

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.650	0.650	ROAD	1, 2, 3, 4, 5, 6, 9
0.000	0.000	0.000	10.324	0.000	10.324	Woods, Good	1, 2, 3, 4, 5, 6, 7, 8, 9

PRE-Development Conditions

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Post-Development CADD

Type III 24-hr 2-Year Rainfall=3.10"

Printed 10/31/2019

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Summary for Subcatchment 1: SUBCAT 1

Runoff = 0.39 cfs @ 12.31 hrs, Volume= 0.043 af, Depth> 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
13,344	77	Woods, Good, HSG D
* 2,917	98	ROAD
16,261	81	Weighted Average
13,344		82.06% Pervious Area
2,917		17.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
18.0	135	0.0593	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
4.0	60	0.0100	0.25		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
22.2	210	Total			

Summary for Subcatchment 2: SUBCAT 2

Runoff = 0.63 cfs @ 12.62 hrs, Volume= 0.095 af, Depth> 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
38,835	77	Woods, Good, HSG D
* 2,917	98	ROAD
41,752	78	Weighted Average
38,835		93.01% Pervious Area
2,917		6.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.8	150	0.0400	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
2.1	64	0.0400	0.50		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
41.9	214	Total			

PRE-Development Conditions

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Type III 24-hr 2-Year Rainfall=3.10"

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Summary for Subcatchment 3: SUBCAT 3

Runoff = 1.06 cfs @ 12.88 hrs, Volume= 0.197 af, Depth> 1.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
81,695	77	Woods, Good, HSG D
* 5,574	98	ROAD
87,269	78	Weighted Average
81,695		93.61% Pervious Area
5,574		6.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.4	150	0.0530	0.12		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
41.6	540	0.0075	0.22		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
62.0	690	Total			

Summary for Subcatchment 4: SUBCAT 4

Runoff = 1.08 cfs @ 13.85 hrs, Volume= 0.336 af, Depth> 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
144,430	77	Woods, Good, HSG D
* 7,562	98	ROAD
151,992	78	Weighted Average
144,430		95.02% Pervious Area
7,562		4.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
54.2	135	0.0150	0.04		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
81.1	544	0.0020	0.11		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
135.5	694	Total			

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Type III 24-hr 2-Year Rainfall=3.10"

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Summary for Subcatchment 5: SUBCAT 5

Runoff = 1.46 cfs @ 12.47 hrs, Volume= 0.192 af, Depth> 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
81,208	77	Woods, Good, HSG D
* 2,937	98	ROAD
84,145	78	Weighted Average
81,208		96.51% Pervious Area
2,937		3.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
20.2	135	0.0444	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
11.4	260	0.0230	0.38		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
31.8	410	Total			

Summary for Subcatchment 6: SUBCAT 6

Runoff = 0.32 cfs @ 12.15 hrs, Volume= 0.026 af, Depth> 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
5,928	77	Woods, Good, HSG D
* 2,733	98	ROAD
8,661	84	Weighted Average
5,928		68.44% Pervious Area
2,733		31.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	95	0.1100	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"

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Type III 24-hr 2-Year Rainfall=3.10"

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Summary for Subcatchment 7: SUBCAT 7

Runoff = 0.34 cfs @ 12.38 hrs, Volume= 0.041 af, Depth> 1.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
19,108	77	Woods, Good, HSG D
19,108		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.9	150	0.0400	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
2.6	96	0.0625	0.63		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
25.5	246	Total			

Summary for Subcatchment 8: SUBCAT 3

Runoff = 0.56 cfs @ 12.64 hrs, Volume= 0.088 af, Depth> 1.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
40,823	77	Woods, Good, HSG D
40,823		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.8	150	0.0400	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
5.5	164	0.0400	0.50		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
45.3	314	Total			

Summary for Subcatchment 9: SUBCAT 9

Runoff = 0.39 cfs @ 12.82 hrs, Volume= 0.070 af, Depth> 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

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Type III 24-hr 2-Year Rainfall=3.10"

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Area (sf)	CN	Description
24,324	77	Woods, Good, HSG D
* 3,683	98	ROAD
28,007	80	Weighted Average
24,324		86.85% Pervious Area
3,683		13.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
5.2	111	0.0200	0.35		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
57.7	261	Total			

Summary for Reach A: ANALYSIS PT A

Inflow Area = 3.489 ac, 4.98% Impervious, Inflow Depth > 1.15" for 2-Year event
 Inflow = 1.08 cfs @ 13.85 hrs, Volume= 0.336 af
 Outflow = 1.08 cfs @ 13.85 hrs, Volume= 0.336 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach B: ANALYSIS PT B

Inflow Area = 0.958 ac, 6.99% Impervious, Inflow Depth > 1.19" for 2-Year event
 Inflow = 0.63 cfs @ 12.62 hrs, Volume= 0.095 af
 Outflow = 0.63 cfs @ 12.62 hrs, Volume= 0.095 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach C: ANALYSIS PT C

Inflow Area = 2.377 ac, 8.20% Impervious, Inflow Depth > 1.21" for 2-Year event
 Inflow = 1.18 cfs @ 12.81 hrs, Volume= 0.240 af
 Outflow = 1.18 cfs @ 12.81 hrs, Volume= 0.240 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach D: ANALYSIS PT D

Inflow Area = 1.932 ac, 3.49% Impervious, Inflow Depth > 1.19" for 2-Year event
 Inflow = 1.46 cfs @ 12.47 hrs, Volume= 0.192 af
 Outflow = 1.46 cfs @ 12.47 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

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Type III 24-hr 2-Year Rainfall=3.10"

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Summary for Reach E: ANALYSIS PT E

Inflow Area = 0.199 ac, 31.56% Impervious, Inflow Depth > 1.60" for 2-Year event
Inflow = 0.32 cfs @ 12.15 hrs, Volume= 0.026 af
Outflow = 0.32 cfs @ 12.15 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach F: ANALYSIS PT F

Inflow Area = 0.643 ac, 13.15% Impervious, Inflow Depth > 1.31" for 2-Year event
Inflow = 0.39 cfs @ 12.82 hrs, Volume= 0.070 af
Outflow = 0.39 cfs @ 12.82 hrs, Volume= 0.070 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach G: ANALYSIS PT G

Inflow Area = 0.937 ac, 0.00% Impervious, Inflow Depth > 1.13" for 2-Year event
Inflow = 0.56 cfs @ 12.64 hrs, Volume= 0.088 af
Outflow = 0.56 cfs @ 12.64 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach H: ANALYSIS PT H

Inflow Area = 0.439 ac, 0.00% Impervious, Inflow Depth > 1.13" for 2-Year event
Inflow = 0.34 cfs @ 12.38 hrs, Volume= 0.041 af
Outflow = 0.34 cfs @ 12.38 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

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Type III 24-hr 10-Year Rainfall=4.60"

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Summary for Subcatchment 1: SUBCAT 1

Runoff = 0.75 cfs @ 12.31 hrs, Volume= 0.082 af, Depth> 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
13,344	77	Woods, Good, HSG D
* 2,917	98	ROAD
16,261	81	Weighted Average
13,344		82.06% Pervious Area
2,917		17.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
18.0	135	0.0593	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
4.0	60	0.0100	0.25		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
22.2	210	Total			

Summary for Subcatchment 2: SUBCAT 2

Runoff = 1.28 cfs @ 12.61 hrs, Volume= 0.188 af, Depth> 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
38,835	77	Woods, Good, HSG D
* 2,917	98	ROAD
41,752	78	Weighted Average
38,835		93.01% Pervious Area
2,917		6.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.8	150	0.0400	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
2.1	64	0.0400	0.50		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
41.9	214	Total			

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Type III 24-hr 10-Year Rainfall=4.60"

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Summary for Subcatchment 3: SUBCAT 3

Runoff = 2.15 cfs @ 12.88 hrs, Volume= 0.391 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
81,695	77	Woods, Good, HSG D
* 5,574	98	ROAD
87,269	78	Weighted Average
81,695		93.61% Pervious Area
5,574		6.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.4	150	0.0530	0.12		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
41.6	540	0.0075	0.22		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
62.0	690	Total			

Summary for Subcatchment 4: SUBCAT 4

Runoff = 2.20 cfs @ 13.85 hrs, Volume= 0.668 af, Depth> 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
144,430	77	Woods, Good, HSG D
* 7,562	98	ROAD
151,992	78	Weighted Average
144,430		95.02% Pervious Area
7,562		4.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
54.2	135	0.0150	0.04		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
81.1	544	0.0020	0.11		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
135.5	694	Total			

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Type III 24-hr 10-Year Rainfall=4.60"

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Summary for Subcatchment 5: SUBCAT 5

Runoff = 2.95 cfs @ 12.44 hrs, Volume= 0.380 af, Depth> 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
81,208	77	Woods, Good, HSG D
* 2,937	98	ROAD
84,145	78	Weighted Average
81,208		96.51% Pervious Area
2,937		3.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
20.2	135	0.0444	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
11.4	260	0.0230	0.38		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
31.8	410	Total			

Summary for Subcatchment 6: SUBCAT 6

Runoff = 0.58 cfs @ 12.14 hrs, Volume= 0.048 af, Depth> 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
5,928	77	Woods, Good, HSG D
* 2,733	98	ROAD
8,661	84	Weighted Average
5,928		68.44% Pervious Area
2,733		31.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	95	0.1100	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"

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Type III 24-hr 10-Year Rainfall=4.60"

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Summary for Subcatchment 7: SUBCAT 7

Runoff = 0.71 cfs @ 12.36 hrs, Volume= 0.083 af, Depth> 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
19,108	77	Woods, Good, HSG D
19,108		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.9	150	0.0400	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
2.6	96	0.0625	0.63		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
25.5	246	Total			

Summary for Subcatchment 8: SUBCAT 3

Runoff = 1.16 cfs @ 12.63 hrs, Volume= 0.177 af, Depth> 2.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
40,823	77	Woods, Good, HSG D
40,823		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.8	150	0.0400	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
5.5	164	0.0400	0.50		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
45.3	314	Total			

Summary for Subcatchment 9: SUBCAT 9

Runoff = 0.77 cfs @ 12.76 hrs, Volume= 0.135 af, Depth> 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

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Type III 24-hr 10-Year Rainfall=4.60"

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Area (sf)	CN	Description
24,324	77	Woods, Good, HSG D
* 3,683	98	ROAD
28,007	80	Weighted Average
24,324		86.85% Pervious Area
3,683		13.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
5.2	111	0.0200	0.35		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
57.7	261	Total			

Summary for Reach A: ANALYSIS PT A

Inflow Area = 3.489 ac, 4.98% Impervious, Inflow Depth > 2.30" for 10-Year event
 Inflow = 2.20 cfs @ 13.85 hrs, Volume= 0.668 af
 Outflow = 2.20 cfs @ 13.85 hrs, Volume= 0.668 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach B: ANALYSIS PT B

Inflow Area = 0.958 ac, 6.99% Impervious, Inflow Depth > 2.35" for 10-Year event
 Inflow = 1.28 cfs @ 12.61 hrs, Volume= 0.188 af
 Outflow = 1.28 cfs @ 12.61 hrs, Volume= 0.188 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach C: ANALYSIS PT C

Inflow Area = 2.377 ac, 8.20% Impervious, Inflow Depth > 2.39" for 10-Year event
 Inflow = 2.39 cfs @ 12.75 hrs, Volume= 0.473 af
 Outflow = 2.39 cfs @ 12.75 hrs, Volume= 0.473 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach D: ANALYSIS PT D

Inflow Area = 1.932 ac, 3.49% Impervious, Inflow Depth > 2.36" for 10-Year event
 Inflow = 2.95 cfs @ 12.44 hrs, Volume= 0.380 af
 Outflow = 2.95 cfs @ 12.44 hrs, Volume= 0.380 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

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Type III 24-hr 10-Year Rainfall=4.60"

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Summary for Reach E: ANALYSIS PT E

Inflow Area = 0.199 ac, 31.56% Impervious, Inflow Depth > 2.90" for 10-Year event
Inflow = 0.58 cfs @ 12.14 hrs, Volume= 0.048 af
Outflow = 0.58 cfs @ 12.14 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach F: ANALYSIS PT F

Inflow Area = 0.643 ac, 13.15% Impervious, Inflow Depth > 2.52" for 10-Year event
Inflow = 0.77 cfs @ 12.76 hrs, Volume= 0.135 af
Outflow = 0.77 cfs @ 12.76 hrs, Volume= 0.135 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach G: ANALYSIS PT G

Inflow Area = 0.937 ac, 0.00% Impervious, Inflow Depth > 2.27" for 10-Year event
Inflow = 1.16 cfs @ 12.63 hrs, Volume= 0.177 af
Outflow = 1.16 cfs @ 12.63 hrs, Volume= 0.177 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach H: ANALYSIS PT H

Inflow Area = 0.439 ac, 0.00% Impervious, Inflow Depth > 2.28" for 10-Year event
Inflow = 0.71 cfs @ 12.36 hrs, Volume= 0.083 af
Outflow = 0.71 cfs @ 12.36 hrs, Volume= 0.083 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

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Type III 24-hr 25-Year Rainfall=5.80"

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Summary for Subcatchment 1: SUBCAT 1

Runoff = 1.04 cfs @ 12.31 hrs, Volume= 0.115 af, Depth> 3.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
13,344	77	Woods, Good, HSG D
* 2,917	98	ROAD
16,261	81	Weighted Average
13,344		82.06% Pervious Area
2,917		17.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
18.0	135	0.0593	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
4.0	60	0.0100	0.25		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
22.2	210	Total			

Summary for Subcatchment 2: SUBCAT 2

Runoff = 1.84 cfs @ 12.57 hrs, Volume= 0.269 af, Depth> 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
38,835	77	Woods, Good, HSG D
* 2,917	98	ROAD
41,752	78	Weighted Average
38,835		93.01% Pervious Area
2,917		6.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.8	150	0.0400	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
2.1	64	0.0400	0.50		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
41.9	214	Total			

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Type III 24-hr 25-Year Rainfall=5.80"

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Summary for Subcatchment 3: SUBCAT 3

Runoff = 3.08 cfs @ 12.87 hrs, Volume= 0.561 af, Depth> 3.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
81,695	77	Woods, Good, HSG D
* 5,574	98	ROAD
87,269	78	Weighted Average
81,695		93.61% Pervious Area
5,574		6.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.4	150	0.0530	0.12		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
41.6	540	0.0075	0.22		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
62.0	690	Total			

Summary for Subcatchment 4: SUBCAT 4

Runoff = 3.19 cfs @ 13.71 hrs, Volume= 0.959 af, Depth> 3.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
144,430	77	Woods, Good, HSG D
* 7,562	98	ROAD
151,992	78	Weighted Average
144,430		95.02% Pervious Area
7,562		4.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
54.2	135	0.0150	0.04		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
81.1	544	0.0020	0.11		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
135.5	694	Total			

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Type III 24-hr 25-Year Rainfall=5.80"

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Summary for Subcatchment 5: SUBCAT 5

Runoff = 4.24 cfs @ 12.44 hrs, Volume= 0.544 af, Depth> 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
81,208	77	Woods, Good, HSG D
* 2,937	98	ROAD
84,145	78	Weighted Average
81,208		96.51% Pervious Area
2,937		3.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
20.2	135	0.0444	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
11.4	260	0.0230	0.38		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
31.8	410	Total			

Summary for Subcatchment 6: SUBCAT 6

Runoff = 0.79 cfs @ 12.14 hrs, Volume= 0.066 af, Depth> 4.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
5,928	77	Woods, Good, HSG D
* 2,733	98	ROAD
8,661	84	Weighted Average
5,928		68.44% Pervious Area
2,733		31.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	95	0.1100	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"

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Type III 24-hr 25-Year Rainfall=5.80"

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Summary for Subcatchment 7: SUBCAT 7

Runoff = 1.03 cfs @ 12.35 hrs, Volume= 0.120 af, Depth> 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
19,108	77	Woods, Good, HSG D
19,108		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.9	150	0.0400	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
2.6	96	0.0625	0.63		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
25.5	246	Total			

Summary for Subcatchment 8: SUBCAT 3

Runoff = 1.68 cfs @ 12.63 hrs, Volume= 0.256 af, Depth> 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
40,823	77	Woods, Good, HSG D
40,823		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.8	150	0.0400	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
5.5	164	0.0400	0.50		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
45.3	314	Total			

Summary for Subcatchment 9: SUBCAT 9

Runoff = 1.10 cfs @ 12.76 hrs, Volume= 0.191 af, Depth> 3.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

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Post-Development CADD
Type III 24-hr 25-Year Rainfall=5.80"

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Area (sf)	CN	Description
24,324	77	Woods, Good, HSG D
* 3,683	98	ROAD
28,007	80	Weighted Average
24,324		86.85% Pervious Area
3,683		13.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
5.2	111	0.0200	0.35		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
57.7	261	Total			

Summary for Reach A: ANALYSIS PT A

Inflow Area = 3.489 ac, 4.98% Impervious, Inflow Depth > 3.30" for 25-Year event
 Inflow = 3.19 cfs @ 13.71 hrs, Volume= 0.959 af
 Outflow = 3.19 cfs @ 13.71 hrs, Volume= 0.959 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach B: ANALYSIS PT B

Inflow Area = 0.958 ac, 6.99% Impervious, Inflow Depth > 3.37" for 25-Year event
 Inflow = 1.84 cfs @ 12.57 hrs, Volume= 0.269 af
 Outflow = 1.84 cfs @ 12.57 hrs, Volume= 0.269 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach C: ANALYSIS PT C

Inflow Area = 2.377 ac, 8.20% Impervious, Inflow Depth > 3.41" for 25-Year event
 Inflow = 3.43 cfs @ 12.75 hrs, Volume= 0.675 af
 Outflow = 3.43 cfs @ 12.75 hrs, Volume= 0.675 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach D: ANALYSIS PT D

Inflow Area = 1.932 ac, 3.49% Impervious, Inflow Depth > 3.38" for 25-Year event
 Inflow = 4.24 cfs @ 12.44 hrs, Volume= 0.544 af
 Outflow = 4.24 cfs @ 12.44 hrs, Volume= 0.544 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

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Type III 24-hr 25-Year Rainfall=5.80"

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Summary for Reach E: ANALYSIS PT E

Inflow Area = 0.199 ac, 31.56% Impervious, Inflow Depth > 4.00" for 25-Year event
Inflow = 0.79 cfs @ 12.14 hrs, Volume= 0.066 af
Outflow = 0.79 cfs @ 12.14 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach F: ANALYSIS PT F

Inflow Area = 0.643 ac, 13.15% Impervious, Inflow Depth > 3.56" for 25-Year event
Inflow = 1.10 cfs @ 12.76 hrs, Volume= 0.191 af
Outflow = 1.10 cfs @ 12.76 hrs, Volume= 0.191 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach G: ANALYSIS PT G

Inflow Area = 0.937 ac, 0.00% Impervious, Inflow Depth > 3.27" for 25-Year event
Inflow = 1.68 cfs @ 12.63 hrs, Volume= 0.256 af
Outflow = 1.68 cfs @ 12.63 hrs, Volume= 0.256 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach H: ANALYSIS PT H

Inflow Area = 0.439 ac, 0.00% Impervious, Inflow Depth > 3.29" for 25-Year event
Inflow = 1.03 cfs @ 12.35 hrs, Volume= 0.120 af
Outflow = 1.03 cfs @ 12.35 hrs, Volume= 0.120 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

APPENDIX D

Post-Development HydroCAD and Backup Calculations



1. IMPERVIOUS AREA: 97,619 S.F.
2. LANDSCAPED AREA: 32,714 S.F.
3. SUBCATCHMENTS 1-6 DID NOT CHANGE FROM SW-100
4. SUBCATCHMENTS 9-21 HAVE TIMES OF CONCENTRATION EQUAL TO 6 MINUTES

STORMWATER PEAK DISCHARGE SUMMARY TABLE

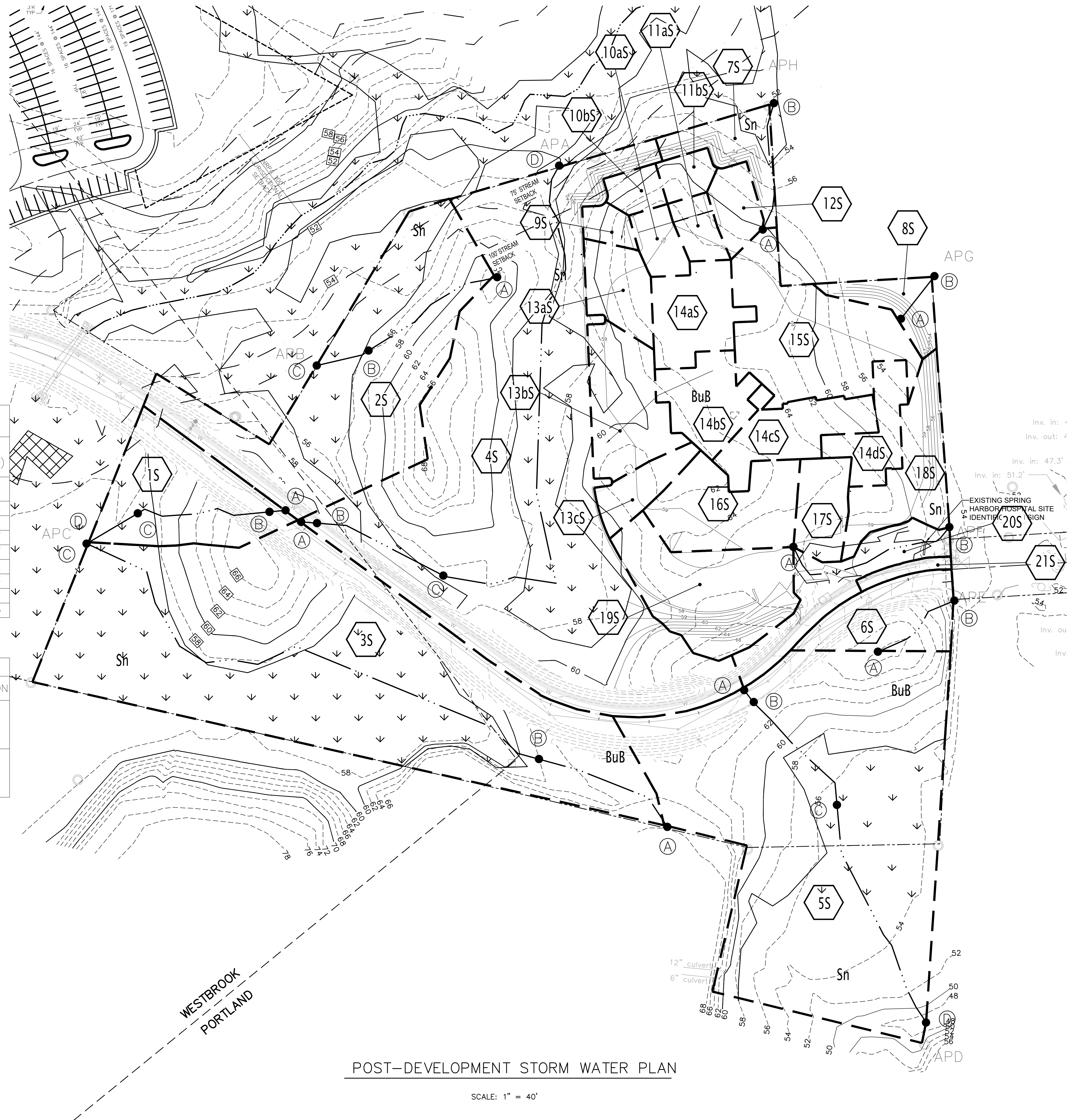
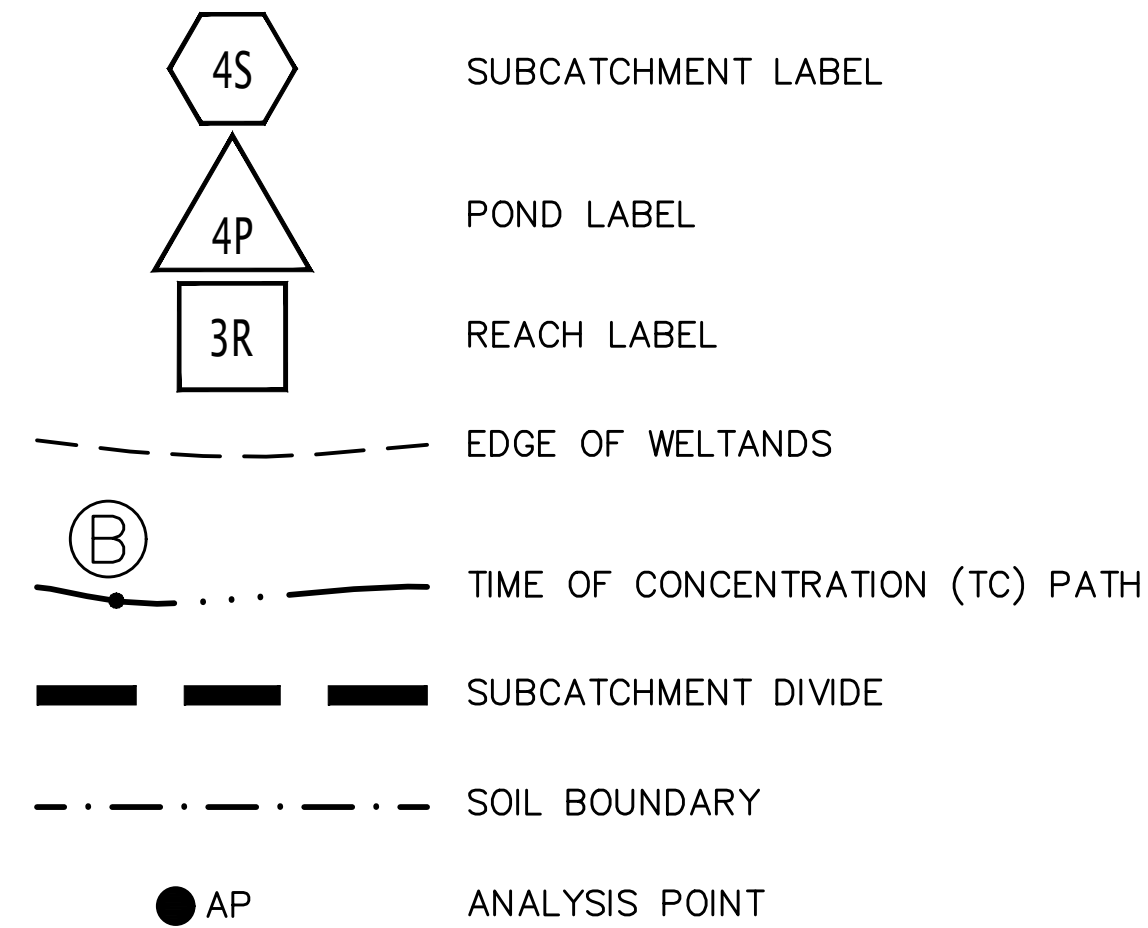
AP	PRE-DEVELOPMENT (CFS)			POST-DEVELOPMENT (CFS)		
	2-YR	10-YR	25-YR	2-YR	10-YR	25-YR
A	1.07	2.19	3.17	0.93	1.92	2.72
B	0.60	1.22	1.75	0.60	1.22	1.75
C	1.19	2.41	3.47	1.19	2.41	3.47
D	1.47	2.97	4.27	1.47	2.97	4.27
E	0.33	0.60	0.82	0.33	0.60	0.82
F	0.42	0.80	1.13	0.19	0.33	0.44
G	0.55	1.15	1.66	0.40	0.80	1.33
H	0.34	0.70	1.02	0.09	0.19	0.28

SOILS TABLE

SOIL NAME	SYMBOL	HSG	DESCRIPTION
LAMOINE SILT LOAM, 3-8% SLOPES	BuB	C/D	POORLY DRAINED
SCANTIC SILT LOAM, 0-3% SLOPES	Sn	D	POORLY DRAINED

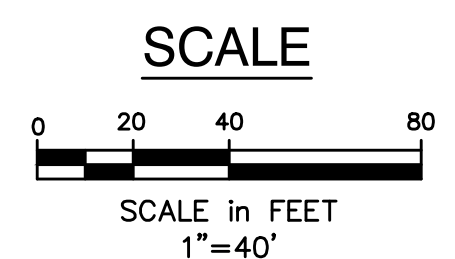
NOTE: SOIL DATA OBTAINED FROM USDA
WEB SOIL SURVEY

DRAINAGE LEGEND



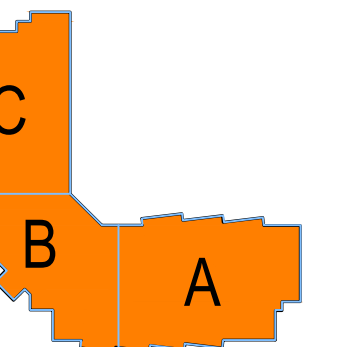
POST-DEVELOPMENT STORM WATER PLAN

SCALE: 1" = 40'



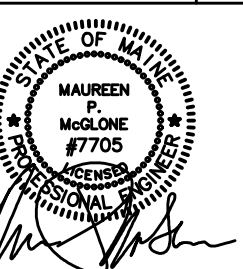
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PLAN

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772-2891

REAL:

PROJECT NUMBER: 181.06068

DATE: 08/22/2019

SHEET TITLE AND NUMBER:

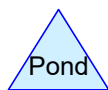
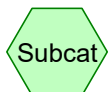
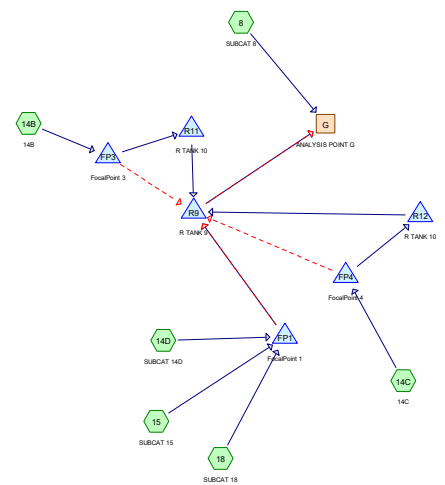
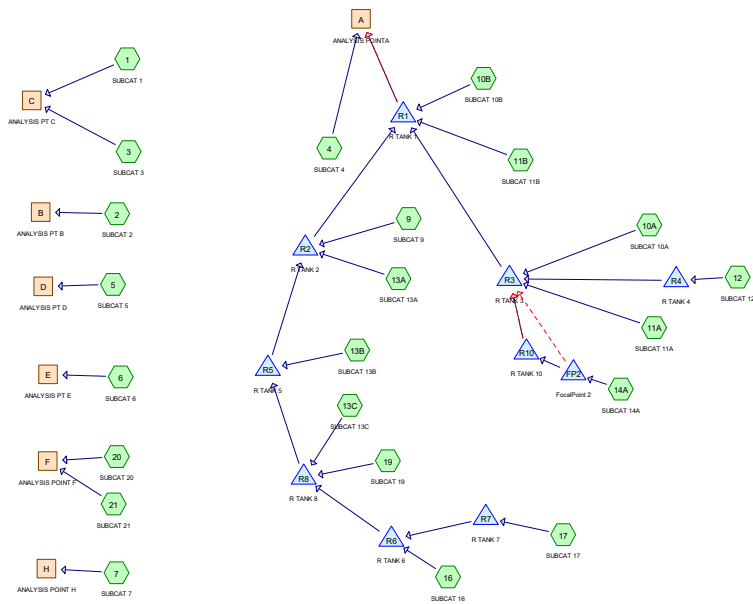
POST-DEVELOPMENT STORMWATER PLAN

STORMWATER PLAN

SW 101

SVV-101

Detention	Detains Subcatchments	Impervious Area of Subcatchment (sf)	Landscaped Area of Subcatchment (sf)	WQV (cf)	WQV of Parking Lot Detention System	WQV of Playground Detention System	Number of Chambers	Length (ft)	Width (ft)	Area (sf)	Detention Volume (cf)
R1 - ACF HD 0.5	10B	2473	71	208	382		484	107.22	18.44	1977	2211
	11B	2055	71	174							
R2 - ACF HD 0.5	9	1707	151	147	568		484	107.22	18.44	1977	2126
	13A	4911	340	421							
R3 - ACF HD 0.5	10A	2901	82	244	433		725	72.03	36.81	2651	3127
	11a	2226	82	188							
R4 - ACF HD 0.5	12	3321	151	282	282		300	62.65	19.75	1237	1383
R5 - ACF HD 0.5	13B	9865	62	824	824		704	154.13	18.44	2842	3254
R6 - ACF HD 0.5	16	10738	355	907	907		768	116.60	25.00	2915	3399
R7 - ACF HD 0.5	17	4769	201	404	404		342	46.22	28.93	1337	1546
R8 - ACF HD 0.5	13C	3695	34	309	1320		1152	229.20	19.75	4527	5058
	19	9785	5862	1011							
R9 - ACF HD 0.5						1899	279	76.72	15.81	1213	1361
R9 - ACF HD 1.0						1899	1440	79.07	63.06	4986	8891
	14D	3649	0	304							
	15	9803	12045	1218							
	18	1354	7919	377							
R10 - ACF HD 1.0	14A	7143	0	595	595		100	27.46	17.12	470	751
R11 - ACF HD 1.0	14B	6772	0	564		564	300	39.19	30.25	1185	2010
R12 - ACF HD 1.0	14C	6642	0	554		554	180	25.11	30.25	760	1258
Total		65589	7462		5714	1899	6678			25663	32356



Routing Diagram for POST-Development Conditions - 01-29-19
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.427	80	>75% Grass cover, Good, HSG D (9, 10A, 10B, 11A, 11B, 12, 13A, 13B, 13C, 15, 16, 17, 18, 19)
0.480	98	ROAD (1, 2, 3, 5, 6, 20)
7.652	77	Woods, Good, HSG D (1, 2, 3, 4, 5, 6, 7, 8, 19, 20)
0.424	98	central parking lot (13A, 13B, 13C)
0.225	98	lower parking lot bottom (19)
0.109	98	lower parking lot right (17)
0.247	98	lower parking lot top (16)
0.031	98	maintenance access east side of building (18)
0.117	98	northeast parking lot left (11A, 11B)
0.076	98	northeast parking lot right (12)
0.039	98	northwest parking lot left (9)
0.123	98	northwest parking lot right (10A, 10B)
0.213	98	playground (15)
0.179	98	road (4, 21)
0.632	98	roof (14A, 14B, 14C, 14D)

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
8.079	HSG D	1, 2, 3, 4, 5, 6, 7, 8, 9, 10A, 10B, 11A, 11B, 12, 13A, 13B, 13C, 15, 16, 17, 18, 19, 20
2.895	Other	1, 2, 3, 4, 5, 6, 9, 10A, 10B, 11A, 11B, 12, 13A, 13B, 13C, 14A, 14B, 14C, 14D, 15, 16, 17, 18, 19, 20, 21

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subca Numb
0.000	0.000	0.000	0.427	0.000	0.427	>75% Grass cover, Good	
0.000	0.000	0.000	0.000	0.480	0.480	ROAD	
0.000	0.000	0.000	7.652	0.000	7.652	Woods, Good	
0.000	0.000	0.000	0.000	0.424	0.424	central parking lot	
0.000	0.000	0.000	0.000	0.225	0.225	lower parking lot bottom	
0.000	0.000	0.000	0.000	0.109	0.109	lower parking lot right	
0.000	0.000	0.000	0.000	0.247	0.247	lower parking lot top	
0.000	0.000	0.000	0.000	0.031	0.031	maintenance access east side of building	
0.000	0.000	0.000	0.000	0.117	0.117	northeast parking lot left	
0.000	0.000	0.000	0.000	0.076	0.076	northeast parking lot right	
0.000	0.000	0.000	0.000	0.039	0.039	northwest parking lot left	
0.000	0.000	0.000	0.000	0.123	0.123	northwest parking lot right	
0.000	0.000	0.000	0.000	0.213	0.213	playground	
0.000	0.000	0.000	0.000	0.179	0.179	road	
0.000	0.000	0.000	0.000	0.632	0.632	roof	

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Post-Development CADD

Type III 24-hr 2-Year Rainfall=3.10"

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Summary for Subcatchment 1: SUBCAT 1

Runoff = 0.39 cfs @ 12.31 hrs, Volume= 0.043 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
13,344	77	Woods, Good, HSG D
* 2,917	98	ROAD
16,261	81	Weighted Average
13,344		82.06% Pervious Area
2,917		17.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
18.0	135	0.0593	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
4.0	60	0.0100	0.25		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
22.2	210	Total			

Summary for Subcatchment 2: SUBCAT 2

Runoff = 0.63 cfs @ 12.62 hrs, Volume= 0.096 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
38,835	77	Woods, Good, HSG D
* 2,917	98	ROAD
41,752	78	Weighted Average
38,835		93.01% Pervious Area
2,917		6.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.8	150	0.0400	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
2.1	64	0.0400	0.50		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
41.9	214	Total			

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Type III 24-hr 2-Year Rainfall=3.10"

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Summary for Subcatchment 3: SUBCAT 3

Runoff = 1.06 cfs @ 12.88 hrs, Volume= 0.200 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
81,695	77	Woods, Good, HSG D
* 5,574	98	ROAD
87,269	78	Weighted Average
81,695		93.61% Pervious Area
5,574		6.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.4	150	0.0530	0.12		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
41.6	540	0.0075	0.22		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
62.0	690	Total			

Summary for Subcatchment 4: SUBCAT 4

Runoff = 0.70 cfs @ 13.85 hrs, Volume= 0.226 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
* 6,629	98	road
91,843	77	Woods, Good, HSG D
98,472	78	Weighted Average
91,843		93.27% Pervious Area
6,629		6.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
54.2	135	0.0150	0.04		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
81.1	544	0.0020	0.11		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
135.5	694	Total			

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Summary for Subcatchment 5: SUBCAT 5

Runoff = 1.46 cfs @ 12.47 hrs, Volume= 0.193 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
81,208	77	Woods, Good, HSG D
* 2,937	98	ROAD
84,145	78	Weighted Average
81,208		96.51% Pervious Area
2,937		3.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
20.2	135	0.0444	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
11.4	260	0.0230	0.38		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
31.8	410	Total			

Summary for Subcatchment 6: SUBCAT 6

Runoff = 0.32 cfs @ 12.15 hrs, Volume= 0.026 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
5,928	77	Woods, Good, HSG D
* 2,733	98	ROAD
8,661	84	Weighted Average
5,928		68.44% Pervious Area
2,733		31.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	95	0.1100	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"

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Summary for Subcatchment 7: SUBCAT 7

Runoff = 0.09 cfs @ 12.43 hrs, Volume= 0.012 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
5,500	77	Woods, Good, HSG D
5,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	129	0.0625	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"

Summary for Subcatchment 8: SUBCAT 8

Runoff = 0.08 cfs @ 12.30 hrs, Volume= 0.009 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
4,022	77	Woods, Good, HSG D
4,022		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.4	65	0.0400	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"

Summary for Subcatchment 9: SUBCAT 9

Runoff = 0.13 cfs @ 12.08 hrs, Volume= 0.010 af, Depth= 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
* 1,707	98	northwest parking lot left
151	80	>75% Grass cover, Good, HSG D
1,858	97	Weighted Average
151		8.13% Pervious Area
1,707		91.87% Impervious Area

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

Summary for Subcatchment 10A: SUBCAT 10A

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.016 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	2,901	98	northwest parking lot right
	82	80	>75% Grass cover, Good, HSG D
	2,983	98	Weighted Average
	82		2.75% Pervious Area
	2,901		97.25% Impervious Area

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

Summary for Subcatchment 10B: SUBCAT 10B

Runoff = 0.17 cfs @ 12.08 hrs, Volume= 0.013 af, Depth= 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	2,473	98	northwest parking lot right
	71	80	>75% Grass cover, Good, HSG D
	2,544	97	Weighted Average
	71		2.79% Pervious Area
	2,473		97.21% Impervious Area

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

Summary for Subcatchment 11A: SUBCAT 11A

Runoff = 0.16 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

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	Area (sf)	CN	Description
*	2,226	98	northeast parking lot left
	82	80	>75% Grass cover, Good, HSG D
	2,308	97	Weighted Average
	82		3.55% Pervious Area
	2,226		96.45% Impervious Area

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

Summary for Subcatchment 11B: SUBCAT 11B

Runoff = 0.20 cfs @ 12.08 hrs, Volume= 0.016 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	2,849	98	northeast parking lot left
	71	80	>75% Grass cover, Good, HSG D
	2,920	98	Weighted Average
	71		2.43% Pervious Area
	2,849		97.57% Impervious Area

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

Summary for Subcatchment 12: SUBCAT 12

Runoff = 0.24 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	3,321	98	northeast parking lot right
	151	80	>75% Grass cover, Good, HSG D
	3,472	97	Weighted Average
	151		4.35% Pervious Area
	3,321		95.65% Impervious Area

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

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Type III 24-hr 2-Year Rainfall=3.10"

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Summary for Subcatchment 13A: SUBCAT 13A

Runoff = 0.36 cfs @ 12.08 hrs, Volume= 0.028 af, Depth= 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	4,911	98	central parking lot
	340	80	>75% Grass cover, Good, HSG D
	5,251	97	Weighted Average
	340		6.47% Pervious Area
	4,911		93.53% Impervious Area

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

Summary for Subcatchment 13B: SUBCAT 13B

Runoff = 0.69 cfs @ 12.08 hrs, Volume= 0.054 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	9,865	98	central parking lot
	62	80	>75% Grass cover, Good, HSG D
	9,927	98	Weighted Average
	62		0.62% Pervious Area
	9,865		99.38% Impervious Area

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

Summary for Subcatchment 13C: SUBCAT 13C

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.020 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	3,695	98	central parking lot
	34	80	>75% Grass cover, Good, HSG D
	3,729	98	Weighted Average
	34		0.91% Pervious Area
	3,695		99.09% Impervious Area

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Type III 24-hr 2-Year Rainfall=3.10"

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

Summary for Subcatchment 14A: SUBCAT 14A

Runoff = 0.53 cfs @ 12.08 hrs, Volume= 0.042 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
* 7,641	98	roof
7,641		100.00% Impervious Area

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

Summary for Subcatchment 14B: 14B

Runoff = 0.48 cfs @ 12.08 hrs, Volume= 0.038 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
* 6,943	98	roof
6,943		100.00% Impervious Area

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

Summary for Subcatchment 14C: 14C

Runoff = 0.53 cfs @ 12.08 hrs, Volume= 0.042 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
* 7,724	98	roof
7,724		100.00% Impervious Area

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Type III 24-hr 2-Year Rainfall=3.10"

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

Summary for Subcatchment 14D: SUBCAT 14D

Runoff = 0.36 cfs @ 12.08 hrs, Volume= 0.029 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
* 5,204	98	roof
5,204		100.00% Impervious Area

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

Summary for Subcatchment 15: SUBCAT 15

Runoff = 0.97 cfs @ 12.09 hrs, Volume= 0.069 af, Depth= 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
* 9,300	98	playground
8,892	80	>75% Grass cover, Good, HSG D
18,192	89	Weighted Average
8,892		48.88% Pervious Area
9,300		51.12% Impervious Area

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

Summary for Subcatchment 16: SUBCAT 16

Runoff = 0.75 cfs @ 12.08 hrs, Volume= 0.059 af, Depth= 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

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	Area (sf)	CN	Description
*	10,738	98	lower parking lot top
	355	80	>75% Grass cover, Good, HSG D
	11,093	97	Weighted Average
	355		3.20% Pervious Area
	10,738		96.80% Impervious Area

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

Summary for Subcatchment 17: SUBCAT 17

Runoff = 0.34 cfs @ 12.08 hrs, Volume= 0.026 af, Depth= 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	4,769	98	lower parking lot right
	201	80	>75% Grass cover, Good, HSG D
	4,970	97	Weighted Average
	201		4.04% Pervious Area
	4,769		95.96% Impervious Area

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

Summary for Subcatchment 18: SUBCAT 18

Runoff = 0.38 cfs @ 12.09 hrs, Volume= 0.027 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	1,354	98	maintenance access east side of building
	7,919	80	>75% Grass cover, Good, HSG D
	9,273	83	Weighted Average
	7,919		85.40% Pervious Area
	1,354		14.60% Impervious Area

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

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Summary for Subcatchment 19: SUBCAT 19

Runoff = 0.87 cfs @ 12.09 hrs, Volume= 0.062 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	9,785	98	lower parking lot bottom
	5,675	77	Woods, Good, HSG D
	187	80	>75% Grass cover, Good, HSG D
	15,647	90	Weighted Average
	5,862		37.46% Pervious Area
	9,785		62.54% Impervious Area

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

Summary for Subcatchment 20: SUBCAT 20

Runoff = 0.18 cfs @ 12.73 hrs, Volume= 0.030 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	5,288	77	Woods, Good, HSG D
*	3,810	98	ROAD
	9,098	86	Weighted Average
	5,288		58.12% Pervious Area
	3,810		41.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		Sheet Flow,
					Woods: Dense underbrush n= 0.800 P2= 3.10"
1.5	32	0.0200	0.35		Shallow Concentrated Flow,
					Forest w/Heavy Litter Kv= 2.5 fps
54.0	182	Total			

Summary for Subcatchment 21: SUBCAT 21

Runoff = 0.08 cfs @ 12.08 hrs, Volume= 0.007 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

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	Area (sf)	CN	Description
*	1,190	98	road
	1,190		100.00% Impervious Area

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

Summary for Reach A: ANALYSIS POINTA

Inflow Area = 3.967 ac, 42.54% Impervious, Inflow Depth > 1.49" for 2-Year event
 Inflow = 0.94 cfs @ 13.85 hrs, Volume= 0.493 af
 Outflow = 0.94 cfs @ 13.85 hrs, Volume= 0.493 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach B: ANALYSIS PT B

Inflow Area = 0.958 ac, 6.99% Impervious, Inflow Depth = 1.20" for 2-Year event
 Inflow = 0.63 cfs @ 12.62 hrs, Volume= 0.096 af
 Outflow = 0.63 cfs @ 12.62 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach C: ANALYSIS PT C

Inflow Area = 2.377 ac, 8.20% Impervious, Inflow Depth = 1.23" for 2-Year event
 Inflow = 1.18 cfs @ 12.81 hrs, Volume= 0.244 af
 Outflow = 1.18 cfs @ 12.81 hrs, Volume= 0.244 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach D: ANALYSIS PT D

Inflow Area = 1.932 ac, 3.49% Impervious, Inflow Depth = 1.20" for 2-Year event
 Inflow = 1.46 cfs @ 12.47 hrs, Volume= 0.193 af
 Outflow = 1.46 cfs @ 12.47 hrs, Volume= 0.193 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach E: ANALYSIS PT E

Inflow Area = 0.199 ac, 31.56% Impervious, Inflow Depth = 1.60" for 2-Year event
 Inflow = 0.32 cfs @ 12.15 hrs, Volume= 0.026 af
 Outflow = 0.32 cfs @ 12.15 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach F: ANALYSIS POINT F

Inflow Area = 0.236 ac, 48.60% Impervious, Inflow Depth = 1.88" for 2-Year event
 Inflow = 0.19 cfs @ 12.72 hrs, Volume= 0.037 af
 Outflow = 0.19 cfs @ 12.72 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach G: ANALYSIS POINT G

Inflow Area = 1.179 ac, 59.44% Impervious, Inflow Depth > 1.91" for 2-Year event
 Inflow = 0.40 cfs @ 12.51 hrs, Volume= 0.187 af
 Outflow = 0.40 cfs @ 12.51 hrs, Volume= 0.187 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach H: ANALYSIS POINT H

Inflow Area = 0.126 ac, 0.00% Impervious, Inflow Depth = 1.14" for 2-Year event
 Inflow = 0.09 cfs @ 12.43 hrs, Volume= 0.012 af
 Outflow = 0.09 cfs @ 12.43 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Pond FP1: FocalPoint 1

Inflow Area = 0.750 ac, 48.54% Impervious, Inflow Depth = 2.00" for 2-Year event
 Inflow = 1.71 cfs @ 12.09 hrs, Volume= 0.125 af
 Outflow = 1.71 cfs @ 12.09 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.1 min
 Primary = 1.71 cfs @ 12.09 hrs, Volume= 0.125 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 56.03' @ 12.09 hrs Surf.Area= 900 sf Storage= 15 cf

Plug-Flow detention time= 0.1 min calculated for 0.125 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (804.7 - 804.5)

Volume	Invert	Avail.Storage	Storage Description
#1	55.95'	405 cf	12.00'W x 75.00'L x 2.25'H FocalPoint 2,025 cf Overall x 20.0% Voids
#2	58.20'	900 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		1,305 cf	Total Available Storage

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.20	900	0	0
59.20	900	900	900

Device	Routing	Invert	Outlet Devices
#1	Primary	55.95'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	58.95'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=1.71 cfs @ 12.09 hrs HW=56.03' TW=54.61' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 1.71 cfs)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=55.95' TW=54.00' (Dynamic Tailwater)↑**2=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond FP2: FocalPoint 2**

Inflow Area = 0.175 ac, 100.00% Impervious, Inflow Depth = 2.87" for 2-Year event
 Inflow = 0.53 cfs @ 12.08 hrs, Volume= 0.042 af
 Outflow = 0.42 cfs @ 12.05 hrs, Volume= 0.042 af, Atten= 20%, Lag= 0.0 min
 Primary = 0.42 cfs @ 12.05 hrs, Volume= 0.042 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 57.57' @ 12.14 hrs Surf.Area= 183 sf Storage= 30 cf

Plug-Flow detention time= 0.2 min calculated for 0.042 af (100% of inflow)

Center-of-Mass det. time= 0.2 min (757.3 - 757.1)

Volume	Invert	Avail.Storage	Storage Description
#1	56.75'	82 cf	10.00'W x 18.30'L x 2.25'H FocalPoint 412 cf Overall x 20.0% Voids
#2	59.00'	213 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		296 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	183	0	0
59.75	386	213	213

Device	Routing	Invert	Outlet Devices
#1	Primary	56.75'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	59.60'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.42 cfs @ 12.05 hrs HW=56.91' TW=54.74' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 0.42 cfs)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=56.75' TW=54.00' (Dynamic Tailwater)↑**2=Orifice/Grate** (Controls 0.00 cfs)

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Summary for Pond FP3: FocalPoint 3

Inflow Area = 0.159 ac, 100.00% Impervious, Inflow Depth = 2.87" for 2-Year event
 Inflow = 0.48 cfs @ 12.08 hrs, Volume= 0.038 af
 Outflow = 0.25 cfs @ 12.21 hrs, Volume= 0.038 af, Atten= 47%, Lag= 7.6 min
 Primary = 0.23 cfs @ 11.98 hrs, Volume= 0.038 af
 Secondary = 0.03 cfs @ 12.21 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 59.47' @ 12.21 hrs Surf.Area= 98 sf Storage= 124 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 1.8 min (758.9 - 757.1)

Volume	Invert	Avail.Storage	Storage Description
#1	56.75'	44 cf	4.00'W x 24.50'L x 2.25'H FocalPoint 221 cf Overall x 20.0% Voids
#2	59.00'	159 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		203 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	98	0	0
59.75	325	159	159

Device	Routing	Invert	Outlet Devices
#1	Primary	56.75'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	59.40'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.23 cfs @ 11.98 hrs HW=56.90' TW=54.54' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 0.23 cfs)**Secondary OutFlow** Max=0.03 cfs @ 12.21 hrs HW=59.47' TW=54.73' (Dynamic Tailwater)↑**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 0.90 fps)**Summary for Pond FP4: FocalPoint 4**

Inflow Area = 0.177 ac, 100.00% Impervious, Inflow Depth = 2.87" for 2-Year event
 Inflow = 0.53 cfs @ 12.08 hrs, Volume= 0.042 af
 Outflow = 0.53 cfs @ 12.10 hrs, Volume= 0.042 af, Atten= 1%, Lag= 0.8 min
 Primary = 0.07 cfs @ 11.62 hrs, Volume= 0.032 af
 Secondary = 0.45 cfs @ 12.10 hrs, Volume= 0.011 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 59.59' @ 12.10 hrs Surf.Area= 32 sf Storage= 86 cf

Plug-Flow detention time= 2.6 min calculated for 0.042 af (100% of inflow)

Center-of-Mass det. time= 2.6 min (759.7 - 757.1)

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Volume	Invert	Avail.Storage	Storage Description
#1	56.50'	14 cf	4.00'W x 8.00'L x 2.25'H FocalPoint 72 cf Overall x 20.0% Voids
#2	58.75'	95 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		109 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.75	32	0	0
59.75	158	95	95

Device	Routing	Invert	Outlet Devices
#1	Primary	56.50'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	59.30'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.07 cfs @ 11.62 hrs HW=56.63' TW=54.45' (Dynamic Tailwater)
 ↳ **1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Secondary OutFlow Max=0.45 cfs @ 12.10 hrs HW=59.59' TW=54.62' (Dynamic Tailwater)
 ↳ **2=Orifice/Grate** (Orifice Controls 0.45 cfs @ 1.85 fps)

Summary for Pond R1: R TANK 1

Inflow Area = 1.707 ac, 89.96% Impervious, Inflow Depth > 1.95" for 2-Year event
 Inflow = 0.53 cfs @ 12.10 hrs, Volume= 0.278 af
 Outflow = 0.26 cfs @ 12.86 hrs, Volume= 0.267 af, Atten= 52%, Lag= 46.0 min
 Primary = 0.26 cfs @ 12.86 hrs, Volume= 0.267 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 54.75' @ 12.86 hrs Surf.Area= 1,977 sf Storage= 999 cf

Plug-Flow detention time= 107.2 min calculated for 0.267 af (96% of inflow)
 Center-of-Mass det. time= 55.6 min (1,266.1 - 1,210.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	1,142 cf	18.44'W x 107.22'L x 2.04'H Field A 4,027 cf Overall - 1,173 cf Embedded = 2,854 cf x 40.0% Voids
#2A	54.25'	1,115 cf	ACF R-Tank HD 0.5 x 484 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 11 Rows of 44 Chambers
		2,256 cf	Total Available Storage

Storage Group A created with Chamber Wizard

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Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 15.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 53.50' S= 0.0500 '/ Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Device 1	54.40'	12.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	54.70'	12.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	54.80'	12.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#5	Secondary	55.60'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=0.26 cfs @ 12.86 hrs HW=54.75' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 0.26 cfs of 0.37 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.22 cfs @ 2.66 fps)
 3=Orifice/Grate (Orifice Controls 0.03 cfs @ 0.70 fps)
 4=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.00' TW=0.00' (Dynamic Tailwater)

5=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond R10: R TANK 10

Inflow Area = 0.175 ac, 100.00% Impervious, Inflow Depth = 2.87" for 2-Year event
 Inflow = 0.42 cfs @ 12.05 hrs, Volume= 0.042 af
 Outflow = 0.35 cfs @ 12.22 hrs, Volume= 0.039 af, Atten= 18%, Lag= 10.0 min
 Primary = 0.35 cfs @ 12.22 hrs, Volume= 0.039 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 54.90' @ 12.22 hrs Surf.Area= 470 sf Storage= 281 cf

Plug-Flow detention time= 106.8 min calculated for 0.039 af (94% of inflow)

Center-of-Mass det. time= 74.2 min (831.5 - 757.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	329 cf	17.12'W x 27.46'L x 2.69'H Field A 1,266 cf Overall - 444 cf Embedded = 822 cf x 40.0% Voids
#2A	54.25'	422 cf	ACF R-Tank HD 1.0 x 100 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 10 Rows of 10 Chambers
		751 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

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Primary OutFlow Max=0.34 cfs @ 12.22 hrs HW=54.90' TW=54.69' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.34 cfs @ 1.73 fps)**Summary for Pond R11: R TANK 10**

Inflow Area = 0.159 ac, 100.00% Impervious, Inflow Depth = 2.85" for 2-Year event
 Inflow = 0.23 cfs @ 11.98 hrs, Volume= 0.038 af
 Outflow = 0.17 cfs @ 12.60 hrs, Volume= 0.034 af, Atten= 27%, Lag= 37.0 min
 Primary = 0.17 cfs @ 12.60 hrs, Volume= 0.034 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 54.90' @ 12.60 hrs Surf.Area= 1,185 sf Storage= 754 cf

Plug-Flow detention time= 249.0 min calculated for 0.034 af (90% of inflow)

Center-of-Mass det. time= 198.8 min (957.8 - 759.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	744 cf	30.25'W x 39.19'L x 2.69'H Field A 3,193 cf Overall - 1,333 cf Embedded = 1,859 cf x 40.0% Voids
#2A	54.25'	1,267 cf	ACF R-Tank HD 1.0 x 300 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 20 Rows of 15 Chambers
		2,010 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.16 cfs @ 12.60 hrs HW=54.90' TW=54.85' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.16 cfs @ 0.83 fps)**Summary for Pond R12: R TANK 10**

Inflow Area = 0.177 ac, 100.00% Impervious, Inflow Depth = 2.14" for 2-Year event
 Inflow = 0.07 cfs @ 11.62 hrs, Volume= 0.032 af
 Outflow = 0.08 cfs @ 13.22 hrs, Volume= 0.029 af, Atten= 0%, Lag= 96.0 min
 Primary = 0.08 cfs @ 13.22 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 54.85' @ 12.90 hrs Surf.Area= 760 sf Storage= 444 cf

Plug-Flow detention time= 196.6 min calculated for 0.029 af (92% of inflow)

Center-of-Mass det. time= 152.7 min (922.7 - 770.0)

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Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	498 cf	30.25'W x 25.11'L x 2.69'H Field A 2,046 cf Overall - 800 cf Embedded = 1,246 cf x 40.0% Voids
#2A	54.25'	760 cf	ACF R-Tank HD 1.0 x 180 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 20 Rows of 9 Chambers
		1,258 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.08 cfs @ 13.22 hrs HW=54.84' TW=54.83' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.08 cfs @ 0.42 fps)**Summary for Pond R2: R TANK 2**

Inflow Area = 1.205 ac, 86.65% Impervious, Inflow Depth > 1.94" for 2-Year event
 Inflow = 0.52 cfs @ 12.09 hrs, Volume= 0.195 af
 Outflow = 0.15 cfs @ 15.12 hrs, Volume= 0.184 af, Atten= 70%, Lag= 182.3 min
 Primary = 0.15 cfs @ 15.12 hrs, Volume= 0.184 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 54.80' @ 14.06 hrs Surf.Area= 0.045 ac Storage= 0.025 af

Plug-Flow detention time= 167.8 min calculated for 0.184 af (94% of inflow)

Center-of-Mass det. time= 97.0 min (1,309.6 - 1,212.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.026 af	18.44'W x 107.22'L x 2.04'H Field A 0.092 af Overall - 0.027 af Embedded = 0.066 af x 40.0% Voids
#2A	54.25'	0.026 af	ACF R-Tank HD 0.5 x 484 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 11 Rows of 44 Chambers
		0.052 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R2-OCS L= 55.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

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Primary OutFlow Max=0.15 cfs @ 15.12 hrs HW=54.79' TW=54.73' (Dynamic Tailwater)

↑1=R2-OCS (Outlet Controls 0.15 cfs @ 0.90 fps)

Summary for Pond R3: R TANK 3

Inflow Area = 0.377 ac, 98.08% Impervious, Inflow Depth > 2.54" for 2-Year event
 Inflow = 0.68 cfs @ 12.10 hrs, Volume= 0.080 af
 Outflow = 0.15 cfs @ 12.34 hrs, Volume= 0.065 af, Atten= 77%, Lag= 14.6 min
 Primary = 0.15 cfs @ 12.34 hrs, Volume= 0.065 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 54.78' @ 12.58 hrs Surf.Area= 0.061 ac Storage= 0.034 af

Plug-Flow detention time= 382.8 min calculated for 0.065 af (81% of inflow)

Center-of-Mass det. time= 258.8 min (1,133.6 - 874.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.033 af	36.81'W x 72.03'L x 2.04'H Field A 0.124 af Overall - 0.040 af Embedded = 0.084 af x 40.0% Voids
#2A	54.25'	0.038 af	ACF R-Tank HD 0.5 x 725 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 25 Rows of 29 Chambers
		0.072 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R3-R1 L= 33.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=0.15 cfs @ 12.34 hrs HW=54.75' TW=54.70' (Dynamic Tailwater)

↑1=R3-R1 (Outlet Controls 0.15 cfs @ 0.94 fps)

Summary for Pond R4: R TANK 4

Inflow Area = 0.080 ac, 95.65% Impervious, Inflow Depth = 2.76" for 2-Year event
 Inflow = 0.24 cfs @ 12.08 hrs, Volume= 0.018 af
 Outflow = 0.01 cfs @ 14.11 hrs, Volume= 0.012 af, Atten= 94%, Lag= 121.3 min
 Primary = 0.01 cfs @ 14.11 hrs, Volume= 0.012 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 54.75' @ 13.92 hrs Surf.Area= 0.028 ac Storage= 0.014 af

Plug-Flow detention time= 635.4 min calculated for 0.012 af (63% of inflow)

Center-of-Mass det. time= 534.3 min (1,301.1 - 766.8)

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Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.016 af	19.75'W x 62.65'L x 2.04'H Field A 0.058 af Overall - 0.017 af Embedded = 0.041 af x 40.0% Voids
#2A	54.25'	0.016 af	ACF R-Tank HD 0.5 x 300 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 12 Rows of 25 Chambers
		0.032 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.02 cfs @ 14.11 hrs HW=54.75' TW=54.74' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 0.02 cfs @ 0.10 fps)**Summary for Pond R5: R TANK 5**

Inflow Area = 1.041 ac, 85.64% Impervious, Inflow Depth > 1.99" for 2-Year event
 Inflow = 0.69 cfs @ 12.08 hrs, Volume= 0.173 af
 Outflow = 0.13 cfs @ 15.40 hrs, Volume= 0.157 af, Atten= 81%, Lag= 199.1 min
 Primary = 0.13 cfs @ 15.40 hrs, Volume= 0.157 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 54.83' @ 14.58 hrs Surf.Area= 0.065 ac Storage= 0.037 af

Plug-Flow detention time= 273.4 min calculated for 0.157 af (91% of inflow)

Center-of-Mass det. time= 168.4 min (1,319.0 - 1,150.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.037 af	18.44'W x 154.13'L x 2.04'H Field A 0.133 af Overall - 0.039 af Embedded = 0.094 af x 40.0% Voids
#2A	54.25'	0.037 af	ACF R-Tank HD 0.5 x 704 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 11 Rows of 64 Chambers
		0.075 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R7-R2 L= 9.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

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Primary OutFlow Max=0.13 cfs @ 15.40 hrs HW=54.82' TW=54.79' (Dynamic Tailwater)

↑1=R7-R2 (Inlet Controls 0.13 cfs @ 0.68 fps)

Summary for Pond R6: R TANK 6

Inflow Area = 0.369 ac, 96.54% Impervious, Inflow Depth > 2.51" for 2-Year event
 Inflow = 0.78 cfs @ 12.08 hrs, Volume= 0.077 af
 Outflow = 0.11 cfs @ 12.16 hrs, Volume= 0.061 af, Atten= 86%, Lag= 4.8 min
 Primary = 0.11 cfs @ 12.16 hrs, Volume= 0.061 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 54.85' @ 14.76 hrs Surf.Area= 0.067 ac Storage= 0.041 af

Plug-Flow detention time= 554.5 min calculated for 0.061 af (79% of inflow)

Center-of-Mass det. time= 401.8 min (1,299.2 - 897.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.037 af	25.00'W x 116.60'L x 2.04'H Field A 0.136 af Overall - 0.043 af Embedded = 0.094 af x 40.0% Voids
#2A	54.25'	0.041 af	ACF R-Tank HD 0.5 x 768 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 16 Rows of 48 Chambers
		0.078 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R8-R10 L= 33.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=0.10 cfs @ 12.16 hrs HW=54.63' TW=54.59' (Dynamic Tailwater)

↑1=R8-R10 (Outlet Controls 0.10 cfs @ 0.85 fps)

Summary for Pond R7: R TANK 7

Inflow Area = 0.114 ac, 95.96% Impervious, Inflow Depth = 2.76" for 2-Year event
 Inflow = 0.34 cfs @ 12.08 hrs, Volume= 0.026 af
 Outflow = 0.03 cfs @ 12.12 hrs, Volume= 0.019 af, Atten= 90%, Lag= 2.0 min
 Primary = 0.03 cfs @ 12.12 hrs, Volume= 0.019 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 54.85' @ 14.78 hrs Surf.Area= 0.031 ac Storage= 0.018 af

Plug-Flow detention time= 628.2 min calculated for 0.019 af (71% of inflow)

Center-of-Mass det. time= 538.0 min (1,304.9 - 766.8)

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Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.017 af	28.93'W x 46.22'L x 2.04'H Field A 0.063 af Overall - 0.019 af Embedded = 0.044 af x 40.0% Voids
#2A	54.25'	0.018 af	ACF R-Tank HD 0.5 x 342 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 19 Rows of 18 Chambers
		0.035 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R9-R8 L= 35.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=0.00 cfs @ 12.12 hrs HW=54.60' TW=54.60' (Dynamic Tailwater)↑**1=R9-R8** (Controls 0.00 cfs)**Summary for Pond R8: R TANK 8**

Inflow Area = 0.814 ac, 81.79% Impervious, Inflow Depth > 2.12" for 2-Year event
 Inflow = 1.22 cfs @ 12.09 hrs, Volume= 0.143 af
 Outflow = 0.10 cfs @ 15.51 hrs, Volume= 0.118 af, Atten= 92%, Lag= 205.3 min
 Primary = 0.10 cfs @ 15.51 hrs, Volume= 0.118 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 54.84' @ 14.72 hrs Surf.Area= 0.104 ac Storage= 0.062 af

Plug-Flow detention time= 477.7 min calculated for 0.118 af (82% of inflow)

Center-of-Mass det. time= 322.8 min (1,331.9 - 1,009.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.059 af	19.75'W x 229.20'L x 2.04'H Field A 0.212 af Overall - 0.064 af Embedded = 0.148 af x 40.0% Voids
#2A	54.25'	0.061 af	ACF R-Tank HD 0.5 x 1152 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 12 Rows of 96 Chambers
		0.120 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R10-R7 L= 9.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

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Primary OutFlow Max=0.10 cfs @ 15.51 hrs HW=54.84' TW=54.82' (Dynamic Tailwater)

↑1=R10-R7 (Inlet Controls 0.10 cfs @ 0.52 fps)

Summary for Pond R9: R TANK 9

Inflow Area = 1.087 ac, 64.49% Impervious, Inflow Depth = 2.20" for 2-Year event
 Inflow = 2.19 cfs @ 12.09 hrs, Volume= 0.199 af
 Outflow = 0.35 cfs @ 12.67 hrs, Volume= 0.179 af, Atten= 84%, Lag= 34.9 min
 Primary = 0.35 cfs @ 12.67 hrs, Volume= 0.179 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 54.85' @ 12.67 hrs Surf.Area= 6,095 sf Storage= 3,787 cf

Plug-Flow detention time= 242.5 min calculated for 0.179 af (90% of inflow)
 Center-of-Mass det. time= 184.2 min (1,028.1 - 843.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	718 cf	15.81'W x 76.72'L x 2.04'H Field A 2,471 cf Overall - 676 cf Embedded = 1,795 cf x 40.0% Voids
#2A	54.25'	642 cf	ACF R-Tank HD 0.5 x 279 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 9 Rows of 31 Chambers
#3B	54.00'	2,757 cf	61.74'W x 79.07'L x 2.69'H Field B 13,149 cf Overall - 6,257 cf Embedded = 6,892 cf x 40.0% Voids
#4B	54.25'	5,944 cf	ACF R-Tank HD 1.0 x 1408 Inside #3 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 44 Rows of 32 Chambers
		10,062 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.00' S= 0.0250 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	54.30'	10.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	54.70'	10.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	54.85'	10.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#5	Secondary	55.60'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

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Primary OutFlow Max=0.35 cfs @ 12.67 hrs HW=54.85' TW=0.00' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 0.35 cfs of 0.44 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.24 cfs @ 3.43 fps)
- ↑ **3=Orifice/Grate** (Orifice Controls 0.11 cfs @ 1.58 fps)
- ↑ **4=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.05 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.00' TW=0.00' (Dynamic Tailwater)

- ↑ **5=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

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Type III 24-hr 10-Year Rainfall=4.60"

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Summary for Subcatchment 1: SUBCAT 1

Runoff = 0.75 cfs @ 12.31 hrs, Volume= 0.082 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
13,344	77	Woods, Good, HSG D
* 2,917	98	ROAD
16,261	81	Weighted Average
13,344		82.06% Pervious Area
2,917		17.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
18.0	135	0.0593	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
4.0	60	0.0100	0.25		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
22.2	210	Total			

Summary for Subcatchment 2: SUBCAT 2

Runoff = 1.28 cfs @ 12.61 hrs, Volume= 0.190 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
38,835	77	Woods, Good, HSG D
* 2,917	98	ROAD
41,752	78	Weighted Average
38,835		93.01% Pervious Area
2,917		6.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.8	150	0.0400	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
2.1	64	0.0400	0.50		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
41.9	214	Total			

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Type III 24-hr 10-Year Rainfall=4.60"

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Summary for Subcatchment 3: SUBCAT 3

Runoff = 2.15 cfs @ 12.88 hrs, Volume= 0.397 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
81,695	77	Woods, Good, HSG D
* 5,574	98	ROAD
87,269	78	Weighted Average
81,695		93.61% Pervious Area
5,574		6.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.4	150	0.0530	0.12		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
41.6	540	0.0075	0.22		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
62.0	690	Total			

Summary for Subcatchment 4: SUBCAT 4

Runoff = 1.43 cfs @ 13.85 hrs, Volume= 0.448 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
* 6,629	98	road
91,843	77	Woods, Good, HSG D
98,472	78	Weighted Average
91,843		93.27% Pervious Area
6,629		6.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
54.2	135	0.0150	0.04		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
81.1	544	0.0020	0.11		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
135.5	694	Total			

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Type III 24-hr 10-Year Rainfall=4.60"

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Summary for Subcatchment 5: SUBCAT 5

Runoff = 2.95 cfs @ 12.44 hrs, Volume= 0.382 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
81,208	77	Woods, Good, HSG D
* 2,937	98	ROAD
84,145	78	Weighted Average
81,208		96.51% Pervious Area
2,937		3.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
20.2	135	0.0444	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
11.4	260	0.0230	0.38		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
31.8	410	Total			

Summary for Subcatchment 6: SUBCAT 6

Runoff = 0.58 cfs @ 12.14 hrs, Volume= 0.048 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
5,928	77	Woods, Good, HSG D
* 2,733	98	ROAD
8,661	84	Weighted Average
5,928		68.44% Pervious Area
2,733		31.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	95	0.1100	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"

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Type III 24-hr 10-Year Rainfall=4.60"

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Summary for Subcatchment 7: SUBCAT 7

Runoff = 0.19 cfs @ 12.42 hrs, Volume= 0.024 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
5,500	77	Woods, Good, HSG D
5,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	129	0.0625	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"

Summary for Subcatchment 8: SUBCAT 8

Runoff = 0.17 cfs @ 12.29 hrs, Volume= 0.018 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
4,022	77	Woods, Good, HSG D
4,022		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.4	65	0.0400	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"

Summary for Subcatchment 9: SUBCAT 9

Runoff = 0.19 cfs @ 12.08 hrs, Volume= 0.015 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
* 1,707	98	northwest parking lot left
151	80	>75% Grass cover, Good, HSG D
1,858	97	Weighted Average
151		8.13% Pervious Area
1,707		91.87% Impervious Area

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

Summary for Subcatchment 10A: SUBCAT 10A

Runoff = 0.31 cfs @ 12.08 hrs, Volume= 0.025 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
* 2,901	98	northwest parking lot right
82	80	>75% Grass cover, Good, HSG D
2,983	98	Weighted Average
82		2.75% Pervious Area
2,901		97.25% Impervious Area

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

Summary for Subcatchment 10B: SUBCAT 10B

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.021 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
* 2,473	98	northwest parking lot right
71	80	>75% Grass cover, Good, HSG D
2,544	97	Weighted Average
71		2.79% Pervious Area
2,473		97.21% Impervious Area

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

Summary for Subcatchment 11A: SUBCAT 11A

Runoff = 0.24 cfs @ 12.08 hrs, Volume= 0.019 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

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	Area (sf)	CN	Description
*	2,226	98	northeast parking lot left
	82	80	>75% Grass cover, Good, HSG D
	2,308	97	Weighted Average
	82		3.55% Pervious Area
	2,226		96.45% Impervious Area

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

Summary for Subcatchment 11B: SUBCAT 11B

Runoff = 0.30 cfs @ 12.08 hrs, Volume= 0.024 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	2,849	98	northeast parking lot left
	71	80	>75% Grass cover, Good, HSG D
	2,920	98	Weighted Average
	71		2.43% Pervious Area
	2,849		97.57% Impervious Area

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

Summary for Subcatchment 12: SUBCAT 12

Runoff = 0.36 cfs @ 12.08 hrs, Volume= 0.028 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	3,321	98	northeast parking lot right
	151	80	>75% Grass cover, Good, HSG D
	3,472	97	Weighted Average
	151		4.35% Pervious Area
	3,321		95.65% Impervious Area

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

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Summary for Subcatchment 13A: SUBCAT 13A

Runoff = 0.54 cfs @ 12.08 hrs, Volume= 0.043 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	4,911	98	central parking lot
	340	80	>75% Grass cover, Good, HSG D
	5,251	97	Weighted Average
	340		6.47% Pervious Area
	4,911		93.53% Impervious Area

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

Summary for Subcatchment 13B: SUBCAT 13B

Runoff = 1.02 cfs @ 12.08 hrs, Volume= 0.083 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	9,865	98	central parking lot
	62	80	>75% Grass cover, Good, HSG D
	9,927	98	Weighted Average
	62		0.62% Pervious Area
	9,865		99.38% Impervious Area

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

Summary for Subcatchment 13C: SUBCAT 13C

Runoff = 0.38 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	3,695	98	central parking lot
	34	80	>75% Grass cover, Good, HSG D
	3,729	98	Weighted Average
	34		0.91% Pervious Area
	3,695		99.09% Impervious Area

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

Summary for Subcatchment 14A: SUBCAT 14A

Runoff = 0.79 cfs @ 12.08 hrs, Volume= 0.064 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
* 7,641	98	roof
7,641		100.00% Impervious Area

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

Summary for Subcatchment 14B: 14B

Runoff = 0.72 cfs @ 12.08 hrs, Volume= 0.058 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
* 6,943	98	roof
6,943		100.00% Impervious Area

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

Summary for Subcatchment 14C: 14C

Runoff = 0.80 cfs @ 12.08 hrs, Volume= 0.064 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
* 7,724	98	roof
7,724		100.00% Impervious Area

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Type III 24-hr 10-Year Rainfall=4.60"

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

Summary for Subcatchment 14D: SUBCAT 14D

Runoff = 0.54 cfs @ 12.08 hrs, Volume= 0.043 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
* 5,204	98	roof
5,204		100.00% Impervious Area

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

Summary for Subcatchment 15: SUBCAT 15

Runoff = 1.62 cfs @ 12.09 hrs, Volume= 0.118 af, Depth= 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
* 9,300	98	playground
8,892	80	>75% Grass cover, Good, HSG D
18,192	89	Weighted Average
8,892		48.88% Pervious Area
9,300		51.12% Impervious Area

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

Summary for Subcatchment 16: SUBCAT 16

Runoff = 1.14 cfs @ 12.08 hrs, Volume= 0.090 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

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	Area (sf)	CN	Description
*	10,738	98	lower parking lot top
	355	80	>75% Grass cover, Good, HSG D
	11,093	97	Weighted Average
	355		3.20% Pervious Area
	10,738		96.80% Impervious Area

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

Summary for Subcatchment 17: SUBCAT 17

Runoff = 0.51 cfs @ 12.08 hrs, Volume= 0.040 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	4,769	98	lower parking lot right
	201	80	>75% Grass cover, Good, HSG D
	4,970	97	Weighted Average
	201		4.04% Pervious Area
	4,769		95.96% Impervious Area

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

Summary for Subcatchment 18: SUBCAT 18

Runoff = 0.70 cfs @ 12.09 hrs, Volume= 0.050 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	1,354	98	maintenance access east side of building
	7,919	80	>75% Grass cover, Good, HSG D
	9,273	83	Weighted Average
	7,919		85.40% Pervious Area
	1,354		14.60% Impervious Area

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

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Summary for Subcatchment 19: SUBCAT 19

Runoff = 1.43 cfs @ 12.09 hrs, Volume= 0.105 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	9,785	98	lower parking lot bottom
	5,675	77	Woods, Good, HSG D
	187	80	>75% Grass cover, Good, HSG D
	15,647	90	Weighted Average
	5,862		37.46% Pervious Area
	9,785		62.54% Impervious Area

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

Summary for Subcatchment 20: SUBCAT 20

Runoff = 0.32 cfs @ 12.72 hrs, Volume= 0.054 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	5,288	77	Woods, Good, HSG D
*	3,810	98	ROAD
	9,098	86	Weighted Average
	5,288		58.12% Pervious Area
	3,810		41.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		Sheet Flow,
					Woods: Dense underbrush n= 0.800 P2= 3.10"
1.5	32	0.0200	0.35		Shallow Concentrated Flow,
					Forest w/Heavy Litter Kv= 2.5 fps
54.0	182	Total			

Summary for Subcatchment 21: SUBCAT 21

Runoff = 0.12 cfs @ 12.08 hrs, Volume= 0.010 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

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	Area (sf)	CN	Description
*	1,190	98	road
	1,190		100.00% Impervious Area

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

Summary for Reach A: ANALYSIS POINTA

Inflow Area = 3.967 ac, 42.54% Impervious, Inflow Depth > 2.79" for 10-Year event
 Inflow = 1.93 cfs @ 13.71 hrs, Volume= 0.922 af
 Outflow = 1.93 cfs @ 13.71 hrs, Volume= 0.922 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach B: ANALYSIS PT B

Inflow Area = 0.958 ac, 6.99% Impervious, Inflow Depth = 2.38" for 10-Year event
 Inflow = 1.28 cfs @ 12.61 hrs, Volume= 0.190 af
 Outflow = 1.28 cfs @ 12.61 hrs, Volume= 0.190 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach C: ANALYSIS PT C

Inflow Area = 2.377 ac, 8.20% Impervious, Inflow Depth = 2.42" for 10-Year event
 Inflow = 2.39 cfs @ 12.75 hrs, Volume= 0.479 af
 Outflow = 2.39 cfs @ 12.75 hrs, Volume= 0.479 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach D: ANALYSIS PT D

Inflow Area = 1.932 ac, 3.49% Impervious, Inflow Depth = 2.38" for 10-Year event
 Inflow = 2.95 cfs @ 12.44 hrs, Volume= 0.382 af
 Outflow = 2.95 cfs @ 12.44 hrs, Volume= 0.382 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach E: ANALYSIS PT E

Inflow Area = 0.199 ac, 31.56% Impervious, Inflow Depth = 2.91" for 10-Year event
 Inflow = 0.58 cfs @ 12.14 hrs, Volume= 0.048 af
 Outflow = 0.58 cfs @ 12.14 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach F: ANALYSIS POINT F

Inflow Area = 0.236 ac, 48.60% Impervious, Inflow Depth = 3.24" for 10-Year event
 Inflow = 0.33 cfs @ 12.72 hrs, Volume= 0.064 af
 Outflow = 0.33 cfs @ 12.72 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach G: ANALYSIS POINT G

Inflow Area = 1.179 ac, 59.44% Impervious, Inflow Depth > 3.30" for 10-Year event
 Inflow = 0.80 cfs @ 12.35 hrs, Volume= 0.325 af
 Outflow = 0.80 cfs @ 12.35 hrs, Volume= 0.325 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach H: ANALYSIS POINT H

Inflow Area = 0.126 ac, 0.00% Impervious, Inflow Depth = 2.29" for 10-Year event
 Inflow = 0.19 cfs @ 12.42 hrs, Volume= 0.024 af
 Outflow = 0.19 cfs @ 12.42 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Pond FP1: FocalPoint 1

Inflow Area = 0.750 ac, 48.54% Impervious, Inflow Depth = 3.38" for 10-Year event
 Inflow = 2.86 cfs @ 12.09 hrs, Volume= 0.211 af
 Outflow = 2.08 cfs @ 12.04 hrs, Volume= 0.211 af, Atten= 27%, Lag= 0.0 min
 Primary = 2.08 cfs @ 12.04 hrs, Volume= 0.211 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 57.38' @ 12.16 hrs Surf.Area= 900 sf Storage= 257 cf

Plug-Flow detention time= 0.4 min calculated for 0.211 af (100% of inflow)

Center-of-Mass det. time= 0.4 min (792.5 - 792.1)

Volume	Invert	Avail.Storage	Storage Description
#1	55.95'	405 cf	12.00'W x 75.00'L x 2.25'H FocalPoint 2,025 cf Overall x 20.0% Voids
#2	58.20'	900 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		1,305 cf	Total Available Storage

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.20	900	0	0
59.20	900	900	900

Device	Routing	Invert	Outlet Devices
#1	Primary	55.95'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	58.95'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=2.08 cfs @ 12.04 hrs HW=56.12' TW=54.80' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 2.08 cfs)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=55.95' TW=54.00' (Dynamic Tailwater)↑**2=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond FP2: FocalPoint 2**

Inflow Area = 0.175 ac, 100.00% Impervious, Inflow Depth = 4.36" for 10-Year event
 Inflow = 0.79 cfs @ 12.08 hrs, Volume= 0.064 af
 Outflow = 0.42 cfs @ 12.00 hrs, Volume= 0.064 af, Atten= 46%, Lag= 0.0 min
 Primary = 0.42 cfs @ 12.00 hrs, Volume= 0.064 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 59.36' @ 12.21 hrs Surf.Area= 183 sf Storage= 167 cf

Plug-Flow detention time= 1.2 min calculated for 0.064 af (100% of inflow)

Center-of-Mass det. time= 1.2 min (750.7 - 749.4)

Volume	Invert	Avail.Storage	Storage Description
#1	56.75'	82 cf	10.00'W x 18.30'L x 2.25'H FocalPoint 412 cf Overall x 20.0% Voids
#2	59.00'	213 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		296 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	183	0	0
59.75	386	213	213

Device	Routing	Invert	Outlet Devices
#1	Primary	56.75'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	59.60'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.42 cfs @ 12.00 hrs HW=56.92' TW=54.84' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 0.42 cfs)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=56.75' TW=54.00' (Dynamic Tailwater)↑**2=Orifice/Grate** (Controls 0.00 cfs)

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Summary for Pond FP3: FocalPoint 3

Inflow Area = 0.159 ac, 100.00% Impervious, Inflow Depth = 4.36" for 10-Year event
 Inflow = 0.72 cfs @ 12.08 hrs, Volume= 0.058 af
 Outflow = 0.61 cfs @ 12.13 hrs, Volume= 0.058 af, Atten= 14%, Lag= 2.9 min
 Primary = 0.23 cfs @ 11.84 hrs, Volume= 0.053 af
 Secondary = 0.39 cfs @ 12.13 hrs, Volume= 0.005 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 59.67' @ 12.13 hrs Surf.Area= 98 sf Storage= 178 cf

Plug-Flow detention time= 2.1 min calculated for 0.058 af (100% of inflow)

Center-of-Mass det. time= 2.1 min (751.5 - 749.4)

Volume	Invert	Avail.Storage	Storage Description
#1	56.75'	44 cf	4.00'W x 24.50'L x 2.25'H FocalPoint 221 cf Overall x 20.0% Voids
#2	59.00'	159 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		203 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	98	0	0
59.75	325	159	159

Device	Routing	Invert	Outlet Devices
#1	Primary	56.75'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	59.40'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.23 cfs @ 11.84 hrs HW=56.90' TW=54.62' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 0.23 cfs)**Secondary OutFlow** Max=0.39 cfs @ 12.13 hrs HW=59.67' TW=54.96' (Dynamic Tailwater)↑**2=Orifice/Grate** (Orifice Controls 0.39 cfs @ 1.77 fps)**Summary for Pond FP4: FocalPoint 4**

Inflow Area = 0.177 ac, 100.00% Impervious, Inflow Depth = 4.36" for 10-Year event
 Inflow = 0.80 cfs @ 12.08 hrs, Volume= 0.064 af
 Outflow = 0.79 cfs @ 12.09 hrs, Volume= 0.064 af, Atten= 1%, Lag= 0.7 min
 Primary = 0.07 cfs @ 11.34 hrs, Volume= 0.044 af
 Secondary = 0.72 cfs @ 12.09 hrs, Volume= 0.020 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 59.67' @ 12.09 hrs Surf.Area= 32 sf Storage= 98 cf

Plug-Flow detention time= 2.5 min calculated for 0.064 af (100% of inflow)

Center-of-Mass det. time= 2.5 min (752.0 - 749.4)

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Volume	Invert	Avail.Storage	Storage Description
#1	56.50'	14 cf	4.00'W x 8.00'L x 2.25'H FocalPoint 72 cf Overall x 20.0% Voids
#2	58.75'	95 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		109 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.75	32	0	0
59.75	158	95	95

Device	Routing	Invert	Outlet Devices
#1	Primary	56.50'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	59.30'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.07 cfs @ 11.34 hrs HW=56.63' TW=54.50' (Dynamic Tailwater)
 ↑**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Secondary OutFlow Max=0.71 cfs @ 12.09 hrs HW=59.67' TW=54.89' (Dynamic Tailwater)
 ↑**2=Orifice/Grate** (Orifice Controls 0.71 cfs @ 2.08 fps)

Summary for Pond R1: R TANK 1

Inflow Area = 1.707 ac, 89.96% Impervious, Inflow Depth > 3.41" for 10-Year event
 Inflow = 0.85 cfs @ 12.09 hrs, Volume= 0.485 af
 Outflow = 0.53 cfs @ 12.83 hrs, Volume= 0.474 af, Atten= 38%, Lag= 44.3 min
 Primary = 0.53 cfs @ 12.83 hrs, Volume= 0.474 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 55.00' @ 12.83 hrs Surf.Area= 1,977 sf Storage= 1,398 cf

Plug-Flow detention time= 76.4 min calculated for 0.474 af (98% of inflow)
 Center-of-Mass det. time= 44.2 min (1,225.2 - 1,181.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	1,142 cf	18.44'W x 107.22'L x 2.04'H Field A 4,027 cf Overall - 1,173 cf Embedded = 2,854 cf x 40.0% Voids
#2A	54.25'	1,115 cf	ACF R-Tank HD 0.5 x 484 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 11 Rows of 44 Chambers
		2,256 cf	Total Available Storage

Storage Group A created with Chamber Wizard

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Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 15.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 53.50' S= 0.0500 '/ Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Device 1	54.40'	12.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	54.70'	12.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	54.80'	12.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#5	Secondary	55.60'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=0.53 cfs @ 12.83 hrs HW=55.00' TW=0.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 0.53 cfs @ 2.68 fps)
 2=Orifice/Grate (Passes < 0.30 cfs potential flow)
 3=Orifice/Grate (Passes < 0.20 cfs potential flow)
 4=Orifice/Grate (Passes < 0.16 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.00' TW=0.00' (Dynamic Tailwater)

5=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond R10: R TANK 10

Inflow Area = 0.175 ac, 100.00% Impervious, Inflow Depth = 4.36" for 10-Year event
 Inflow = 0.42 cfs @ 12.00 hrs, Volume= 0.064 af
 Outflow = 0.37 cfs @ 12.47 hrs, Volume= 0.061 af, Atten= 13%, Lag= 28.0 min
 Primary = 0.37 cfs @ 12.47 hrs, Volume= 0.061 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.30' @ 12.50 hrs Surf.Area= 470 sf Storage= 422 cf

Plug-Flow detention time= 96.0 min calculated for 0.061 af (96% of inflow)

Center-of-Mass det. time= 72.3 min (823.0 - 750.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	329 cf	17.12'W x 27.46'L x 2.69'H Field A 1,266 cf Overall - 444 cf Embedded = 822 cf x 40.0% Voids
#2A	54.25'	422 cf	ACF R-Tank HD 1.0 x 100 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 10 Rows of 10 Chambers
		751 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

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Primary OutFlow Max=0.36 cfs @ 12.47 hrs HW=55.28' TW=55.05' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.36 cfs @ 1.84 fps)**Summary for Pond R11: R TANK 10**

Inflow Area = 0.159 ac, 100.00% Impervious, Inflow Depth = 3.96" for 10-Year event
 Inflow = 0.23 cfs @ 11.84 hrs, Volume= 0.053 af
 Outflow = 0.15 cfs @ 12.73 hrs, Volume= 0.049 af, Atten= 34%, Lag= 53.5 min
 Primary = 0.15 cfs @ 12.73 hrs, Volume= 0.049 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.30' @ 12.73 hrs Surf.Area= 1,185 sf Storage= 1,147 cf

Plug-Flow detention time= 244.1 min calculated for 0.049 af (93% of inflow)

Center-of-Mass det. time= 203.0 min (956.6 - 753.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	744 cf	30.25'W x 39.19'L x 2.69'H Field A 3,193 cf Overall - 1,333 cf Embedded = 1,859 cf x 40.0% Voids
#2A	54.25'	1,267 cf	ACF R-Tank HD 1.0 x 300 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 20 Rows of 15 Chambers
		2,010 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.15 cfs @ 12.73 hrs HW=55.30' TW=55.26' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.15 cfs @ 0.77 fps)**Summary for Pond R12: R TANK 10**

Inflow Area = 0.177 ac, 100.00% Impervious, Inflow Depth = 2.98" for 10-Year event
 Inflow = 0.07 cfs @ 11.34 hrs, Volume= 0.044 af
 Outflow = 0.10 cfs @ 13.74 hrs, Volume= 0.042 af, Atten= 0%, Lag= 144.0 min
 Primary = 0.10 cfs @ 13.74 hrs, Volume= 0.042 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.18' @ 13.22 hrs Surf.Area= 760 sf Storage= 644 cf

Plug-Flow detention time= 184.4 min calculated for 0.042 af (94% of inflow)

Center-of-Mass det. time= 150.6 min (913.4 - 762.8)

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Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	498 cf	30.25'W x 25.11'L x 2.69'H Field A 2,046 cf Overall - 800 cf Embedded = 1,246 cf x 40.0% Voids
#2A	54.25'	760 cf	ACF R-Tank HD 1.0 x 180 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 20 Rows of 9 Chambers
		1,258 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.10 cfs @ 13.74 hrs HW=55.11' TW=55.09' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.10 cfs @ 0.53 fps)**Summary for Pond R2: R TANK 2**

Inflow Area = 1.205 ac, 86.65% Impervious, Inflow Depth > 3.39" for 10-Year event
 Inflow = 0.83 cfs @ 12.09 hrs, Volume= 0.340 af
 Outflow = 0.31 cfs @ 14.46 hrs, Volume= 0.329 af, Atten= 63%, Lag= 142.2 min
 Primary = 0.31 cfs @ 14.46 hrs, Volume= 0.329 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.19' @ 13.37 hrs Surf.Area= 0.045 ac Storage= 0.036 af

Plug-Flow detention time= 124.5 min calculated for 0.329 af (97% of inflow)

Center-of-Mass det. time= 79.5 min (1,265.6 - 1,186.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.026 af	18.44'W x 107.22'L x 2.04'H Field A 0.092 af Overall - 0.027 af Embedded = 0.066 af x 40.0% Voids
#2A	54.25'	0.026 af	ACF R-Tank HD 0.5 x 484 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 11 Rows of 44 Chambers
		0.052 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R2-OCS L= 55.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

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Primary OutFlow Max=0.31 cfs @ 14.46 hrs HW=55.16' TW=54.93' (Dynamic Tailwater)

↑1=R2-OCS (Outlet Controls 0.31 cfs @ 1.56 fps)

Summary for Pond R3: R TANK 3

Inflow Area = 0.377 ac, 98.08% Impervious, Inflow Depth > 4.03" for 10-Year event
 Inflow = 0.85 cfs @ 12.08 hrs, Volume= 0.126 af
 Outflow = 0.27 cfs @ 12.56 hrs, Volume= 0.111 af, Atten= 68%, Lag= 28.5 min
 Primary = 0.27 cfs @ 12.56 hrs, Volume= 0.111 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.11' @ 12.60 hrs Surf.Area= 0.061 ac Storage= 0.049 af

Plug-Flow detention time= 331.9 min calculated for 0.111 af (88% of inflow)

Center-of-Mass det. time= 235.5 min (1,104.0 - 868.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.033 af	36.81'W x 72.03'L x 2.04'H Field A 0.124 af Overall - 0.040 af Embedded = 0.084 af x 40.0% Voids
#2A	54.25'	0.038 af	ACF R-Tank HD 0.5 x 725 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 25 Rows of 29 Chambers
		0.072 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R3-R1 L= 33.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=0.27 cfs @ 12.56 hrs HW=55.10' TW=54.97' (Dynamic Tailwater)

↑1=R3-R1 (Outlet Controls 0.27 cfs @ 1.37 fps)

Summary for Pond R4: R TANK 4

Inflow Area = 0.080 ac, 95.65% Impervious, Inflow Depth = 4.25" for 10-Year event
 Inflow = 0.36 cfs @ 12.08 hrs, Volume= 0.028 af
 Outflow = 0.04 cfs @ 13.38 hrs, Volume= 0.021 af, Atten= 90%, Lag= 77.9 min
 Primary = 0.04 cfs @ 13.38 hrs, Volume= 0.021 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.03' @ 13.17 hrs Surf.Area= 0.028 ac Storage= 0.021 af

Plug-Flow detention time= 561.0 min calculated for 0.021 af (76% of inflow)

Center-of-Mass det. time= 477.1 min (1,234.7 - 757.5)

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Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.016 af	19.75'W x 62.65'L x 2.04'H Field A 0.058 af Overall - 0.017 af Embedded = 0.041 af x 40.0% Voids
#2A	54.25'	0.016 af	ACF R-Tank HD 0.5 x 300 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 12 Rows of 25 Chambers
		0.032 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.04 cfs @ 13.38 hrs HW=55.02' TW=55.02' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 0.04 cfs @ 0.20 fps)**Summary for Pond R5: R TANK 5**

Inflow Area = 1.041 ac, 85.64% Impervious, Inflow Depth > 3.44" for 10-Year event
 Inflow = 1.12 cfs @ 12.09 hrs, Volume= 0.298 af
 Outflow = 0.26 cfs @ 14.72 hrs, Volume= 0.282 af, Atten= 77%, Lag= 158.1 min
 Primary = 0.26 cfs @ 14.72 hrs, Volume= 0.282 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.31' @ 13.74 hrs Surf.Area= 0.065 ac Storage= 0.056 af

Plug-Flow detention time= 210.3 min calculated for 0.282 af (95% of inflow)

Center-of-Mass det. time= 141.6 min (1,273.8 - 1,132.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.037 af	18.44'W x 154.13'L x 2.04'H Field A 0.133 af Overall - 0.039 af Embedded = 0.094 af x 40.0% Voids
#2A	54.25'	0.037 af	ACF R-Tank HD 0.5 x 704 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 11 Rows of 64 Chambers
		0.075 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R7-R2 L= 9.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

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Primary OutFlow Max=0.26 cfs @ 14.72 hrs HW=55.28' TW=55.15' (Dynamic Tailwater)

↑1=R7-R2 (Inlet Controls 0.26 cfs @ 1.34 fps)

Summary for Pond R6: R TANK 6

Inflow Area = 0.369 ac, 96.54% Impervious, Inflow Depth > 4.00" for 10-Year event
 Inflow = 1.17 cfs @ 12.08 hrs, Volume= 0.123 af
 Outflow = 0.09 cfs @ 15.07 hrs, Volume= 0.106 af, Atten= 92%, Lag= 179.4 min
 Primary = 0.09 cfs @ 15.07 hrs, Volume= 0.106 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.39' @ 13.91 hrs Surf.Area= 0.067 ac Storage= 0.061 af

Plug-Flow detention time= 492.1 min calculated for 0.106 af (86% of inflow)

Center-of-Mass det. time= 375.1 min (1,270.4 - 895.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.037 af	25.00'W x 116.60'L x 2.04'H Field A 0.136 af Overall - 0.043 af Embedded = 0.094 af x 40.0% Voids
#2A	54.25'	0.041 af	ACF R-Tank HD 0.5 x 768 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 16 Rows of 48 Chambers
		0.078 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R8-R10 L= 33.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=0.10 cfs @ 15.07 hrs HW=55.35' TW=55.33' (Dynamic Tailwater)

↑1=R8-R10 (Outlet Controls 0.10 cfs @ 0.49 fps)

Summary for Pond R7: R TANK 7

Inflow Area = 0.114 ac, 95.96% Impervious, Inflow Depth = 4.25" for 10-Year event
 Inflow = 0.51 cfs @ 12.08 hrs, Volume= 0.040 af
 Outflow = 0.04 cfs @ 12.06 hrs, Volume= 0.033 af, Atten= 93%, Lag= 0.0 min
 Primary = 0.04 cfs @ 12.06 hrs, Volume= 0.033 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.39' @ 13.92 hrs Surf.Area= 0.031 ac Storage= 0.028 af

Plug-Flow detention time= 592.1 min calculated for 0.033 af (81% of inflow)

Center-of-Mass det. time= 517.8 min (1,275.4 - 757.5)

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Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.017 af	28.93'W x 46.22'L x 2.04'H Field A 0.063 af Overall - 0.019 af Embedded = 0.044 af x 40.0% Voids
#2A	54.25'	0.018 af	ACF R-Tank HD 0.5 x 342 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 19 Rows of 18 Chambers
		0.035 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R9-R8 L= 35.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=0.00 cfs @ 12.06 hrs HW=54.75' TW=54.76' (Dynamic Tailwater)↑**1=R9-R8** (Controls 0.00 cfs)**Summary for Pond R8: R TANK 8**

Inflow Area = 0.814 ac, 81.79% Impervious, Inflow Depth > 3.56" for 10-Year event
 Inflow = 1.87 cfs @ 12.08 hrs, Volume= 0.242 af
 Outflow = 0.20 cfs @ 14.82 hrs, Volume= 0.216 af, Atten= 89%, Lag= 164.4 min
 Primary = 0.20 cfs @ 14.82 hrs, Volume= 0.216 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.37' @ 13.87 hrs Surf.Area= 0.104 ac Storage= 0.092 af

Plug-Flow detention time= 392.4 min calculated for 0.216 af (89% of inflow)

Center-of-Mass det. time= 282.3 min (1,279.3 - 997.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.059 af	19.75'W x 229.20'L x 2.04'H Field A 0.212 af Overall - 0.064 af Embedded = 0.148 af x 40.0% Voids
#2A	54.25'	0.061 af	ACF R-Tank HD 0.5 x 1152 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 12 Rows of 96 Chambers
		0.120 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R10-R7 L= 9.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

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Primary OutFlow Max=0.20 cfs @ 14.82 hrs HW=55.34' TW=55.27' (Dynamic Tailwater)

↑1=R10-R7 (Inlet Controls 0.20 cfs @ 1.04 fps)

Summary for Pond R9: R TANK 9

Inflow Area = 1.087 ac, 64.49% Impervious, Inflow Depth = 3.62" for 10-Year event
 Inflow = 3.14 cfs @ 12.12 hrs, Volume= 0.327 af
 Outflow = 0.66 cfs @ 12.52 hrs, Volume= 0.307 af, Atten= 79%, Lag= 24.4 min
 Primary = 0.66 cfs @ 12.52 hrs, Volume= 0.307 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 55.28' @ 12.52 hrs Surf.Area= 6,095 sf Storage= 5,959 cf

Plug-Flow detention time= 201.0 min calculated for 0.307 af (94% of inflow)
 Center-of-Mass det. time= 161.6 min (988.9 - 827.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	718 cf	15.81'W x 76.72'L x 2.04'H Field A 2,471 cf Overall - 676 cf Embedded = 1,795 cf x 40.0% Voids
#2A	54.25'	642 cf	ACF R-Tank HD 0.5 x 279 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 9 Rows of 31 Chambers
#3B	54.00'	2,757 cf	61.74'W x 79.07'L x 2.69'H Field B 13,149 cf Overall - 6,257 cf Embedded = 6,892 cf x 40.0% Voids
#4B	54.25'	5,944 cf	ACF R-Tank HD 1.0 x 1408 Inside #3 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 44 Rows of 32 Chambers
		10,062 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.00' S= 0.0250 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	54.30'	10.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	54.70'	10.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	54.85'	10.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#5	Secondary	55.60'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

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Primary OutFlow Max=0.66 cfs @ 12.52 hrs HW=55.28' TW=0.00' (Dynamic Tailwater)

- ↑ 1=Culvert (Inlet Controls 0.66 cfs @ 3.36 fps)
- ↑ 2=Orifice/Grate (Passes < 0.32 cfs potential flow)
- ↑ 3=Orifice/Grate (Passes < 0.25 cfs potential flow)
- ↑ 4=Orifice/Grate (Passes < 0.21 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.00' TW=0.00' (Dynamic Tailwater)

- ↑ 5=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

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Summary for Subcatchment 1: SUBCAT 1

Runoff = 1.04 cfs @ 12.31 hrs, Volume= 0.115 af, Depth= 3.70"

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

Area (sf)	CN	Description
13,344	77	Woods, Good, HSG D
* 2,917	98	ROAD
16,261	81	Weighted Average
13,344		82.06% Pervious Area
2,917		17.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
18.0	135	0.0593	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
4.0	60	0.0100	0.25		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
22.2	210	Total			

Summary for Subcatchment 2: SUBCAT 2

Runoff = 1.84 cfs @ 12.57 hrs, Volume= 0.272 af, Depth= 3.40"

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

Area (sf)	CN	Description
38,835	77	Woods, Good, HSG D
* 2,917	98	ROAD
41,752	78	Weighted Average
38,835		93.01% Pervious Area
2,917		6.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.8	150	0.0400	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
2.1	64	0.0400	0.50		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
41.9	214	Total			

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Type III 24-hr 25-Year Rainfall=5.80"

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Summary for Subcatchment 3: SUBCAT 3

Runoff = 3.08 cfs @ 12.87 hrs, Volume= 0.568 af, Depth= 3.40"

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

Area (sf)	CN	Description
81,695	77	Woods, Good, HSG D
* 5,574	98	ROAD
87,269	78	Weighted Average
81,695		93.61% Pervious Area
5,574		6.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.4	150	0.0530	0.12		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
41.6	540	0.0075	0.22		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
62.0	690	Total			

Summary for Subcatchment 4: SUBCAT 4

Runoff = 2.06 cfs @ 13.71 hrs, Volume= 0.641 af, Depth= 3.40"

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

Area (sf)	CN	Description
* 6,629	98	road
91,843	77	Woods, Good, HSG D
98,472	78	Weighted Average
91,843		93.27% Pervious Area
6,629		6.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
54.2	135	0.0150	0.04		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"
81.1	544	0.0020	0.11		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
135.5	694	Total			

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Type III 24-hr 25-Year Rainfall=5.80"

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Summary for Subcatchment 5: SUBCAT 5

Runoff = 4.24 cfs @ 12.44 hrs, Volume= 0.548 af, Depth= 3.40"

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

Area (sf)	CN	Description
81,208	77	Woods, Good, HSG D
* 2,937	98	ROAD
84,145	78	Weighted Average
81,208		96.51% Pervious Area
2,937		3.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.34		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.10"
20.2	135	0.0444	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
11.4	260	0.0230	0.38		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
31.8	410	Total			

Summary for Subcatchment 6: SUBCAT 6

Runoff = 0.79 cfs @ 12.14 hrs, Volume= 0.066 af, Depth= 4.01"

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

Area (sf)	CN	Description
5,928	77	Woods, Good, HSG D
* 2,733	98	ROAD
8,661	84	Weighted Average
5,928		68.44% Pervious Area
2,733		31.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	95	0.1100	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"

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Type III 24-hr 25-Year Rainfall=5.80"

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Summary for Subcatchment 7: SUBCAT 7

Runoff = 0.28 cfs @ 12.42 hrs, Volume= 0.035 af, Depth= 3.31"

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

Area (sf)	CN	Description
5,500	77	Woods, Good, HSG D
5,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	129	0.0625	0.07		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"

Summary for Subcatchment 8: SUBCAT 8

Runoff = 0.24 cfs @ 12.28 hrs, Volume= 0.025 af, Depth= 3.31"

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

Area (sf)	CN	Description
4,022	77	Woods, Good, HSG D
4,022		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.4	65	0.0400	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.10"

Summary for Subcatchment 9: SUBCAT 9

Runoff = 0.24 cfs @ 12.08 hrs, Volume= 0.019 af, Depth= 5.44"

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

Area (sf)	CN	Description
* 1,707	98	northwest parking lot left
151	80	>75% Grass cover, Good, HSG D
1,858	97	Weighted Average
151		8.13% Pervious Area
1,707		91.87% Impervious Area

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Type III 24-hr 25-Year Rainfall=5.80"

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

Summary for Subcatchment 10A: SUBCAT 10A

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.032 af, Depth= 5.56"

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

Area (sf)	CN	Description
* 2,901	98	northwest parking lot right
82	80	>75% Grass cover, Good, HSG D
2,983	98	Weighted Average
82		2.75% Pervious Area
2,901		97.25% Impervious Area

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

Summary for Subcatchment 10B: SUBCAT 10B

Runoff = 0.33 cfs @ 12.08 hrs, Volume= 0.026 af, Depth= 5.44"

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

Area (sf)	CN	Description
* 2,473	98	northwest parking lot right
71	80	>75% Grass cover, Good, HSG D
2,544	97	Weighted Average
71		2.79% Pervious Area
2,473		97.21% Impervious Area

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

Summary for Subcatchment 11A: SUBCAT 11A

Runoff = 0.30 cfs @ 12.08 hrs, Volume= 0.024 af, Depth= 5.44"

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

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	Area (sf)	CN	Description
*	2,226	98	northeast parking lot left
	82	80	>75% Grass cover, Good, HSG D
	2,308	97	Weighted Average
	82		3.55% Pervious Area
	2,226		96.45% Impervious Area

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

Summary for Subcatchment 11B: SUBCAT 11B

Runoff = 0.38 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 5.56"

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

	Area (sf)	CN	Description
*	2,849	98	northeast parking lot left
	71	80	>75% Grass cover, Good, HSG D
	2,920	98	Weighted Average
	71		2.43% Pervious Area
	2,849		97.57% Impervious Area

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

Summary for Subcatchment 12: SUBCAT 12

Runoff = 0.45 cfs @ 12.08 hrs, Volume= 0.036 af, Depth= 5.44"

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

	Area (sf)	CN	Description
*	3,321	98	northeast parking lot right
	151	80	>75% Grass cover, Good, HSG D
	3,472	97	Weighted Average
	151		4.35% Pervious Area
	3,321		95.65% Impervious Area

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

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Type III 24-hr 25-Year Rainfall=5.80"

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Summary for Subcatchment 13A: SUBCAT 13A

Runoff = 0.68 cfs @ 12.08 hrs, Volume= 0.055 af, Depth= 5.44"

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

	Area (sf)	CN	Description
*	4,911	98	central parking lot
	340	80	>75% Grass cover, Good, HSG D
	5,251	97	Weighted Average
	340		6.47% Pervious Area
	4,911		93.53% Impervious Area

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

Summary for Subcatchment 13B: SUBCAT 13B

Runoff = 1.30 cfs @ 12.08 hrs, Volume= 0.106 af, Depth= 5.56"

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

	Area (sf)	CN	Description
*	9,865	98	central parking lot
	62	80	>75% Grass cover, Good, HSG D
	9,927	98	Weighted Average
	62		0.62% Pervious Area
	9,865		99.38% Impervious Area

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

Summary for Subcatchment 13C: SUBCAT 13C

Runoff = 0.49 cfs @ 12.08 hrs, Volume= 0.040 af, Depth= 5.56"

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

	Area (sf)	CN	Description
*	3,695	98	central parking lot
	34	80	>75% Grass cover, Good, HSG D
	3,729	98	Weighted Average
	34		0.91% Pervious Area
	3,695		99.09% Impervious Area

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Type III 24-hr 25-Year Rainfall=5.80"

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

Summary for Subcatchment 14A: SUBCAT 14A

Runoff = 1.00 cfs @ 12.08 hrs, Volume= 0.081 af, Depth= 5.56"

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

Area (sf)	CN	Description
* 7,641	98	roof
7,641		100.00% Impervious Area

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

Summary for Subcatchment 14B: 14B

Runoff = 0.91 cfs @ 12.08 hrs, Volume= 0.074 af, Depth= 5.56"

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

Area (sf)	CN	Description
* 6,943	98	roof
6,943		100.00% Impervious Area

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

Summary for Subcatchment 14C: 14C

Runoff = 1.01 cfs @ 12.08 hrs, Volume= 0.082 af, Depth= 5.56"

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

Area (sf)	CN	Description
* 7,724	98	roof
7,724		100.00% Impervious Area

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

Summary for Subcatchment 14D: SUBCAT 14D

Runoff = 0.68 cfs @ 12.08 hrs, Volume= 0.055 af, Depth= 5.56"

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

Area (sf)	CN	Description
* 5,204	98	roof
5,204		100.00% Impervious Area

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

Summary for Subcatchment 15: SUBCAT 15

Runoff = 2.14 cfs @ 12.08 hrs, Volume= 0.158 af, Depth= 4.54"

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

Area (sf)	CN	Description
* 9,300	98	playground
8,892	80	>75% Grass cover, Good, HSG D
18,192	89	Weighted Average
8,892		48.88% Pervious Area
9,300		51.12% Impervious Area

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

Summary for Subcatchment 16: SUBCAT 16

Runoff = 1.44 cfs @ 12.08 hrs, Volume= 0.116 af, Depth= 5.44"

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

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	Area (sf)	CN	Description
*	10,738	98	lower parking lot top
	355	80	>75% Grass cover, Good, HSG D
	11,093	97	Weighted Average
	355		3.20% Pervious Area
	10,738		96.80% Impervious Area

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

Summary for Subcatchment 17: SUBCAT 17

Runoff = 0.64 cfs @ 12.08 hrs, Volume= 0.052 af, Depth= 5.44"

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

	Area (sf)	CN	Description
*	4,769	98	lower parking lot right
	201	80	>75% Grass cover, Good, HSG D
	4,970	97	Weighted Average
	201		4.04% Pervious Area
	4,769		95.96% Impervious Area

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

Summary for Subcatchment 18: SUBCAT 18

Runoff = 0.97 cfs @ 12.09 hrs, Volume= 0.069 af, Depth= 3.91"

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

	Area (sf)	CN	Description
*	1,354	98	maintenance access east side of building
	7,919	80	>75% Grass cover, Good, HSG D
	9,273	83	Weighted Average
	7,919		85.40% Pervious Area
	1,354		14.60% Impervious Area

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

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Type III 24-hr 25-Year Rainfall=5.80"

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Summary for Subcatchment 19: SUBCAT 19

Runoff = 1.87 cfs @ 12.08 hrs, Volume= 0.139 af, Depth= 4.65"

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

	Area (sf)	CN	Description
*	9,785	98	lower parking lot bottom
	5,675	77	Woods, Good, HSG D
	187	80	>75% Grass cover, Good, HSG D
	15,647	90	Weighted Average
	5,862		37.46% Pervious Area
	9,785		62.54% Impervious Area

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

Summary for Subcatchment 20: SUBCAT 20

Runoff = 0.43 cfs @ 12.72 hrs, Volume= 0.073 af, Depth= 4.22"

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

	Area (sf)	CN	Description
	5,288	77	Woods, Good, HSG D
*	3,810	98	ROAD
	9,098	86	Weighted Average
	5,288		58.12% Pervious Area
	3,810		41.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		Sheet Flow,
					Woods: Dense underbrush n= 0.800 P2= 3.10"
1.5	32	0.0200	0.35		Shallow Concentrated Flow,
					Forest w/Heavy Litter Kv= 2.5 fps
54.0	182	Total			

Summary for Subcatchment 21: SUBCAT 21

Runoff = 0.16 cfs @ 12.08 hrs, Volume= 0.013 af, Depth= 5.56"

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

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	Area (sf)	CN	Description
*	1,190	98	road
	1,190		100.00% Impervious Area

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

Summary for Reach A: ANALYSIS POINTA

Inflow Area = 3.967 ac, 42.54% Impervious, Inflow Depth > 3.88" for 25-Year event
 Inflow = 2.73 cfs @ 13.70 hrs, Volume= 1.283 af
 Outflow = 2.73 cfs @ 13.70 hrs, Volume= 1.283 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach B: ANALYSIS PT B

Inflow Area = 0.958 ac, 6.99% Impervious, Inflow Depth = 3.40" for 25-Year event
 Inflow = 1.84 cfs @ 12.57 hrs, Volume= 0.272 af
 Outflow = 1.84 cfs @ 12.57 hrs, Volume= 0.272 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach C: ANALYSIS PT C

Inflow Area = 2.377 ac, 8.20% Impervious, Inflow Depth = 3.45" for 25-Year event
 Inflow = 3.43 cfs @ 12.75 hrs, Volume= 0.683 af
 Outflow = 3.43 cfs @ 12.75 hrs, Volume= 0.683 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach D: ANALYSIS PT D

Inflow Area = 1.932 ac, 3.49% Impervious, Inflow Depth = 3.40" for 25-Year event
 Inflow = 4.24 cfs @ 12.44 hrs, Volume= 0.548 af
 Outflow = 4.24 cfs @ 12.44 hrs, Volume= 0.548 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach E: ANALYSIS PT E

Inflow Area = 0.199 ac, 31.56% Impervious, Inflow Depth = 4.01" for 25-Year event
 Inflow = 0.79 cfs @ 12.14 hrs, Volume= 0.066 af
 Outflow = 0.79 cfs @ 12.14 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach F: ANALYSIS POINT F

Inflow Area = 0.236 ac, 48.60% Impervious, Inflow Depth = 4.37" for 25-Year event
 Inflow = 0.44 cfs @ 12.72 hrs, Volume= 0.086 af
 Outflow = 0.44 cfs @ 12.72 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach G: ANALYSIS POINT G

Inflow Area = 1.179 ac, 59.44% Impervious, Inflow Depth > 4.45" for 25-Year event
 Inflow = 1.33 cfs @ 12.50 hrs, Volume= 0.437 af
 Outflow = 1.33 cfs @ 12.50 hrs, Volume= 0.437 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Reach H: ANALYSIS POINT H

Inflow Area = 0.126 ac, 0.00% Impervious, Inflow Depth = 3.31" for 25-Year event
 Inflow = 0.28 cfs @ 12.42 hrs, Volume= 0.035 af
 Outflow = 0.28 cfs @ 12.42 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Pond FP1: FocalPoint 1

Inflow Area = 0.750 ac, 48.54% Impervious, Inflow Depth = 4.52" for 25-Year event
 Inflow = 3.78 cfs @ 12.09 hrs, Volume= 0.283 af
 Outflow = 2.08 cfs @ 12.01 hrs, Volume= 0.283 af, Atten= 45%, Lag= 0.0 min
 Primary = 2.08 cfs @ 12.01 hrs, Volume= 0.283 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 58.59' @ 12.21 hrs Surf.Area= 900 sf Storage= 759 cf

Plug-Flow detention time= 1.2 min calculated for 0.283 af (100% of inflow)

Center-of-Mass det. time= 1.2 min (786.5 - 785.2)

Volume	Invert	Avail.Storage	Storage Description
#1	55.95'	405 cf	12.00'W x 75.00'L x 2.25'H FocalPoint 2,025 cf Overall x 20.0% Voids
#2	58.20'	900 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		1,305 cf	Total Available Storage

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.20	900	0	0
59.20	900	900	900

Device	Routing	Invert	Outlet Devices
#1	Primary	55.95'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	58.95'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=2.08 cfs @ 12.01 hrs HW=56.15' TW=54.93' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 2.08 cfs)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=55.95' TW=54.00' (Dynamic Tailwater)↑**2=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond FP2: FocalPoint 2**

Inflow Area = 0.175 ac, 100.00% Impervious, Inflow Depth = 5.56" for 25-Year event
 Inflow = 1.00 cfs @ 12.08 hrs, Volume= 0.081 af
 Outflow = 0.53 cfs @ 12.21 hrs, Volume= 0.081 af, Atten= 47%, Lag= 7.5 min
 Primary = 0.42 cfs @ 11.96 hrs, Volume= 0.080 af
 Secondary = 0.11 cfs @ 12.21 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 59.74' @ 12.21 hrs Surf.Area= 183 sf Storage= 292 cf

Plug-Flow detention time= 2.3 min calculated for 0.081 af (100% of inflow)

Center-of-Mass det. time= 2.3 min (747.9 - 745.7)

Volume	Invert	Avail.Storage	Storage Description
#1	56.75'	82 cf	10.00'W x 18.30'L x 2.25'H FocalPoint 412 cf Overall x 20.0% Voids
#2	59.00'	213 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		296 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	183	0	0
59.75	386	213	213

Device	Routing	Invert	Outlet Devices
#1	Primary	56.75'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	59.60'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.42 cfs @ 11.96 hrs HW=56.92' TW=54.94' (Dynamic Tailwater)↑**1=Exfiltration** (Exfiltration Controls 0.42 cfs)**Secondary OutFlow** Max=0.11 cfs @ 12.21 hrs HW=59.74' TW=55.09' (Dynamic Tailwater)↑**2=Orifice/Grate** (Orifice Controls 0.11 cfs @ 1.28 fps)

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Summary for Pond FP3: FocalPoint 3

Inflow Area = 0.159 ac, 100.00% Impervious, Inflow Depth = 5.56" for 25-Year event
 Inflow = 0.91 cfs @ 12.08 hrs, Volume= 0.074 af
 Outflow = 0.85 cfs @ 12.11 hrs, Volume= 0.074 af, Atten= 6%, Lag= 1.8 min
 Primary = 0.23 cfs @ 11.76 hrs, Volume= 0.063 af
 Secondary = 0.62 cfs @ 12.11 hrs, Volume= 0.011 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 59.75' @ 12.11 hrs Surf.Area= 98 sf Storage= 202 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 2.1 min (747.8 - 745.7)

Volume	Invert	Avail.Storage	Storage Description
#1	56.75'	44 cf	4.00'W x 24.50'L x 2.25'H FocalPoint 221 cf Overall x 20.0% Voids
#2	59.00'	159 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		203 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	98	0	0
59.75	325	159	159

Device	Routing	Invert	Outlet Devices
#1	Primary	56.75'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	59.40'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.23 cfs @ 11.76 hrs HW=56.89' TW=54.69' (Dynamic Tailwater)↑ **1=Exfiltration** (Exfiltration Controls 0.23 cfs)**Secondary OutFlow** Max=0.62 cfs @ 12.11 hrs HW=59.75' TW=55.13' (Dynamic Tailwater)↑ **2=Orifice/Grate** (Orifice Controls 0.62 cfs @ 2.01 fps)**Summary for Pond FP4: FocalPoint 4**

Inflow Area = 0.177 ac, 100.00% Impervious, Inflow Depth = 5.56" for 25-Year event
 Inflow = 1.01 cfs @ 12.08 hrs, Volume= 0.082 af
 Outflow = 1.00 cfs @ 12.09 hrs, Volume= 0.082 af, Atten= 1%, Lag= 0.6 min
 Primary = 0.07 cfs @ 11.11 hrs, Volume= 0.053 af
 Secondary = 0.93 cfs @ 12.09 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 59.73' @ 12.09 hrs Surf.Area= 32 sf Storage= 106 cf

Plug-Flow detention time= 2.7 min calculated for 0.082 af (100% of inflow)

Center-of-Mass det. time= 2.7 min (748.4 - 745.7)

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Volume	Invert	Avail.Storage	Storage Description
#1	56.50'	14 cf	4.00'W x 8.00'L x 2.25'H FocalPoint 72 cf Overall x 20.0% Voids
#2	58.75'	95 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		109 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.75	32	0	0
59.75	158	95	95

Device	Routing	Invert	Outlet Devices
#1	Primary	56.50'	100.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	59.30'	18.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.07 cfs @ 11.11 hrs HW=56.63' TW=54.54' (Dynamic Tailwater)
 ↑1=Exfiltration (Exfiltration Controls 0.07 cfs)

Secondary OutFlow Max=0.92 cfs @ 12.09 hrs HW=59.73' TW=55.09' (Dynamic Tailwater)
 ↑2=Orifice/Grate (Orifice Controls 0.92 cfs @ 2.23 fps)

Summary for Pond R1: R TANK 1

Inflow Area = 1.707 ac, 89.96% Impervious, Inflow Depth > 4.59" for 25-Year event
 Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.653 af
 Outflow = 0.70 cfs @ 12.86 hrs, Volume= 0.642 af, Atten= 35%, Lag= 46.4 min
 Primary = 0.70 cfs @ 12.86 hrs, Volume= 0.642 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 55.37' @ 12.86 hrs Surf.Area= 1,977 sf Storage= 1,728 cf

Plug-Flow detention time= 65.8 min calculated for 0.641 af (98% of inflow)
 Center-of-Mass det. time= 40.9 min (1,212.1 - 1,171.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	1,142 cf	18.44'W x 107.22'L x 2.04'H Field A 4,027 cf Overall - 1,173 cf Embedded = 2,854 cf x 40.0% Voids
#2A	54.25'	1,115 cf	ACF R-Tank HD 0.5 x 484 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 11 Rows of 44 Chambers
		2,256 cf	Total Available Storage

Storage Group A created with Chamber Wizard

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Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 15.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 53.50' S= 0.0500 '/ Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Device 1	54.40'	12.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	54.70'	12.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	54.80'	12.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#5	Secondary	55.60'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=0.70 cfs @ 12.86 hrs HW=55.37' TW=0.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 0.70 cfs @ 3.55 fps)
 2=Orifice/Grate (Passes < 0.39 cfs potential flow)
 3=Orifice/Grate (Passes < 0.32 cfs potential flow)
 4=Orifice/Grate (Passes < 0.29 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.00' TW=0.00' (Dynamic Tailwater)

5=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond R10: R TANK 10

Inflow Area = 0.175 ac, 100.00% Impervious, Inflow Depth = 5.48" for 25-Year event
 Inflow = 0.42 cfs @ 11.96 hrs, Volume= 0.080 af
 Outflow = 0.38 cfs @ 12.67 hrs, Volume= 0.078 af, Atten= 11%, Lag= 42.4 min
 Primary = 0.38 cfs @ 12.67 hrs, Volume= 0.078 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.76' @ 12.67 hrs Surf.Area= 470 sf Storage= 575 cf

Plug-Flow detention time= 95.1 min calculated for 0.078 af (97% of inflow)

Center-of-Mass det. time= 75.9 min (824.0 - 748.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	329 cf	17.12'W x 27.46'L x 2.69'H Field A 1,266 cf Overall - 444 cf Embedded = 822 cf x 40.0% Voids
#2A	54.25'	422 cf	ACF R-Tank HD 1.0 x 100 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 10 Rows of 10 Chambers
		751 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

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Primary OutFlow Max=0.37 cfs @ 12.67 hrs HW=55.76' TW=55.51' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.37 cfs @ 1.89 fps)**Summary for Pond R11: R TANK 10**

Inflow Area = 0.159 ac, 100.00% Impervious, Inflow Depth = 4.76" for 25-Year event
 Inflow = 0.23 cfs @ 11.76 hrs, Volume= 0.063 af
 Outflow = 0.13 cfs @ 13.31 hrs, Volume= 0.059 af, Atten= 43%, Lag= 93.3 min
 Primary = 0.13 cfs @ 13.31 hrs, Volume= 0.059 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.58' @ 12.96 hrs Surf.Area= 1,185 sf Storage= 1,424 cf

Plug-Flow detention time= 249.3 min calculated for 0.059 af (94% of inflow)

Center-of-Mass det. time= 213.2 min (963.9 - 750.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	744 cf	30.25'W x 39.19'L x 2.69'H Field A 3,193 cf Overall - 1,333 cf Embedded = 1,859 cf x 40.0% Voids
#2A	54.25'	1,267 cf	ACF R-Tank HD 1.0 x 300 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 20 Rows of 15 Chambers
		2,010 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.14 cfs @ 13.31 hrs HW=55.51' TW=55.48' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.14 cfs @ 0.69 fps)**Summary for Pond R12: R TANK 10**

Inflow Area = 0.177 ac, 100.00% Impervious, Inflow Depth = 3.59" for 25-Year event
 Inflow = 0.07 cfs @ 11.11 hrs, Volume= 0.053 af
 Outflow = 0.11 cfs @ 14.17 hrs, Volume= 0.051 af, Atten= 0%, Lag= 183.9 min
 Primary = 0.11 cfs @ 14.17 hrs, Volume= 0.051 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.44' @ 13.53 hrs Surf.Area= 760 sf Storage= 799 cf

Plug-Flow detention time= 183.5 min calculated for 0.051 af (95% of inflow)

Center-of-Mass det. time= 154.5 min (913.7 - 759.2)

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Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	498 cf	30.25'W x 25.11'L x 2.69'H Field A 2,046 cf Overall - 800 cf Embedded = 1,246 cf x 40.0% Voids
#2A	54.25'	760 cf	ACF R-Tank HD 1.0 x 180 Inside #1 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 20 Rows of 9 Chambers
		1,258 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.11 cfs @ 14.17 hrs HW=55.33' TW=55.30' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.11 cfs @ 0.57 fps)**Summary for Pond R2: R TANK 2**

Inflow Area = 1.205 ac, 86.65% Impervious, Inflow Depth > 4.56" for 25-Year event
 Inflow = 1.07 cfs @ 12.08 hrs, Volume= 0.458 af
 Outflow = 0.41 cfs @ 14.89 hrs, Volume= 0.446 af, Atten= 62%, Lag= 168.5 min
 Primary = 0.41 cfs @ 14.89 hrs, Volume= 0.446 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.70' @ 13.23 hrs Surf.Area= 0.045 ac Storage= 0.046 af

Plug-Flow detention time= 108.9 min calculated for 0.446 af (98% of inflow)

Center-of-Mass det. time= 73.8 min (1,250.7 - 1,176.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.026 af	18.44'W x 107.22'L x 2.04'H Field A 0.092 af Overall - 0.027 af Embedded = 0.066 af x 40.0% Voids
#2A	54.25'	0.026 af	ACF R-Tank HD 0.5 x 484 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 11 Rows of 44 Chambers
		0.052 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R2-OCS L= 55.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

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Primary OutFlow Max=0.41 cfs @ 14.89 hrs HW=55.60' TW=55.17' (Dynamic Tailwater)

↑1=R2-OCS (Outlet Controls 0.41 cfs @ 2.09 fps)

Summary for Pond R3: R TANK 3

Inflow Area = 0.377 ac, 98.08% Impervious, Inflow Depth > 5.22" for 25-Year event
 Inflow = 1.00 cfs @ 12.08 hrs, Volume= 0.164 af
 Outflow = 0.31 cfs @ 12.70 hrs, Volume= 0.149 af, Atten= 69%, Lag= 37.1 min
 Primary = 0.31 cfs @ 12.70 hrs, Volume= 0.149 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.52' @ 12.74 hrs Surf.Area= 0.061 ac Storage= 0.059 af

Plug-Flow detention time= 309.1 min calculated for 0.149 af (91% of inflow)

Center-of-Mass det. time= 227.8 min (1,095.5 - 867.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.033 af	36.81'W x 72.03'L x 2.04'H Field A 0.124 af Overall - 0.040 af Embedded = 0.084 af x 40.0% Voids
#2A	54.25'	0.038 af	ACF R-Tank HD 0.5 x 725 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 25 Rows of 29 Chambers
		0.072 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R3-R1 L= 33.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=0.31 cfs @ 12.70 hrs HW=55.52' TW=55.35' (Dynamic Tailwater)

↑1=R3-R1 (Outlet Controls 0.31 cfs @ 1.56 fps)

Summary for Pond R4: R TANK 4

Inflow Area = 0.080 ac, 95.65% Impervious, Inflow Depth = 5.44" for 25-Year event
 Inflow = 0.45 cfs @ 12.08 hrs, Volume= 0.036 af
 Outflow = 0.05 cfs @ 13.09 hrs, Volume= 0.029 af, Atten= 88%, Lag= 60.4 min
 Primary = 0.05 cfs @ 13.09 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.49' @ 12.95 hrs Surf.Area= 0.028 ac Storage= 0.026 af

Plug-Flow detention time= 537.3 min calculated for 0.029 af (81% of inflow)

Center-of-Mass det. time= 462.8 min (1,215.6 - 752.8)

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Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.016 af	19.75'W x 62.65'L x 2.04'H Field A 0.058 af Overall - 0.017 af Embedded = 0.041 af x 40.0% Voids
#2A	54.25'	0.016 af	ACF R-Tank HD 0.5 x 300 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 12 Rows of 25 Chambers
		0.032 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.06 cfs @ 13.09 hrs HW=55.47' TW=55.46' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 0.06 cfs @ 0.31 fps)**Summary for Pond R5: R TANK 5**

Inflow Area = 1.041 ac, 85.64% Impervious, Inflow Depth > 4.61" for 25-Year event
 Inflow = 1.46 cfs @ 12.10 hrs, Volume= 0.400 af
 Outflow = 0.35 cfs @ 15.23 hrs, Volume= 0.384 af, Atten= 76%, Lag= 188.0 min
 Primary = 0.35 cfs @ 15.23 hrs, Volume= 0.384 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 55.89' @ 13.65 hrs Surf.Area= 0.065 ac Storage= 0.071 af

Plug-Flow detention time= 187.6 min calculated for 0.384 af (96% of inflow)

Center-of-Mass det. time= 133.0 min (1,258.8 - 1,125.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.037 af	18.44'W x 154.13'L x 2.04'H Field A 0.133 af Overall - 0.039 af Embedded = 0.094 af x 40.0% Voids
#2A	54.25'	0.037 af	ACF R-Tank HD 0.5 x 704 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 11 Rows of 64 Chambers
		0.075 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R7-R2 L= 9.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

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Primary OutFlow Max=0.35 cfs @ 15.23 hrs HW=55.79' TW=55.56' (Dynamic Tailwater)

↑1=R7-R2 (Inlet Controls 0.35 cfs @ 1.80 fps)

Summary for Pond R6: R TANK 6

Inflow Area = 0.369 ac, 96.54% Impervious, Inflow Depth > 5.19" for 25-Year event
 Inflow = 1.47 cfs @ 12.08 hrs, Volume= 0.159 af
 Outflow = 0.13 cfs @ 15.70 hrs, Volume= 0.142 af, Atten= 91%, Lag= 217.0 min
 Primary = 0.13 cfs @ 15.70 hrs, Volume= 0.142 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 56.03' @ 13.88 hrs Surf.Area= 0.067 ac Storage= 0.078 af

Plug-Flow detention time= 466.9 min calculated for 0.142 af (89% of inflow)

Center-of-Mass det. time= 367.0 min (1,261.3 - 894.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.037 af	25.00'W x 116.60'L x 2.04'H Field A 0.136 af Overall - 0.043 af Embedded = 0.094 af x 40.0% Voids
#2A	54.25'	0.041 af	ACF R-Tank HD 0.5 x 768 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 16 Rows of 48 Chambers
		0.078 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R8-R10 L= 33.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=0.13 cfs @ 15.70 hrs HW=55.89' TW=55.86' (Dynamic Tailwater)

↑1=R8-R10 (Outlet Controls 0.13 cfs @ 0.66 fps)

Summary for Pond R7: R TANK 7

Inflow Area = 0.114 ac, 95.96% Impervious, Inflow Depth = 5.44" for 25-Year event
 Inflow = 0.64 cfs @ 12.08 hrs, Volume= 0.052 af
 Outflow = 0.04 cfs @ 15.88 hrs, Volume= 0.044 af, Atten= 94%, Lag= 228.0 min
 Primary = 0.04 cfs @ 15.88 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 56.03' @ 13.90 hrs Surf.Area= 0.031 ac Storage= 0.035 af

Plug-Flow detention time= 579.1 min calculated for 0.044 af (85% of inflow)

Center-of-Mass det. time= 513.8 min (1,266.6 - 752.8)

POST-Development Conditions - 01-29-19

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Type III 24-hr 25-Year Rainfall=5.80"

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Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.017 af	28.93'W x 46.22'L x 2.04'H Field A 0.063 af Overall - 0.019 af Embedded = 0.044 af x 40.0% Voids
#2A	54.25'	0.018 af	ACF R-Tank HD 0.5 x 342 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 19 Rows of 18 Chambers
		0.035 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R9-R8 L= 35.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=0.05 cfs @ 15.88 hrs HW=55.87' TW=55.87' (Dynamic Tailwater)↑**1=R9-R8** (Outlet Controls 0.05 cfs @ 0.24 fps)**Summary for Pond R8: R TANK 8**

Inflow Area = 0.814 ac, 81.79% Impervious, Inflow Depth > 4.74" for 25-Year event
 Inflow = 2.42 cfs @ 12.08 hrs, Volume= 0.321 af
 Outflow = 0.27 cfs @ 15.36 hrs, Volume= 0.295 af, Atten= 89%, Lag= 196.7 min
 Primary = 0.27 cfs @ 15.36 hrs, Volume= 0.295 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 56.01' @ 13.83 hrs Surf.Area= 0.104 ac Storage= 0.119 af

Plug-Flow detention time= 361.3 min calculated for 0.295 af (92% of inflow)

Center-of-Mass det. time= 270.6 min (1,262.0 - 991.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	0.059 af	19.75'W x 229.20'L x 2.04'H Field A 0.212 af Overall - 0.064 af Embedded = 0.148 af x 40.0% Voids
#2A	54.25'	0.061 af	ACF R-Tank HD 0.5 x 1152 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 12 Rows of 96 Chambers
		0.120 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round R10-R7 L= 9.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.25' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

POST-Development Conditions - 01-29-19

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Type III 24-hr 25-Year Rainfall=5.80"

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Primary OutFlow Max=0.27 cfs @ 15.36 hrs HW=55.91' TW=55.77' (Dynamic Tailwater)

↑1=R10-R7 (Inlet Controls 0.27 cfs @ 1.38 fps)

Summary for Pond R9: R TANK 9

Inflow Area = 1.087 ac, 64.49% Impervious, Inflow Depth = 4.77" for 25-Year event
 Inflow = 3.62 cfs @ 12.10 hrs, Volume= 0.432 af
 Outflow = 1.17 cfs @ 12.50 hrs, Volume= 0.412 af, Atten= 68%, Lag= 24.1 min
 Primary = 0.81 cfs @ 12.50 hrs, Volume= 0.407 af
 Secondary = 0.35 cfs @ 12.50 hrs, Volume= 0.005 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 55.69' @ 12.50 hrs Surf.Area= 6,095 sf Storage= 7,927 cf

Plug-Flow detention time= 188.5 min calculated for 0.412 af (95% of inflow)
 Center-of-Mass det. time= 156.9 min (977.3 - 820.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	54.00'	718 cf	15.81'W x 76.72'L x 2.04'H Field A 2,471 cf Overall - 676 cf Embedded = 1,795 cf x 40.0% Voids
#2A	54.25'	642 cf	ACF R-Tank HD 0.5 x 279 Inside #1 Inside= 15.7"W x 9.4"H => 0.98 sf x 2.35'L = 2.3 cf Outside= 15.7"W x 9.4"H => 1.03 sf x 2.35'L = 2.4 cf 9 Rows of 31 Chambers
#3B	54.00'	2,757 cf	61.74'W x 79.07'L x 2.69'H Field B 13,149 cf Overall - 6,257 cf Embedded = 6,892 cf x 40.0% Voids
#4B	54.25'	5,944 cf	ACF R-Tank HD 1.0 x 1408 Inside #3 Inside= 15.7"W x 17.3"H => 1.80 sf x 2.35'L = 4.2 cf Outside= 15.7"W x 17.3"H => 1.89 sf x 2.35'L = 4.4 cf 44 Rows of 32 Chambers
		10,062 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	54.25'	6.0" Round Culvert L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.25' / 54.00' S= 0.0250 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	54.30'	10.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	54.70'	10.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	54.85'	10.0" W x 1.0" H Vert. Orifice/Grate C= 0.600
#5	Secondary	55.60'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

POST-Development Conditions - 01-29-19

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Type III 24-hr 25-Year Rainfall=5.80"

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Primary OutFlow Max=0.81 cfs @ 12.50 hrs HW=55.69' TW=0.00' (Dynamic Tailwater)

- ↑ **1=Culvert** (Inlet Controls 0.81 cfs @ 4.15 fps)
- ↑ **2=Orifice/Grate** (Passes < 0.39 cfs potential flow)
- ↑ **3=Orifice/Grate** (Passes < 0.33 cfs potential flow)
- ↑ **4=Orifice/Grate** (Passes < 0.30 cfs potential flow)

Secondary OutFlow Max=0.35 cfs @ 12.50 hrs HW=55.69' TW=0.00' (Dynamic Tailwater)

- ↑ **5=Sharp-Crested Rectangular Weir** (Weir Controls 0.35 cfs @ 0.98 fps)

Maine Behavioral Healthcare Stormwater Management Plan

LIST OF APPENDICES:

- Appendix A: Stormwater Treatment Calculations
- Appendix B: Stormwater BMP Inspection and Maintenance Requirements
- Appendix C: Pre-Development Calculations
- Appendix D: Post-Development Calculations

SITE DESCRIPTION:

The site (refer to Site Location Map) is an approximately 10.9-acre lot located on the west side of Hutchins Drive and adjacent to the Spring Harbor Hospital. The parcel is bisected by Andover Road. Both the Spring Harbor Hospital parcel and Andover Road were part of a previous development. The land north of Andover Road is primarily woods with heavy underbrush in good condition and the land south of Andover Road is primarily woods with light underbrush in good condition. The topography of the undeveloped site has several higher upland areas separated by pockets of wetlands. The native soil in this location are Hydrologic Soil Groups (HSG) C and D. Stormwater runoff from the site flows into the on-site wetlands and then off-site in 8 different locations. The site is in Zone X of FEMA's Flood Insurance Rate Map (FIRM), indicating that it is outside of the 500-year floodplain.

DEVELOPMENT DESCRIPTION:

Maine Behavioral Healthcare proposes to construct an approximately 32,000 sf, 1 story building as a Center for Autism and Developmental Delays. The site will have several parking lots with approximately 119 spaces (including 6 ADA spaces), 3 access aisles, sidewalks, outdoor sitting spaces, 10,250 sf playground areas and landscaped areas. The proposed developed area which includes the proposed building, pavement and sidewalk (Post-Development sub catchments 9-20) totals 128,971 sf; of which 93,700 sf is new impervious surface and 35,270 sf is landscaped area. There will also be two outlet control structures that discharge to two analysis points. The runoff will discharge to the same points both pre and post development, with equal or decreased flows in the post development with no changes in existing channel geometry.

The Stroudwater River is north of the site, and the development is not expected to impact the water quality or quantity draining to the river. There is roughly 1,000 feet of vegetated buffer between proposed site and the Stroudwater River, with pre-development flows exceeding the expected post-development flows for 2, 10, and 25-year storms. Since post-developed flows are less than that of pre-developed flows

at all discharge points, and the parcel and abutting parcels are outside of the 500-year floodplain, site runoff from the developed site is not expected to impact flood-sensitive areas.

Grading of the site slopes away from the perimeter of the building, while maintaining ADA accessibility and matching into the existing landscape where possible. The site was designed to have slopes of 3:1 or shallower, thereby removing the need for slope stabilization materials. However, guard rails may be used at some locations of the parking lot, such as from the western parking lot area to along the northern parking lot area, though it is not required. There is approximately 3,146 sf of wetland impact.

STORMWATER MANAGEMENT – BASIC STANDARDS:

Erosion and sedimentation control measures during construction are detailed within the design plans. Post-Construction stormwater management practices and good housekeeping practices will be in accordance with Maine DEP Best Management Practices. A post construction stormwater management plan as well as inspection and maintenance requirements are provided in Appendix B of this Stormwater Management Plan.

STORMWATER MANAGEMENT – QUALITY (GENERAL STANDARDS):

A project must meet Maine's *Chapter 500, Stormwater Management* general standards if the project results in one or more acres of impervious area, or 5 acres or more of developed area for projects that are not within the direct watershed of an urban impaired stream or a lake most at risk (as defined by Chapter 502). To meet the general standards, the project's stormwater management system must include treatment measures that will provide pollutant removal or treatment (or both), mitigate for the increased frequency and duration of channel erosive flows due to runoff from smaller storms, and mitigate potential temperature impacts. To do that a project must provide treatment of 95% of the impervious area and no less than 80% of the developed area. In addition, runoff from upgradient areas must either be redirected away from the project's stormwater treatment measures or that measure must be sized to address the runoff volume of the upgradient area at 50% of the sizing requirements. Although the amount of on-site treatment provided may be reduced by providing treatment on a currently untreated off-site area in the same watershed, this is not proposed for this project at this time.

Treatment of stormwater is addressed using Maine's Best Management Practices (BMPs). These BMPs are focused on meeting the following water quality objectives:

- Effective pollutant removal – removal of fine particles that carry nutrient and heavy metal load as well as dissolved pollutants and hydrocarbons.
- Cooling – to protect aquatic life within a river, stream, or brook watershed discharge must effectively cool down.
- Channel protection – discharge within a river, stream, or brook watershed must be released slowly to avoid destabilization and resulting sedimentation of receiving channels.
- Flood control – detention for large, infrequent storm events to avoid flooding infrastructure.

The water quality volume is the initial depth of runoff that is considered to carry the bulk of pollutants deposited since the last rain event. Studies have indicated that the first inch of runoff distributed over the watershed carries 90% of the pollutant load from a storm event. Maine's BMPs identified in Volume III of the Maine Stormwater Management Design Manual consider this when establishing the treatment volume identified within each BMP. The BMPs chosen for this site to meet the water quality objectives include:

- Bioretention: Filtration BMP discussed in Maine's Stormwater Management Manual, Volume III, Chapter 7.2, Bioretention Filters.
- Manmade Pervious Paver Systems: Filtration BMP discussed in Maine's Stormwater Management Manual, Volume III, Chapter 7.7, Manmade Pervious Surfaces.

PROJECT SPECIFIC WATER QUALITY TREATMENT MEASURES:

The existing site is currently a mix of vegetated (wooded/scrub brush) upland areas and wetlands. The site currently drains to the wetlands on site. For water quality treatment, the site design incorporates a 12560-sf porous paver filter system along the northern, middle, and southern parking lot areas, as well two FocalPoint bioretention filter systems.

- Bioretention Filter/FocalPoint (FP): The bioretention filters consist of FocalPoint systems that collect, filter, and treat stormwater runoff using conditioned planting soil beds, gravel, underdrained beds, and vegetation within shallow depressions. They capture and retain runoff and pass it through a filter that is comprised of 2-3" of mulch, underlain by an 18" layer of proprietary soil filter media and 6" of course gravel with R-Tank storage placed below grade. The systems are designed to remove a wide range of pollutants, including suspended solids, phosphorus, nitrogen, metals, hydrocarbons, and some dissolved pollutants. The filter also provides for attenuation of discharge which provides reduction of thermal impacts to the discharge points (Analysis Points A and G) as well as minimizing potential channel erosion. The system is sized to store the treatment volume (1.0 inches times the impervious area and 0.4 inches times the landscaped developed area). For larger storms, stormwater bypasses the filter through catch basin and grate to the R-Tank system below.

FocalPoint 1 (FP1) is a 900-sf system with 1,264 cf of surficial storage in a landscaped area northeast of the building just beyond the playground area. It is used for treatment of the paved sidewalk and path, patio, playground, and southeast portion of the building roof (sub catchments 14B, 15, and 18 on the Post-Development Plan). Runoff from the sloped roof discharges to the surface and flows to the level spreader ahead of FP1 with runoff from the playground. Runoff from the flat portion of the roof is collected and discharged through scuppers and downspouts above-ground to a stormwater channel which also directs the runoff to the level spreader ahead of FP1. The level-spreader is provided as pre-treatment. Stormwater filtered through the FocalPoint is conveyed to the R-Tank storage installed below grade, and stormwater above the treatment volume is transferred to R-Tank storage system through a catch basin and grate.

FocalPoint 2 (FP2) is a 437-sf system with 495 cf of surficial storage located on the northeast corner of the building between the parking lot and playground. It is being used exclusively to treat runoff from the flat portion of the northwest section of the building roof. The water from the roof will be captured and discharged using scuppers and downspouts to this FocalPoint system. Both filtration through the FocalPoint and bypass via catch basin and grate is directed to a subsurface R-Tank storage system. The R-Tank storage below FP2 is connected to a series of subsurface R-Tank storage areas below the multiple pervious paver systems and are interconnected with piping to provide common storage.

- Manmade Pervious Pavers (MPP): Pervious paver systems are used almost exclusively for the treatment of paved areas on site, though some systems in parking areas may see some runoff from adjacent landscaped area discharging to the system. The MPP systems consist of the Power BLOCK porous paver system by ACF Environmental underlain by a layer of 3/8" stone, then a layer of 3/4" crushed stone and finally a layer of bio-filter media for filtration for the stormwater runoff. The Power BLOCK system overlays an R-Tank storage system that will be used for detention during larger storm events. Stormwater beyond the water quality volume will be captured by catch basins which discharge to the R-tank system. The area of pervious pavers must be no less than 20% of the area being treated and the flow path to the pervious paver section must be no greater than 50 feet. Catch basins in the pervious area capture overflow from larger storms and discharge to the R-Tank system below which is interconnected with piping to provide common storage.

The pervious pavers proposed are in sub catchments 9, 10a, 10b, 11a, 11b, 12, 13a, 13b, 13c, 16, 17, 19 shown on the Post-Development Plan and the depth of the paver systems were sized based on the magnitude of the impervious areas draining to those locations.

STORMWATER MANAGEMENT – QUANTITY (FLOODING STANDARDS):

A project must meet Maine's *Chapter 500, Stormwater Management* flooding standards if the project results in three or more acres of impervious area, or 20 acres or more of developed area. To meet the flooding standard, the project's stormwater management systems must:

- detain, retain, or result in the infiltration of stormwater from 24-hour storms of the 2-year, 10-year, and 25-year frequencies such that peak flow of stormwater from the project site do not exceed the peak flows of stormwater prior to undertaking the project;
- design the piped or open channel systems based on a 10-year, 24-hour storm without overloading or flooding beyond channel limits;
- not flood the primary access road to the project and any public roads bordering the project as a result of a 25-year, 24-hour storm event

A project is eligible for a waiver from the flooding standard for insignificant increases in peak flow rates from a project site. A waiver is also available for a project in the watershed of a coastal wetland, great pond, or major river segment provided the stormwater is conveyed via sheet flow, in a manmade open channel, or in a piped system directly into one of these resources.

The use of the R-Tank modules by ACF Environmental will detain the stormwater runoff to below pre-development conditions to comply with the Flooding Standard. The proposed detention system consists of a series of R-Tanks located below all pervious paver systems as well as FocalPoint filtration systems. The R-Tanks below the pavers and FP2 are interconnected with corrugated polyethylene, smooth interior pipe to capture and store the larger volume storms prior to discharge. A separate R-Tank system is used to store runoff from FP2.

Each storage system discharges through an outlet control structure that ultimately discharges to a plunge pool. For the northern R-Tank system (MPP and FP2), the R-Tanks were all placed at an elevation of 55.20 ft. Therefore, the water level throughout the system rises at an equal rate. The surface area of the R-Tank was sized as to not exceed the bottom of the filter layer of the paver system. Discharge from the R-Tank storage systems goes through an outlet control structure that uses orifices and a weir to release the discharge to Analysis Points A and G at a controlled rate; commensurate with a particular rainfall event.

Additionally, it should be noted that there is an existing 18" culvert at station 19+60 that drains from the southern to northern side of Andover Road. However, the flow rate discharged through the culvert has no affect on the development of Maine Behavioral Healthcare as the culvert drains to the same wetland both before and after the development. The project does not propose to upgrade the existing culvert because post-development flows are the same as pre-development flows. The site layout was designed to minimize impact on this wetland.

Stormwater runoff in the pre and post-development conditions are evaluated at Analysis Points A-H. The development of the site influences only Analysis Points A, F, G, and H. Sub catchments in the post-development condition were established based on subareas used to define treatment boundaries. The runoff at all analysis points in the post-development condition are either equal to or less than the flow in the pre-development condition. Pre-Development stormwater plans and pre-development HydroCAD calculations are included in Appendix C while Post-Development stormwater plans and post-development HydroCAD calculations are included in Appendix D.

- HydroCAD Modeling Assumptions: All soils in the developed areas have a Hydrologic Soil Group (HSG) rating of C/D or D. To provide a conservative estimate of expected flows discharging from the site, it was assumed that all soils had a HSG rating of D, since these soils have less permeability and higher runoff potential than that of C.
 - Areas of sub catchments were determined using AutoCAD.
 - Times of concentration beginning at Andover Road and ending at analyses points was assumed to flow 15 feet as sheet flow from the crown to the side of the road over a smooth surface with a Manning's number of 0.011 and a slope of 5%. The water then flows an additional 135 feet as sheet flow (150 feet of sheet flow total), and the remainder of the time of concentration path flowing as shallow concentrated flow.
 - Slopes of time of concentration paths were based on the survey conducted by Titcomb Associates in May of 1997, overlaid with the grading plan of Andover Road.

- For flow over developed impervious areas with a curve number of 98, the time of concentration was assumed to be 6 minutes in accordance with Maine DEP guidance documents. The non-developed vegetated areas north of Andover Road was assumed to be in good condition with a curve number of 77, with sheet flow traveling over dense underbrush woods with a Manning number of 0.8, and shallow concentrated flow traveling over forest with heavy litter with a velocity factor of 2.5.
- The non-developed vegetated areas south of Andover Road were assumed to be in good condition with a curve number of 77, with sheet flow traveling over light underbrush woods with a Manning number of 0.4, and shallow concentrated flow traveling over forest with heavy litter with a velocity factor of 2.5.
- Developed landscaped areas were assumed to be >75% grass cover in good condition with a curve number of 80 and paved impervious areas were assumed to have a curve number of 98.
- Because the playground material has not yet been finalized it was assumed to be impervious with a curve number of 98 as a conservative estimate to predict runoff.

HYDRAULIC ANALYSIS:

Stormwater runoff calculations for quantity were made using the HydroCAD 10.00 computer program, which is based on the Soil Conservation Service's TR-20 methodology. Runoff hydrographs are generated based on a standard Type III 24-hour storm for Cumberland County identified in Appendix H of *Maine DEP Chapter 500, Stormwater Management*.

Four storm events were evaluated as follows:

- 2-year frequency flood event: 3.1" rainfall
- 10-year frequency flood event: 4.6" rainfall
- 25-year frequency flood event: 5.8" rainfall

Runoff Curve numbers were determined based on land coverage and hydro-geological soil type D. Times of concentration were developed based on runoff flow paths for each subarea and shown on the Pre and Post-Development plans. A minimum Tc of 6 minutes was used in the HydroCAD model.

Peak runoff flow rates and runoff volumes are provided at the analysis points, which are identified on the Pre and Post-Development plans. Comparison of the runoff peak flow rates are provided at each analysis point on Tables 1-3 below :

Table 1 – 2-year, 24-hour Storm

Analysis Point	Pre-Development	Post-Development
A	1.08 cfs	1.01 cfs
B	0.63 cfs	0.63 cfs
C	1.18 cfs	1.18 cfs
D	1.46 cfs	1.46 cfs
E	0.32 cfs	0.32 cfs
F	0.39 cfs	0.33 cfs
G	0.56 cfs	0.35 cfs
H	0.34 cfs	0.09 cfs

Table 2 – 10-year, 24-hour Storm

Analysis Point	Pre-Development	Post-Development
A	2.20 cfs	2.05 cfs
B	1.28 cfs	1.28 cfs
C	2.39 cfs	2.39 cfs
D	2.95 cfs	2.95 cfs
E	0.58 cfs	0.58 cfs
F	0.77 cfs	0.59 cfs
G	1.16 cfs	0.79 cfs
H	0.71 cfs	0.18 cfs

Table 3 – 25-year, 24-hour Storm

Analysis Point	Pre-Development	Post-Development
A	3.19 cfs	2.84 cfs
B	1.84 cfs	1.84 cfs
C	3.43 cfs	3.43 cfs
D	4.24 cfs	4.24 cfs
E	0.79 cfs	0.79 cfs
F	1.10 cfs	0.81 cfs
G	1.68 cfs	1.64 cfs
H	1.03 cfs	0.26 cfs

**ZONING ANALYSIS**Relevant Zone(s) IM - Industrial Moderate**All Projects:**

	Required	Proposed
Lot Size	none	9.30 acres
Area Per Dwelling Unit	n/a	---
Minimum Street Frontage	60'	60'
Front Yard Minimum ¹	27'	75'+
Front Yard Maximum	none	---
Rear Yard	25'	125'+
Yard Right	25'	39'
Yard Left	25'	275'+
Side Street Setback	n/a	---
Step Back	n/a	---
Maximum Lot Coverage	75%	23%
Minimum Lot Coverage	none	---
Maximum Height	75'	27'
Open Space	none	---
Maximum Impervious Area	75%	23%
Pavement Setback	10'	10'
Floor Area Ratio	none	---
Off Street Parking Spaces	71	119
Loading Bays	0	0
Other 1		
Other 2		
Other 3		

Building Height = 26' - 8"

¹ Measured from Andover Road

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PROJECT PHASE: DESIGN DEVELOPMENT PRICING AND OWNER REVIEW

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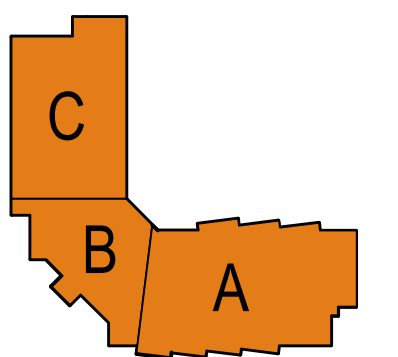
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Maine Behavioral Healthcare
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KEY PLAN

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AND DEVELOPMENTAL DISORDERS**
100 ANDOVER ROAD
PORTLAND, ME

[illegible]

**NOT FOR
CONSTRUCTION**

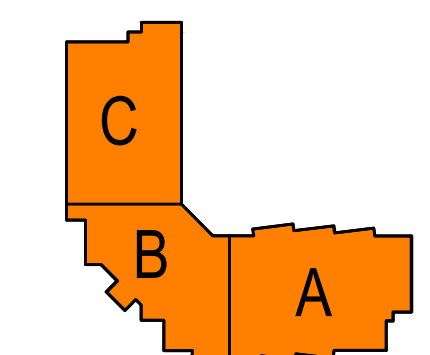
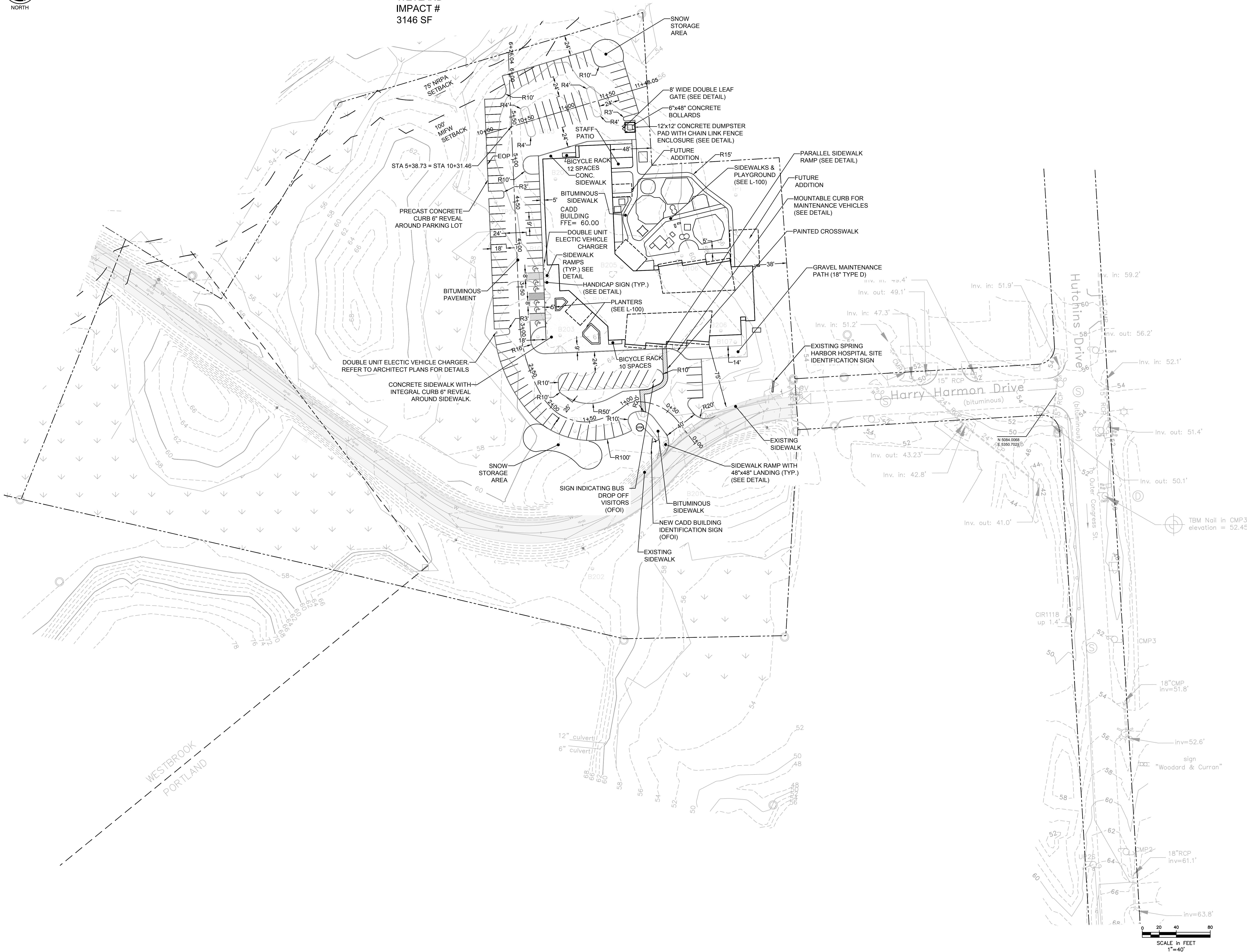
PROJECT NUMBER: 2018005
DATE: August 16, 2019
SHEET TITLE AND NUMBER:

COVER

OVER SHEET



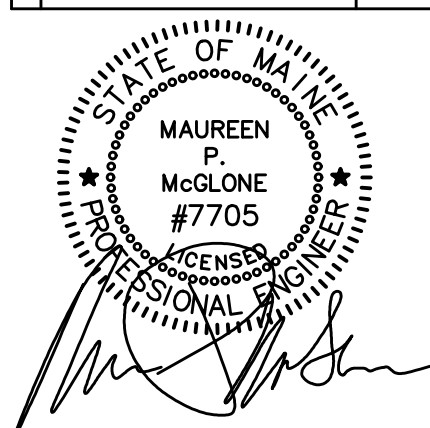
WETLAND
IMPACT #
3146 SF



KEY PLAN

MAINE BEHAVIORAL HEALTHCARE
CENTER OF EXCELLENCE IN AUTISM
AND DEVELOPMENTAL DISORDERS
100 ANDOVER ROAD
PORTLAND, ME

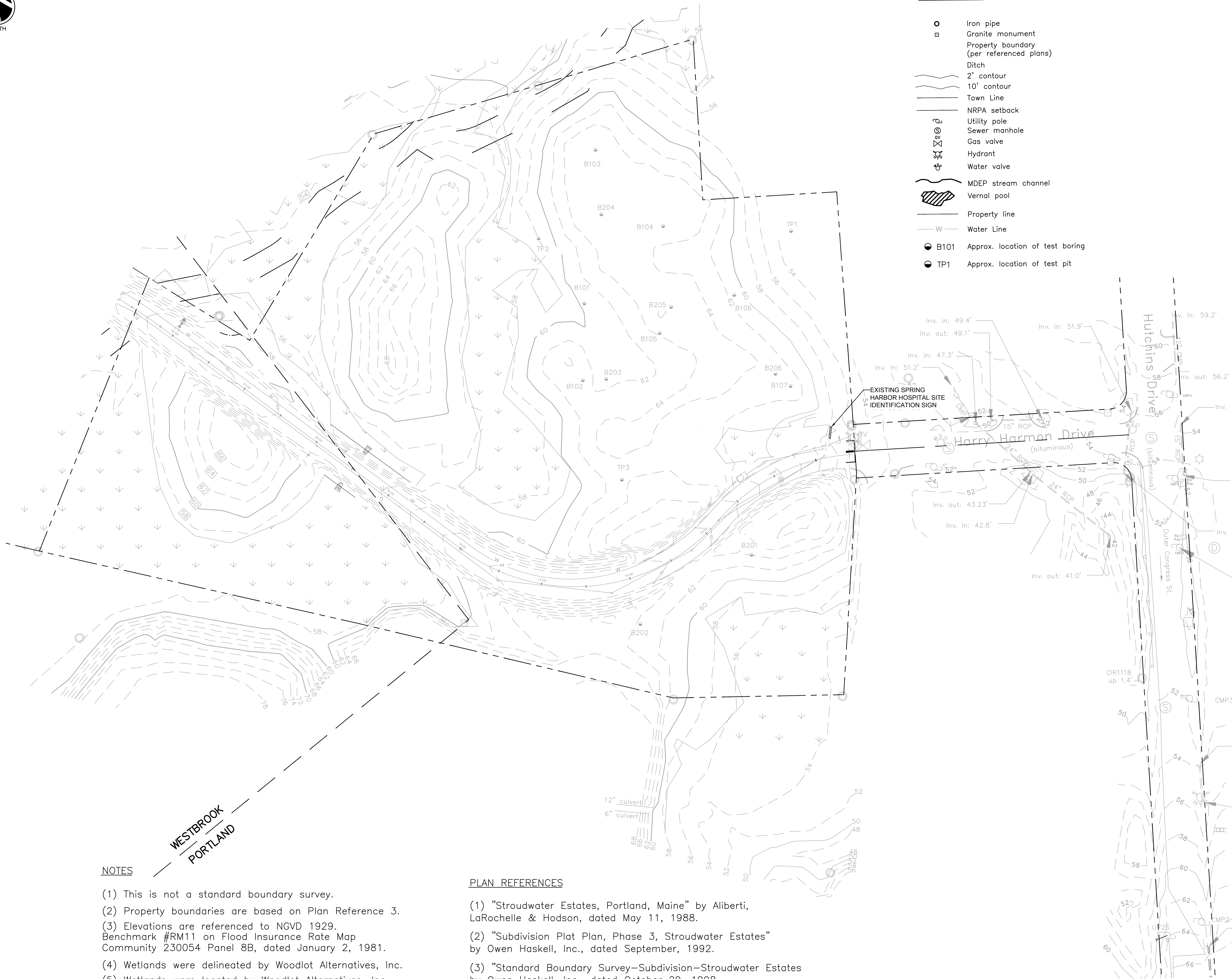
REV	DESCRIPTION	DATE
A	DEP PERMITTING	08/23/19
B	DEP REVICITY PRELIM	10/22/19
C	90% CD OWNER REVIEW	11/20/19
D	CITY SUBMISSION	11/21/19
E	ISSUED FOR CONSTRUCTION	01/09/20
F	PER CITY COMMENTS	03/06/20



SEAL:
PROJECT NUMBER: 181.06068
DATE: 08/22/2019
SHEET TITLE AND NUMBER:

SITE PLAN

C-101



NOTES

- (1) This is not a standard boundary survey.
- (2) Property boundaries are based on Plan Reference 3.
- (3) Elevations are referenced to NGVD 1929.
Benchmark #RM11 on Flood Insurance Rate Map
Community 230054 Panel 8B, dated January 2, 1981.
- (4) Wetlands were delineated by Woodlot Alternatives, Inc.
- (5) Wetlands were located by Woodlot Alternatives, Inc.,
using a Trimble Pathfinder ProXR GPS unit (+/- one meter).

PLAN REFERENCES

- (1) "Stroudwater Estates, Portland, Maine" by Aliberti, LaRochelle & Hodson, dated May 11, 1988.
- (2) "Subdivision Plat Plan, Phase 3, Stroudwater Estates" by Owen Haskell, Inc., dated September, 1992.
- (3) "Standard Boundary Survey—Subdivision—Stroudwater Estates by Owen Haskell, Inc., dated October 29, 1998.

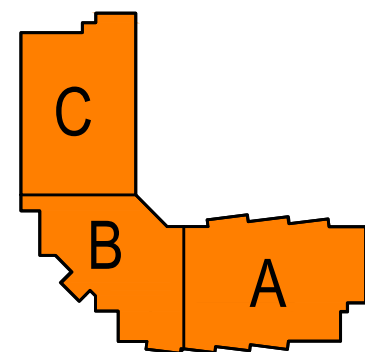
PORTLAND CITY APPROVAL

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 ENVIRONMENTS
 FOR HEALTH
ARCHITECTURE
 207.773.8841
 163 Fore Street, Portland, ME 04101
e4harchitect.com


 Maine Behavioral Healthcare
 MaineHealth



400 Commercial Street, Suite 404
Portland, ME 04101
Tel. (207) 772-2891
Fax (207) 772-3248
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KEY PLAN

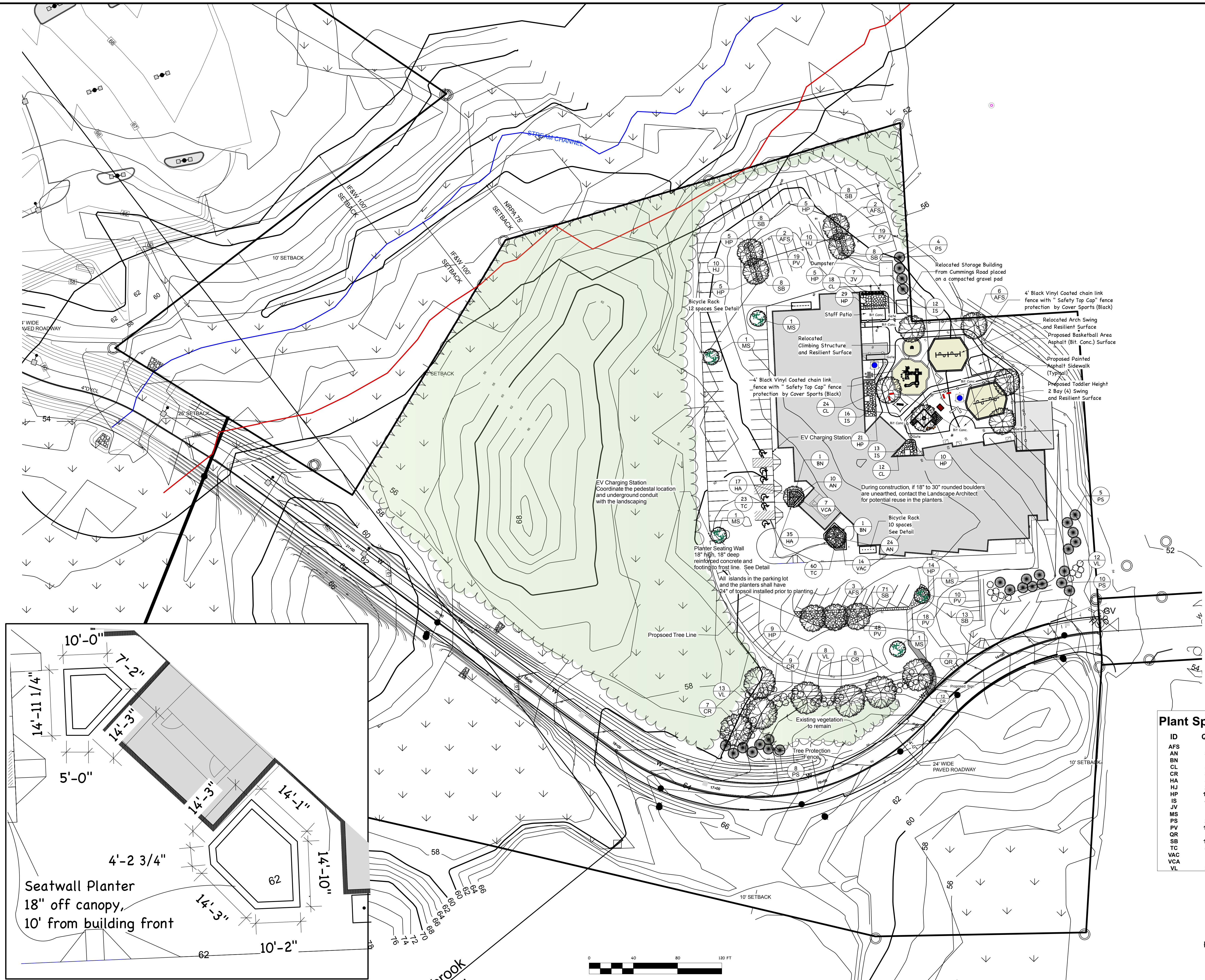
**MAINE BEHAVIORAL HEALTHCARE
CENTER OF EXCELLENCE IN AUTISM
AND DEVELOPMENTAL DISORDERS**
100 ANDOVER ROAD
PORTLAND, ME

[illegible]

SEAL:	
PROJECT NUMBER:	181.06068
DATE:	08/22/2015
SHEET TITLE AND NUMBER:	

EXISTING CONDITIONS

C-100

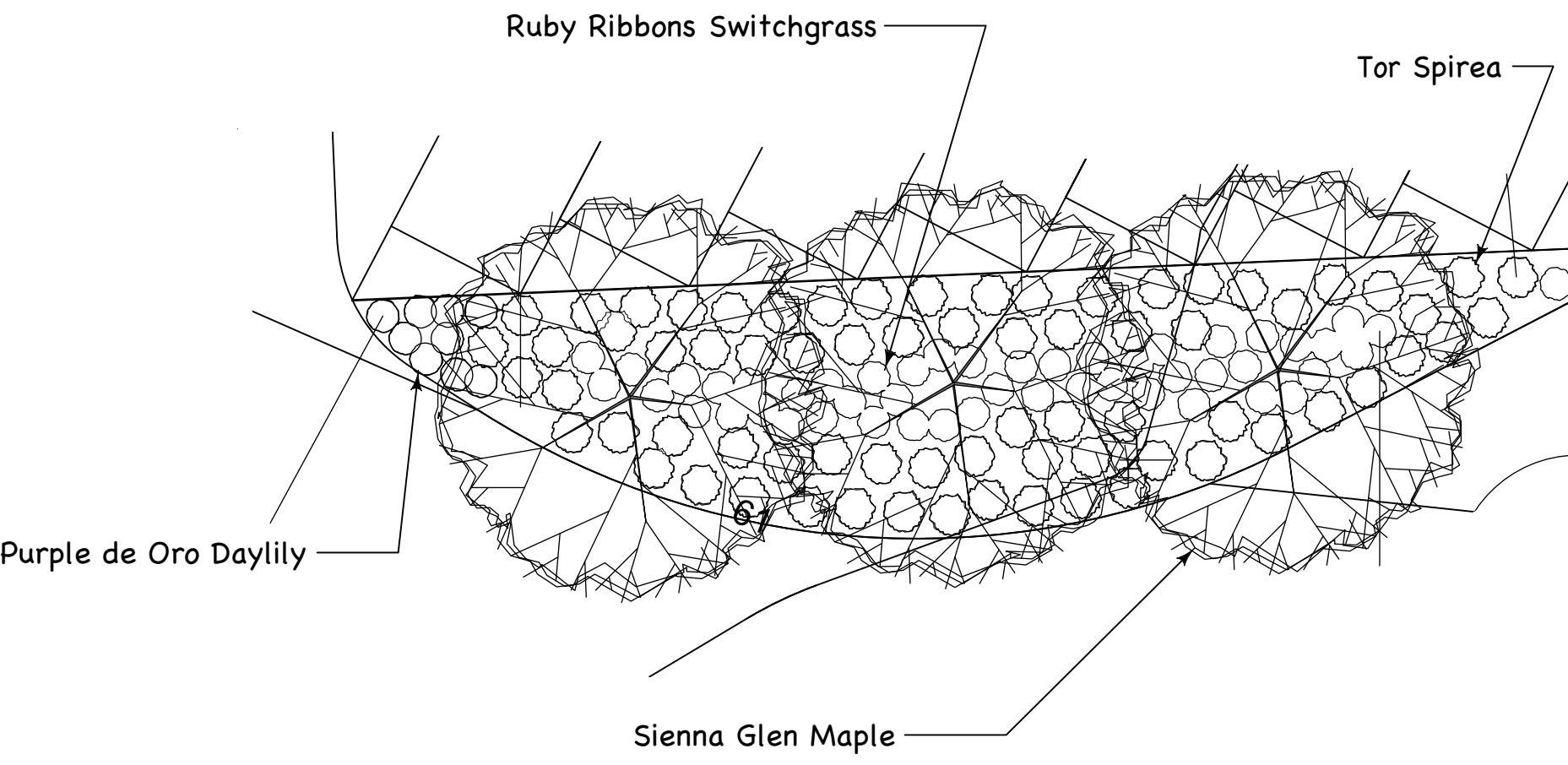


- Plant Notes:**
- The Landscape Contractor is advised that a full set of detailed written landscape specifications and related sections are in Section 329300 of the specification book.
 - The Landscape Contractor is advised of the existence of underground utilities. The Landscape Contractor shall verify utilities prior to commencing construction. Call DIGSAFE at 1-888-344-7233.
 - The Landscape Contractor shall be responsible for repairing any utilities, walks, paving, curbing, etc. damaged in the performance of this job at no cost to the Owner. The Landscape Contractor shall notify the Landscape Architect immediately if they encounter any site conditions, which will not allow them to carry out the landscape installation according to the drawings.
 - Planting of trees shall not occur until all erosion control is in place and all grading and paving is completed. All islands and planting areas, shall have 24" of planting soil mix, see specification 329300. 2.5 installed and rolled prior to planting. The finished elevation of the planting soil mix shall be 2" below to the top of the curb or even with adjacent ground. All islands and medians are crowned a minimum of 6" at the center of the island or graded to drain. Submit a sample of the topsoil with NPK, pH, calcium, aluminum effective cation exchange capacity tests and fertility recommendations as well as bulk density test of the sample. Topsoil shall be friable void of weeds, stones greater than 3/4" diameter, sticks and other debris. Topsoil shall contain, 70-80% sand, 5-20% clay, 18-20% silt, 5.0-8% organic matter and a pH of 6-6.9. Notify the Landscape Architect immediately if there is standing water or other factors, which would prohibit the installation of plant material.
 - All plants shall have a normal habit of growth for the species and shall be sound, healthy and free of disease and insects. All plants shall be legibly tagged with the proper complete botanical name. They shall conform to the measurements on the Plant List and shall conform to ANSI Z60.1 - Nursery Stock, latest revision. Prior to plant installation, the Landscape Contractor shall submit a written affidavit of all plant species, cultivars, varieties, sizes and quantities that they propose to install with the name, phone number and location of all nurseries where plant material has been grown. All plants shall be grown in a latitude north of Washington D.C. The Landscape Architect will inspect all plants at the place of growth or upon delivery for conformity to the plant list and specifications. Such approval shall not affect the right of inspection and rejection during the progress of work. The Landscape Architect and Owner reserve the right to inspect, select and tag all plant material at the place of growth or select and approve a representative sample of each type of shrub, perennial, groundcover and annual. The samples selected will serve as a minimum standard for all plants of the same species used for this work.
 - The top 1/3 of wire baskets and burlap on trees shall be cut and removed. All other plant material including trees shall have all non-biodegradable materials (string, wire, pots, etc.) removed at the time of planting. Circling roots or roots that would later girdle the plant shall be straightened, cut or the root ball shall be cut utilizing a split ball technique.
 - Backfill mix shall be composed of an 80/20, top soil/ peat moss mix. Planting pits shall be excavated to three times the diameter and to the same depth of the plant root ball. Backfill 1/2 of the pit at a time, and compact. See Note 8 and install slow release fertilizer after first backfill. Settling the tree/shrub. Each tree/shrub shall be planted such that the trunk flare junction is level with or 1" above existing grade. All trees/shrubs where the planting depth is incorrect shall be rejected. All trees and shrubs shall have a 3" soil saucer constructed at the perimeter of the planting pit.
 - All plantings shall have slow release fertilizer installed at the time of planting. The fertilizer shall be "Roots Transplant 1 Step" installed/ applied according to manufacturers instructions according to manufacturers instructions. After the plants are installed in each area, liquid feed all plants with Roots - Liquid Concentrate. Mix and apply according to manufacturers instructions. The landscape contractor shall submit samples of the slow release fertilizer and copies of the label of the liquid fertilizer prior to plant installation. The Landscape Contractor shall not install any plant material unless appropriate watering equipment is on site. All plants shall be adequately watered the day of installation or these plants will be rejected and replaced by the Landscape Contractors at no cost to the owner.
 - All trees shall have 2 stakes and guys. Stakes shall be 2" x 2" hardwood of sufficient length to guy above the first branches. Guys shall be flexible guying chain or an approved equal. Submit a sample of guying prior to installation. Any plants with broken or damaged root balls will be rejected. The landscape contractor shall remove all stakes after 1 year.
 - Mulch to be installed to a depth of 3" after normal settling including the seasonal color area. Mulch shall be medium shredded Hemlock bark, dark brown in color. Do not place mulch in contact with the tree trunk. The Landscape Contractor shall submit a .25 cubic foot sample prior to installation.
 - All plants shall have their locations staked and approved by the Landscape Architect prior to plant installation. Plants shall be spaced according to the plan and as noted in the Plant Species List. All plants shall be oriented for best appearance and arranged to evenly occupy the space where they are planted.
 - Plant species and plant size substitutions will not be allowed unless first approved by the Landscape Architect. Any substituted plants installed without prior approval will be rejected.
 - All plants shall be warranted as noted in section 329300. 1.7 in the specifications. The landscape contractor at no cost to the owner shall replace any plants that die during the guarantee.
 - Allow deciduous and evergreen shrubs to grow together to form a continuous plant mass.
 - The contractor shall supply the quantities of plants sufficient to complete the work shown on all of the drawings. If quantities of plants listed in the plant species list do not correlate with the plantings indicated on the drawings, the quantities on the drawings shall govern. Any discrepancies between the plant list and the drawings shall not entitle the landscape contractor to additional remuneration. Notify the Landscape Architect immediately if discrepancies are detected.
 - Under no circumstance shall snow be plowed and piled on planting areas. This will result in crushing and death of the plant material.

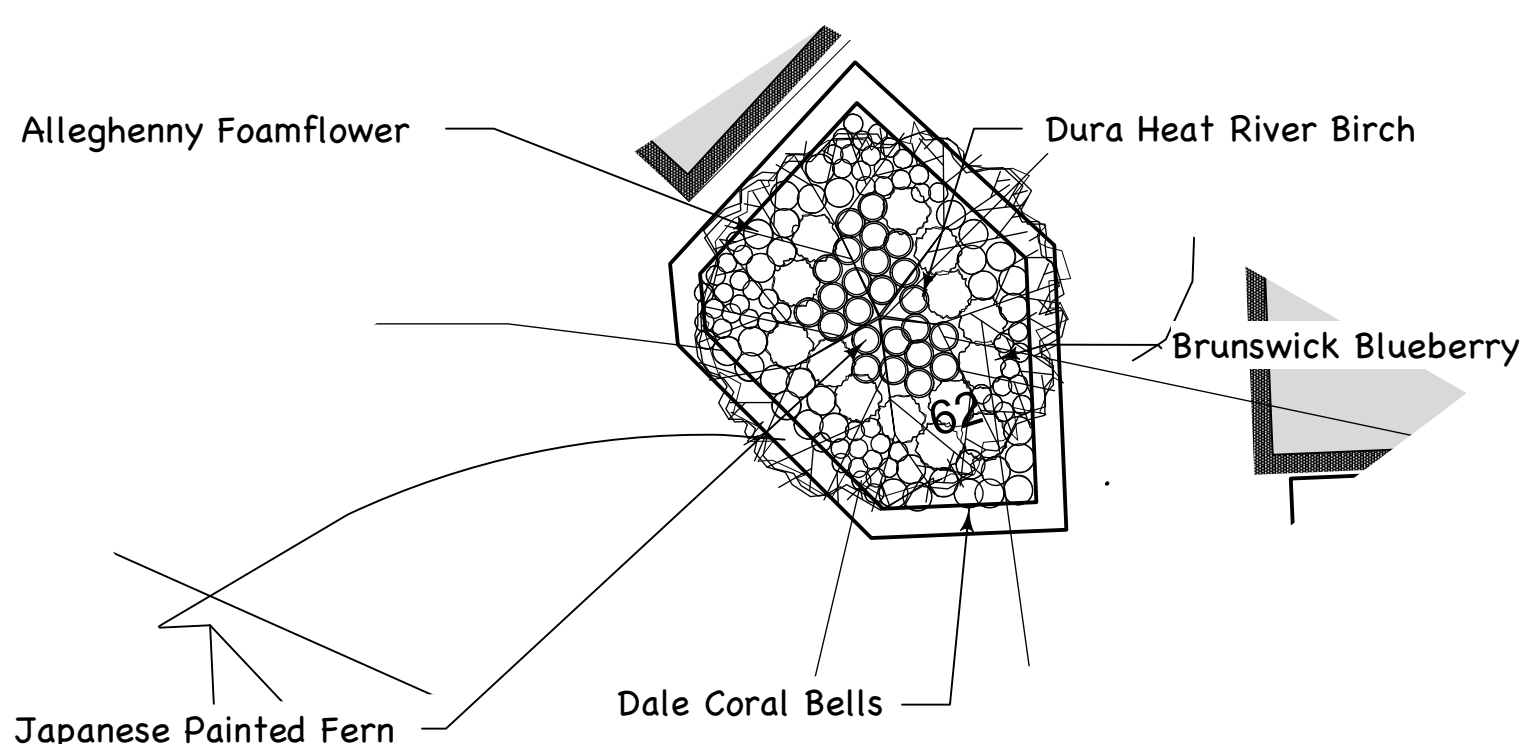
Plant Species List

ID	Qty	Botanical Name	Common Name	Scheduled Size	Remarks
AFS	13	Acer x freemanii 'Sienna Glen'	Sienna Glen Maple	2" - 2.5" cal.	B&B
AN	34	Alnus incana 'Pictum'	Japanese Painted Fern	2 cal.	18" o.c.
BN	2	Betula nigra 'BNMTF'	Dura Heat River Birch	10" - 12"	30" o.c.
CL	54	Chasmanthium latifolium	Northern Sea Oats	1 gal.	5' o.c.
CR	36	Cornus racemosa 'Hurricane'	Huron Gray Dogwood	24" - 30"	24" o.c.
HA	52	Heuchera americana 'Dale'	Dale Coral Bells	2 qt.	18" o.c.
HJ	20	Hemerocallis x 'Joan Senior'	Joan Senior Daylily	1 gal.	24" o.c.
HP	103	Hemerocallis x 'Purple de Oro'	Purple de Oro Daylily	1 gal.	18" o.c.
IS	41	Iris sibirica 'Caesar's Brother'	Caesar's Brother Siberian Iris	1 gal.	30" o.c.
JV	7	Juniperus virginiana 'Taylor'	Taylor Eastern Red Cedar	5' - 6'	B&B 3' o.c.
MS	6	Malus x 'Spring Snow'	Spring Snow Crabapple	21" - 3" cal.	B&B
PS	27	Pinus strobus	Eastern White Pine	5' - 6'	B&B, 10' o.c.
PV	114	Panicum virgatum 'Ruby Ribbons'	Ruby Ribbons Switch Grass	1 gal.	24" o.c.
QR	7	Quercus rubra	Red Oak	2" - 2.5" cal	B&B, 10' o.c.
SB	116	Spiraea betulifolia 'Tor'	Tor Birchleaf Spiraea	18" - 24"	30" o.c.
TC	83	Tiarella cordifolia	Allegheny Foamflower	1 qt	12" o.c.
VAC	14	Vaccinium angustifolium x corymbosum 'Northsky'	Northsky Blueberry	15" - 18"	30" o.c.
VAC	7	Vaccinium angustifolium 'Brunswick'	Brunswick Blueberry	2 gal.	30" o.c.
VL	33	Viburnum lentago	Nannyberry Viburnum	30" - 36"	8' o.c.

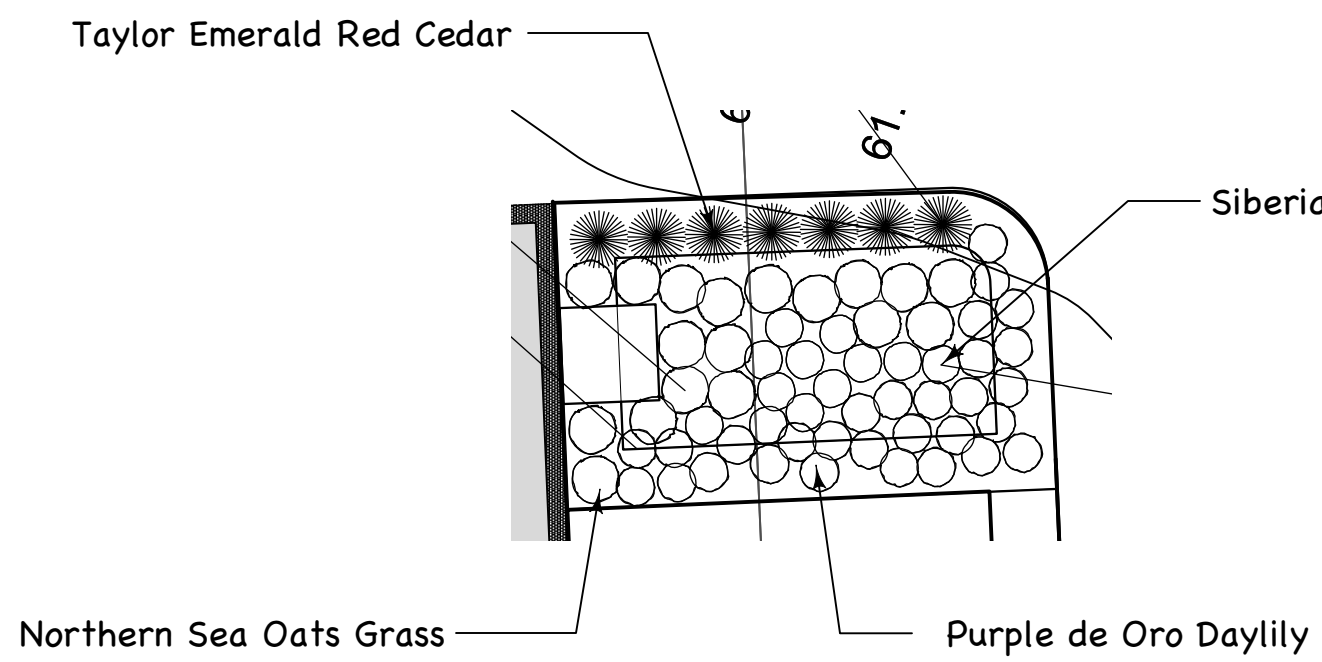
5 Seatwall Planter Dimension Diagram
1" = 10'



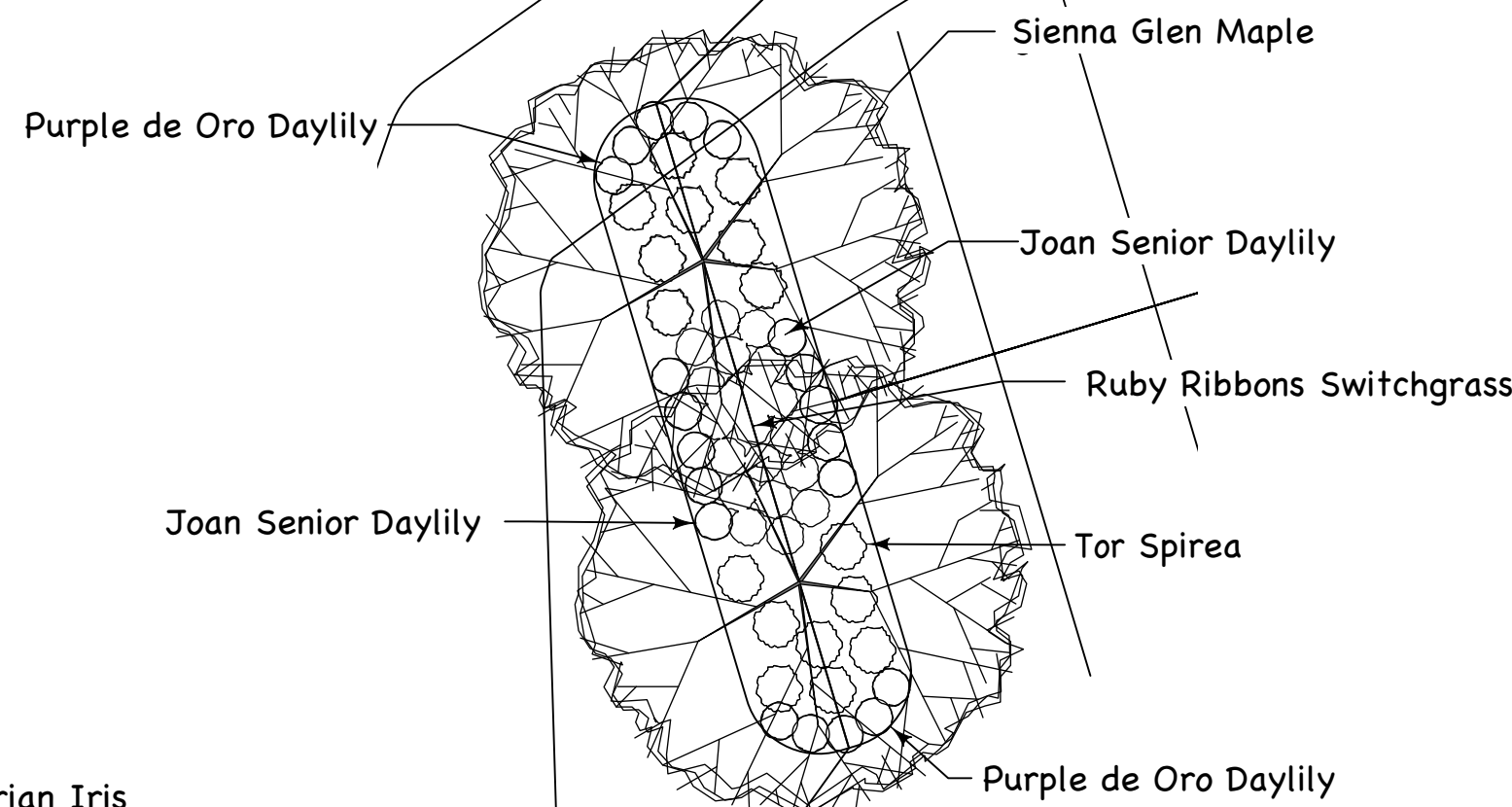
1 Center Island - Typical Plant Layout Detail
Not To Scale



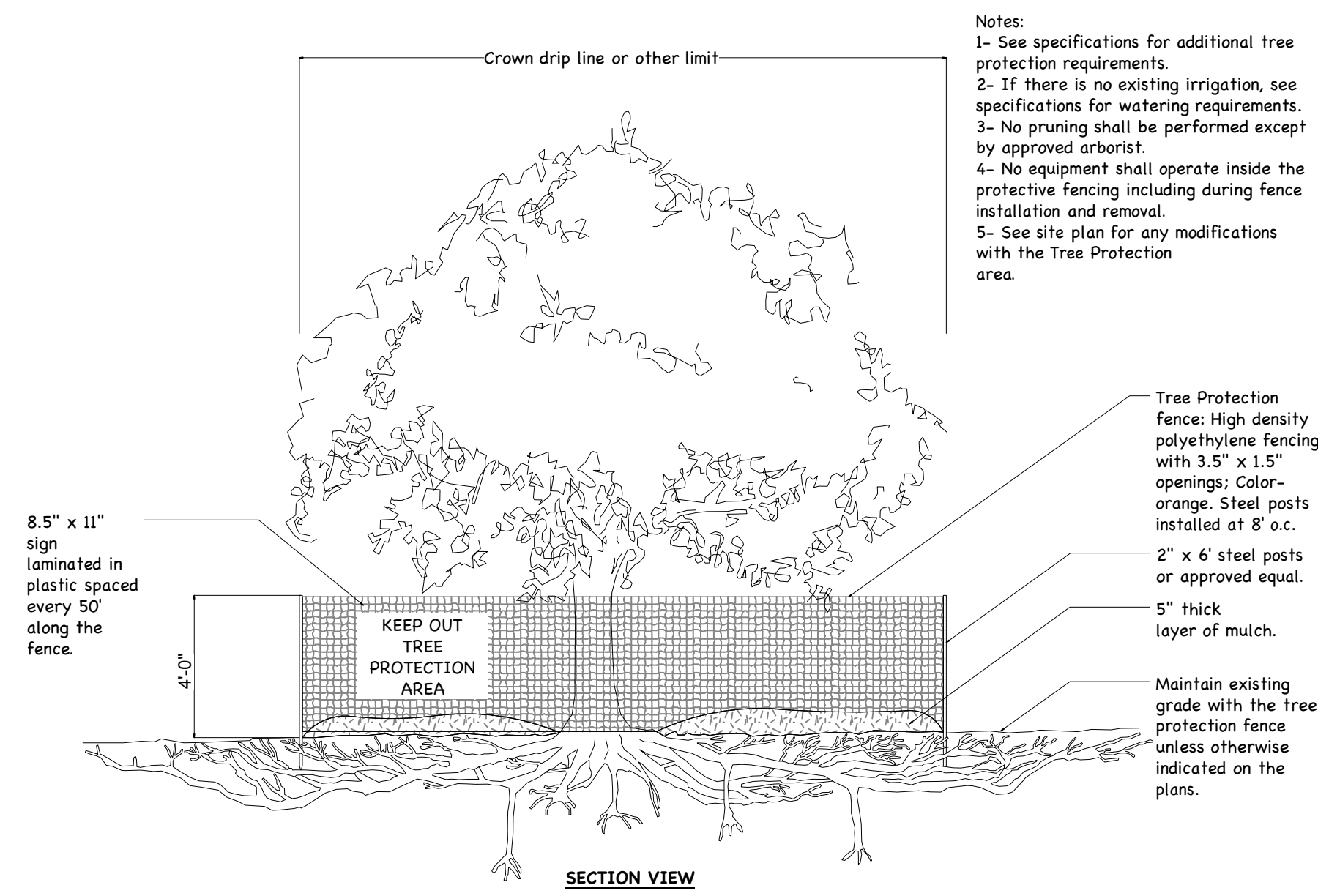
2 Planter/ Seatwall - Typical Plant Layout Detail
Not To Scale



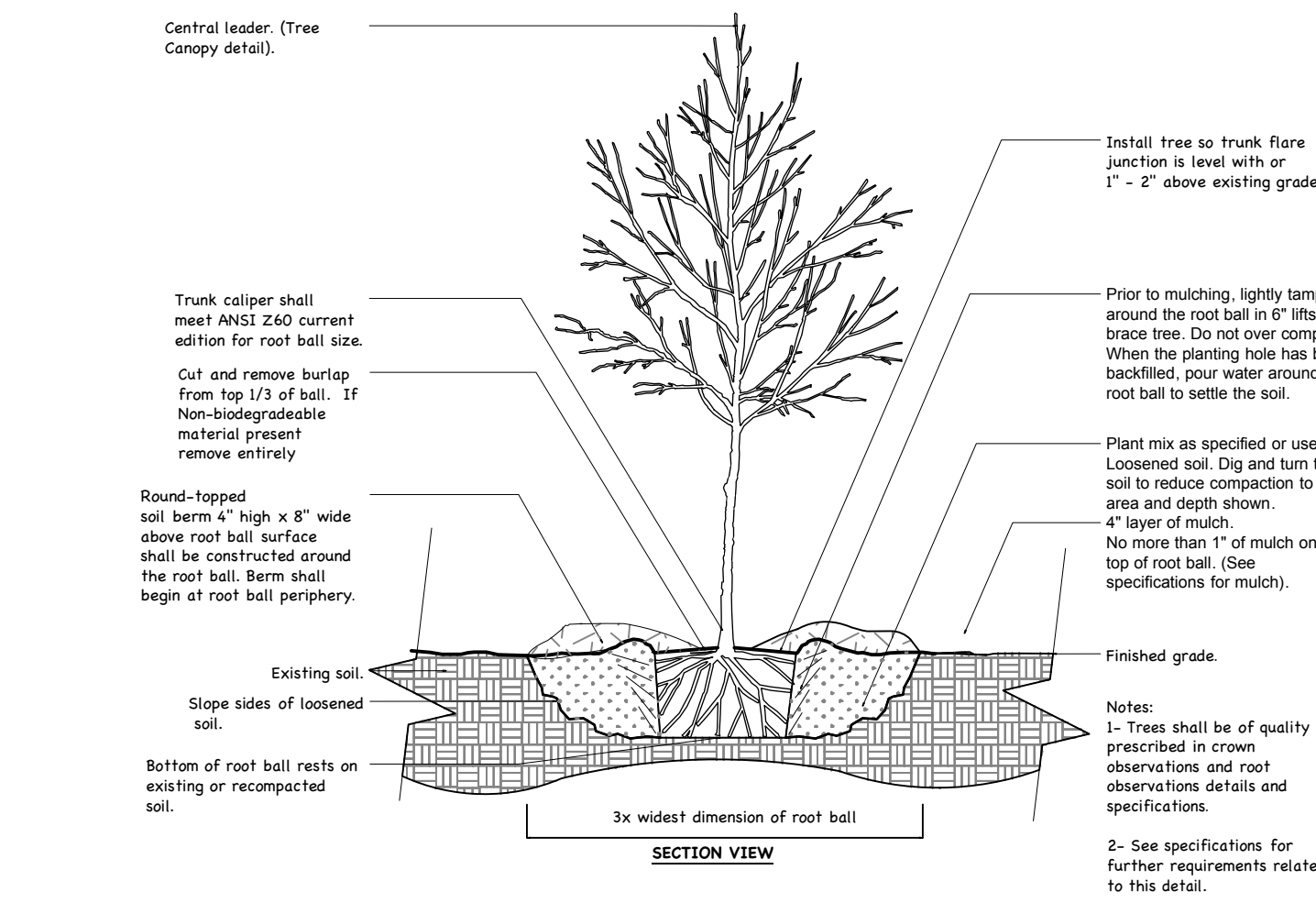
3 Typical Focal Point Plant Layout
Not To Scale



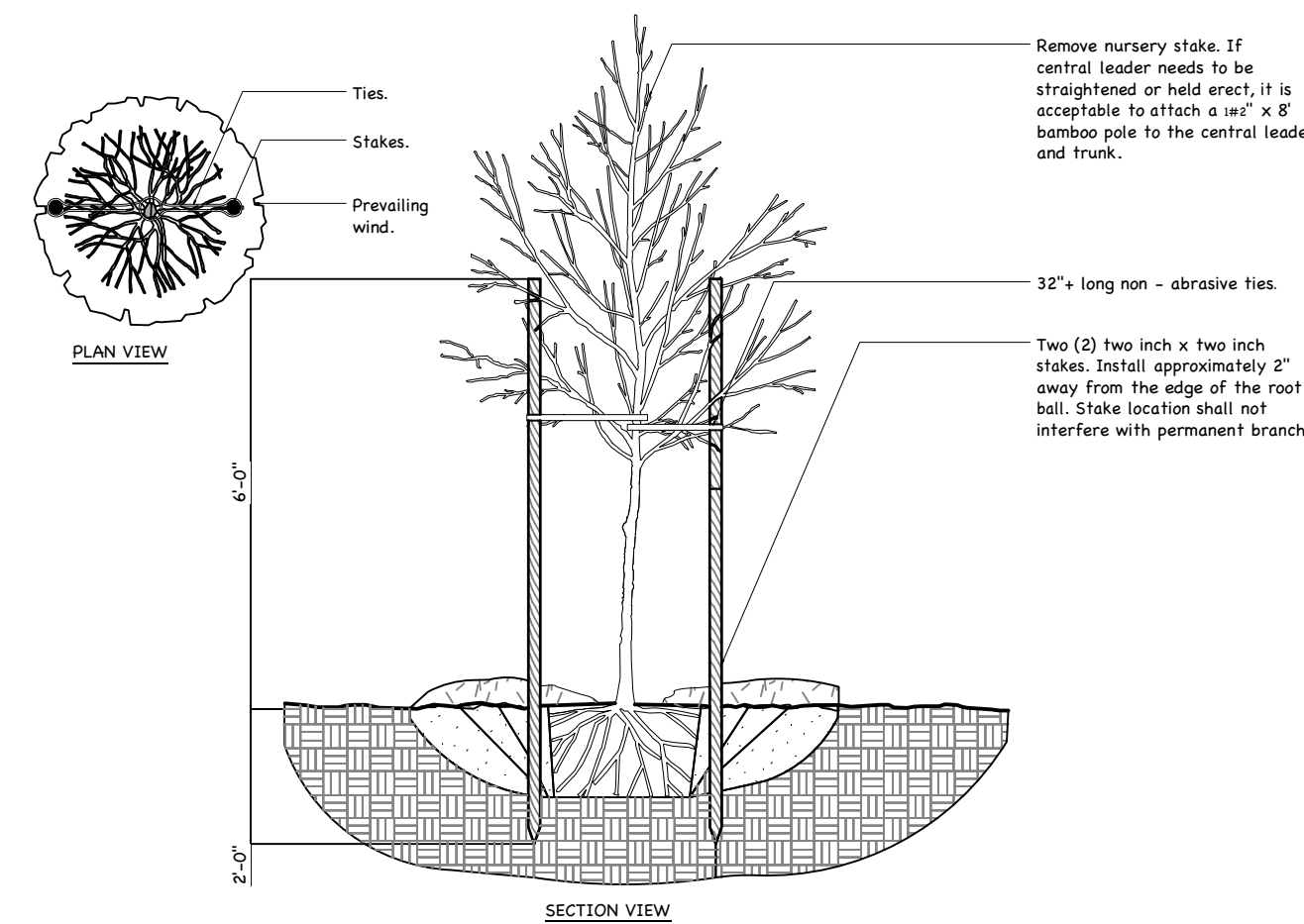
4 End Cap Island - Typical Plant Layout Detail
Not To Scale



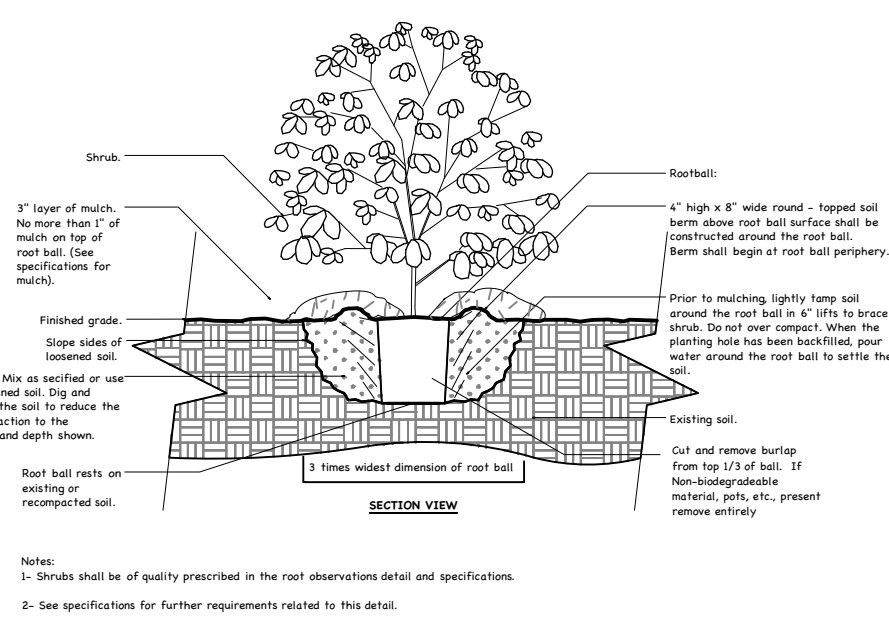
1 Tree Protection Detail
Not to Scale



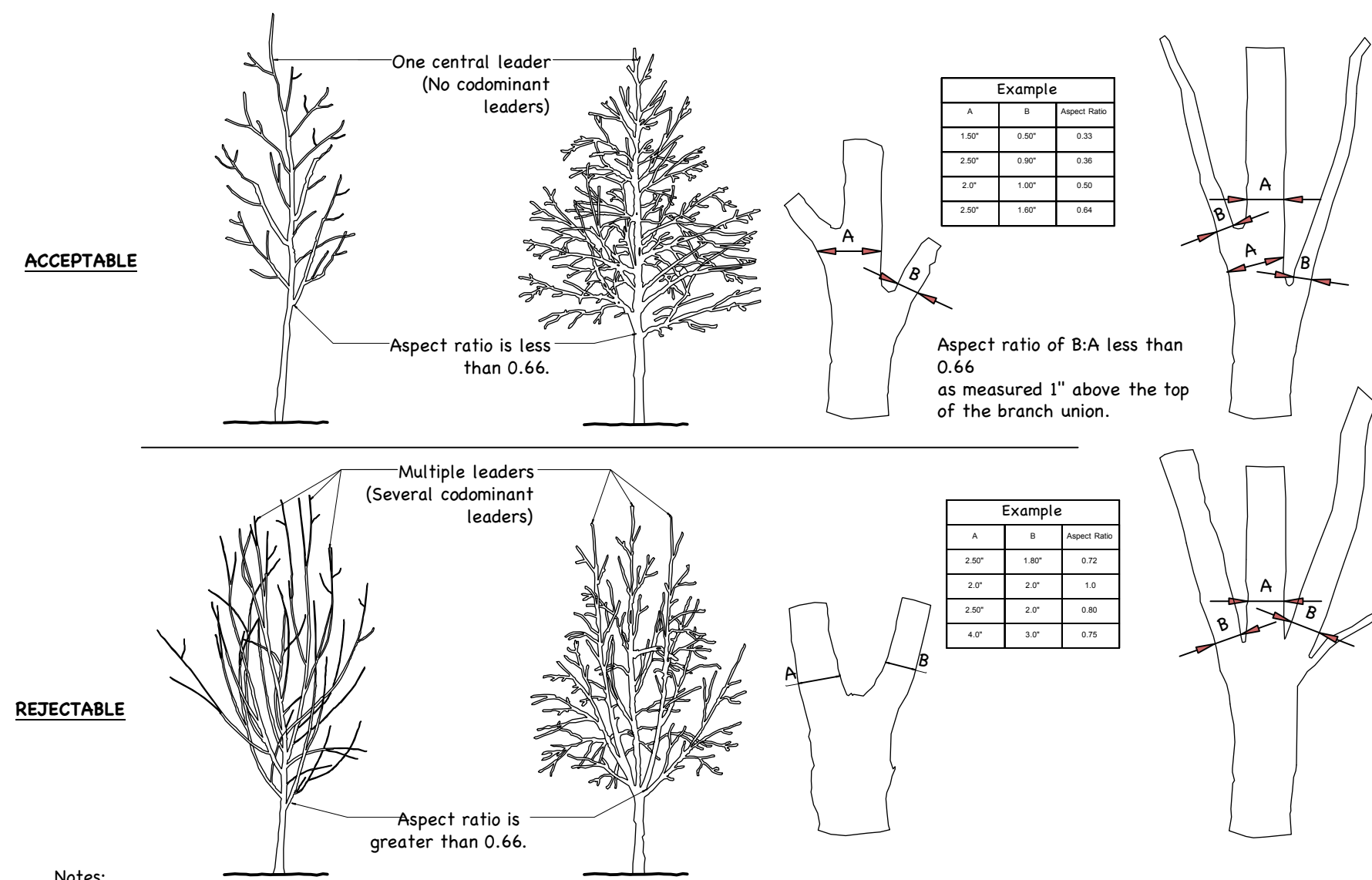
2 Tree Planting Detail
Not to Scale



3 Tree Staking Detail (2)
Not to Scale

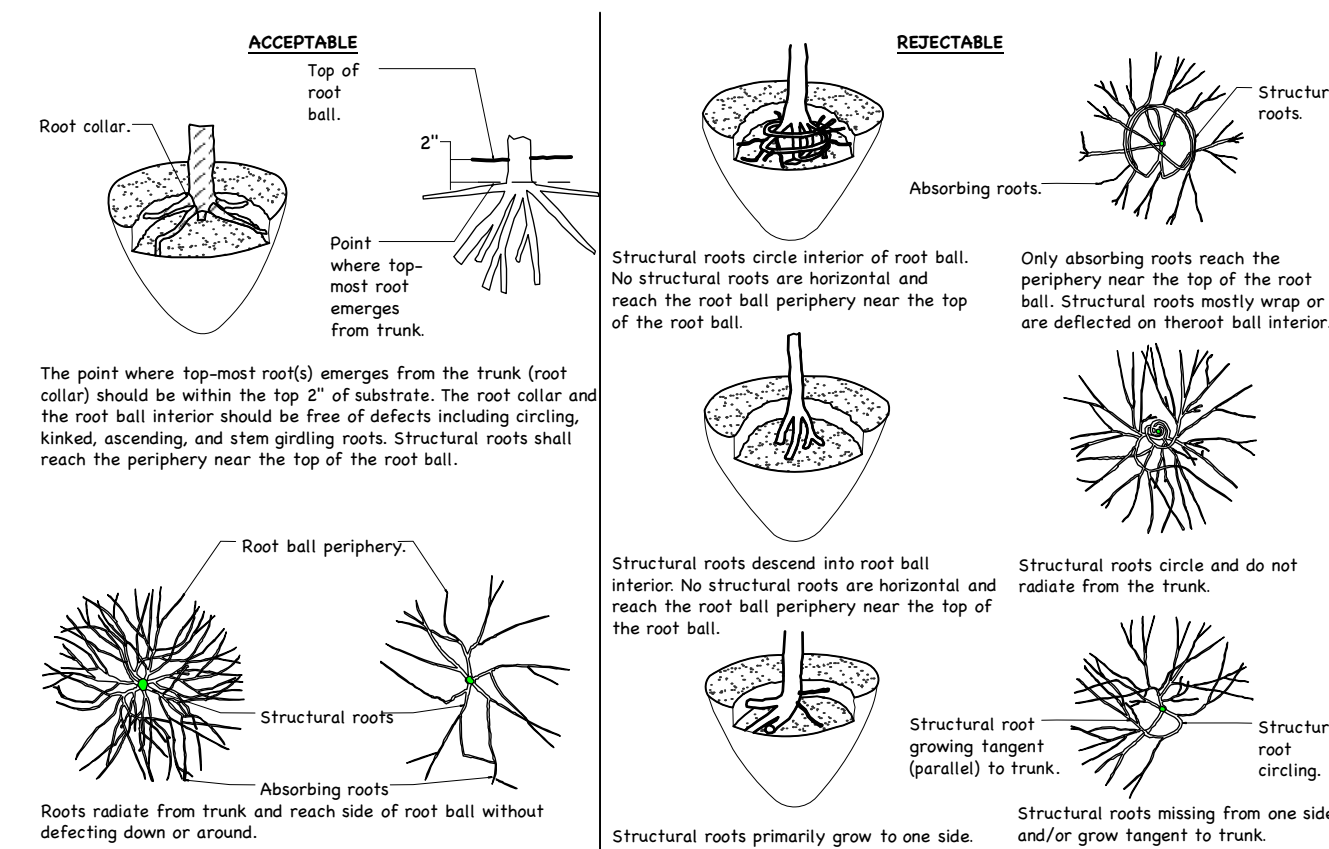


4 Shrub Planting Detail
Not to Scale



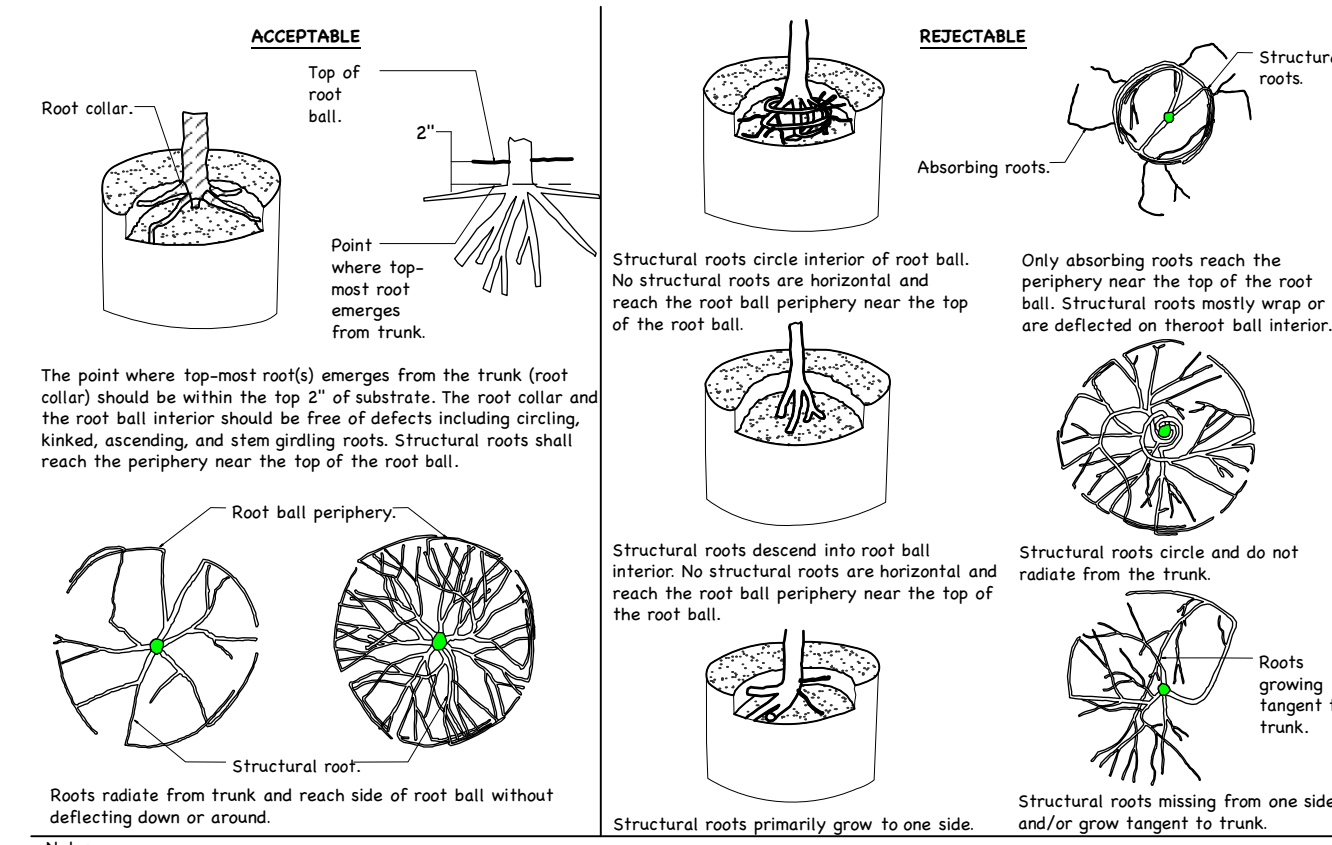
Notes:
1- Aspect ratio shall be less than 0.66 on all branch unions. Aspect ratio is the diameter of branch (B) divided by the diameter of the trunk (A) as measured 1" above the top of the branch union.
2- Any tree not meeting the crown observations detail may be rejected.

5 Tree Canopy Inspection Detail
Not to Scale



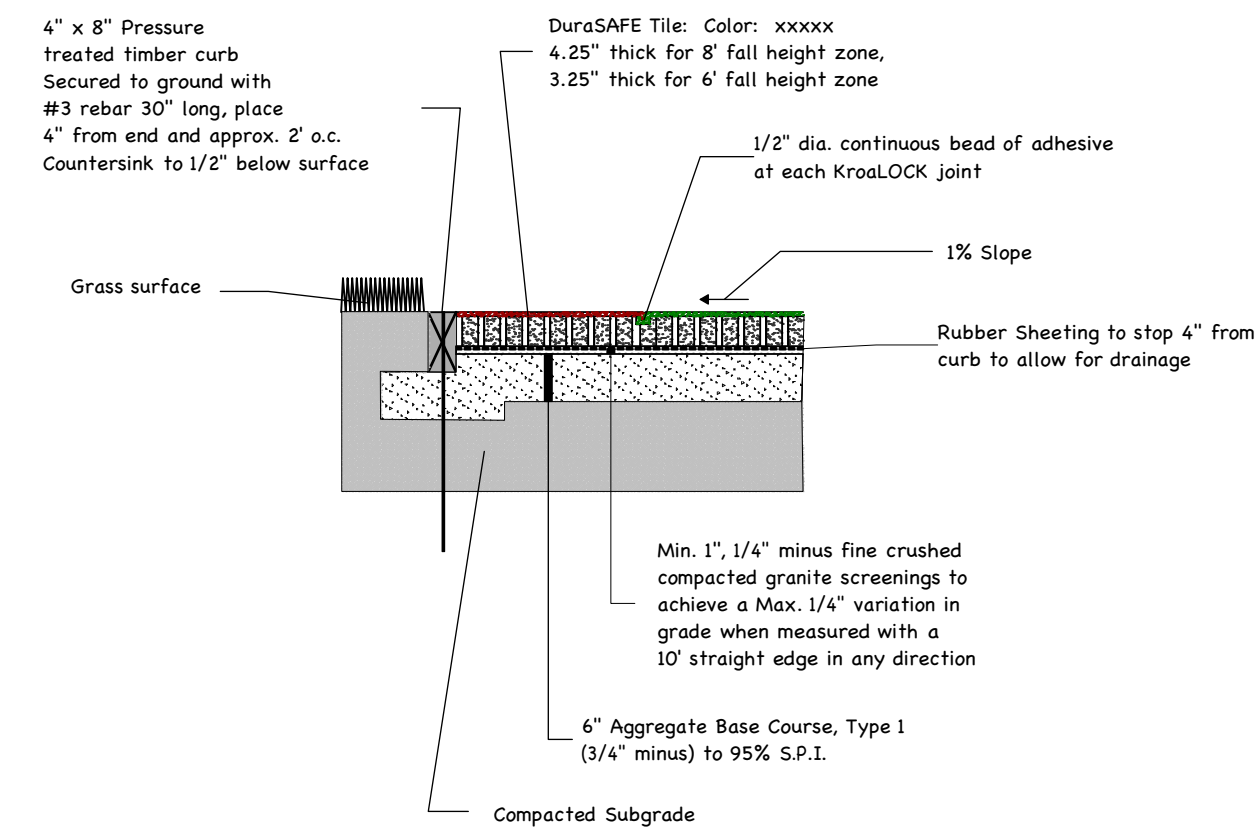
Notes:
1- Observations of roots shall occur prior to acceptance. Roots and soil may be removed during the observation process; substrate/soil shall be replaced after the observations have been completed.
2- See specifications for observation process and requirements.

6 Root Observation Detail (B&B)
Not to Scale

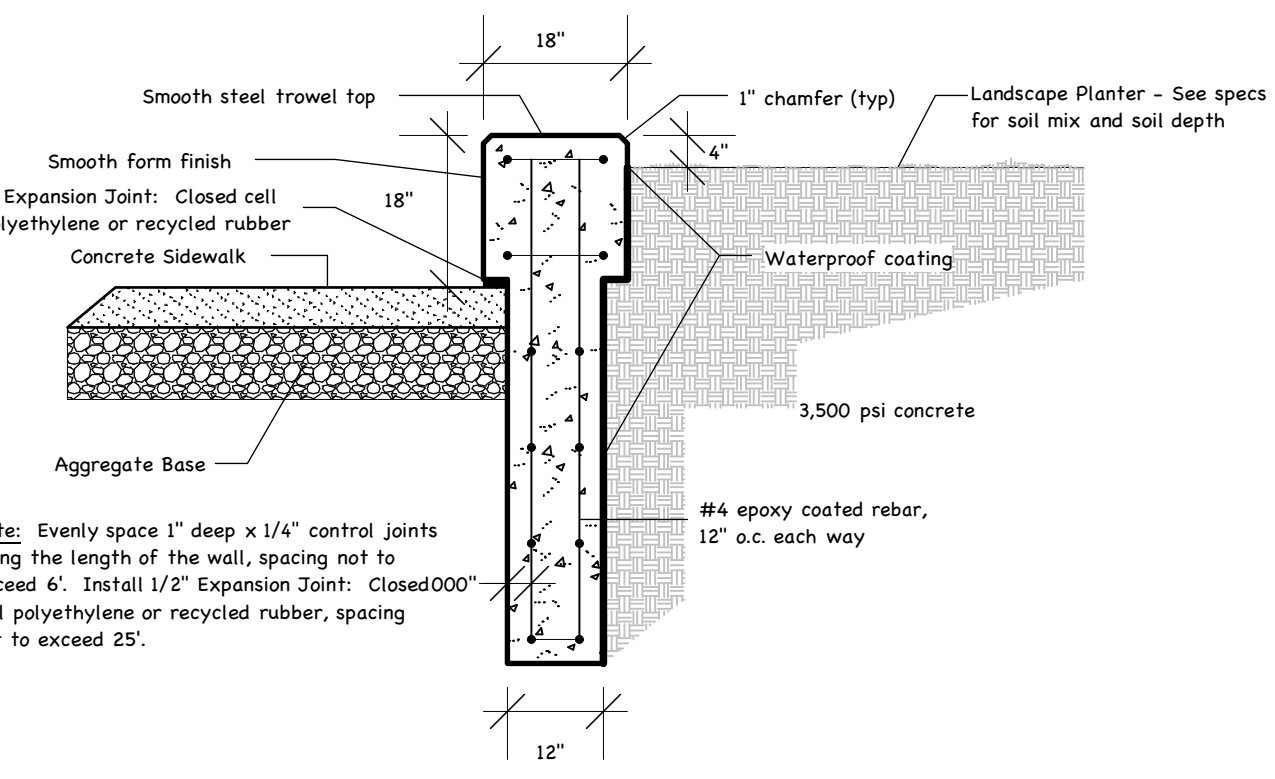


Notes:
1- Observations of roots shall occur prior to acceptance. Roots and substrate may be removed during the observation process; substrate/soil shall be replaced after observation has been completed.
2- Small roots (less than 1/2\"/>

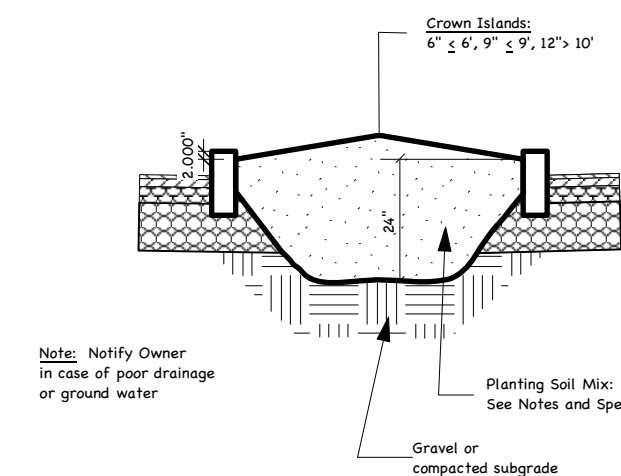
7 Root Observation Detail (Container)
Not to Scale



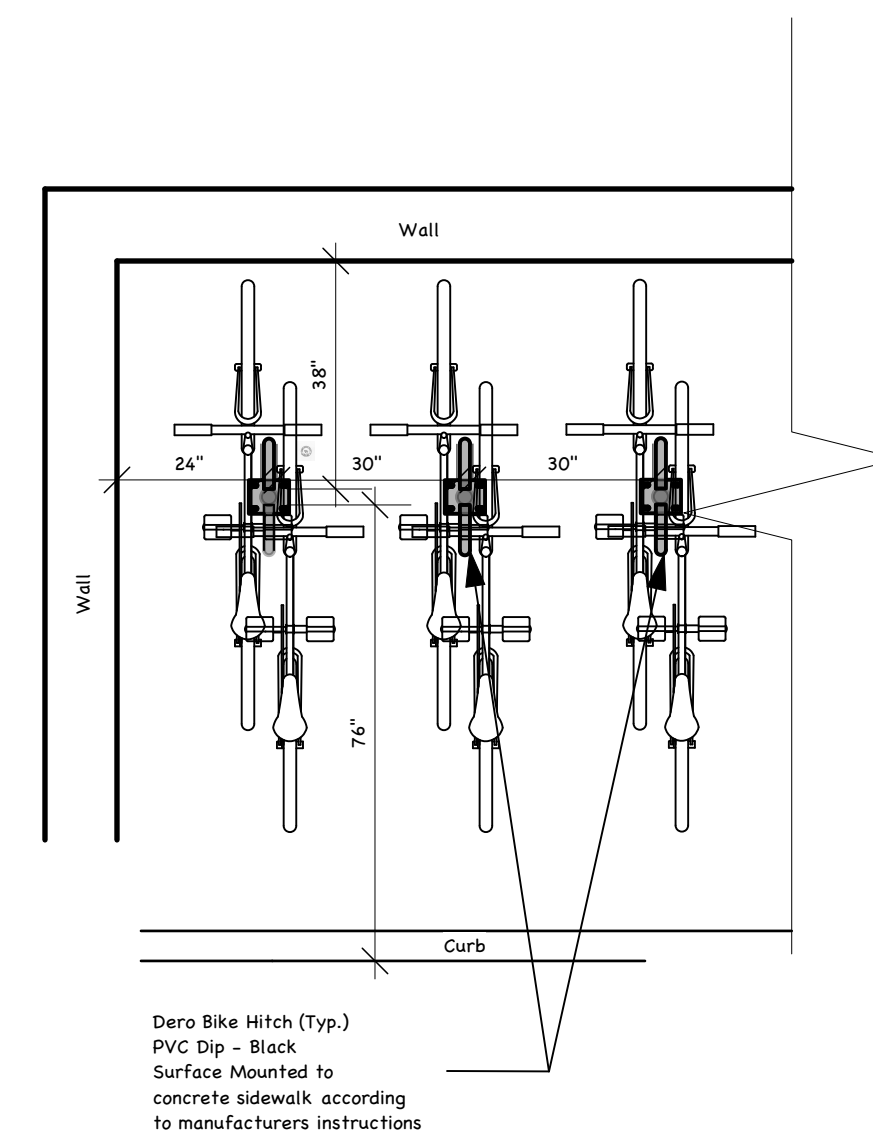
8 Playground Resilient Surface Detail
Not to Scale



9 Seatwall Planter Detail
Not to Scale

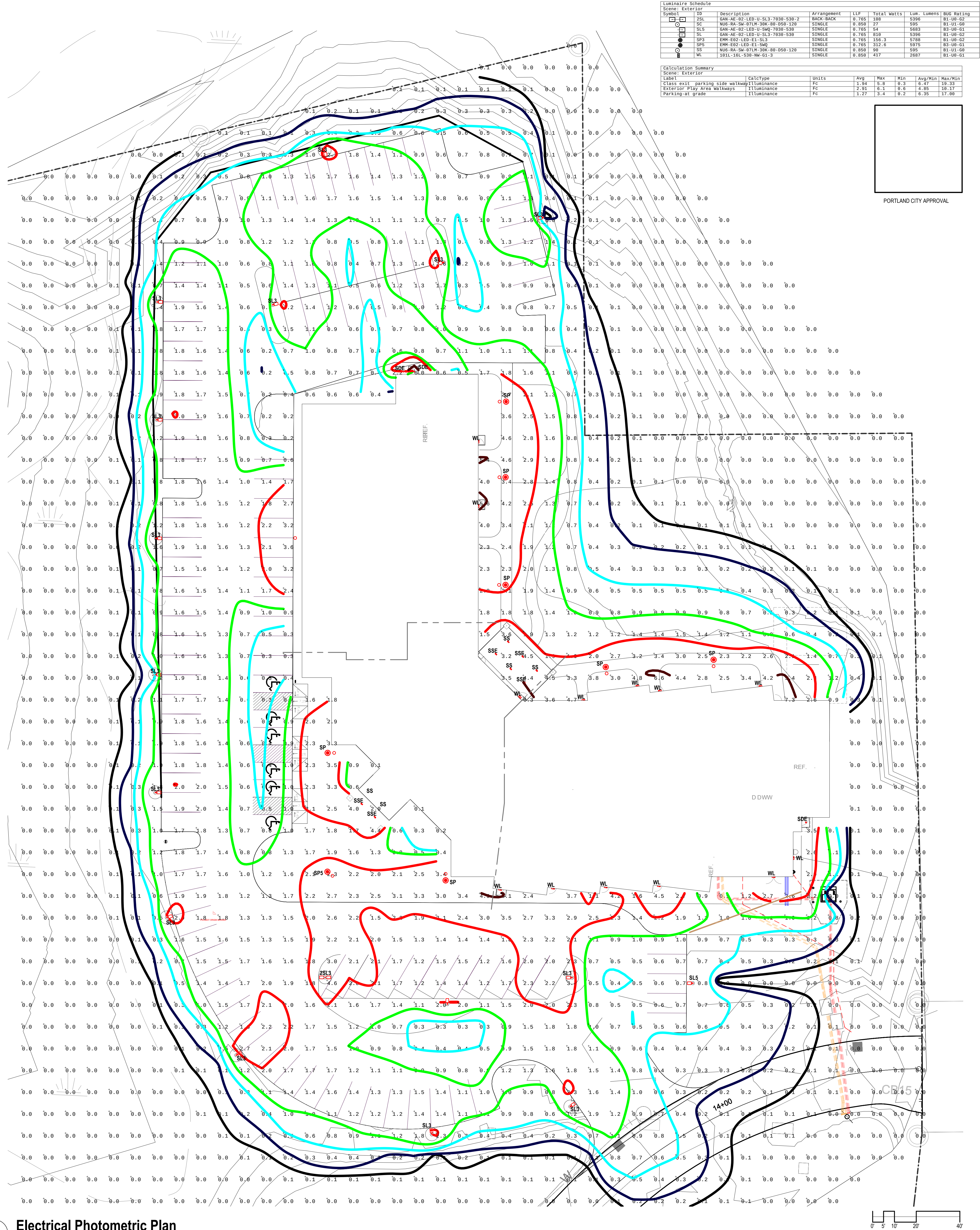


10 Typical Section - Landscape Island
Not to Scale



11 Dero Bike Hitch
Not to Scale

Portland City Approval



1 Electrical Photometric Plan
ESP101
1" = 20'-0"

ENVIRONMENTS FOR HEALTH ARCHITECTURE

88731 041 207 773861 103 Pine Street, Portland, ME 04101 e4h@e4harchitect.com

PORTLAND CITY APPROVAL

MAINE BEHAVIORAL HEALTHCARE
MaineHealth

CONSULTANT LOGO

KEY PLAN

MAINE BEHAVIORAL HEALTHCARE
CENTER OF EXCELLENCE IN AUTISM
AND DEVELOPMENTAL DISORDERS
100 ANDOVER ROAD
PORTLAND, ME

REV DESCRIPTION

DATE

NOT FOR CONSTRUCTION

SEAL:

PROJECT NUMBER: 195211200

DATE:

SHEET TITLE AND NUMBER:

ESP101

Photometric Plan



WETLAND
IMPACT #
3146 SF

SPACE & BULK TABLE

	Required	Proposed
Lot Size	none	9.30 acres
Minimum Street Frontage	60'	60'
Front Yard Minimum ¹	27'	75'+
Rear Yard	25'	125'±
Yard Right	25'	39'
Yard Left	25'	275'±
Maximum Lot Coverage	75%	23%
Maximum Height	75'	27'
Maximum Impervious Area	75%	23%
Pavement Setback	10'	10'
Off Street Parking Spaces	71	119
Loading Bays	0	0
Discharge to Wetland	25'	25'

¹ Measured from Andover Road

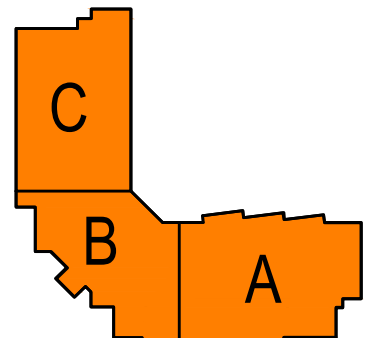
PORTLAND CITY APPROVAL

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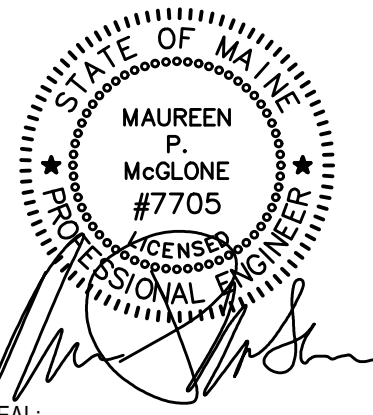


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Portland, ME 04101
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KEY PLAN

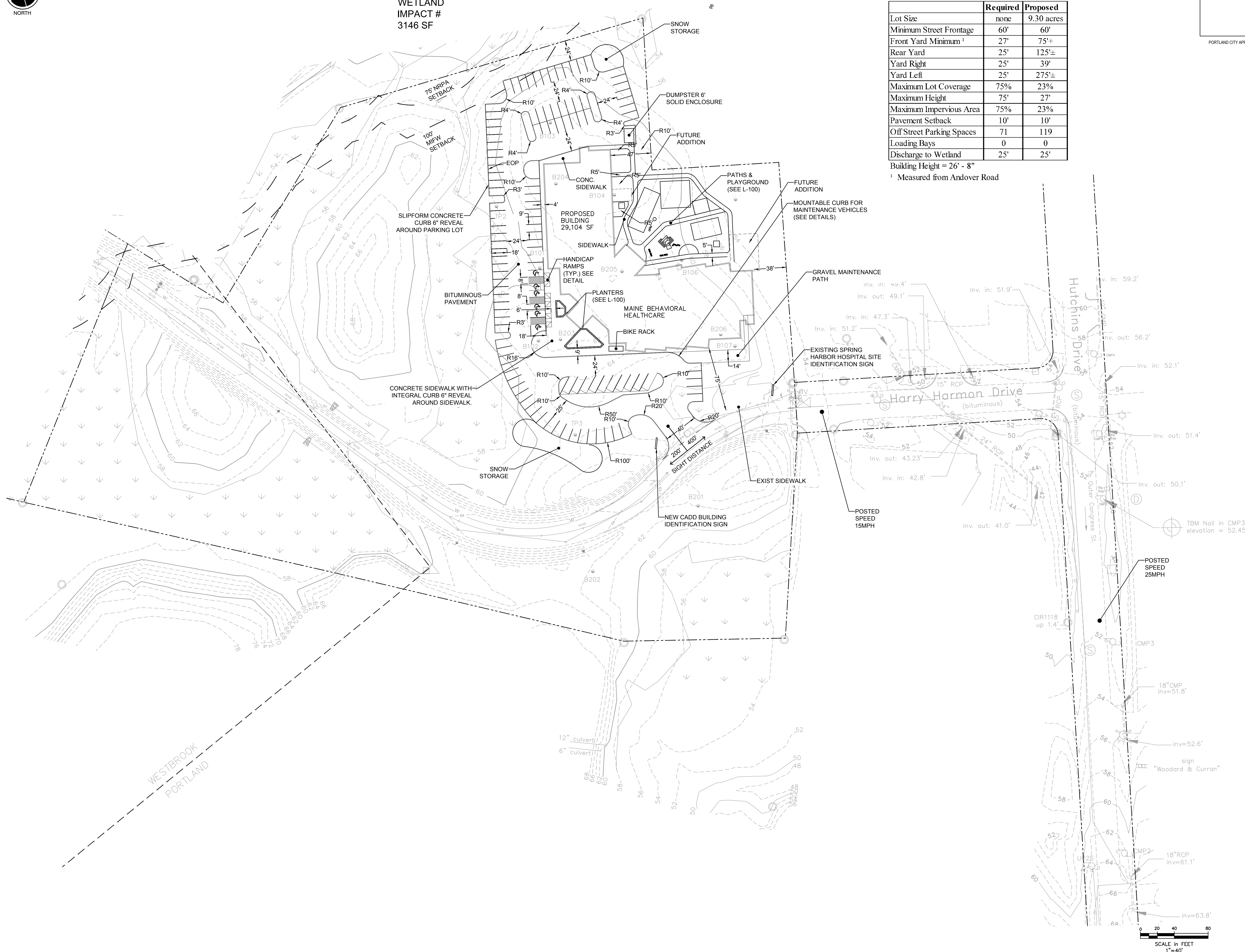
**MAINE BEHAVIORAL HEALTHCARE
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100 ANDOVER ROAD
PORTLAND, ME

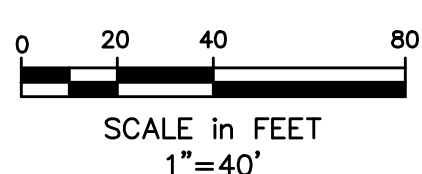
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PROJECT NUMBER:	181.0606
DATE:	08/22/20
SHEET TITLE AND NUMBER:	

SITE PLAN

C-101





—UE—	UNDERGROUND ELECTRIC
—SS—	SANITARY SEWER
—OHE—	OVERHEAD ELECTRIC
—W—	WATER

888.781.8441 207.773.8841 163 Fore Street, Portland, ME 04101
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**MAINE BEHAVIORAL HEALTHCARE
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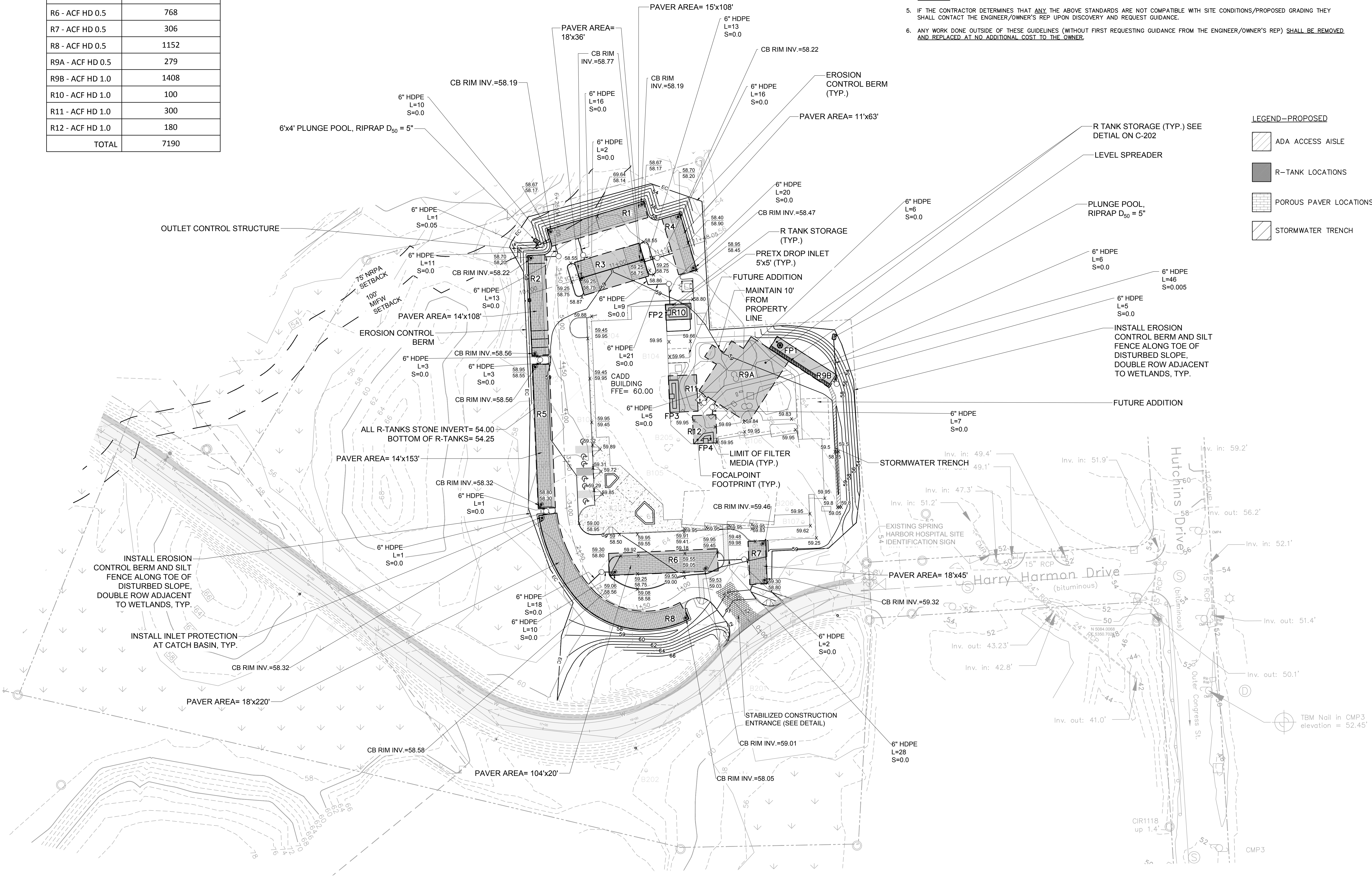
UTILITIES

C-103



RTANK SYSTEMS

	Number of Chambers
R1 - ACF HD 0.5	484
R2 - ACF HD 0.5	484
R3 - ACF HD 0.5	725
R4 - ACF HD 0.5	300
R5 - ACF HD 0.5	704
R6 - ACF HD 0.5	768
R7 - ACF HD 0.5	306
R8 - ACF HD 0.5	1152
R9A - ACF HD 0.5	279
R9B - ACF HD 1.0	1408
R10 - ACF HD 1.0	100
R11 - ACF HD 1.0	300
R12 - ACF HD 1.0	180
TOTAL	7190

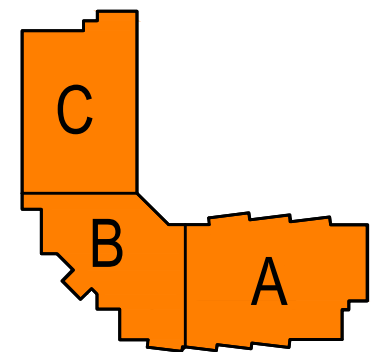


GRADING NOTES

- ALL WALKWAYS, PEDESTRIAN AREAS, AND ACCESSIBLE PARKING AISLES SHALL CONFORM WITH THE APPROPRIATE ADA GUIDELINES. GRADING SHALL BE AS FOLLOWS:
- WALKWAYS SHALL HAVE A MAXIMUM CROSS SLOPE (PERPENDICULAR TO THE DIRECTION OF TRAVEL) OF 2% AND A MAXIMUM RUNNING SLOPE (ALONG THE DIRECTION OF TRAVEL) OF 5%.
- CURB RAMP OR RAMPS WITH HANDRAILS MAY HAVE A RUNNING SLOPE OF UP TO 8.3% (1" PER FOOT); HOWEVER, THE MAXIMUM CROSS SLOPE IS STILL 2%.
- LANDING AREAS, ACCESSIBLE PARKING AISLES, AND AREAS WHERE PEDESTRIANS ARE TURNING SHALL HAVE A MAXIMUM SLOPE OF 2% IN ALL DIRECTIONS.
- IF THE CONTRACTOR DETERMINES THAT ANY OF THE ABOVE STANDARDS ARE NOT COMPATIBLE WITH SITE CONDITIONS/PROPOSED GRADING THEY SHALL CONTACT THE ENGINEER/OWNER'S REP UPON DISCOVERY AND REQUEST GUIDANCE.
- ANY WORK DONE OUTSIDE OF THESE GUIDELINES (WITHOUT FIRST REQUESTING GUIDANCE FROM THE ENGINEER/OWNER'S REP) SHALL BE REMOVED AND REPLACED AT NO ADDITIONAL COST TO THE OWNER.

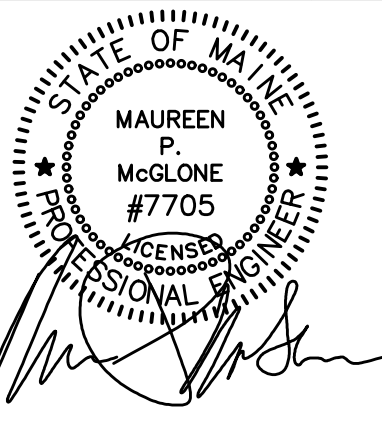
LEGEND-PROPOSED

- ADA ACCESS AISLE
- R-TANK LOCATIONS
- POROUS PAVER LOCATIONS
- STORMWATER TRENCH



MAINE BEHAVIORAL HEALTHCARE
CENTER OF EXCELLENCE IN AUTISM
AND DEVELOPMENTAL DISORDERS
100 ANDOVER ROAD
PORTLAND, ME

REV DESCRIPTION	DATE
A DEP PERMITTING	08/23/19
B DEP REV CITY PRELIM	10/22/19
C 90% CD OWNER REVIEW	11/20/19
D CITY SUBMISSION	11/21/19
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F PER CITY COMMENTS	03/09/20

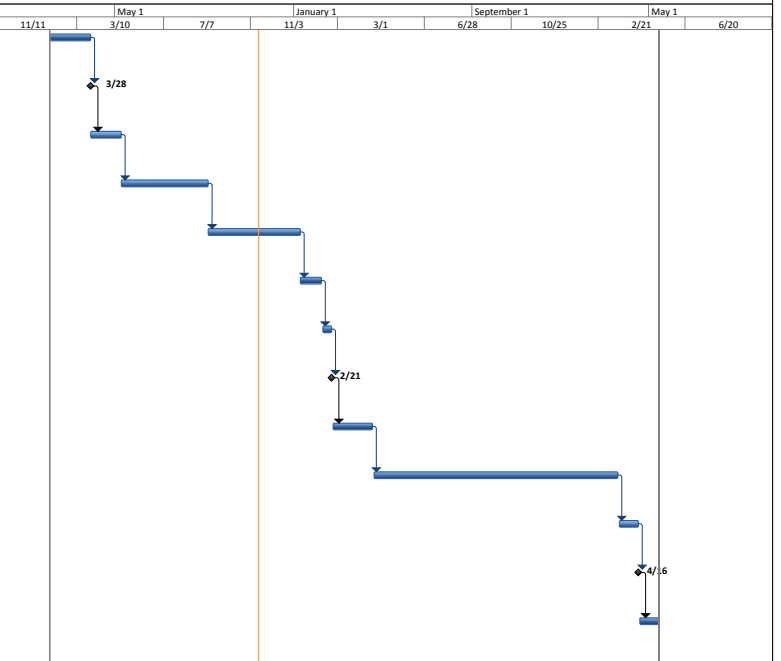


PROJECT NUMBER: 181.06068
DATE: 08/22/2019
SHEET TITLE AND NUMBER:

GRADING & DRAINAGE

MaineHealth
Center of Excellence for Developmental Disorders

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	11/11	May 1	3/10	7/7	January 1	3/1	September 1	6/28	10/25	May 1	6/20
1		Conceptual Design	40 days	Fri 2/1/19	Thu 3/28/19												
2		Issue Owner RFP	0 days	Thu 3/28/19	Thu 3/28/19	1											
3		Schematic Design	30 days	Fri 3/29/19	Thu 5/9/19	2											
4		Design Development	85 days	Fri 5/10/19	Thu 9/5/19	3											
5		IFC Documents	90 days	Fri 9/6/19	Thu 1/9/20	4											
6		GMP Development	21 days	Fri 1/10/20	Fri 2/7/20	5											
7		GMP Review	10 days	Mon 2/10/20	Fri 2/21/20	6											
8		Notice to Proceed	0 days	Fri 2/21/20	Fri 2/21/20	7											
9		Site Clearing & Preliminary Sitework	40 days	Mon 2/24/20	Fri 4/17/20	8											
10		Building Construction	240 days	Mon 4/20/20	Fri 3/19/21	9											
11		Landscaping & Plantings	20 days	Mon 3/22/21	Fri 4/16/21	10											
12		Occupancy	0 days	Fri 4/16/21	Fri 4/16/21	11											
13		Closeout	20 days	Mon 4/19/21	Fri 5/14/21	12											



Project: MaineHealth - COE
Date: Thu 11/14/19

Task	Summary	External Milestone	Inactive Summary	Manual Summary Rollup	Finish-only	3
Split	Project Summary	Inactive Task	Manual Task	Manual Summary	Deadline	+
Milestone	External Tasks	Inactive Milestone	Duration-only	Start-only	Progress	



171
202

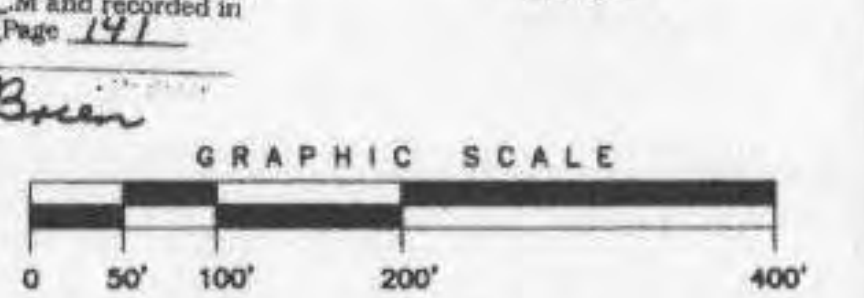
- PLAN REFERENCES:**
1. PLAN FOR CITY OF PORTLAND CONGRESS STREET SEWERAGE SYSTEM BY E.C. JORDAN DATED MAY 22, 1967 REVISED JULY 5, 1967.
 2. FINAL PLAN PHASE 1 STROUDWATER ESTATES, PORTLAND, MAINE, BY LAND USE CONSULTANTS, INC. DATED SEPT. 10, 1979 RECORDED IN PLAN BOOK 124, PAGE 80.
 3. FINAL PLAN PHASE 2 SUBDIVISION STROUDWATER ESTATES, PORTLAND, MAINE, BY E.C. JORDAN DATED SEPT. 10, 1984 RECORDED IN PLAN BOOK 144, PAGE 73.
 4. FINAL PLAN PHASE 2 AMENDMENT 1 SUBDIVISION STROUDWATER ESTATES, PORTLAND, MAINE, BY E.C. JORDAN DATED DEC. 13, 1985 RECORDED IN PLAN BOOK 153, PAGE 12.
 5. SUBDIVISION - PLAT PLAN, PHASE 3, STROUDWATER ESTATE MADE FOR GEORGE M. HUTCHINS DATED SEPT. 11, 1992 BY OWEN HASKELL, INC. (NOT APPROVED).
 6. STANDARD BOUNDARY SURVEY, HARRY HARMON DRIVE - STROUDWATER ESTATES FOR CITY OF PORTLAND STREET ACCEPTANCE MADE FOR GEORGE M. HUTCHINS DATED JAN. 21, 1997 BY OWEN HASKELL, INC. RECORDED IN PLAN BOOK 200 PAGE 312 ON JULY 7, 2000.
 7. TOPOGRAPHIC PLAN - LOT 9, STROUDWATER ESTATES, HUTCHINS DRIVE, PORTLAND & WESTBROOK, MAINE DATED JULY 2, 1998 BY TITCOMB ASSOCIATES.

CERTIFICATION:

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 STANDARDS FOR A CATEGORY 1, CONDITION II SURVEY WITH THE FOLLOWING EXCEPTIONS:

- 1) NO NEW DEED DESCRIPTIONS; 2) NO REPORT
- 3) NOT ALL CORNERS SET

John P.R. Cyr
JOHN P.R. CYR, PLS NO. 509
DATE 6-26-01
State of Maine, Cumberland as
Registry of Deeds
Received April 12, 2002
at 10 h 53 m 38 s and recorded in
Plan No. 202 Page 141
John B.O'Brien



MASTER PLAN

6-26-01	ADDED P.O.B., TOTAL AREA & 81.45' DIST. ON LOT 9
8-12-01	REVISED LOT 100 AND ADDED NOTES
2-23-00	ADDED NAMES ALONG CONGRESS STREET
STANDARD BOUNDARY SURVEY	
SUBDIVISION - STROUDWATER ESTATES	
ON HUTCHINS DRIVE & HARRY HARMON DRIVE	
PORTLAND, MAINE	
MADE FOR	
GEORGE M. HUTCHINS	
1000 CONGRESS STREET, PORTLAND, MAINE	
OWEN HASKELL, INC.	
16 CARCO ST., PORTLAND, ME 04101 (207) 774-0424	
PROFESSIONAL LAND SURVEYORS	
Drawn By	CHI
Trace By	JLW
Check By	JFRC
Book No.	-
Date	OCT. 29, 1998
Job No.	92035P
Scale	1" = 100'
Drwg. No.	1 of 2

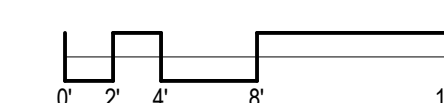
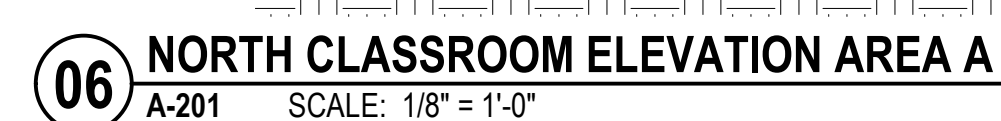


PORTLAND CITY APPROVAL
NOT TO SCALE



PORTLAND CITY APPROVAL
NOT TO SCALE

Maine Behavioral Healthcare
Center for Autism & Developmental Disorders
Center of Excellence

[illegible]

NOT FOR
CONSTRUCTION

SEAL:

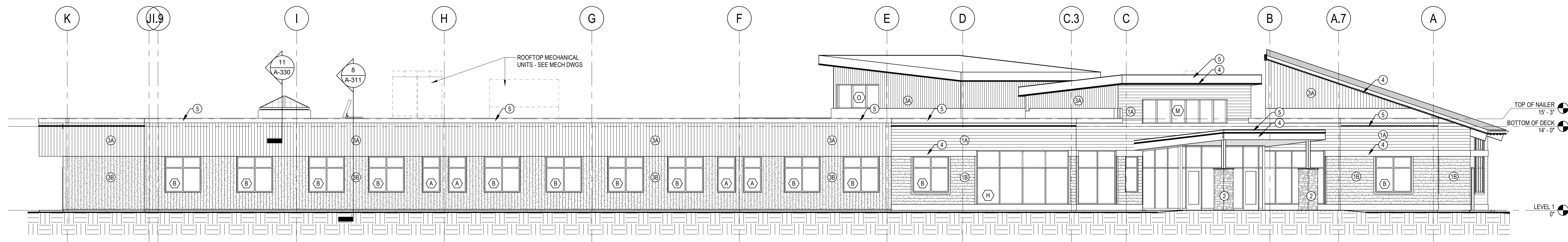
PROJECT NUMBER: 2018005

DATE: November 08, 2019

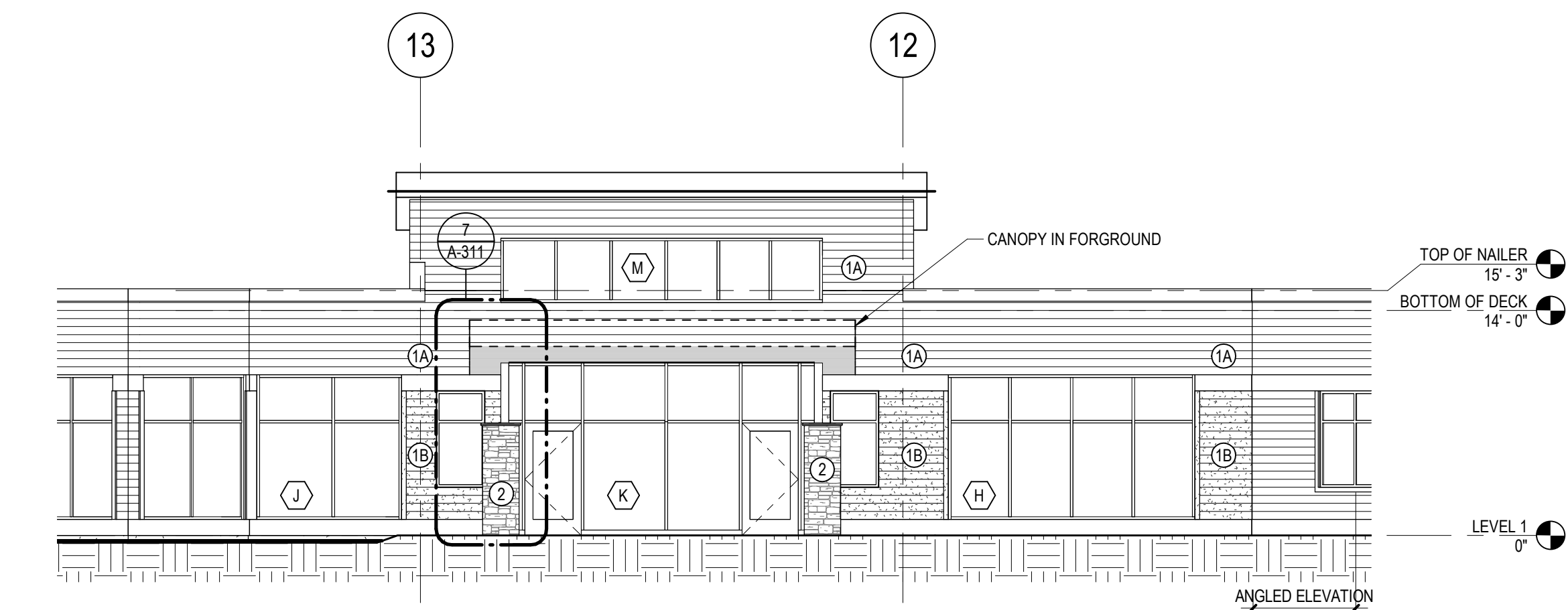
SHEET TITLE AND NUMBER:

A-201

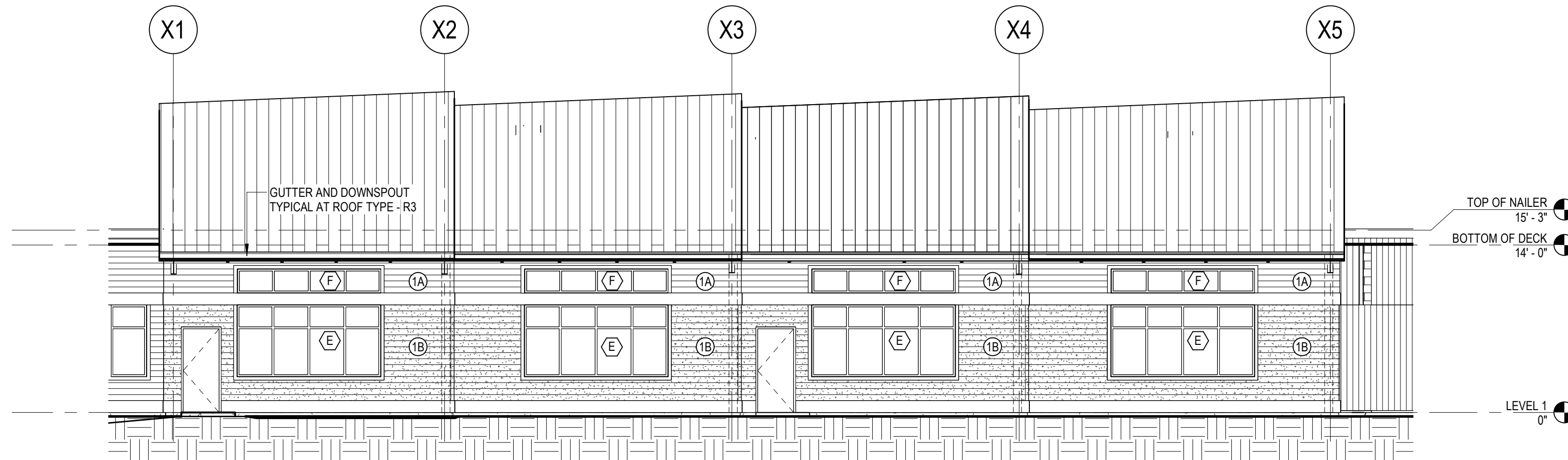
EXTERIOR ELEVATIONS



01 WEST ELEVATION AREA C
A-200 SCALE: 1/8" = 1'-0"



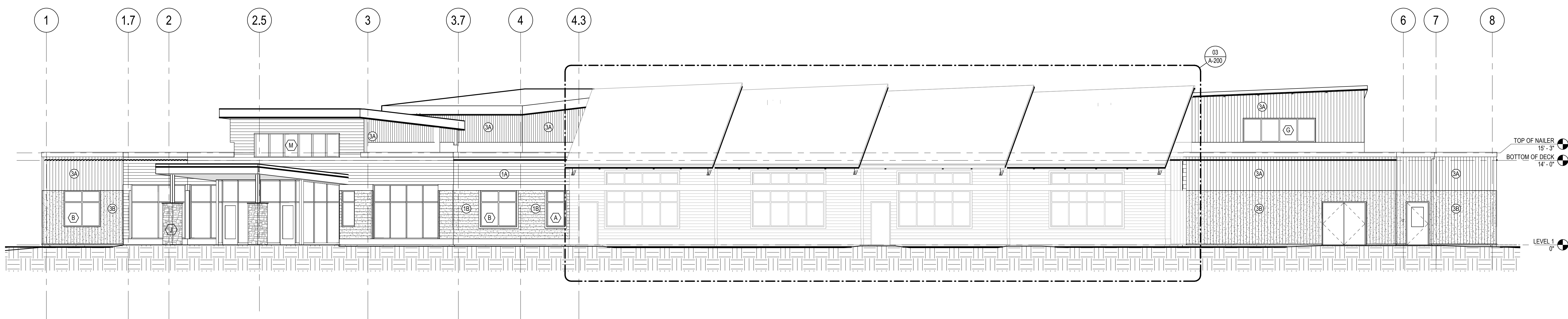
02 SOUTH ELEVATION AREA B
A-200 SCALE: 1/8" = 1'-0"



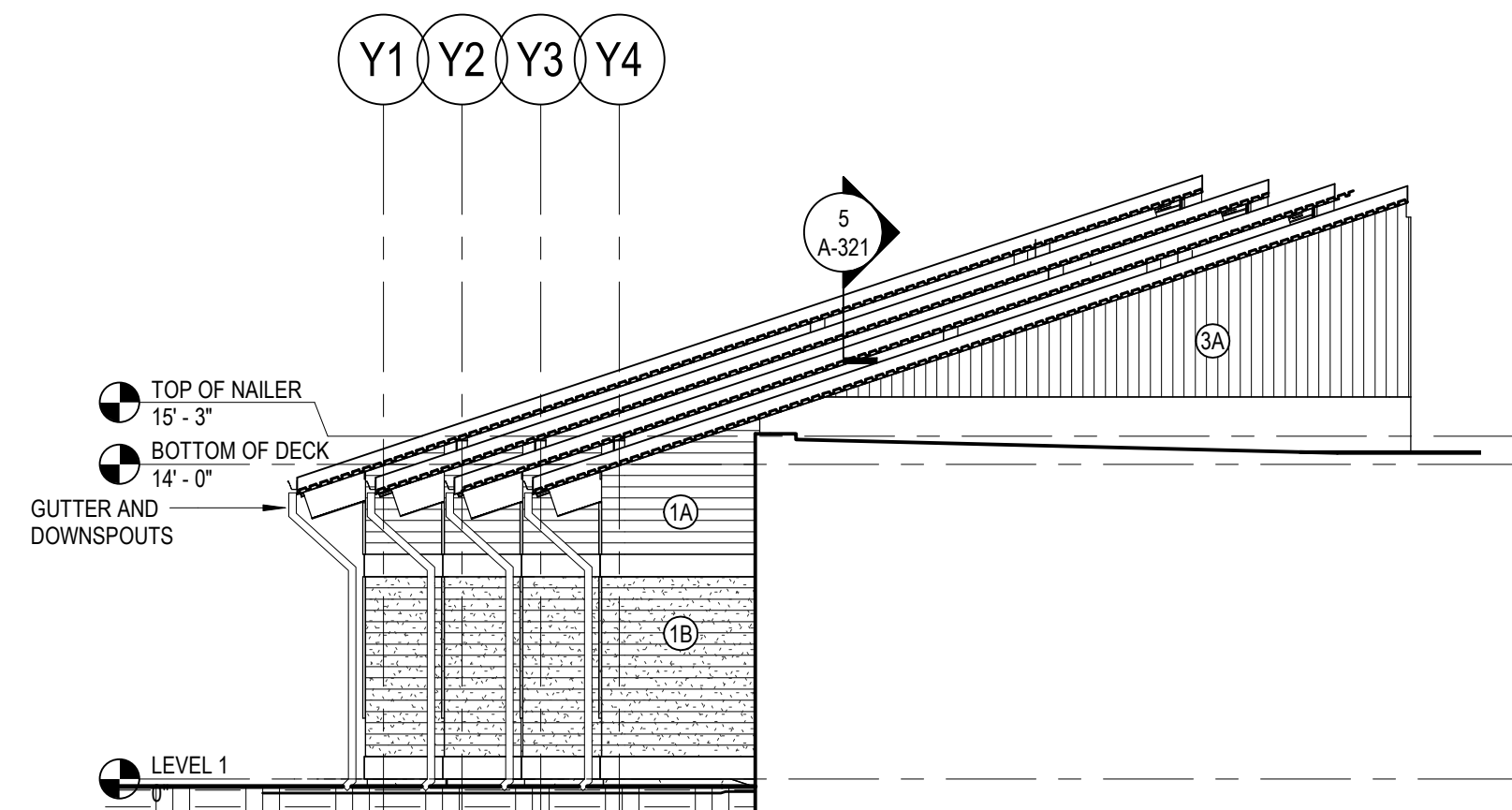
03 SOUTH CLASSROOM ELEVATION AREA A
A-200 SCALE: 1/8" = 1'-0"

- EXTERIOR MATERIAL LEGEND**
SCALE: 1/8" = 1'-0"
- (1A) FIBER CEMENT SIDING: HARDIE BOARD
COLOR: 1A & 1B TBD
 - (1B) FIBER CEMENT SIDING: NICHHA - KURASTONE LEDGESTONE W/ CHISELED SILL
COLOR: TBD
 - (3A) METAL SIDING: ATAS - RIGID WALL
COLOR: 3A & 3B TBD
 - (4) CEMENTITIOUS TRIM
COLOR: TBD
 - (5) PREFINISHED METAL ROOF EDGE
COLOR: TBD

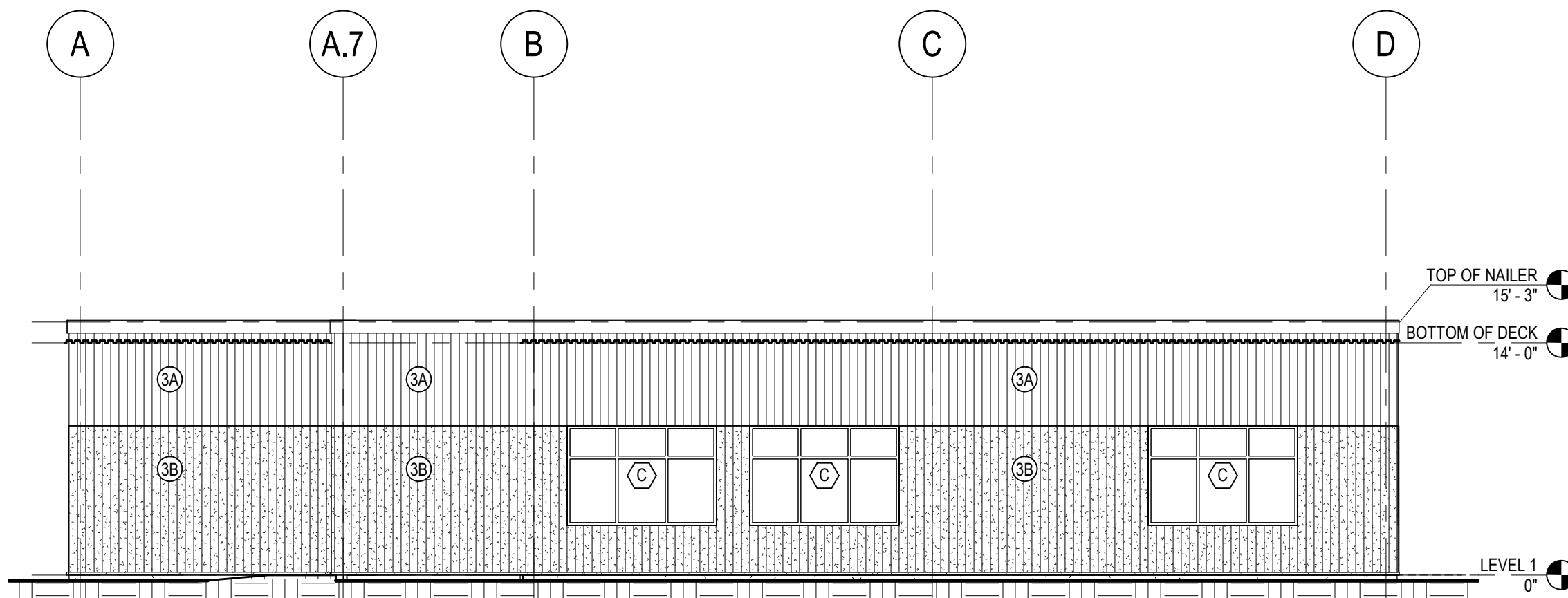
04 SOUTH ELEVATION AREA A
A-200 SCALE: 1/8" = 1'-0"



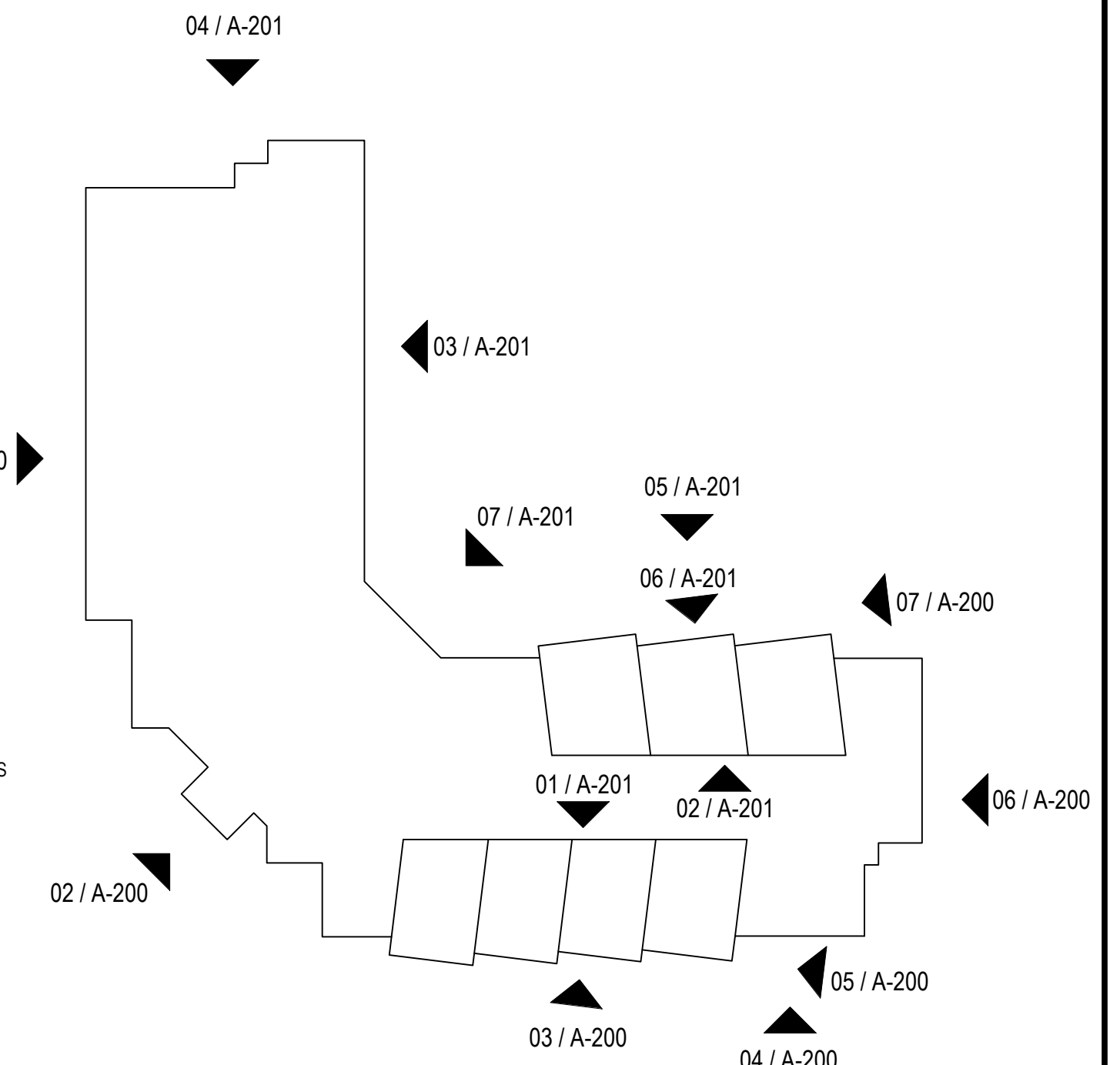
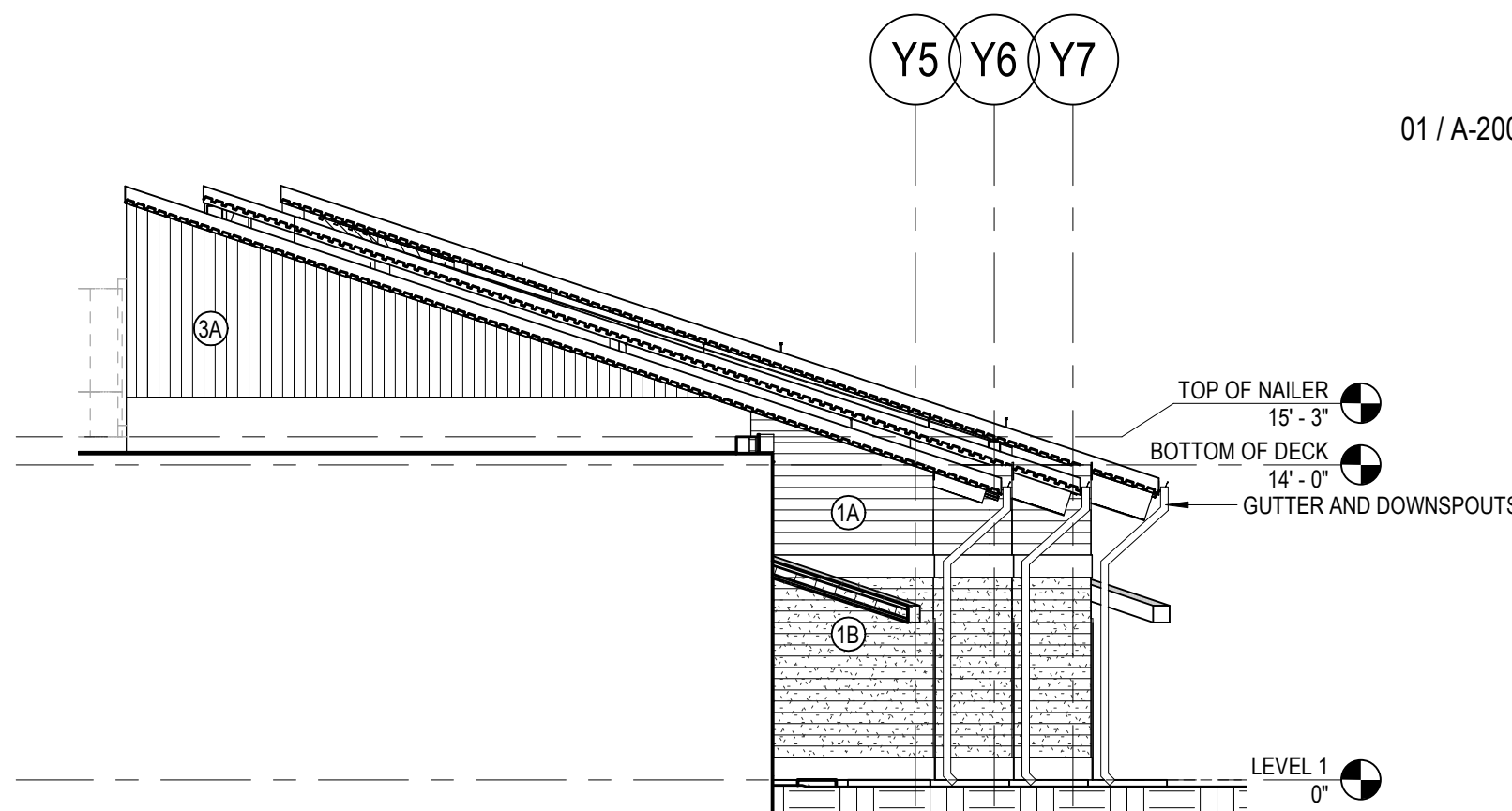
05 CLASS WING SOUTH
A-200 SCALE: 1/8" = 1'-0"



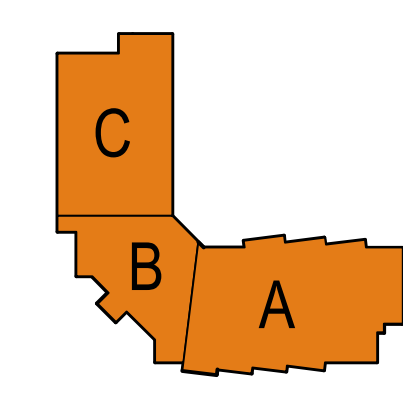
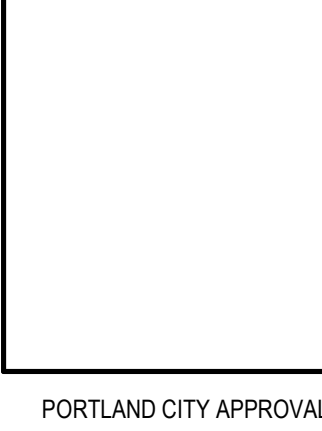
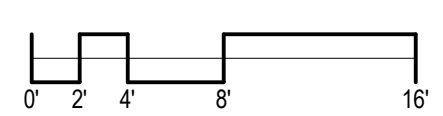
06 EAST ELEVATION AREA A
A-200 SCALE: 1/8" = 1'-0"



07 CLASS WING EAST
A-200 SCALE: 1/8" = 1'-0"



KEY PLAN
SCALE: 3" = 1'-0"



KEY PLAN

REV DESCRIPTION	DATE
00 PRICING	08/16/19
90% CD OWNER REVIEW	11/20/19

NOT FOR CONSTRUCTION

SEAL:
PROJECT NUMBER: 2018005
DATE: November 08, 2019
SHEET TITLE AND NUMBER:



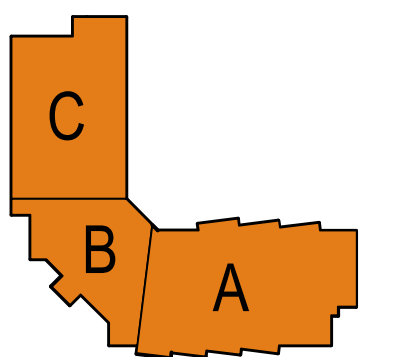
PORTLAND CITY APPROVAL

MAINE BEHAVIORAL HEALTHCARE
CENTER OF EXCELLENCE IN AUTISM
AND DEVELOPMENTAL DISORDERS
100 ANDOVER ROAD
PORTLAND, ME

REV	DESCRIPTION	DATE
00	PRICING	08/16/19
90	CD OWNER REVIEW	11/20/19

NOT FOR
CONSTRUCTION

SEAL:	
PROJECT NUMBER:	2018005
DATE:	November 08, 2019
SHEET TITLE AND NUMBER:	



**MAINE BEHAVIORAL HEALTHCARE
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AND DEVELOPMENTAL DISORDERS**
100 ANDOVER ROAD
PORTLAND, ME

**NOT FOR
CONSTRUCTION**

A-110

1 ROOF PLAN OVERALL
A-110 SCALE: 3/32" = 1'-0"

ROOF PLAN LEGEND

- LOW SLOPED STEEL AREA WITH FLAT MEMBRANE ROOF TYPE - R1
- TAPERED INSULATION AREAS WITH ARROW INDICATING DRAINAGE DIRECTION - ROOF TYPE - R2
- SLOPED ROOF AREA WITH STANDING SEAM METAL ROOF TYPE - R3
- ROOF DRAIN
- WALKWAY DESIGNATION - WALKWAY ROLL PROVIDED BY ROOFING MANUFACTURER

ROOF TYPE - R1 MAIN FLAT ROOF

- EPDM ROOF MEMBRANE
- 12" COVER BOARD
- TAPERED INSULATION FOR MIN 1/4" / 1'-0" DRAINAGE
- 4" MIN RIGID INSULATION
- VAPOR RETARDER
- 1/2" THERMAL BARRIER
- STRUCTURAL METAL DECK

ROOF TYPE - R2 LOW SLOPE ROOF

- EPDM ROOF MEMBRANE
- 12" COVER BOARD
- TAPERED INSULATION FOR MIN 1/4" / 1'-0" DRAINAGE
- 4" MIN RIGID INSULATION
- VAPOR RETARDER
- 1/2" THERMAL BARRIER
- STRUCTURAL METAL DECK

ROOF TYPE - R3 LOW SLOPE ROOF

- 2" METAL STANDING SEAM PANEL
- 4" ZEE-RIB SUPPORT CHANNELS
- #30 FELT UNDERLAYMENT
- 4" RIGID INSULATION
- VAPOR BARRIER
- 1/2" THERMAL BARRIER
- STRUCTURAL DECK

ROOF TYPE - R4 LOW SLOPE ROOF (NO INSULATION)

- EPDM ROOF MEMBRANE
- 12" COVER BOARD
- 1/2" THERMAL BARRIER
- STRUCTURAL METAL DECK

MECHANICAL ROOFTOP UNITS

SKYLIGHT

ACCESS HATCH W/ LADDER SAFETY POST

HATCH SAFETY RAILING SYSTEM W/ SELF LATCHING GATE

ROOF EDGE SPILLOUT SCUPPER TYP EACH SIDE

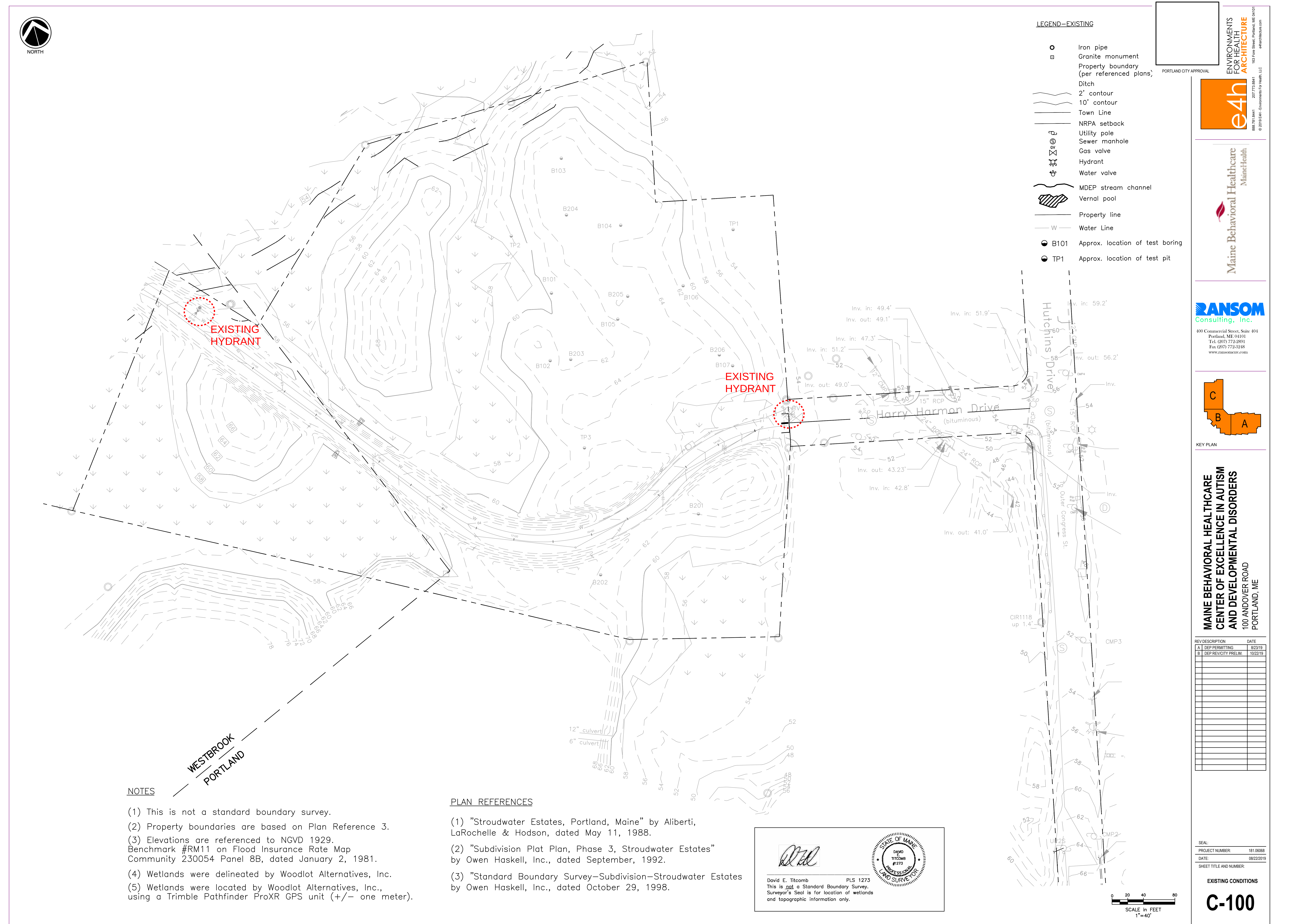
ROOF EDGE SPILLOUT W/ SPLASHPADS ON LOWER ROOF

PREFINISHED ALUMINUM GUTTER AND DOWNSPOUT - COLOR TO MATCH ROOF EDGE - TYPICAL AT ALL SHED ROOF AREAS

WALKWAY PADDING

PROJECT ORIGIN MARKER

0 2 4 8 16'



	Iron pipe	
	Granite monument	
	Property boundary (per referenced plans)	
	Ditch	
	2' contour	
	10' contour	
	Town Line	
	NRPA setback	
	Utility pole	
	Sewer manhole	
	Gas valve	
	Hydrant	
	Water valve	
	MDEP stream channel	
	Vernal pool	
	Property line	
	Water Line	
	B101	Approx. location of test boring
	TP1	Approx. location of test pit

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**ENVIRONMENTS
 FOR HEALTH
 ARCHITECTURE**
 888.781.8441 207.773.8841
 2019 E4H - Environments For Health, LLC
 163 Fore Street, Portland, ME 0
 e4harchitecture.com



400 Commercial Street, Suite 404
Portland, ME 04101
Tel. (207) 772-2891
Fax (207) 772-3248
www.raisonnery.com



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AND DEVELOPMENTAL DISORDERS**
100 ANDOVER ROAD
PORTLAND, ME

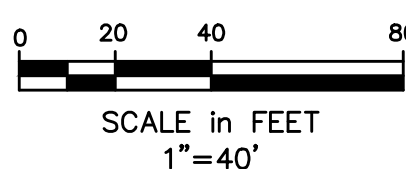
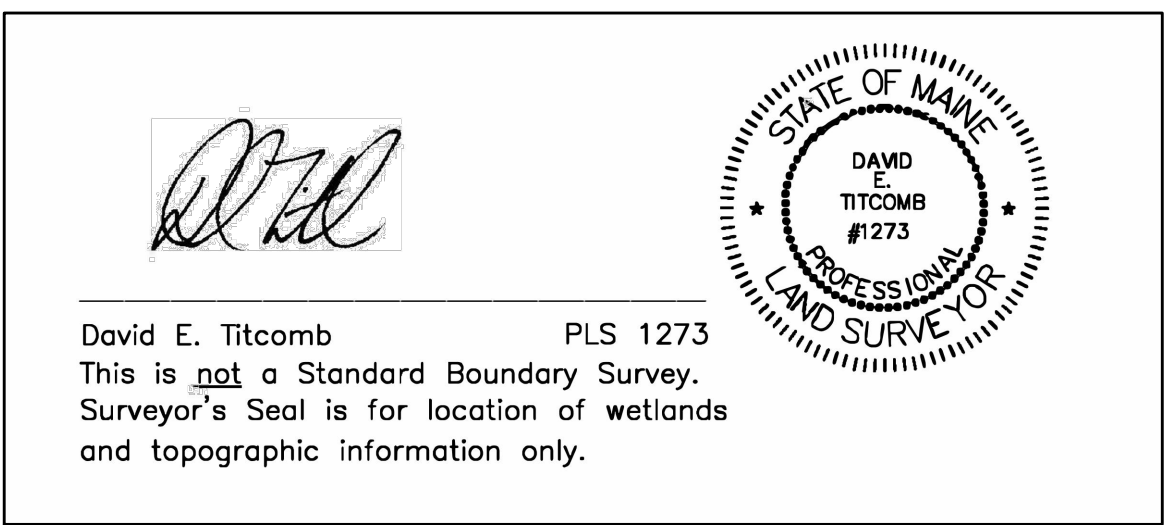
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SEAL:	
PROJECT NUMBER:	181.06068
DATE:	08/22/201
SHEET TITLE AND NUMBER:	

C-100

- (1) This is not a standard boundary survey.
- (2) Property boundaries are based on Plan Reference 3.
- (3) Elevations are referenced to NGVD 1929.
Benchmark #RM11 on Flood Insurance Rate Map
Community 230054 Panel 8B, dated January 2, 1981.
- (4) Wetlands were delineated by Woodlot Alternatives, Inc.
- (5) Wetlands were located by Woodlot Alternatives, Inc.,
using a Trimble Pathfinder ProXR GPS unit (+/- one meter).

- (1) "Stroudwater Estates, Portland, Maine" by Aliberti, LaRoche & Hodson, dated May 11, 1988.
- (2) "Subdivision Plat Plan, Phase 3, Stroudwater Estates" by Owen Haskell, Inc., dated September, 1992.
- (3) "Standard Boundary Survey-Subdivision-Stroudwater Estates by Owen Haskell, Inc., dated October 29, 1998.





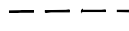
WETLAND
IMPACT #
3146 SF

SPACE & BULK TABLE

	Required	Proposed
Lot Size	none	9.30 acres
Minimum Street Frontage	60'	60'
Front Yard Minimum ¹	27'	75'+
Rear Yard	25'	125'±
Yard Right	25'	39'
Yard Left	25'	275'±
Maximum Lot Coverage	75%	23%
Maximum Height	75'	27'
Maximum Impervious Area	75%	23%
Pavement Setback	10'	10'
Off Street Parking Spaces	71	119
Loading Bays	0	0
Discharge to Wetland	25'	25'

¹ Measured from Andover Road

LEGEND—EXISTING

- | | |
|---|---|
|  | Iron pipe |
|  | Granite monument |
|  | |
| | Property boundary
(per referenced plans) |
|  | |
| | Ditch |
|  | 2' contour |
|  | 10' contour |
|  | Town Line |
|  | NRPA setback |
|  | Utility pole |
|  | Sewer manhole |
|  | Gas valve |
|  | Hydrant |
|  | Water valve |
|  | |
| | MDEP stream channel |
|  | |
| | Property line |
|  | |
| | Water Line |
|  | B101 |
| | Approx. location of test boring |
|  | TP1 |
| | Approx. location of test pit |

PORTLAND CITY APPROVAL

ENVIRONMENTS
FOR HEALTH
ARCHITECTURE

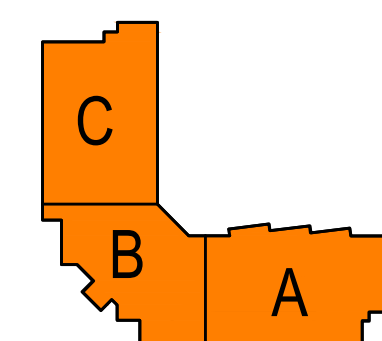
163 Fore Street, Portland, ME 04101
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e4architecture.com

Maine Behavioral Healthcare
MaineHealth

400 Commercial Street, Suite 404
Portland, ME 04101
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KEY PLAN

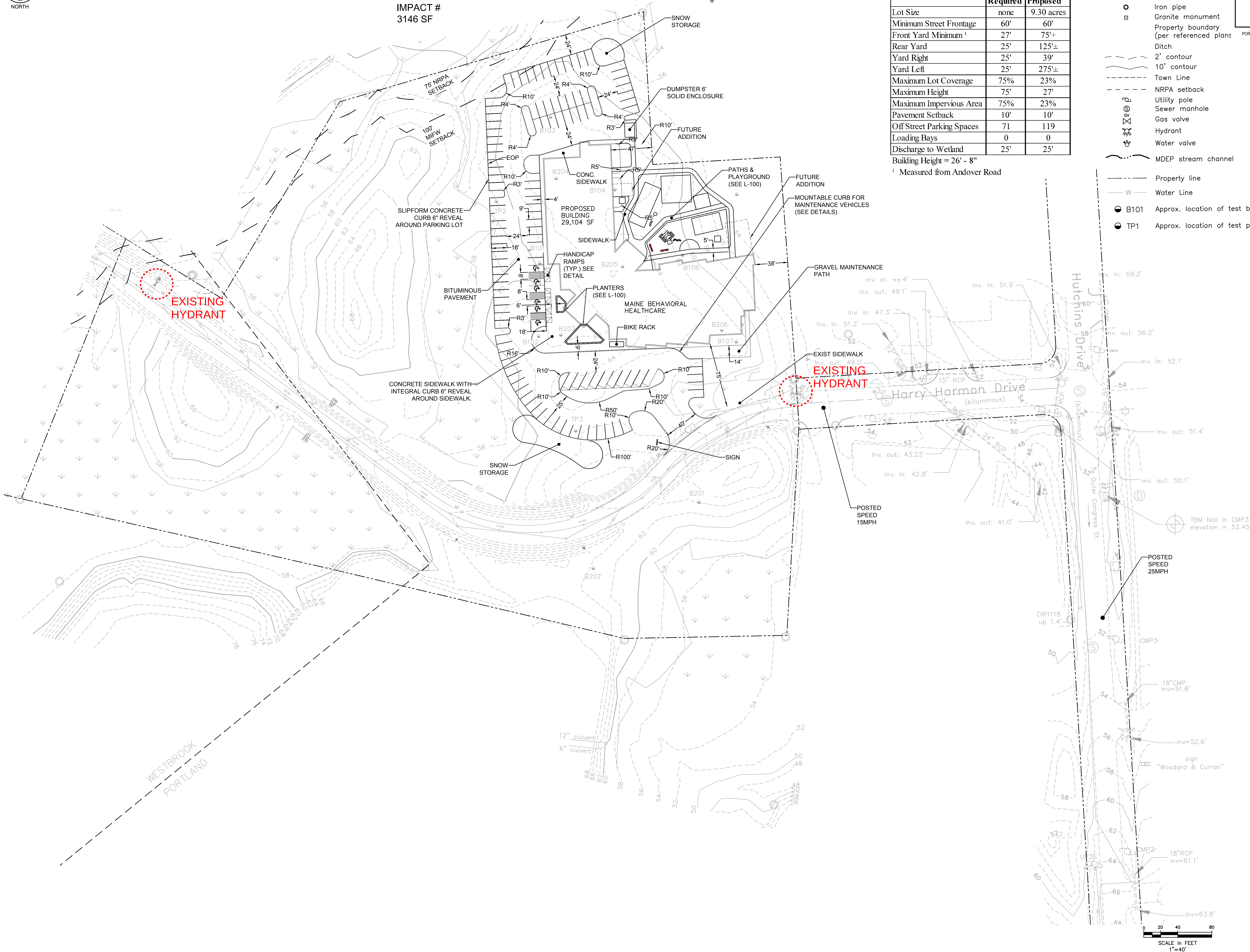
**MAINE BEHAVIORAL HEALTHCARE
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AND DEVELOPMENTAL DISORDERS**
100 ANDOVER ROAD
PORTLAND, ME

[illegible]

PROJECT NUMBER:	181.06068
DATE:	08/22/201
SHEET TITLE AND NUMBER:	

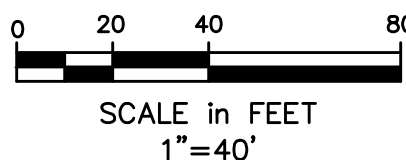
SITE PLAN

C-101





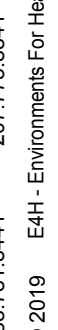
NORTH



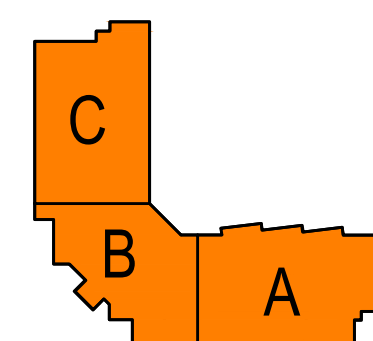
- Iron pipe
- Granite monument
- Property boundary (per referenced plans)
- - - Ditch
- - - 2' contour
- - - 10' contour
- - - Town Line
- - - NRPA setback
- Utility pole
- Sewer manhole
- Gas valve
- Hydrant
- Water valve
- - - MDEP stream channel

PORTLAND CITY APPROVAL

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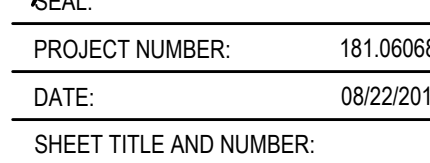
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KEY PLAN

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AND DEVELOPMENTAL DISORDERS**
100 ANDOVER ROAD
PORTLAND, ME

[illegible]

UTILITIES

C-103

NOTES

1. INSTALL NEW METER PIT AND SERVICE LINES AS SHOWN. TEST LINES THEN CUT EXISTING LINE AND CONNECT WITH FIELD LOK RESTRAINING JOINT FITTINGS.
2. REMOVE METER AND CONTINUE DI BETWEEN MECHANICAL FITTINGS.
3. PERFORM CONNECTION TO EXISTING WATER DURING LOW DEMAND TIME PERIOD TO MINIMIZE DISRUPTION.

FOR PERMITTING ONLY

PROJECT DESCRIPTION:
NEW STEEL FRAMED, METAL STUD BUILDING CONSISTING OF 8 CLASSROOMS, SENSORY ROOMS, CLINICAL SPACES, OFFICES, OUTDOOR PLAY AREA AND SUPPORT SPACES. COMPLETE MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION SYSTEMS TO SERVE THE NEW BUILDING. THE BUILDING SHALL BE FURNISHED WITH A FULLY AUTOMATIC SUPERVISED FIRE-EXTINGUISHING SPRINKLER SYSTEM.

APPLICABLE CODES:

STATE OF MAINE
MAINE UNIFORM BUILDING AND ENERGY CODE "MUBEC"
2015 INTERNATIONAL BUILDING CODE (IBC)
2009 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)

2013 THE AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE) STANDARDS
CITY OF PORTLAND

CITY OF PORTLAND MUNICIPAL CODE CH. 6 BUILDING AND BUILDING REGULATIONS
CITY OF PORTLAND MUNICIPAL CODE CH. 10 FIRE PREVENTION AND PROTECTION (NFPA LSC 101 AND NFPA 1 WITH APPLICABLE FIRE DEPARTMENT TECHNICAL STANDARDS)
2017 NATIONAL ELECTRIC CODE ELECTRICAL STANDARDS ADOPTED PURSUANT TO 32 M.S. §1153-A.
2015 US NATIONAL PLUMBING CODE THE PLUMBING CODE ADOPTED PURSUANT TO 32 M.S. §1403-B.
2015 INTERNATIONAL FIRE ALARM AND NOTIFICATION CODE ADOPTED PURSUANT TO 32 M.S. §1403-B.
2015 INTERNATIONAL MECHANICAL CODE ADOPTED PURSUANT TO 32 M.S. §1403-B.
2015 INTERNATIONAL GAS PIPING CODE ADOPTED PURSUANT TO 32 M.S. §1403-B.
2015 INTERNATIONAL BOILER AND PRESSURE VESSEL STANDARDS ADOPTED PURSUANT TO 32 M.S. §1510-4.
FIRE SAFETY CODES AND STANDARDS ADOPTED PURSUANT TO 32 M.S. §§ 2452 AND 2465.

FEDERAL
2010 ADA STANDARDS FOR ACCESSIBLE DESIGN

HEALTHCARE
FGI GUIDELINES FOR DESIGN AND CONSTRUCTION OF HEALTH CARE FACILITIES, 2014 EDITION

BUILDING CONSTRUCTION

<u>OCCUPANCY CLASSIFICATION:</u>	<u>USE</u>
IBC: SECTION 305 EDUCATIONAL GROUP E	MIXED USE
SECTION 304 BUSINESS GROUP B	

TABLE 508.4 - 1 HOUR RATED SEPERATION OF OCCUPANCIES

NFPA: CHAPTER 14: NEW EDUCATIONAL & CHAPTER 38: NEW BUSINESS

TABLE 6.1.14.4.1 - 1 HOUR RATED SEPERATION OF OCCUPANCIES
(REDUCTION APPLIED DUE TO AUTOMATIC SPRINKLER)

CONSTRUCTION TYPE
IBC II-B, NFPA 220 TYPE III (000)

HEIGHT AND AREA LIMITS
 BASE ALLOWABLE AREA: 58,000 FOR 1-STORY, SPRINKLERED
 INCREASE FOR FRONTAGE = $[1.0-.25] 30/30 = .75$
 TOTAL ALLOWABLE AREA = $58,000 + (14,500 \times .75) = 68,875$ SF
 ACTUAL GROSS BUILDING AREA = 28,220 SF

ALLOWABLE HEIGHT: 75'
ACTUAL HEIGHT: 27'

ALLOWABLE STORIES: 3
ACTUAL STORIES: 1

GROSS BUILDING AREA

FIRE-RESISTANCE RATING REQUIREMENTS (IBC TABLE 601)

BUILDING ELEMENT	RATING HOURS	UL#
------------------	-----------------	-----

PRIMARY STRUCTURAL FRAME (SUPPORTING ROOF ONLY)	0	XXXX
BEARING WALLS (SUPPORTING ROOF ONLY)	0	XXXX
FLOOR CONSTRUCTION	0	XXXX
ROOF CONSTRUCTION	0	XXXX
CORRIDOR	*1/2	* APPLIES TO EDUCATIONAL ONLY CORRIDOR SMOKE PARTITIONS [14.3.6 (2)] DOORS TO BE 20 MIN PER TABLE [8.3.4.2] * CLOSERS NOT REQUIRED ON NORMALLY OCCUPIED CLASSROOMS PER [14.3.6 (2b)]

HAZARDS / INCIDENTAL USES: (TABLE 509) / [14.3.2.1]

FURNACE / BOILER ROOM [14.3.2.1 (1a)]	1 HOUR
STORAGE ROOM (> 100SF 311.1.1) [14.3.2.1 (1b)]	1 HOUR
JANITORS CLOSETS [14.3.2.1 (1d)]	1 HOUR
LAUNDRY ROOM (> 100SF 311.1.1) [14.3.2.1 (2a)]	1 HOUR

FIRE EXTINGUISHERS - MAX TRAVEL DISTANCE 75'-0" (2015 INTERNATIONAL FIRE CODE TABLE 906.3(1))

EXIT ACCESS DIMENSIONS: (IBC) - [NFA]

ASSEMBLY USE EXCEPTION (303.1.3) [14.1.3.3.1] "A SPACE USED FOR ASSEMBLY PURPOSES (UNDER GROUP E), IS NOT CONSIDERED A SEPARATE OCCUPANCY"

DOOR MINIMUM CLEAR WIDTH (1010.1) [7.2.1.2.3.2] 32 IN.

COMMON PATH OF TRAVEL (1006.2.1) [14.2.5.3.1] 75 FT. (EDUCATIONAL)
100 FT. (BUSINESS)

EXIT TRAVEL DISTANCE (TABLE 1017.2)
300 FT. (BUSINESS) 200 FT. [14.2.6.3]

CORRIDOR MINIMUM WIDTH (TABLE 1002.2) [14.2.3.2] 72 IN. (EDUCATIONAL CORRIDORS WITH OCC LOAD OF 100 OR MORE
44 IN. (BUSINESS)

DEAD END CORRIDOR (1020.4) [14.2.5.2] 50 FT. (EDUCATIONAL & BUSINESS)

ENERGY CONSERVATION
CLIMATE ZONE 6

THERMAL ENVELOPE REQUIREMENTS:

ROOF	R-20ci	
FLOORS	R-30	
WALLS, ABOVE GRADE	R-13 + R-7.5ci	
UNHEATED SLAB-ON-GRADE	R-10 FOR 24 IN. BELOW	
WALLS, BELOW GRADE	R-7.5ci	
DOORS	U-0.70	

NON-RATED WALL

SMOKE PARTITION

1-HOUR FIRE-RATED WALL

1-HOUR FIRE-RATED SMOKE BARRIER

2-HOUR FIRE-RATED WALL

SMOKE COMPARTMENT

EXIT ACCESS TRAVEL DISTANCE

TRAVEL DISTANCE TO COMPARTMENT DOOR

SUITE EXIT TRAVEL DISTANCE

DEAD END CORRIDOR

SUITE

EXIT Δ WIDTH IN INCHES

FIRE-RATING OF DOOR, IN MINUTES

CORRIDOR DOORS, SMOKE-RESISTANT

MAGNETIC HOLD-OPEN

FIRE EXTINGUISHER & CABINET

FIRE EXTINGUISHER

FIRE HOSE CABINET

EXIT SIGN

OVERHEAD COILING FIRE SHUTTER

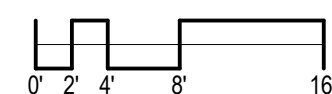
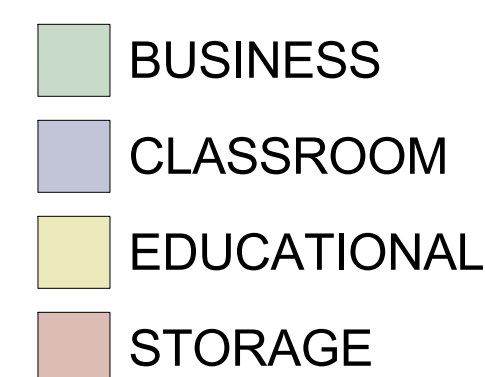
OVERHEAD COILING SMOKE SHUTTER

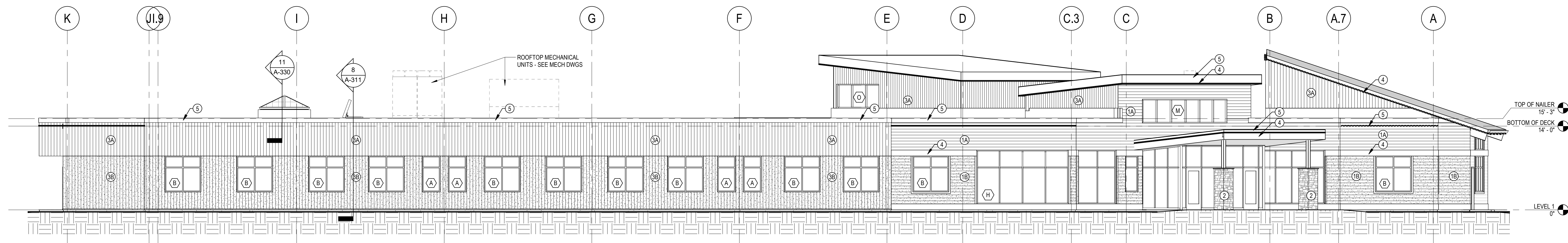
STANDPIPE

HAZARDOUS AREA

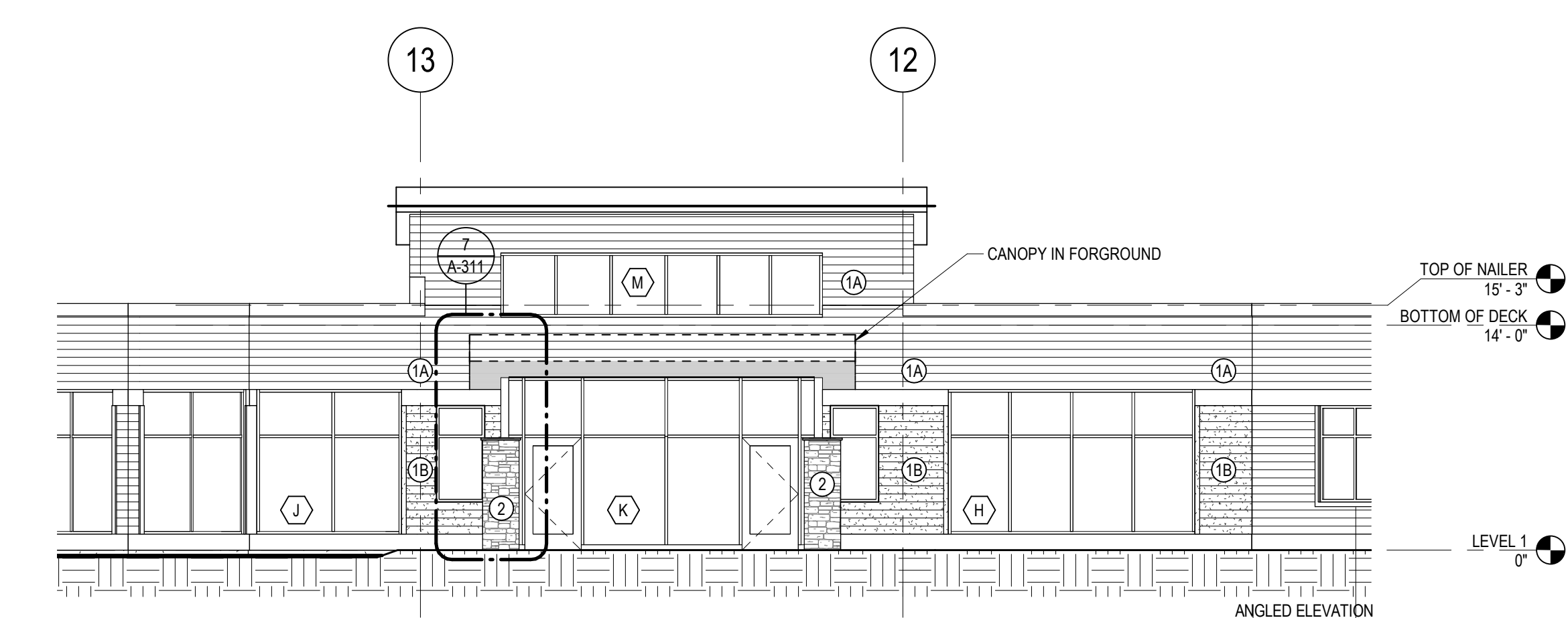
EXIT	WIDTH (INCHES)
LEVEL 1	
.	160
	160

AREA	OCCUPANT LOAD FACTOR	OCCUPANT LOAD	REQ. EXT. WIDTH / OCC	TOTAL REQ. EXT. WIDTH (INCHES)
BUSINESS				
10562 SF	100 SF	131	0.2	27.4
CLASSROOM				
5488 SF	20 SF	282	0.2	56.4
EDUCATIONAL				
7998 SF	100 SF	100	0.2	20.0
STORAGE				
1397 SF	200 SF	11	0.2	2.2
26444 SF		530		106.0

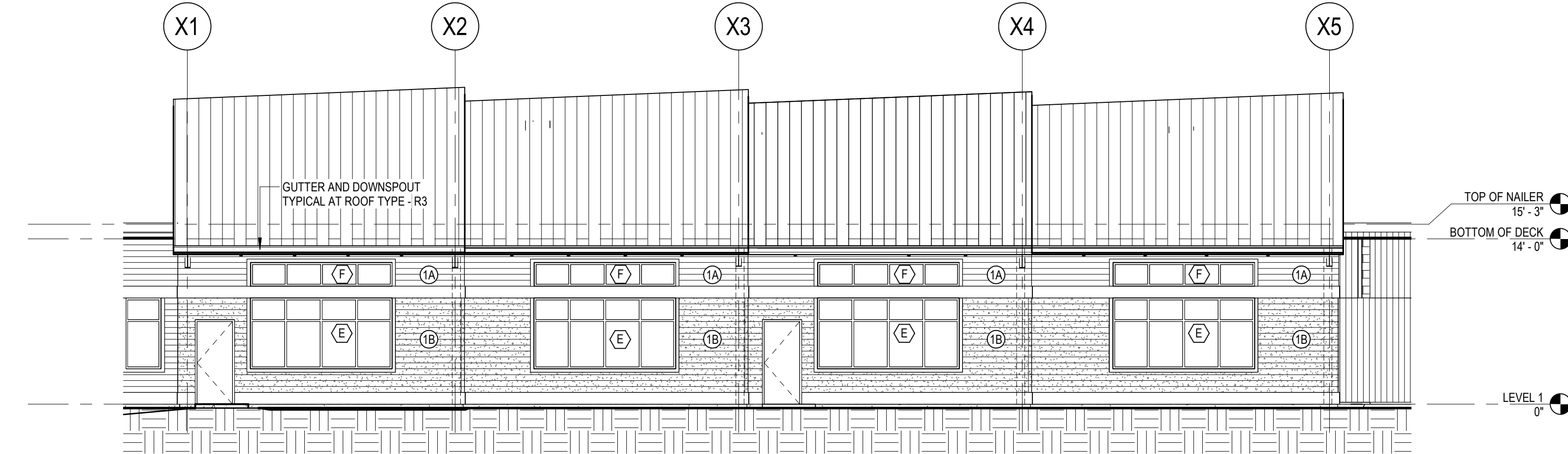




01 WEST ELEVATION AREA C
A-200 SCALE: 1/8" = 1'-0"

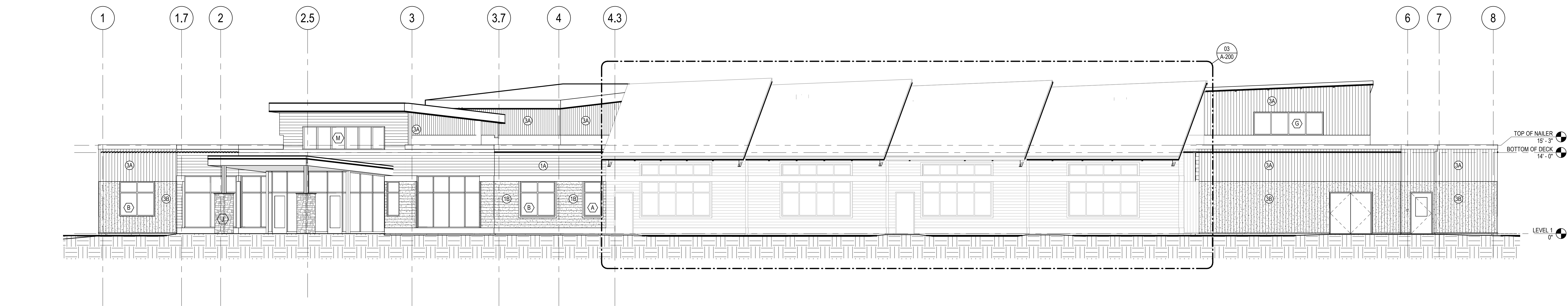


02 SOUTH ELEVATION AREA B
A-200 SCALE: 1/8" = 1'-0"

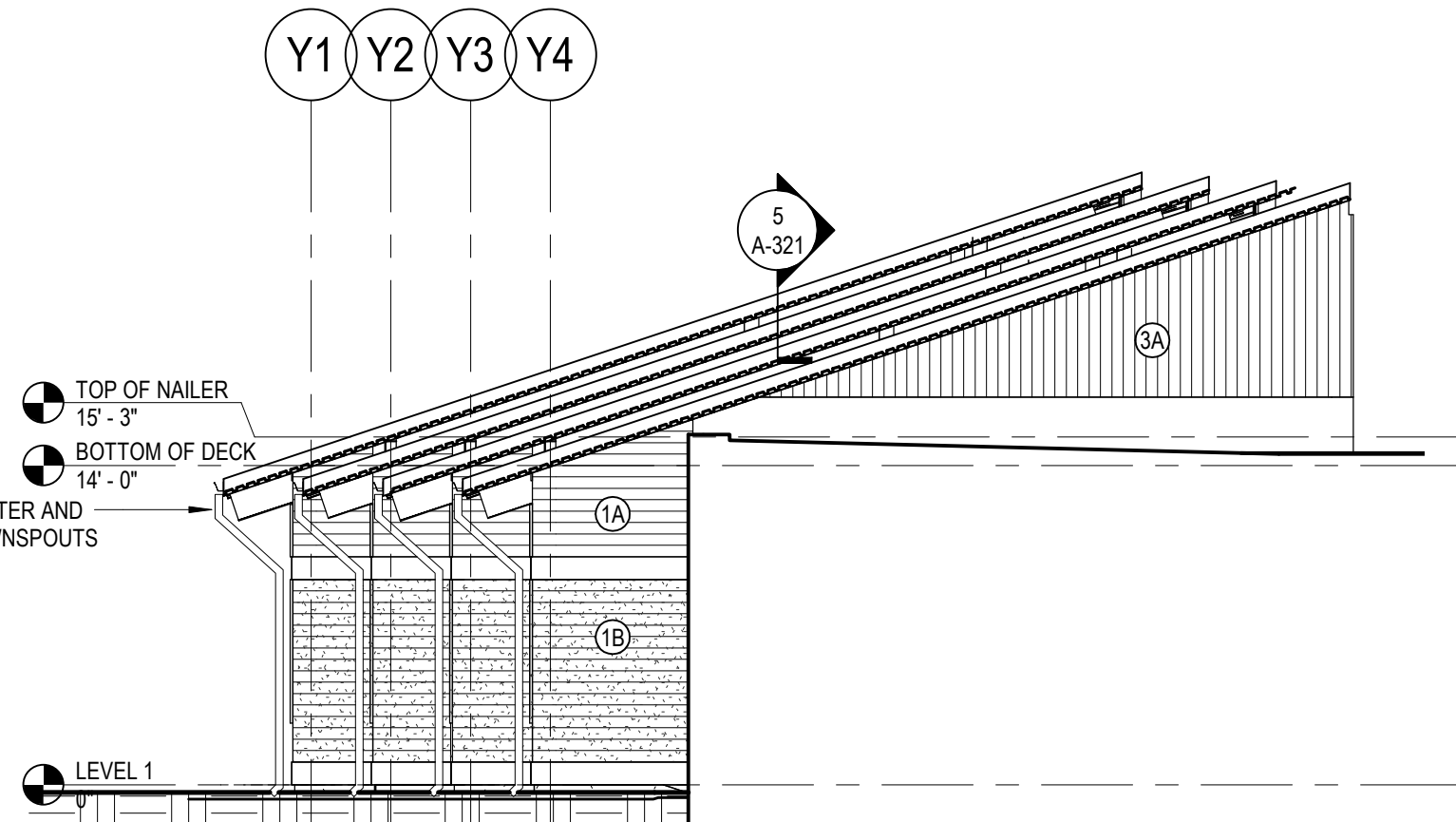


03 SOUTH CLASSROOM ELEVATION AREA A
A-200 SCALE: 1/8" = 1'-0"

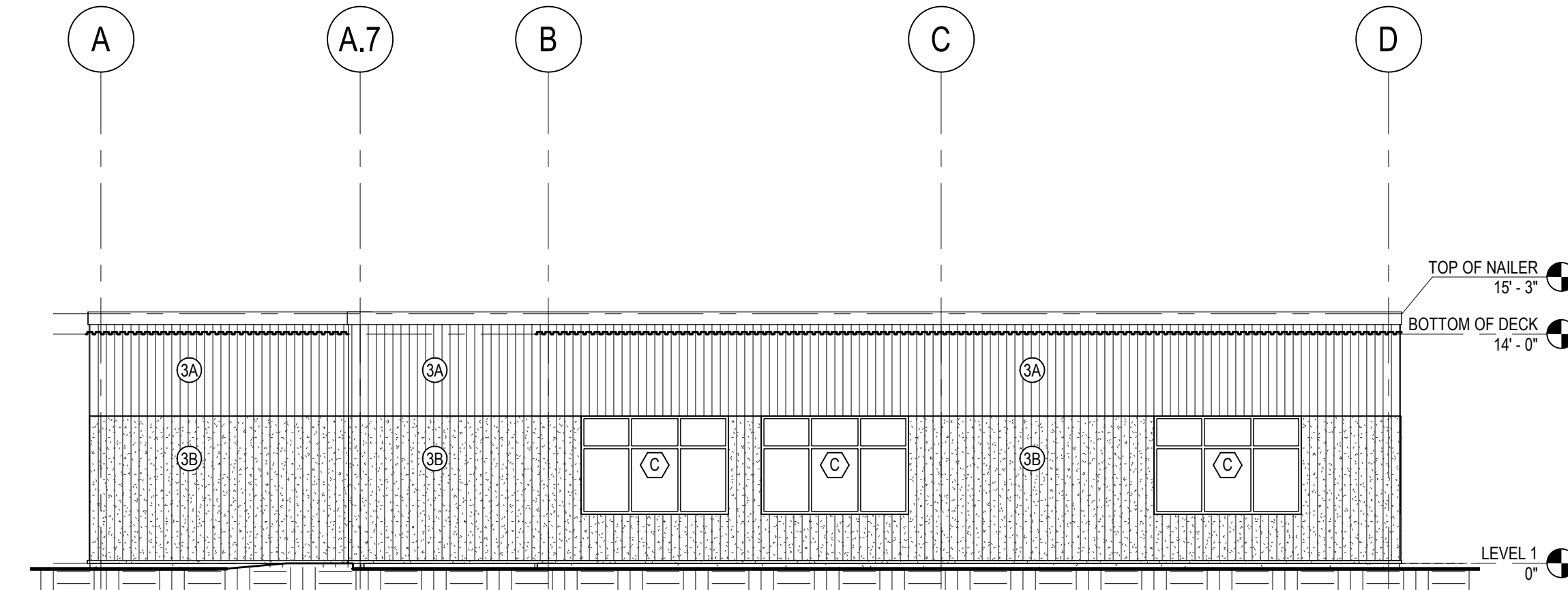
- EXTERIOR MATERIAL LEGEND**
SCALE: 1/8" = 1'-0"
- (1A) FIBER CEMENT SIDING: HARDIE BOARD COLOR: 1A & 1B TBD
 - (1B) FIBER CEMENT SIDING: NICHHA - KURASTONE LEDGESTONE W/ CHISELED SILL COLOR: TBD
 - (3A) METAL SIDING: ATAS - RIGID WALL COLOR: 3A & 3B TBD
 - (4) CEMENTITIOUS TRIM COLOR: TBD
 - (5) PREFINISHED METAL ROOF EDGE COLOR: TBD



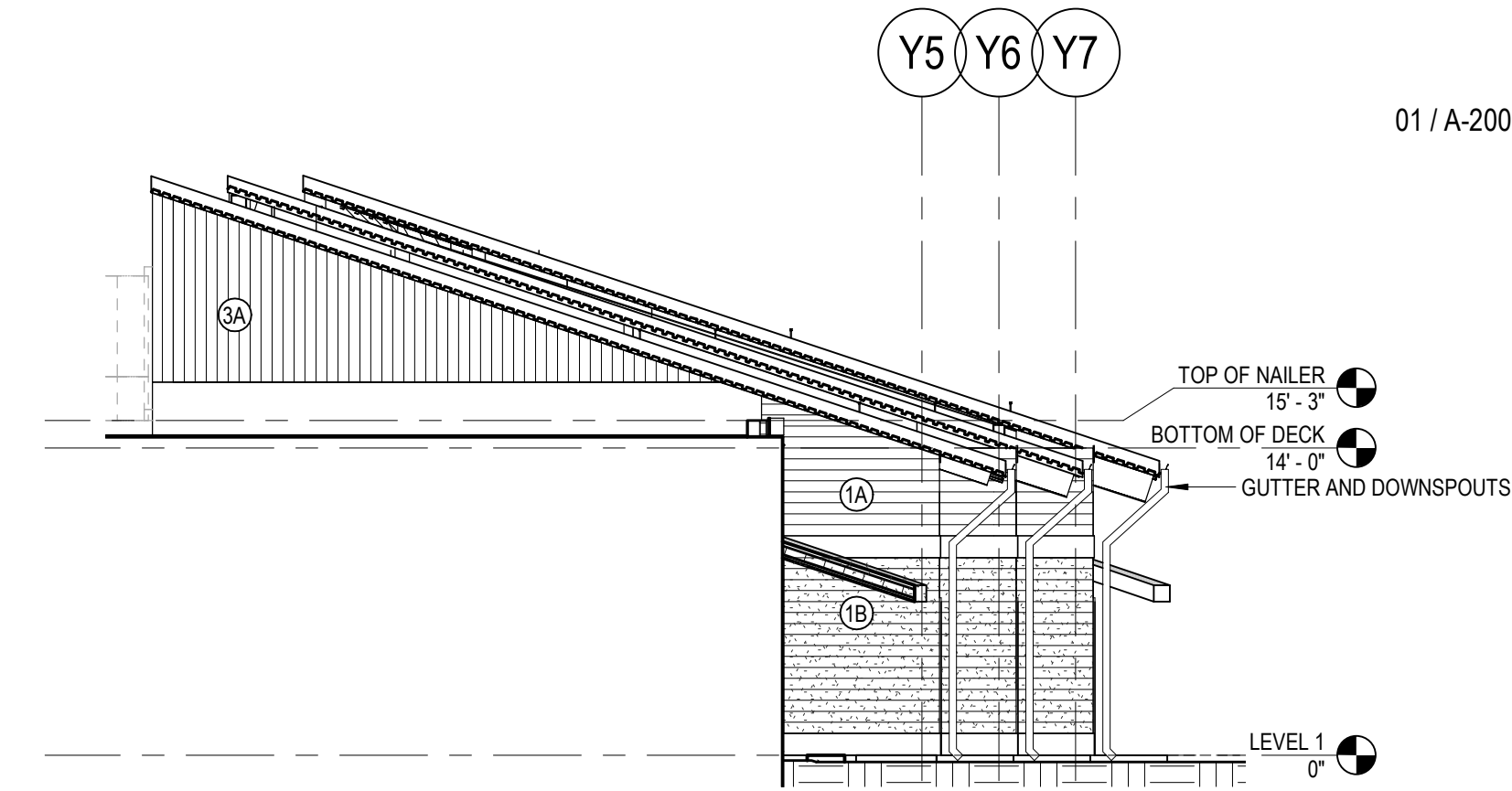
04 SOUTH ELEVATION AREA A
A-200 SCALE: 1/8" = 1'-0"



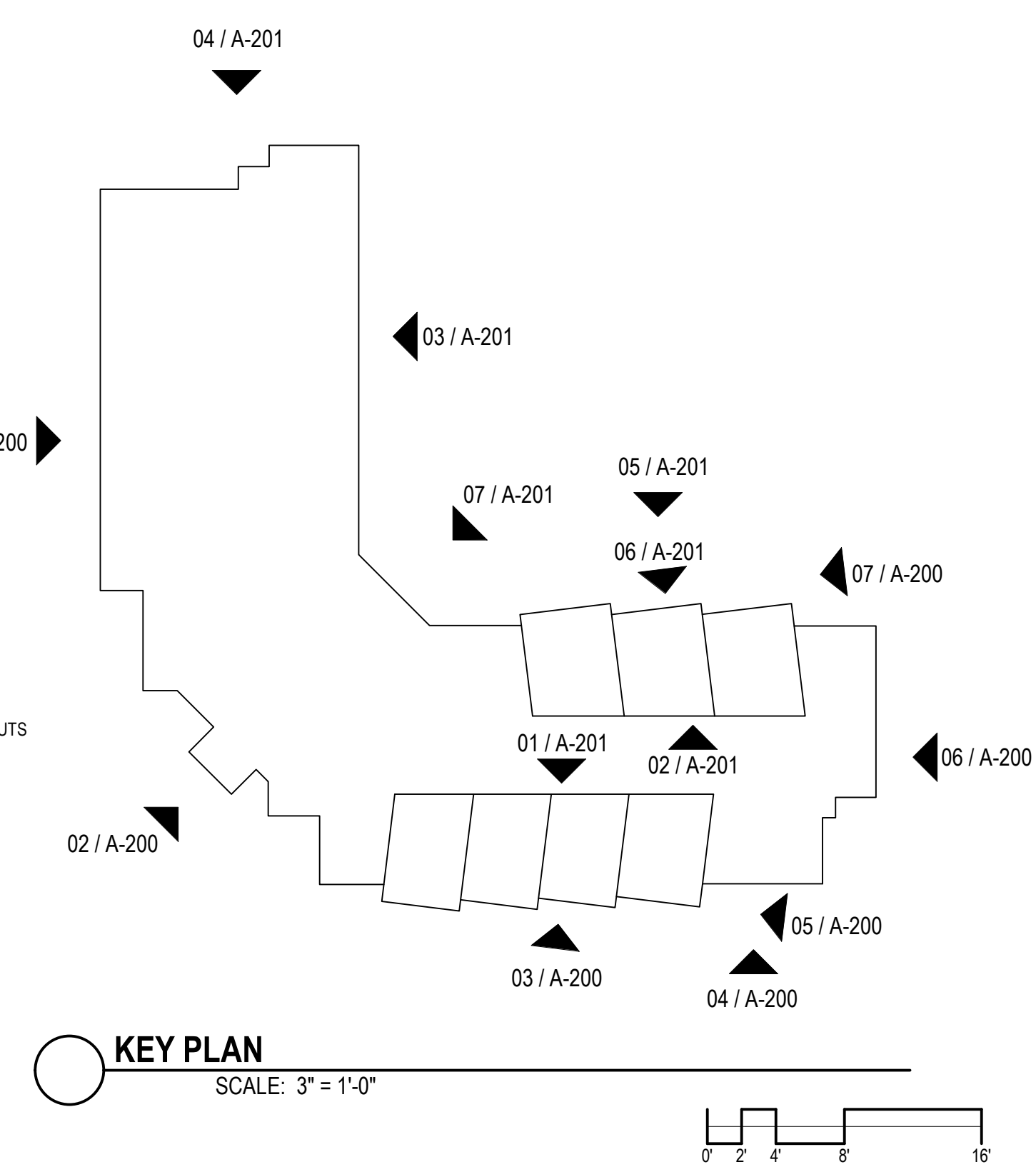
05 CLASS WING SOUTH
A-200 SCALE: 1/8" = 1'-0"



06 EAST ELEVATION AREA A
A-200 SCALE: 1/8" = 1'-0"



07 CLASS WING EAST
A-200 SCALE: 1/8" = 1'-0"



KEY PLAN
SCALE: 3" = 1'-0"

ENVIRONMENTS FOR HEALTH ARCHITECTURE
185 Fox Street, Portland, ME 04101
207.773.8841
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MAINE BEHAVIORAL HEALTHCARE
MaineHealth

KEY PLAN

MAINE BEHAVIORAL HEALTHCARE
CENTER OF EXCELLENCE IN AUTISM
AND DEVELOPMENTAL DISORDERS
100 ANDOVER ROAD
PORTLAND, ME

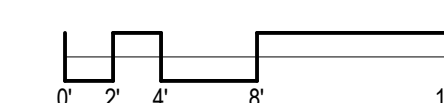
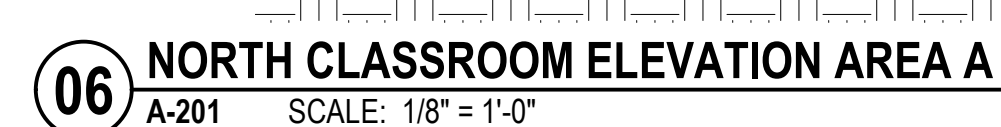
REV	DESCRIPTION	DATE
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90	CD OWNER REVIEW	11/20/19

NOT FOR CONSTRUCTION

SEAL:
PROJECT NUMBER: 2018005
DATE: November 08, 2019
SHEET TITLE AND NUMBER:

A-200

EXTERIOR ELEVATIONS

[illegible]

NOT FOR
CONSTRUCTION

SEAL:

PROJECT NUMBER: 2018005

DATE: November 08, 2019

SHEET TITLE AND NUMBER:

A-201

EXTERIOR ELEVATIONS

EROSION CONTROL NOTES

EROSION CONTROL MEASURES AND SITE STABILIZATION

- THE PRIMARY EMPHASIS OF THE EROSION AND SEDIMENT CONTROL PLAN IS AS FOLLOWS:
- RAPID VEGETATION OF EXPOSED AREAS TO MINIMIZE THE PERIOD OF SOIL EXPOSURE.
 - RAPID STABILIZATION OF DRAINAGE PATHS TO AVOID CHANNEL EROSION.
 - THE USE OF ON-SITE MEASURES TO CAPTURE SEDIMENT (HAY BALES, STONE CHECK DAMS, SILT FENCE, SILT SACK, PLUNGE POOL, ETC.).
 - DEVELOPMENT OF A CAREFUL CONSTRUCTION SEQUENCE.

THE FOLLOWING TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL DEVICES WILL BE IMPLEMENTED AS PART OF THE SITE DEVELOPMENT. THESE DEVICES SHALL BE INSTALLED AS INDICATED ON THE PLANS OR AS DESIRED WITHIN THIS REPORT. FOR FURTHER REFERENCE, SEE THE MAINE EROSION AND SEDIMENT CONTROL BMPs, MARCH 2003.

TEMPORARY EROSION CONTROL MEASURES

THE FOLLOWING MEASURES ARE PLANNED AS TEMPORARY EROSION & SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION. THESE TEMPORARY EROSION CONTROL MEASURES SHOULD BE REMOVED WITHIN 30 DAYS AFTER PERMANENT STABILIZATION HAS BEEN ESTABLISHED.

1. CRUSHED STONE--STABILIZED CONSTRUCTION ENTRANCES SHALL BE PLACED AT SITE ENTRANCES.
2. SILTATION FENCE OR WOOD WASTE COMPOST BERMS (EROSION CONTROL BERMS) SHALL BE INSTALLED DOWNSTREAM OF ANY EXPOSED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL THE TRIBUTARY AREAS ARE STABILIZED. THE SILT FENCE OR WOOD WASTE COMPOST BERMS SHALL BE INSTALLED PER THE DETAILS PROVIDED AND INSPECTED REGULARLY, INCLUDING BEFORE AND AFTER A STORM EVENT OF 0.5 INCHES OR GREATER REPAIRS SHALL BE MADE IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION. FLOW MUST BE MAINTAINED. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND FENCE OR BERM, THE BARRIER SHALL BE REPLACED WITH A STONE CHECK DAM.

3. STRAW, HAY MULCH AND HYDROSEEDING IS INTENDED TO PROVIDE COVER FOR BARE OR SEEDED AREAS UNTIL VEGETATION IS ESTABLISHED AND SHOULD BE APPLIED WITHIN 7 DAYS AT A RATE OF 80 POUNDS PER 1,000 SQUARE FEET. MULCH PLACED BETWEEN APRIL 15TH AND SEPTEMBER 30TH (ON SLOPES OF LESS THAN 15%) SHALL BE ANCHORED BY APPLYING WATTLE. MULCH PLACED ON SLOPES OF EQUAL TO OR STEEPER THAN 15% SHALL BE COVERED BY FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. SLOPES STEEPER THAN 3:1 SHALL RECEIVE EROSION CONTROL BLANKETS.

4. STOCKPILES SHALL BE STABILIZED WITHIN SEVEN DAYS BY EITHER TEMPORARILY COVERING THE STOCKPILE WITH MULCH OR HYDROSEED METHOD CONTAINING AN EMULSIFIED MULCH TACKLER OR BY COVERING THE STOCKPILE WITH MULCH, SUCH AS SHREDDED HAY, STRAW, OR EROSION CONTROL MIX. STOCKPILES SHALL BE SURROUNDED BY SEDIMENTATION BARRIER AT THE TIME OF FORMATION.

5. STATE AND LOCAL RADIOS SHALL BE SWEEPED TO CONTROL MUD AND DUST AS NECESSARY. CRUSHED STONE SHALL BE ADDED TO THE STABILIZED CONSTRUCTION ENTRANCE TO MINIMIZE THE TRACKING OF MATERIAL OFF THE SITE AND ONTO THE OPERATING ROADWAYS.

6. DURING GRUBBING OPERATIONS STONE CHECK DAMS SHALL BE INSTALLED AT ANY EVIDENT CONCENTRATED FLOW DISCHARGE POINTS AND AS DIRECTED ON THE EROSION CONTROL PLANS.

7. SILT FENCE HAS A MINIMUM STAKE SPACING OF 6 FEET, UNLESS THE FENCE IS SUPPORTED BY WIRE FENCE. REINFORCEMENT (MINIMUM 4" X 4" GALV. PIPE) SHALL BE MAXIMUM MESH SPACING (6 INCHES), IN WHICH CASE STAKES MAY BE SPACED A MAXIMUM OF 10 FEET APART. THE BOTTOM OF THE FENCE MUST BE ANCHORED. SEE DETAIL ON PLAN SET.

8. STORM DRAIN CATCH BASIN INLET PROTECTION SHALL BE PROVIDED THROUGH THE USE OF STONE SEDIMENT BARRIERS OR APPROVED SEDIMENT BARRIERS (SUCH AS SILT SACKS). INSTALLATION DETAILS ARE PROVIDED IN THE PLAN SET. THE BARRIERS SHALL BE INSPECTED AFTER EACH RAINFALL AND REPAIRS MADE AS NECESSARY. SEDIMENT SHALL BE REMOVED AND THE BARRIER RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO HALF THE DESIGN DEPTH OF THE BARRIER. THE BARRIER SHALL BE REMOVED WHEN THE TRIBUTARY DRAINAGE AREA HAS BEEN STABILIZED.

9. WATER AND/OR CALCIUM CHLORIDE SHALL BE FURNISHED AND APPLIED IN ACCORDANCE WITH MDOT SPECIFICATIONS--SECTION 637-037-000 CONTROL.

10. LOAM AND SEED IS INTENDED TO SERVE AS THE PRIMARY PERMANENT VEGETATIVE MEASURE FOR ALL BARE AREAS NOT PROVIDED WITH OTHER EROSION CONTROL MEASURES, SUCH AS RIPRAP.

11. WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION SHALL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAYBALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING, LONG AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 75 FEET OF A PROTECTED NATURAL RESOURCE.

PERMANENT EROSION CONTROL MEASURES

THE FOLLOWING PERMANENT EROSION CONTROL MEASURES HAVE BEEN DESIGNED AS PART OF THE EROSION/SEDIMENTATION CONTROL PLAN:

12. ALL AREAS DISTURBED DURING CONSTRUCTION, BUT NOT SUBJECT TO OTHER RESTORATION (PAVING, RIPRAP, ETC.) WILL BE LOAMED, LIMED, FERTILIZED, MULCHED AND SEEDED. ALL EXPOSED SOIL WHICH WILL REMAIN FOR 1 YEAR AFTER COMPLETION OF CONSTRUCTION SHALL BE MULCHED USING EROSION CONTROL MIX AS SPECIFIED IN MAINE DOT SECTION 619 OR SHALL BE LOAMED AND SEEDED.
13. CATCH BASINS SHALL BE PROVIDED WITH SEDIMENT SUMPS AND INLET HOODS FOR ALL OUTLET PIPES THAT ARE 18" IN DIAMETER OR LESS.

IMPLEMENTATION SCHEDULE

THE FOLLOWING CONSTRUCTION SEQUENCE SHALL BE REQUIRED TO INSURE THE EFFECTIVENESS OF THE EROSION AND SEDIMENTATION CONTROL MEASURES ARE OPTIMIZED:

NOTE: FOR ALL GRADING ACTIVITIES, THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION NOT TO OVEREXPOSE THE SITE BY LIMITING THE DISTURBED AREA. THE CONSTRUCTION OF BMPs SHOULD EITHER BE PERFORMED PRIOR TO THE TRIBUTARY AREA IS STABILIZED OR TEMPORARY EROSION CONTROL MEASURES NEED TO BE IMPLEMENTED TO PROTECT THE BMPs FROM BEING CLOTTED WITH CONSTRUCTION SEDIMENT.

14. INSTALL CRUSHED STONE TO STABILIZED CONSTRUCTION ENTRANCES.
15. INSTALL PERIMETER SILT FENCE.
16. CLEAR AND GRUB SITE WITHIN THE SPECIFIED CLEARING LIMITS.
17. COMMENCE INSTALLATION OF DRAINAGE INFRASTRUCTURE.
18. COMMENCE EARTHWORK AND GRADING TO SUBGRADE.
19. COMMENCE STORM WATER BMPs CONSTRUCTION.
20. COMMENCE INSTALLATION OF ELECTRICAL SERVICE.
21. COMMENCE INSTALLATION OF WATER AND SEWER INFRASTRUCTURE.
22. CONTINUE EARTHWORK AND GRADING TO SUBGRADE AS NECESSARY FOR CONSTRUCTION.
23. COMPLETE INSTALLATION OF UNDERGROUND UTILITIES TO WITHIN 5' OF THE BUILDINGS.
24. INSTALL LIGHT POLE FOUNDATIONS AND UTILITY POLES.
25. COMPLETE REMAINING EARTHWORK OPERATIONS.
26. COMPLETE INSTALLATION OF DRAINAGE INFRASTRUCTURE.
27. INSTALL SUBBASE AND BASE GRAVEL WITHIN PROPOSED ROADWAYS AND PARKING LOTS.
28. INSTALL CURBING AS NEEDED/REQUIRED.
29. INSTALL BASE COURSE PAVING FOR ACCESS DRIVE AND PARKING AREA AS WELL AS CONCRETE SURFACES.
30. LOAM, LIME, FERTILIZE, SEED AND MULCH DISTURBED AREAS AND COMPLETE ALL LANDSCAPING.
31. INSTALL SURFACE COURSE PAVING FOR ACCESS DRIVE AND PARKING AREAS.
32. ONCE THE SITE IS STABILIZED AND A 90% CATCH OF VEGETATION HAS BEEN OBTAINED, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.

IMPLEMENTATION SCHEDULE (CONTINUED)

33. TOUCH UP LOAM AND SEED.

NOTE: ALL BARE AREAS NOT SUBJECT TO FINAL PAVING, RIPRAP OR GRAVEL, SHALL BE VEGETATED.

PRIOR TO CONSTRUCTION OF THE PROJECT, THE CONTRACTOR SHALL SUBMIT TO THE OWNER A SCHEDULE FOR THE COMPLETION OF THE WORK, WHICH WILL SATISFY THE ABOVE CONSTRUCTION SEQUENCE IN THE SPECIFIED ORDER, HOWEVER, SEVERAL SEPARATE ITEMS MAY BE CONSTRUCTED SIMULTANEOUSLY. WORK MUST ALSO BE SCHEDULED TO REDUCE THE EXTENT OF THE EXPOSED AREAS AS SPECIFIED BELOW. THE INTENT OF THIS SEQUENCE IS TO PROVIDE FOR EROSION CONTROL AND TO HAVE STRUCTURAL MEASURES SUCH AS SILT FENCE AND CONSTRUCTION ENTRANCES IN PLACE BEFORE LARGE AREAS OF LAND ARE STRIPPED.

EROSION, SEDIMENTATION AND STABILIZATION CONTROL PLAN

THE EROSION CONTROL PLAN IS INCLUDED IN THE PLAN SET.

WINTER STABILIZATION PLAN

THE WINTER CONSTRUCTION PERIOD IS FROM NOVEMBER 1 THROUGH APRIL 15. IF THE CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15TH, THEN THE SITE SHALL BE PROTECTED WITH OVER-WINTER STABILIZATION.

WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT ANY AREA LEFT EXPOSED CAN BE PROTECTED BY THE CONTRACTOR. EXPOSED AREAS SHALL BE LIMITED TO THOSE AREAS IN WHICH WORK IS EXPECTED TO COMMENCE AND COMPLETE IN THE NEXT FIFTEEN (15) DAYS AND THAT CAN BE MULCHED WITHIN ONE DAY PRIOR TO ANY SNOW EVENT.

ALL AREAS SHALL BE CONSIDERED TO BE BARE UNTIL THE SUBBASE GRAVEL IS INSTALLED WITHIN PAVEMENT/BUILDING AREAS OR THE AREAS HAVE BEEN LOAMED, SEEDED AND MULCHED. HAY AND STRAW MULCH RATE SHALL BE A MINIMUM OF 150 POUNDS OF MULCH PER 1,000 SQUARE FEET (3 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED.

THE CONTRACTOR SHALL INSTALL ANY ADDED MEASURES, WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM SITE DISTURBANCE AND SHOULD BE APPLIED TO THE 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.

34. SOIL STOCKPILES
STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR AT 150 LBS./1,000 S.F. (3 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOODWASTE EROSION CONTROL MIX. THIS SHALL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL. ANY SOIL STOCKPILE SHALL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

35. NATURAL RESOURCE PROTECTION
ALL AREAS WITHIN 75 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 90% MATURE VEGETATION CATCH, SHALL BE MULCHED BY DECEMBER 1ST AND ANCHORED WITH PLASTIC NETTING OR PROTECTED WITH EROSION CONTROL MATS. DURING WINTER CONSTRUCTION, A DOUBLE LINE OF SEDIMENT BARRIERS (I.E. SILT FENCE BUCKED WITH HAY BALES OR EROSION CONTROL MIX) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE DISTURBED AREA SHALL BE PROTECTED BY A MINIMUM DISTANCE OF 75 FEET ON EITHER SIDE FROM THE RESOURCE. EXISTING PROJECTS NOT STABILIZED BY DECEMBER 1ST SHALL BE PROTECTED WITH THE SECOND LINE OF SEDIMENT BARRIER TO ENSURE FUNCTIONALITY DURING THE SPRING THAW AND RAINS.

36. SEDIMENT BARRIERS
DURING FROZEN CONDITIONS, SEDIMENT BARRIERS SHALL CONSIST OF WOODWASTE FILTER BERMS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES AND SEDIMENT SILT FENCES.

37. MULCHING
AN AREA SHALL BE CONSIDERED BARE UNTIL AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LBS. PER 1,000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75 LBS. PER 1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. MULCH SHALL NOT BE SPREAD 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 EITHER MULCHED WITH STRAW OR HAY AT A RATE OF 150 LBS. PER 1,000 S.F. (3 TONS/ACRE) AND ADEQUATELY ANCHORED THAT GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH.

BETWEEN THE DATES OF NOVEMBER 1ST AND APRIL 15TH ALL MULCH SHALL BE ANCHORED BY PEG LINE, MULCH NETTING, TRACKING OR WOOD CELLULOSE FIBER. WHEN GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH, MULCH COVER IS SUFFICIENT. AFTER NOVEMBER 1ST, MULCH AND ANCHORING OF ALL BARE SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

38. MULCHING ON SLOPES AND DITCHES
SLOPES SHALL NOT BE LEFT EXPOSED FOR ANY EXTENDED PERIOD OF WORK SUSPENSION UNLESS FULLY MULCHED AND ANCHORED WITH PEG AND NETTING OR WITH EROSION CONTROL MATS. MULCHING SHALL BE APPLIED AT A RATE OF 230 LBS./1,000 S.F. ON ALL SLOPES GREATER THAN 8%.

MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH SLOPES GREATER THAN 3% FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%. EROSION CONTROL BLANKETS SHALL BE USED IN LIEU OF MULCH IN ALL DRAINAGE WAYS WITH SLOPES GREATER THAN 8%. EROSION CONTROL MIX CAN BE USED TO SUBSTITUTE EROSION CONTROL BLANKETS ON ALL SLOPES EXCEPT DITCHES.

39. SEEDING
BETWEEN THE DATES OF OCTOBER 15TH AND APRIL 1ST, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES, FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADING WITH A UNIFORM SURFACE IN THE AREA MAY BE DORMANT SEEDING AT A RATE OF THREE TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. DORMANT SEEDING MAY BE SELECTED TO BE PLACED PRIOR TO THE PLACEMENT OF MULCH AND FABRIC NETTING ANCHORED WITH STAPLES. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4" OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS./1,000 S.F.

ALL AREAS SEEDING DURING THE WINTER SHALL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 90% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

40. DEWATERING AND TEMPORARY STREAM DIVERSION
WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION SHALL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAYBALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING, LONG AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 75 FEET OF A PROTECTED NATURAL RESOURCE.

41. INSPECTION AND MONITORING
MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION SEASON. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, THE SITE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUOUS FUNCTION. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDING AND MULCHING, THE CONTRACTOR SHALL IN THE SPRING INSPECT AND REPAIR ANY DAMAGES AND/OR UNSTABILIZED SPOTS. ESTABLISHED VEGETATIVE COVER MEANS A MINIMUM OF 85% TO 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH.

STANDARDS FOR TIMELY STABILIZATION OF CONSTRUCTION SITES DURING WINTER

1. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES. THE APPLICANT SHALL CONSIDER THE TIMELY STABILIZE SLOPE-COVERED SLOPES BY NOVEMBER 15TH. THE APPLICANT SHALL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15TH. THE LAYER OF MULCH SHALL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% TO BE A SLOPE. IF THE APPLICANT FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15TH, THEN THE APPLICANT SHALL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS--BY OCTOBER 15TH, THE APPLICANT SHALL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 LBS./1,000 S.F. AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE APPLICANT SHALL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 15TH, THEN THE APPLICANT SHALL COVER THE SLOPE WITH A LAYER OF WOODWASTE COMPOST OR WITH STONE RIPRAP.

STABILIZE THE SLOPE WITH SOD--THE APPLICANT SHALL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY OCTOBER 15TH. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL. THE DISTURBED SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT SHALL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33%.

STABILIZE THE SLOPE WITH WOODWASTE COMPOST--THE APPLICANT SHALL PLACE A LAYER OF WOODWASTE COMPOST ON THE SLOPE BY NOVEMBER 15TH. PRIOR TO PLACING THE WOODWASTE COMPOST, THE APPLICANT SHALL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. THE APPLICANT SHALL NOT USE WOODWASTE COMPOST TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 50% OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

STABILIZE THE SLOPE WITH STONE RIPRAP--THE APPLICANT SHALL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15TH. THE APPLICANT SHALL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

2. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES BY SEPTEMBER 15TH THE APPLICANT SHALL SEED AND MULCH ALL DISTURBED SLOPES ON THE PROJECT SITE BY SEPTEMBER 15TH. IF THE APPLICANT FAILS TO STABILIZE THESE SLOPES BY THIS DATE, THEN THE APPLICANT SHALL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

STABILIZE THE SOIL WITH TEMPORARY VEGETATION--BY OCTOBER 15TH THE APPLICANT SHALL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 LBS./1,000 S.F., LIGHTLY MULCH THE SEEDS WITH HAY OR STRAW AT 75 LBS./1,000 S.F., AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT SHALL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BEFORE NOVEMBER 15TH, THEN THE APPLICANT SHALL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33%.

STABILIZE THE SLOPE WITH SOD--THE APPLICANT SHALL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY OCTOBER 15TH. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL. THE DISTURBED SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT SHALL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33%.

STABILIZE THE SLOPE WITH WOODWASTE COMPOST--THE APPLICANT SHALL PLACE A LAYER OF WOODWASTE COMPOST ON THE SLOPE BY NOVEMBER 15TH. PRIOR TO PLACING THE WOODWASTE COMPOST, THE APPLICANT SHALL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. THE APPLICANT SHALL NOT USE WOODWASTE COMPOST TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 50% OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

STABILIZE THE SLOPE WITH STONE RIPRAP--THE APPLICANT SHALL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15TH. THE APPLICANT SHALL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

MAINTENANCE OF FACILITIES

THE STORM WATER FACILITIES WILL BE MAINTAINED BY THE APPLICANT. THE CONTRACT DOCUMENTS WILL REQUIRE THE CONTRACTOR TO DESIGNATE A PERSON RESPONSIBLE FOR MAINTENANCE OF THE SEDIMENTATION CONTROL FEATURES DURING CONSTRUCTION AND AFTER CONSTRUCTION. LONG-TERM OPERATION/MAINTENANCE RECOMMENDED FOR THE STORM WATER FACILITIES IS PRESENTED BELOW AND SHOULD BE RECERTIFIED EVERY FIVE YEARS.

THE RESPONSIBLE PARTY MAY CONTRACT WITH SUCH PROFESSIONALS, AS MAY BE NECESSARY IN ORDER TO COMPLY WITH THIS PROVISION AND MAY RELY ON THE ADVICE OF SUCH PROFESSIONALS IN CARRYING OUT ITS DUTY HERE UNDER, PROVIDED THAT THE CONTRACTOR'S OPERATION AND MAINTENANCE PROCEDURES ARE HEREBY ESTABLISHED AS A MINIMUM FOR COMPLIANCE WITH THIS SECTION.

INSPECTION AND MAINTENANCE FREQUENCY AND CORRECTIVE MEASURES: THE FOLLOWING ARE FACILITIES AND MEASURES WILL BE INSPECTED AND THE IDENTIFIED DEFICIENCIES WILL BE CORRECTED. CLEAN-OUT MUST INCLUDE THE REMOVAL AND LEGAL DISPOSAL OF ANY ACCUMULATED SEDIMENTS AND DEBRIS.

CATCH BASINS:
INSPECT CATCH BASINS TWO TIMES PER YEAR (PREFERABLY IN SPRING AND FALL) TO ENSURE THAT THE CATCH BASINS ARE WORKING IN THEIR INTENDED FASHION AND THAT THEY ARE FREE OF DEBRIS. CLEAN STRUCTURES WHEN SEDIMENT DEPTHS REACH 12" FROM INVERT OF OUTLET. IF THE BASIN OUTLET IS DESIGNED WITH A HOOD TO TRAP FLOATABLE MATERIALS (I.E. SNOUT) CHECK TO ENSURE WATERTIGHT SEAL IS WORKING. AT A MINIMUM, REMOVE FLOATING DEBRIS AND HYDROCARBONS AT THE TIME OF INSPECTION.

VEGETATED AREAS:
INSPECT SLOPES AND EMBANKMENT EARLY IN THE GROWING SEASON TO IDENTIFY ACTIVE OR POTENTIAL PROBLEMS. REPLANT BARE AREAS OR AREAS WITH SPARSE GROWTH, WHERE EROSION IS EVIDENT, ARMOR THE AREA WITH AN APPROPRIATE LINING OR DIVERT THE EROSION FLOWS TO ON-SITE AREAS AHEAD OF WITHSTAND THE CONCENTRATED FLOWS. THE FACILITIES WILL BE INSPECTED AFTER MAJOR STORMS AND ANY IDENTIFIED DEFICIENCIES WILL BE CORRECTED.

DITCHES, SWALES AND OTHER OPEN STORM WATER CHANNELS: INSPECT TWO TIMES PER YEAR (PREFERABLY IN SPRING AND FALL) TO ENSURE THEY ARE WORKING IN THEIR INTENDED FASHION AND THAT THEY ARE FREE OF SEDIMENT AND DEBRIS. REMOVE ANY OBSTRUCTIONS TO FLOW, INCLUDING ACCUMULATED SEDIMENTS, DEBRIS AND VEGETATED GROWTH. REPAIR ANY EROSION OF THE DITCH LINING.

VEGETATED DITCHES WILL 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 SLOPES AS SOON AS PRACTICABLE. IF THE DITCH HAS A RIPRAP LINING, REPLACE RIPRAP ON AREAS WHERE AN UNDERLYING FILTER FABRIC OR UNDERDRAIN GRAVEL IS SHOWING THROUGH THE STONE OR WHERE STONES HAVE DISLODGED. CORRECT ANY EROSION OF THE CHANNEL'S BOTTOM OR SIDESLOPES. THE FACILITIES SHOULD BE INSPECTED AFTER MAJOR STORMS AND ANY IDENTIFIED DEFICIENCIES WILL BE CORRECTED.

ROADWAYS AND PARKING SURFACES:
CLEAR ACCUMULATIONS OF WINTER SAND IN PARKING LOTS AND ALONG ROADWAYS AT LEAST ONCE A YEAR. PREFERABLY IN THE SPRING. ACCUMULATIONS ON PAVEMENT MAY BE REMOVED BY PAVEMENT SWEEPING. ACCUMULATIONS OF SAND ALONG ROAD SHOULDERS MAY BE REMOVED BY GRADING EXCESS SAND TO THE PAVEMENT EDGE AND REMOVING IT MANUALLY OR BY A FRONT-END LOADER.

CONSTRUCTION NOTES

SUBGRADE PREPARATION

1. SUBGRADE PREPARATION IN SHOULD BE IN ACCORDANCE WITH GEOTECHNICAL ENGINEER RECOMMENDATIONS FOUND IN THE GEOTECHNICAL REPORT BY HALEY AND ALDRICH, INC. DATED MAY 16, 2007.
2. EXCAVATE THE FULL THICKNESS OF FILL MATERIALS BELOW THE BUILDING FOOTPRINT (AND FOUNDATION BEARING ZONES) AND REPLACE WITH COMPACTED GRANULAR FILL. SUITABLE FOUNDATION SUBGRADES INCLUDE UNDISTURBED NATIVE SOILS OR COMPACTED GRANULAR FILL PLACED ABOVE UNDISTURBED NATIVE SOILS. IN GENERAL, REMOVAL OF UNSUITABLE SOILS FROM THE PROPOSED BUILDING FOOTPRINT AND FOUNDATION BEARING ZONES SHOULD BE ANTICIPATED TO DEPTHS OF APPROXIMATELY 1 TO 3 FEET. GREATER DEPTHS OF OVER-EXCAVATION MAY BE REQUIRED IN LOCALIZED AREAS TO COMPLETELY REMOVE UNSUITABLE SOILS FROM BEARING AREAS. REMOVAL OF UNSUITABLE SOILS SHOULD BE OBSERVED BY THE PROJECT GEOTECHNICAL ENGINEER PRIOR TO BACKFILLING WITH COMPACTED STRUCTURAL FILL.
3. ALL TOPSOIL, PAVEMENTS, DEBRIS, FROZEN SOILS, AND LOOSE OR DISTURBED SOILS SHOULD BE REMOVED FROM AREAS RECEIVING NEW CONSTRUCTION.
4. EXISTING FOUNDATIONS, SLABS, AND/OR UTILITIES ASSOCIATED WITH FORMER SITE BUILDINGS AND ANY PAST USES, IF ENCOUNTERED, SHOULD BE REMOVED FROM BELOW PROPOSED BUILDING FOOTPRINT. THESE MATERIALS SHOULD BE COMPLETELY REMOVED FROM FOUNDATION BEARING ZONES AND REPLACED WITH COMPACTED GRANULAR FILL.
5. UNDERGROUND STRUCTURES AND UNDERGROUND PIPING, LOCATED BENEATH THE PROPOSED PAVEMENTS OR LANDSCAPED AREAS SHOULD BE REMOVED TO AT LEAST 2 FEET BELOW PROPOSED FINISHED GRADE.
6. THE ENDS OF UNDERGROUND PIPES AND UTILITY CONDUITS TO BE ABANDONED IN-PLACE SHOULD BE CAPPED AND/OR FILLED WITH CONCRETE OR GROUTED.
7. ANY UNSTABLE AREAS IDENTIFIED SHOULD BE UNDERCUT AT LEAST 12 INCHES, OR TO COMPETENT SOIL, AND REPLACED WITH COMPACTED STRUCTURAL FILL, CRUSHED STONE, OR COMMON FILL. THE DEPTH OF UNDERCUTTING AND TYPE OF BACKFILL MATERIAL SHOULD BE SELECTED WITH CONSIDERATION OF PROPOSED USE (I.E., BUILDING OR PAVEMENT) AND SOIL AND WEATHER CONDITIONS ENCOUNTERED DURING CONSTRUCTION.
8. FINAL FOUNDATION AND FLOOR SLAB SUBGRADE PREPARATION SHOULD INCLUDE RE-COMPACTING OF BEARING SURFACES. CARE SHOULD BE TAKEN TO LIMIT DISTURBANCE TO BEARING SURFACES PRIOR TO PLACEMENT OF CONCRETE. ANY LOOSE, SORTED, OR DISTURBED MATERIAL SHOULD BE REMOVED AND REPLACED WITH COMPACTED STRUCTURAL FILL PRIOR TO PLACEMENT OF CONCRETE. EXCAVATED SUBGRADES SHOULD NOT BE LEFT EXPOSED OVERNIGHT UNLESS THE FORECAST CALLS FOR ABOVE-FREEZING, CLEAR CONDITIONS.

DEWATERING

1. STATIC GROUNDWATER AT THE SITE IS ANTICIPATED TO RANGE BETWEEN 9 AND 12 FEET BOS ACROSS THE SITE (ELEVATION 4 TO 7 MSL). GROUNDWATER LEVELS AT THE SITE ARE ANTICIPATED TO CHANGE SEASONALLY AND AS A RESULT OF THE PROPOSED CONSTRUCTION. WE DO NOT ANTICIPATE THAT GROUNDWATER WILL BE ENCOUNTERED IN FOUNDATION AND UTILITY EXCAVATIONS.
2. IF A SILT DEWATERING BAG IS USED, HAY BALES SHALL BE PLACED DOWNSTREAM TO PREVENT EROSION. DUE TO THE NATURE OF THE SITE SOILS, TEMPORARY DETENTION POND, TRENCHES, DITCHES, AND DEWATERING SLUMPS SHOULD NOT BE USED FOR DEWATERING DURING CONSTRUCTION.
3. EXCAVATION, FILLING, FOUNDATION AND FLOOR SLAB CONSTRUCTION, AND UTILITY INSTALLATION AND BACKFILLING SHOULD BE COMPLETED IN DRY CONDITIONS. SUBGRADE SOILS THAT BECOME UNSTABLE SHOULD BE UNDERCUT AND REPLACED WITH STRUCTURAL FILL OR CRUSHED STONE, AS NECESSARY. EXCAVATION SITE SLOPES SHOULD BE MONITORED FOR POTENTIAL SEEPAGE AND MAINTAINED TO PROMOTE STABILITY, ACCORDINGLY.
4. SURFACE WATER RUNOFF SHOULD BE DIRECTED AWAY FROM EXCAVATIONS TO REDUCE DEWATERING EFFORTS AND TO PROTECT SUBGRADES FROM BECOMING SOFT AND UNSTABLE.

BACKFILL AND COMPACTION

1. COMPACTED GRANULAR FILL (CGF) SHOULD BE USED FOR ENGINEERED FILLS BELOW BUILDING FOOTPRINT AREAS AND IN FOUNDATION BEARING ZONES. CGF SHALL BE PLACED WITH THE FOLLOWING GRADATION:

SEIVE SIZE	% PASSING
6"	100
NO. 40	30 - 80
NO. 40	10 - 50
NO. 200	0 - 200

IN OPEN AREAS, CGF SHOULD BE PLACED IN LIFT THICKNESSES NOT EXCEEDING 12 INCHES LOOSE MEASURE (PRIOR TO COMPACTION) AND COMPACTED USING SELF PROPELLED VIBRATORY ROLLERS SUCH AS A BOMAG BW-60S. IN CONFINED AREAS, CGF SHOULD BE PLACED IN LIFT THICKNESS NOT EXCEEDING 9 INCHES AND COMPACTED USING A LARGE VIBRATORY PLATE COMPACTOR OR EQUIVALENT. A MINIMUM OF FOUR SYSTEMATIC PASSES OF THE COMPACTION EQUIPMENT SHOULD BE USED TO COMPACT EACH LIFT.

2. COMMON FILL SHOULD BE USED FOR ENGINEERED FILLS BELOW ROADWAY, PARKING, AND OTHER NON-STRUCTURAL AREAS. COMMON FILL SHALL COMPLY WITH THE FOLLOWING GRADATION:

SEIVE SIZE	% PASSING
6"	100
NO. 40	0-80
NO. 200	0 - 30

COMMON FILL SHOULD BE PLACED IN MAXIMUM 12-INCH THICK LOOSE LIFTS USING COMPACTION EQUIPMENT AS DESCRIBED ABOVE FOR CGF.

3. AGGREGATE BASE FOR PAVEMENTS SHOULD BE USED AS THE BASE COURSE LAYER BELOW THE ASPHALT PAVEMENTS. AGGREGATE BASE SHALL COMPLY WITH THE FOLLOWING GRADATION:

SEIVE SIZE	% PASSING
2" (50 MM)	100
3/4" (12.5 MM)	45 - 70
NO. 40 (4.75 MM)	0 - 20
NO. 200 (75 MM)	0 - 5

4. WHERE SUBGRADES BECOME SATURATED, UNSTABLE, AND/OR DIFFICULT TO COMPACT, CRUSHED STONE SHOULD BE PLACED AND COMPACTED IN LIEU OF CGF OR COMMON FILL. CRUSHED STONE, WHEN USED, SHOULD BE WRAPPED IN GEOTEXTILE FILTER FABRIC, SUCH AS WIRE MESH OR EQUIVALENT, AT NO TIME SHOULD CGF OR COMMON FILL BE PLACED OVER CRUSHED STONE THAT HAS NOT BEEN WRAPPED IN A GEOTEXTILE FILTER FABRIC.

5. BEDDING PLACED BELOW UTILITIES SHOULD BE IN ACCORDANCE WITH THE UTILITY AND MANUFACTURER REQUIREMENTS. IN GENERAL, UTILITIES MAY BE SUPPORTED DIRECTLY ON A MINIMUM 6-INCH-THICK LAYER OF COMPACTED STRUCTURAL FILL, CRUSHED STONE, OR OTHER SUITABLE PIPE BEDDING MATERIAL. FILL PLACED AS BACKFILL FOR UTILITIES BELOW BUILDING FLOOR SLABS SHOULD CONSIST OF COMPACTED STRUCTURAL FILL OR CRUSHED STONE. ELSEWHERE, FILL PLACED AS BACKFILL FOR UTILITIES SHOULD CONSIST OF COMPACTED COMMON FILL.

6. RE-USE OF ON-SITE BORROW SOILS IS PERMITTED AS LONG AS THOSE SOILS MEET THE GRADATION REQUIREMENTS IDENTIFIED ABOVE. THE EXISTING FILL MATERIALS WILL MEET THE GRADATION SPECIFICATION FOR COMMON FILL. THESE SOILS COULD BE USED AS COMMON FILL BELOW PAVEMENT SUBBASE AREAS AND BELOW BUILDING SLAB-ON-GRADE AREAS TO SLAB SUBGRADE ELEVATIONS, PROVIDED THAT THE MOISTURE IS CONTROLLED AND COMPACTION IS ACHIEVED.

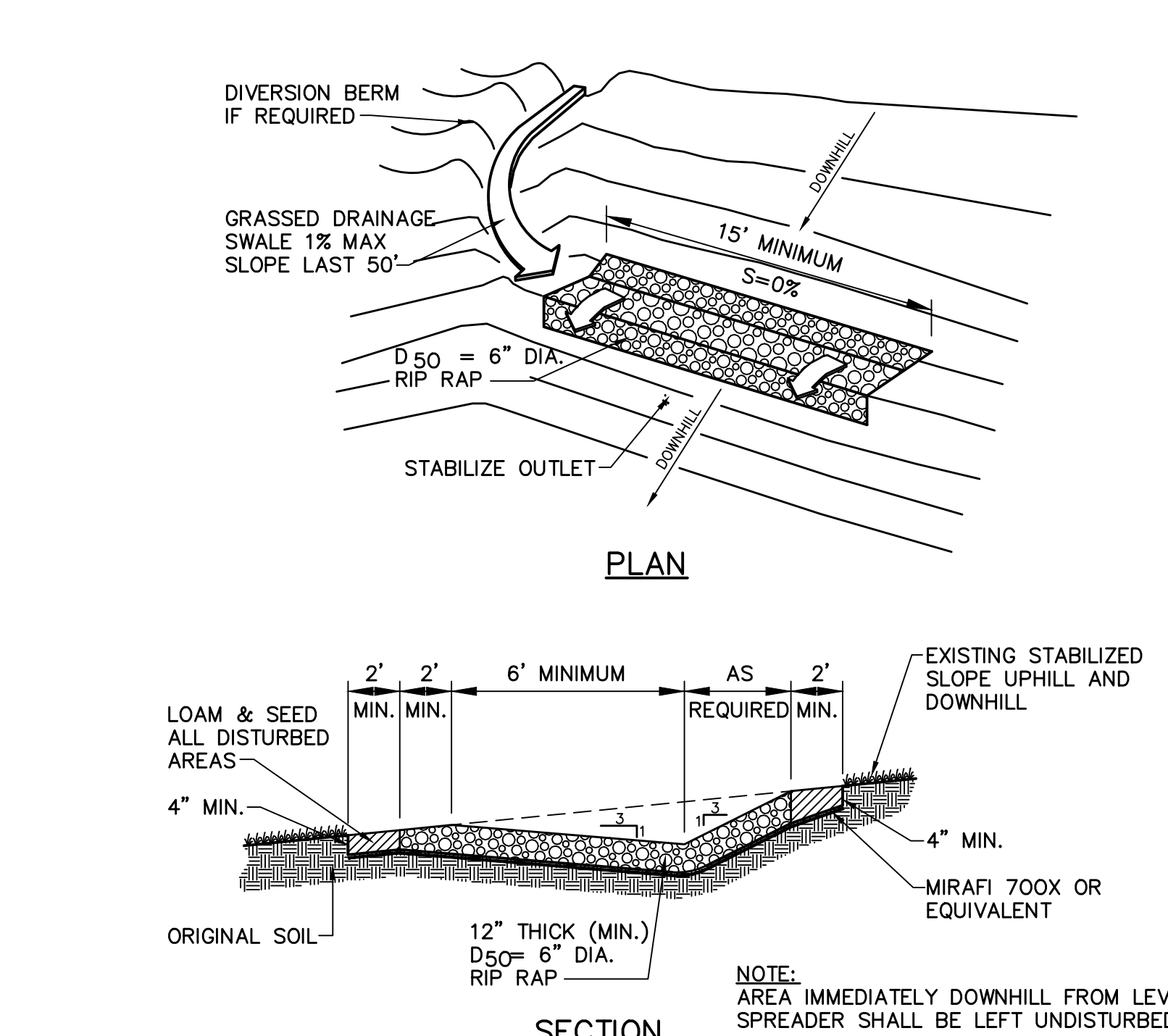
7. THE ON-SITE SOILS COULD BE USED AS CGF ADJACENT TO PILE CAPS AND GRADE BEAMS, BENEATH SIDEWALKS OR ADJACENT TO ANY FOUNDATION WALLS AS LONG AS THOSE SOILS MEET THE GRADATION REQUIREMENTS IDENTIFIED ABOVE.

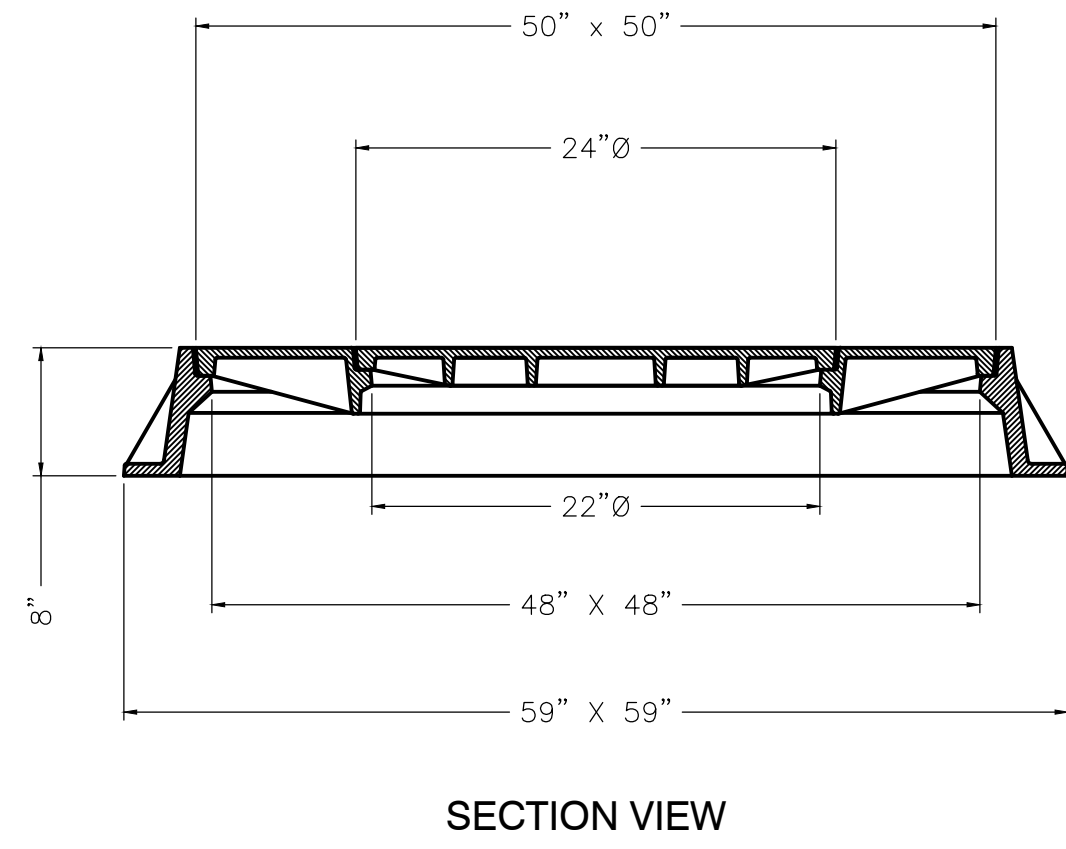
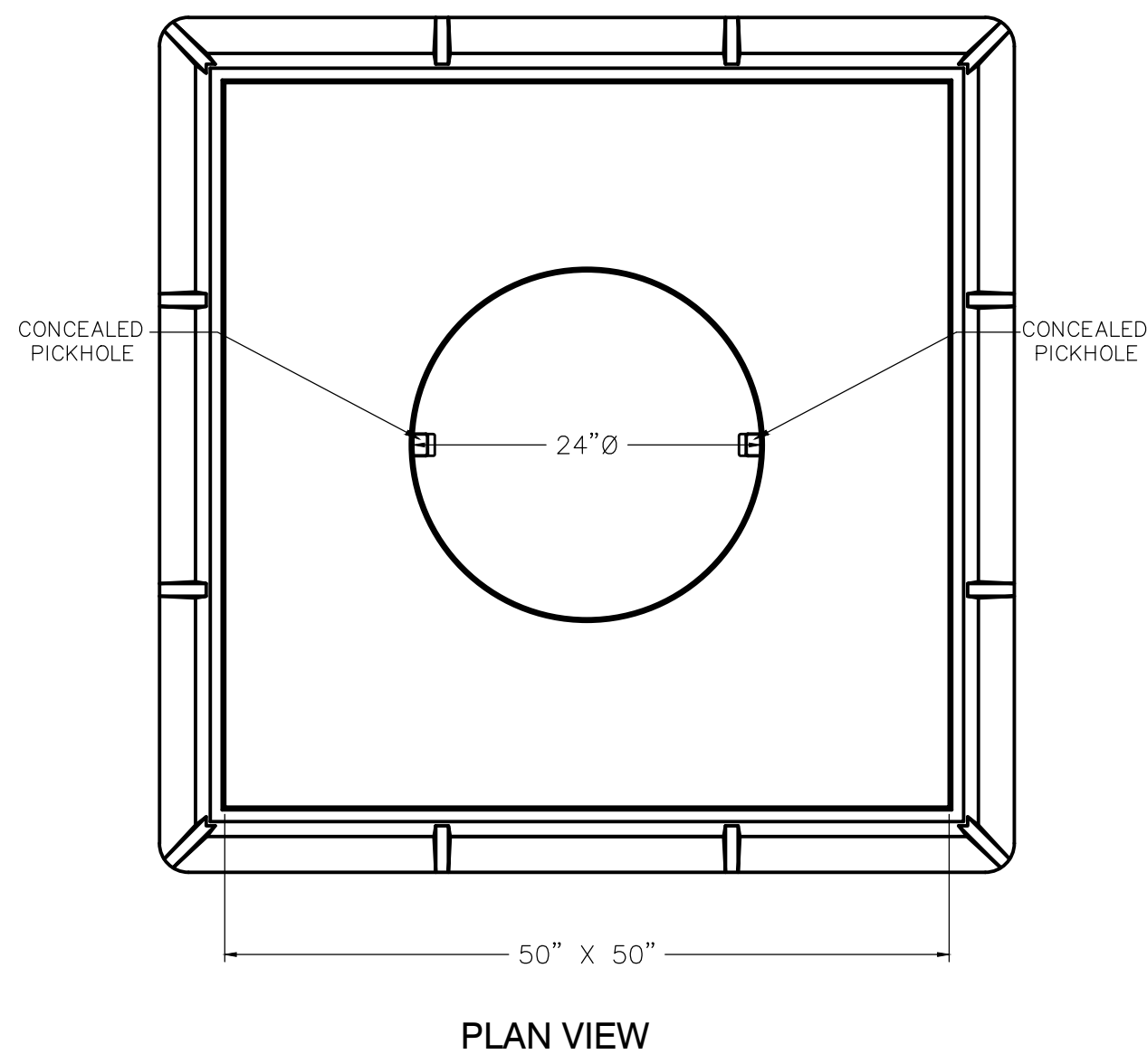
8. GLACIOMARINE SAND AND CLAY SILTS EXCAVATED DURING CONSTRUCTION ARE NOT CONSIDERED SUITABLE FOR REUSE AS CGF. THESE MATERIALS MAY BE USED AS COMMON FILL IN LANDSCAPED AREAS IF THEY CAN BE PLACED AND COMPACTED ADEQUATELY AS STATED HEREIN.

9. THE DURABLE COMPONENTS OF ANY EXISTING STRUCTURES REMOVED DURING DEMOLITION COULD BE CRUSHED AND BLENDED ON-SITE TO PRODUCE A SUITABLE STRUCTURAL OR COMMON FILL. THE CONCRETE (FROM FLOOR SLABS AND FOUNDATION ELEMENTS), AND CONCRETE BLOCK COULD POTENTIALLY BE INCORPORATED INTO STRUCTURAL OR COMMON FILLS.
10. RECLAIMED MATERIALS SHOULD BE FREE OF DELETERIOUS MATERIALS (STRUCTURAL STEEL, WOOD, GLASS, METALS). SAMPLES OF ALL SITE MATERIALS PROPOSED FOR ON-SITE RE-USE SHOULD BE TESTED FOR CONFORMANCE TO THE GRADATION SPECIFICATIONS, MOISTURE-DENSITY RELATIONSHIPS (MODIFIED PROCTOR TESTING), AND ABRASION RESISTANCE (ASTM C 131, THE U.C. ABRASION TEST). PROPOSED RECLAIMED MATERIALS SHOULD HAVE AN ABRASION LOSS OF LESS THAN 50 PERCENT.

CONSTRUCTION WITHIN RIGHT-OF-WAY (R.O.W.)

1. ALL CONSTRUCTION WITHIN THE RIGHT-OF-WAY SHALL CONFORM TO THE STANDARDS OF CITY OF PORTLAND TECHNICAL MANUAL.

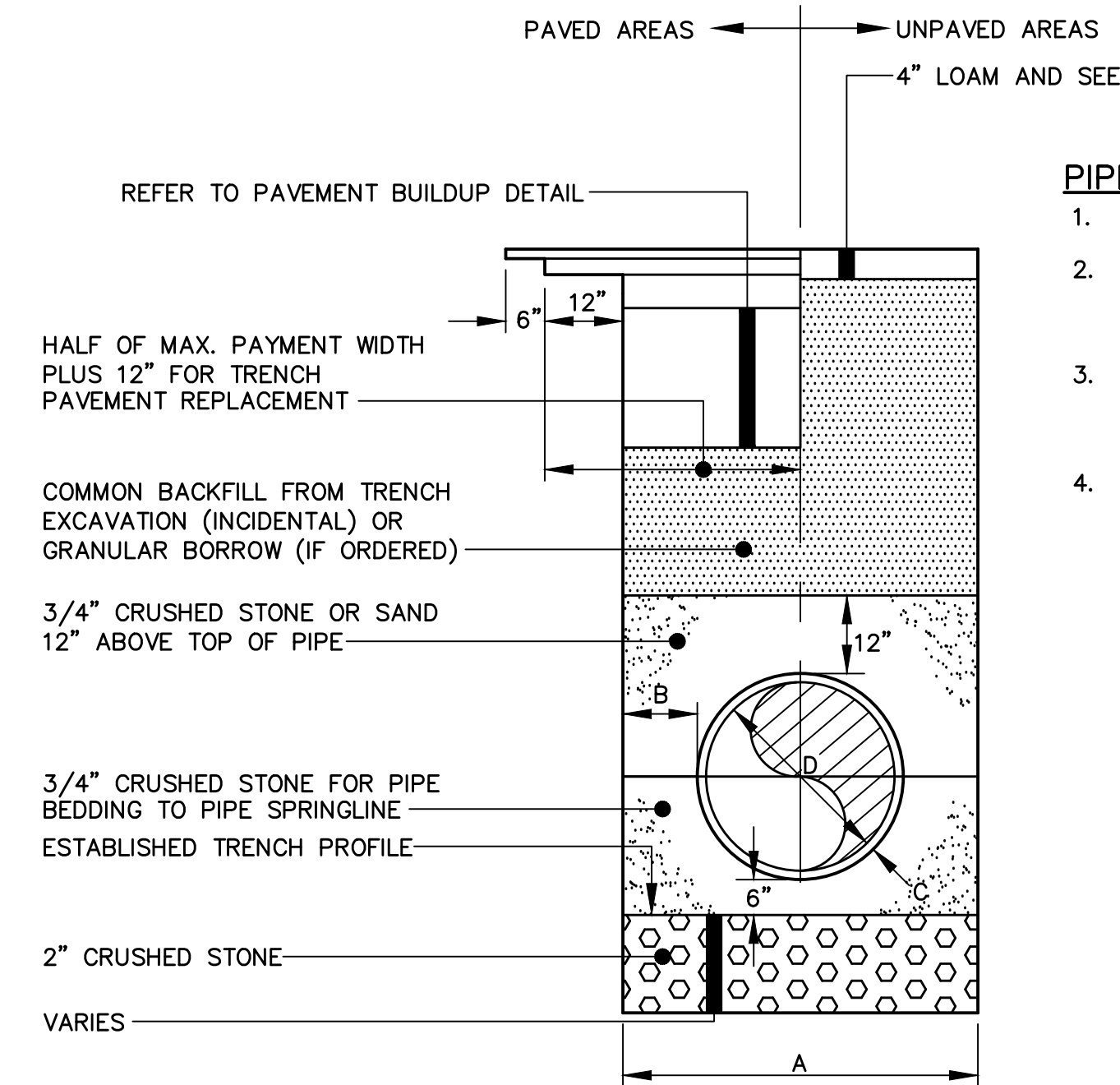




NOTES

1. HEAVY DUTY CASTING RATED FOR H-20 LOADING

1 FRAME AND COVER REPLACEMENT FOR EXISTING WATER METER PIT

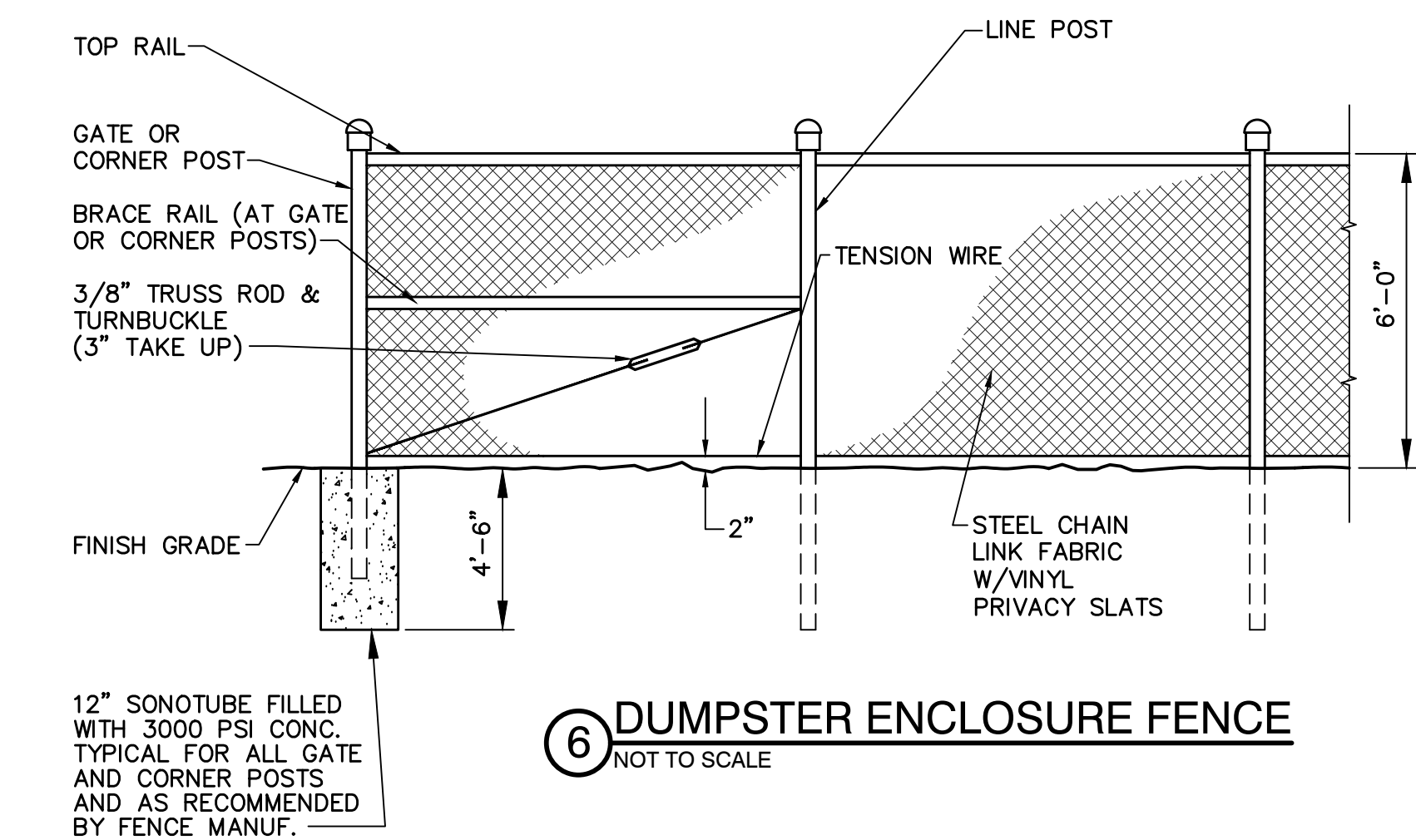


PIPE INSTALLATION NOTES

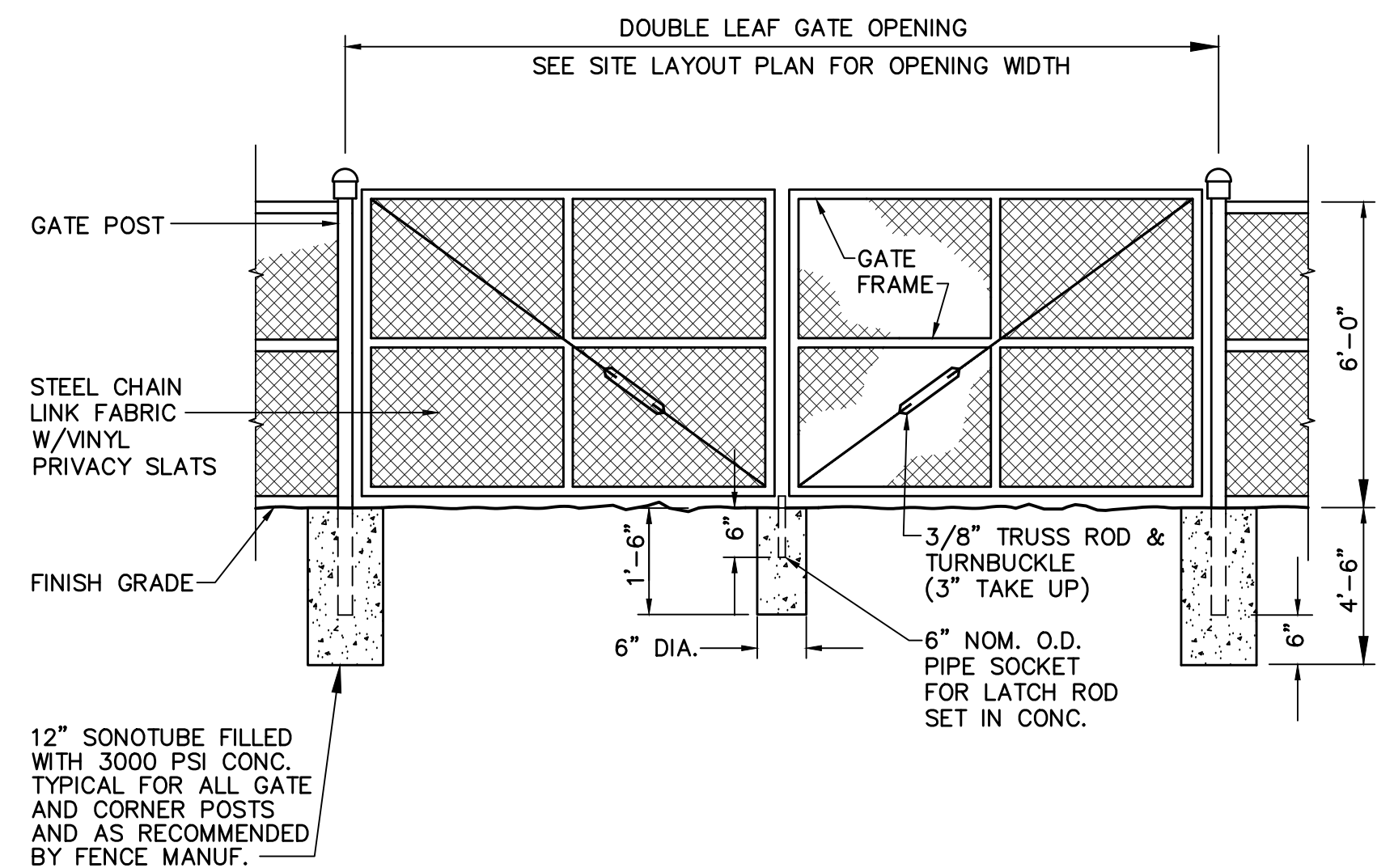
1. ALTERNATE CONSTRUCTION METHODS OR PAYMENT METHODS SHALL BE APPROVED BY THE CITY.
2. IN PAVED AREAS, DEPTHS OF GRAVEL AND HOT MIX ASPHALT PAVEMENT SHALL MATCH THE GREATER OF EXISTING CONDITIONS OR THE REQUIREMENTS FOR THE CORRESPONDING STREET CLASSIFICATION.
3. DIMENSION B SHALL BE SUFFICIENT TO ALLOW CRUSHED STONE BEDDING TO BE PLACED AND COMPACTED UNDER THE HAUNCHES OF THE PIPE, BUT IN ALL CASES DIMENSION B SHALL BE AT LEAST 9\".
4. DIMENSION A IS THE MAXIMUM WIDTH ALLOWED FOR CALCULATING PAY QUANTITIES UNDER GRANULAR BORROW, CRUSHED STONE, STRUCTURAL EARTH EXCAVATION, AND STRUCTURAL ROCK EXCAVATION. DIMENSION A SHALL BE BASED ON PIPE DIAMETER D, AS SET FORTH IN THE FOLLOWING TABLE:

PIPE DIAMETER, D (INCHES)	MAX. TRENCH WIDTH, A (FEET)
4	4.0
6	4.0
8	4.0
10	4.0
12	5.0
15	5.0
18	5.0
21	5.0
24	6.0
27	6.0
30	6.0
36	7.0
42	7.0
48	7.0

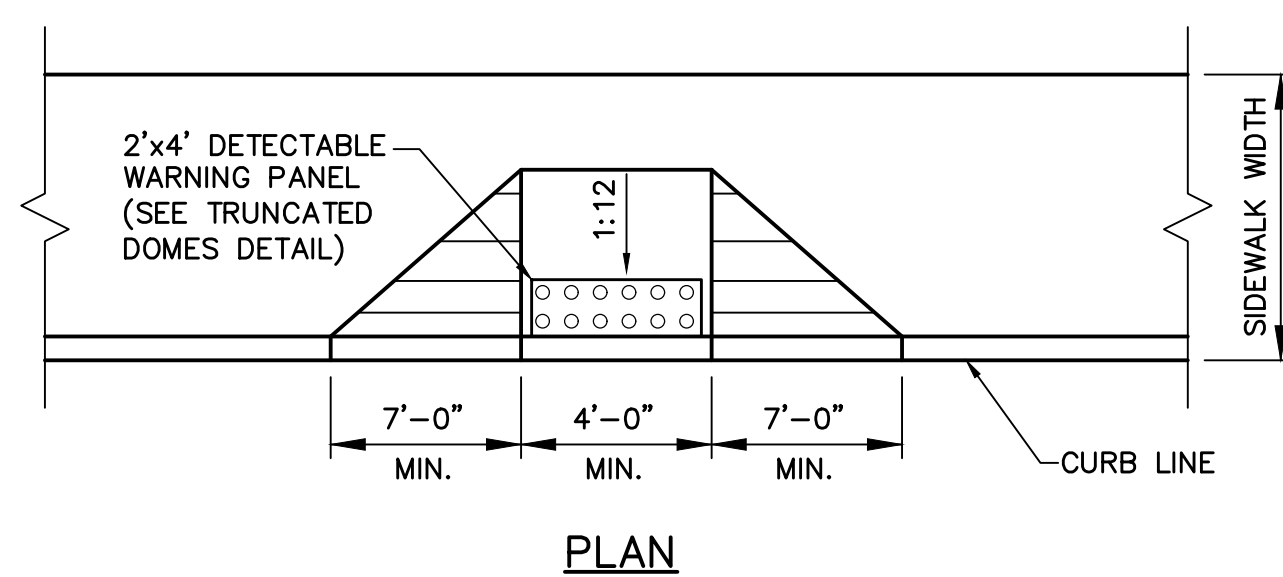
2 TYPICAL PIPE TRENCH INSTALLATION



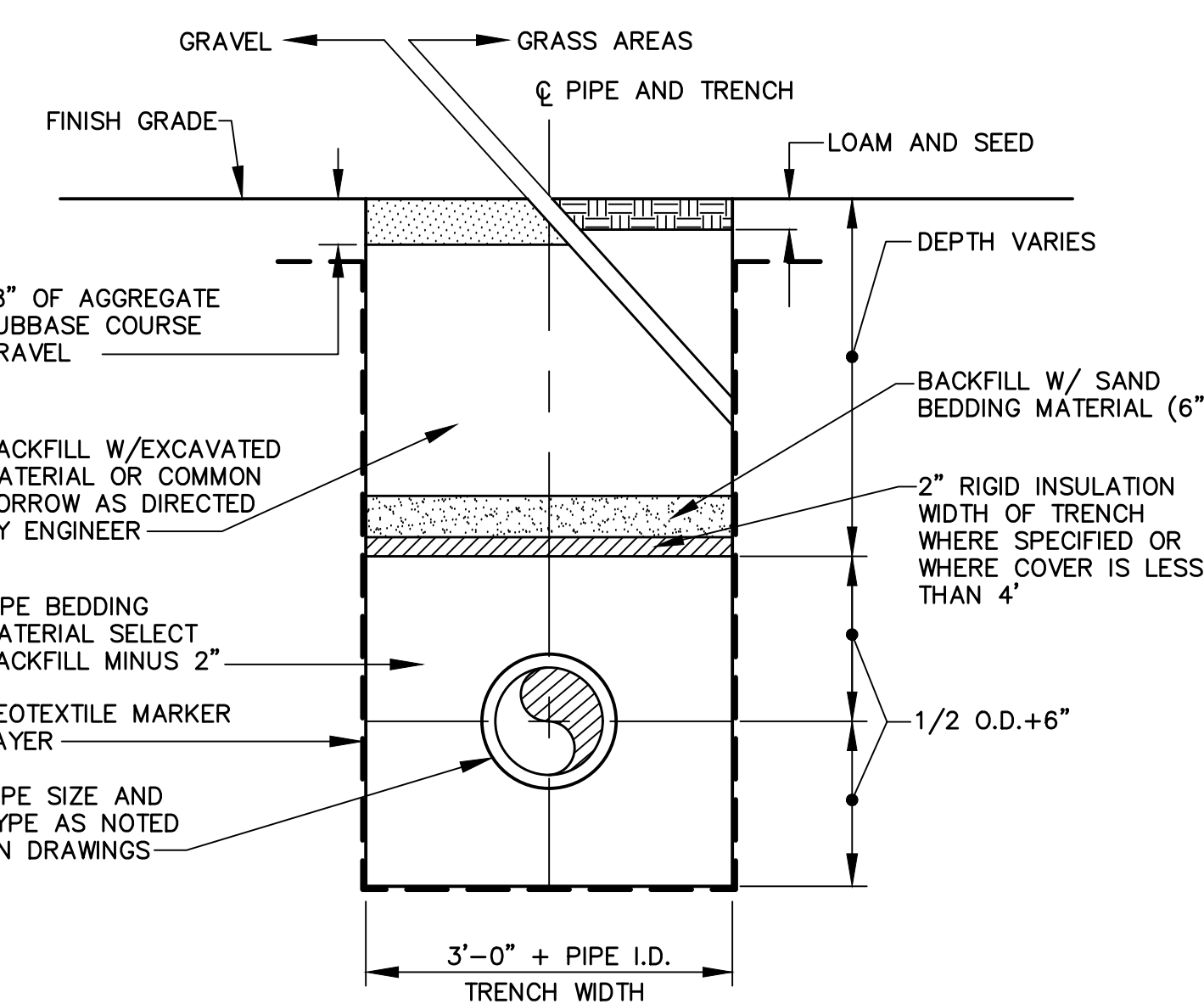
6 DUMPSTER ENCLOSURE FENCE



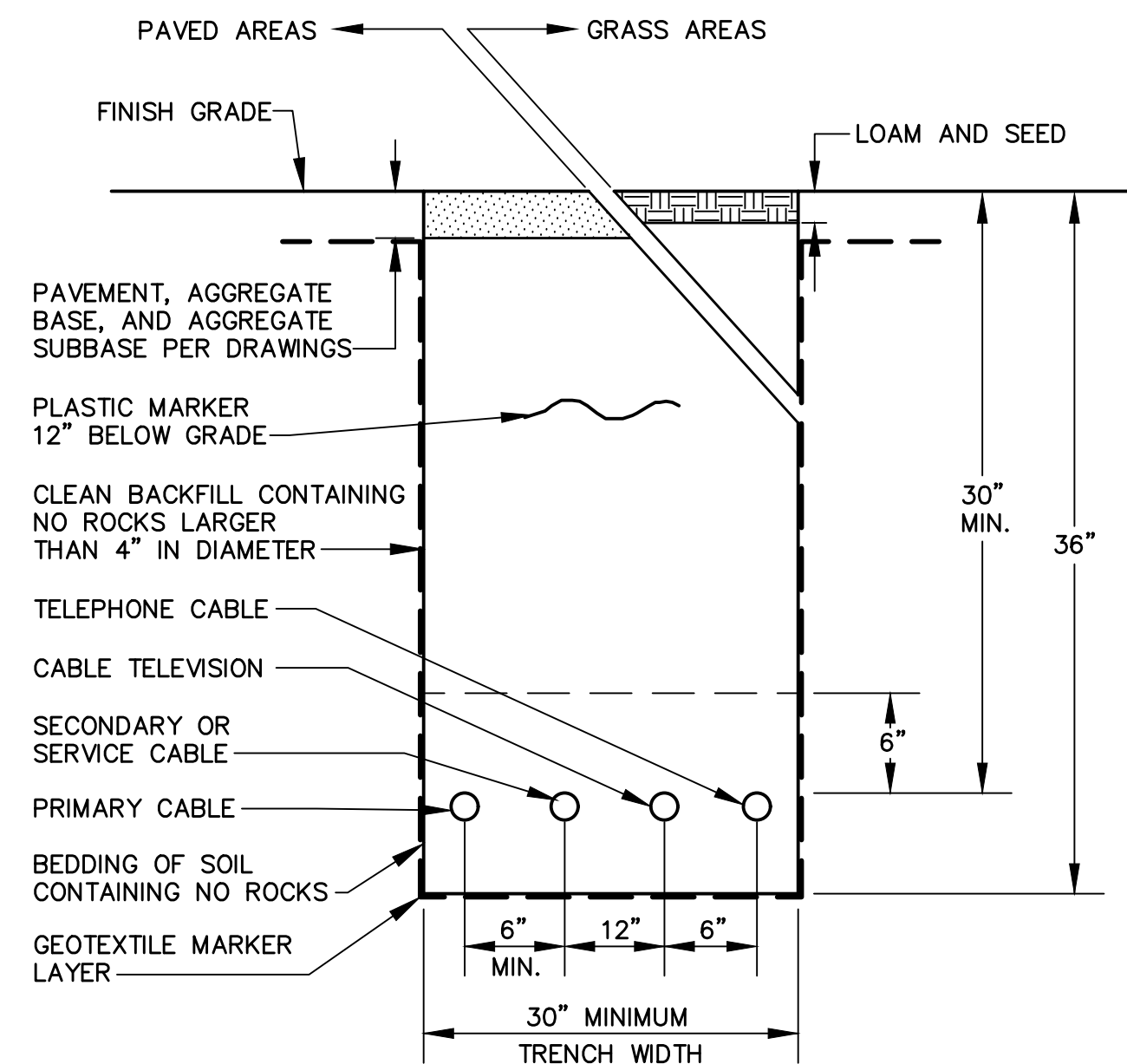
8 DUMPSTER ENCLOSURE GATE DETAIL



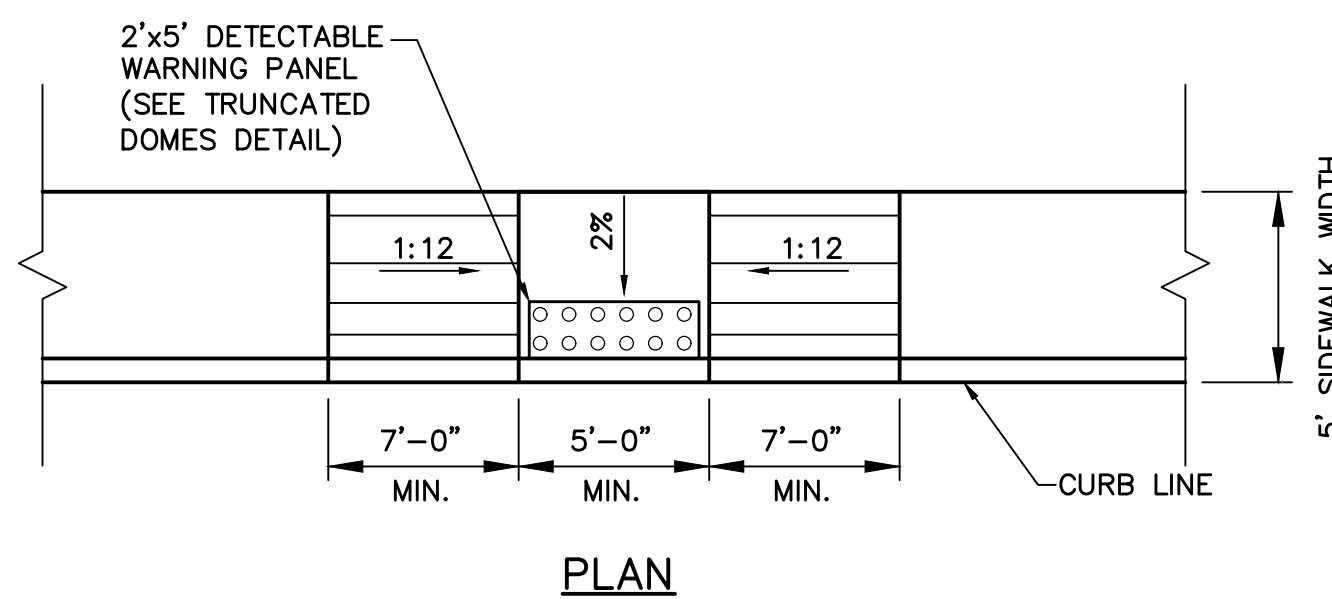
6 SIDEWALK RAMP



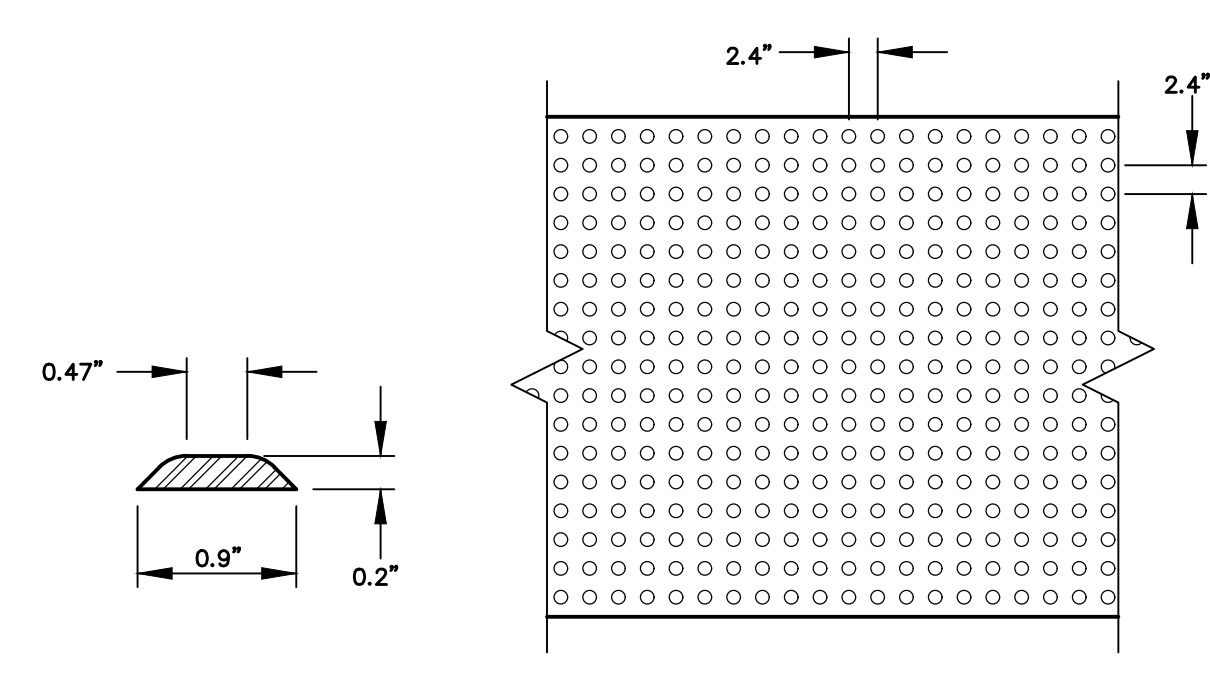
9 WATER TRENCH SECTION



3 UNDERGROUND UTILITY TRENCH DETAIL (WITHIN SITE)

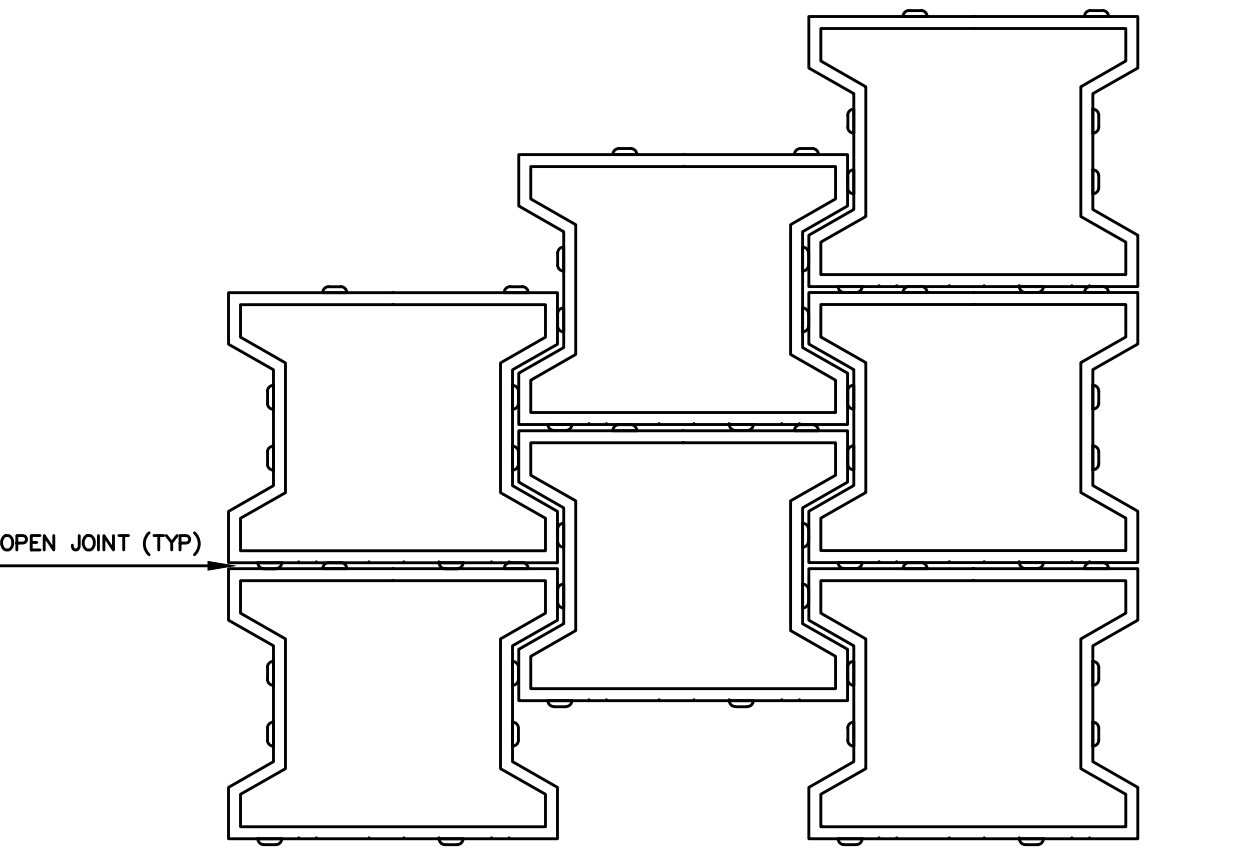


7 PARALLEL SIDEWALK RAMP

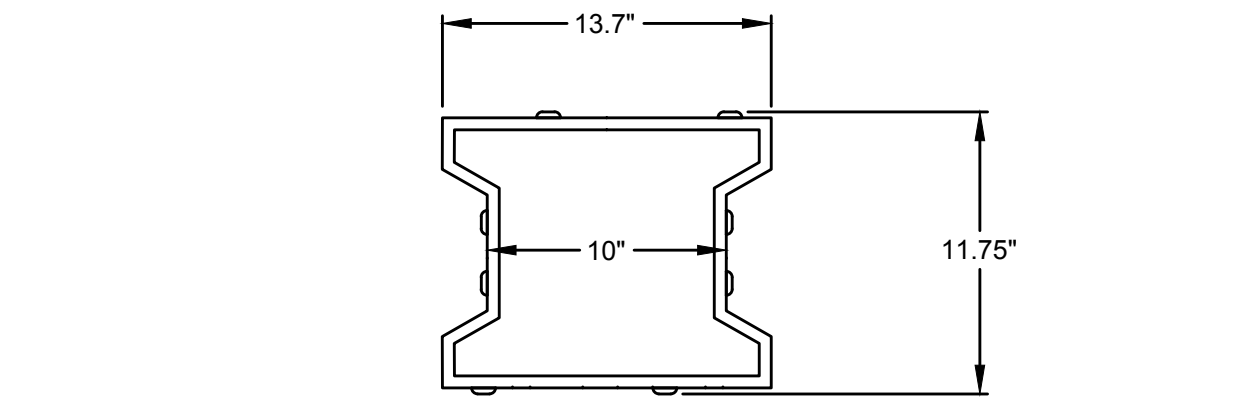


10 TRUNCATED DOMES DETAIL

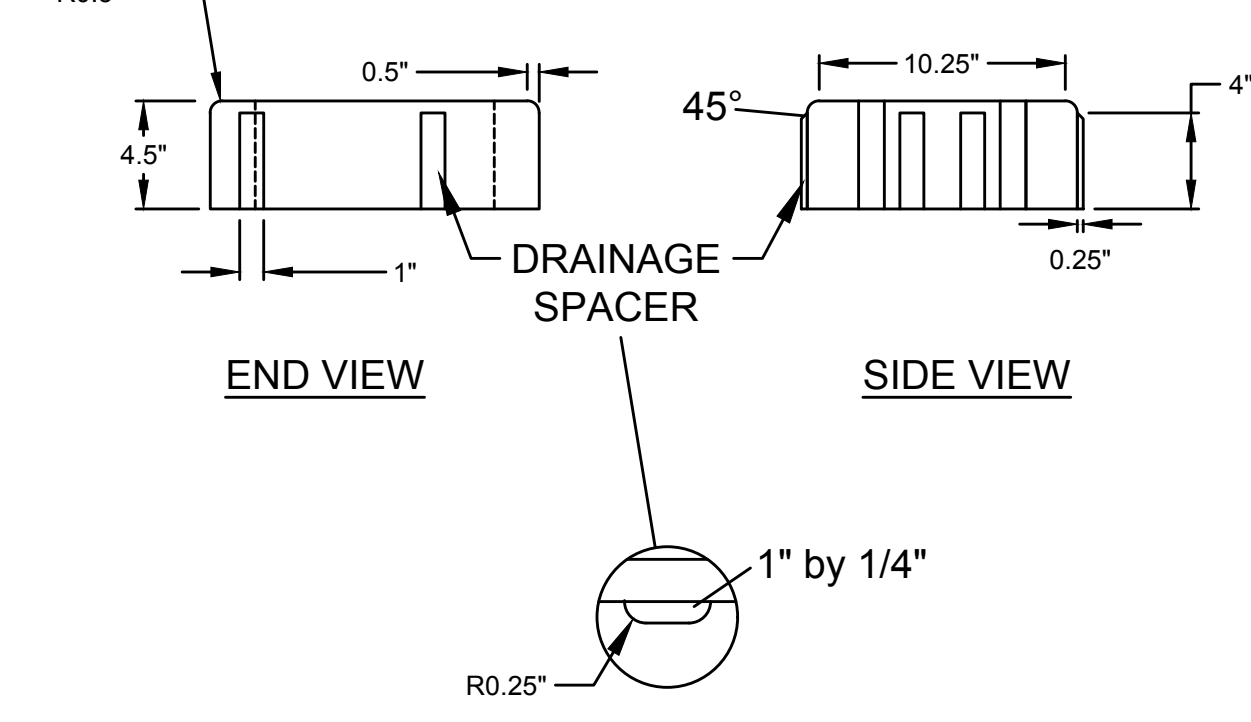
NOTES:



TOP VIEW - INTERCONNECTED BLOCKS

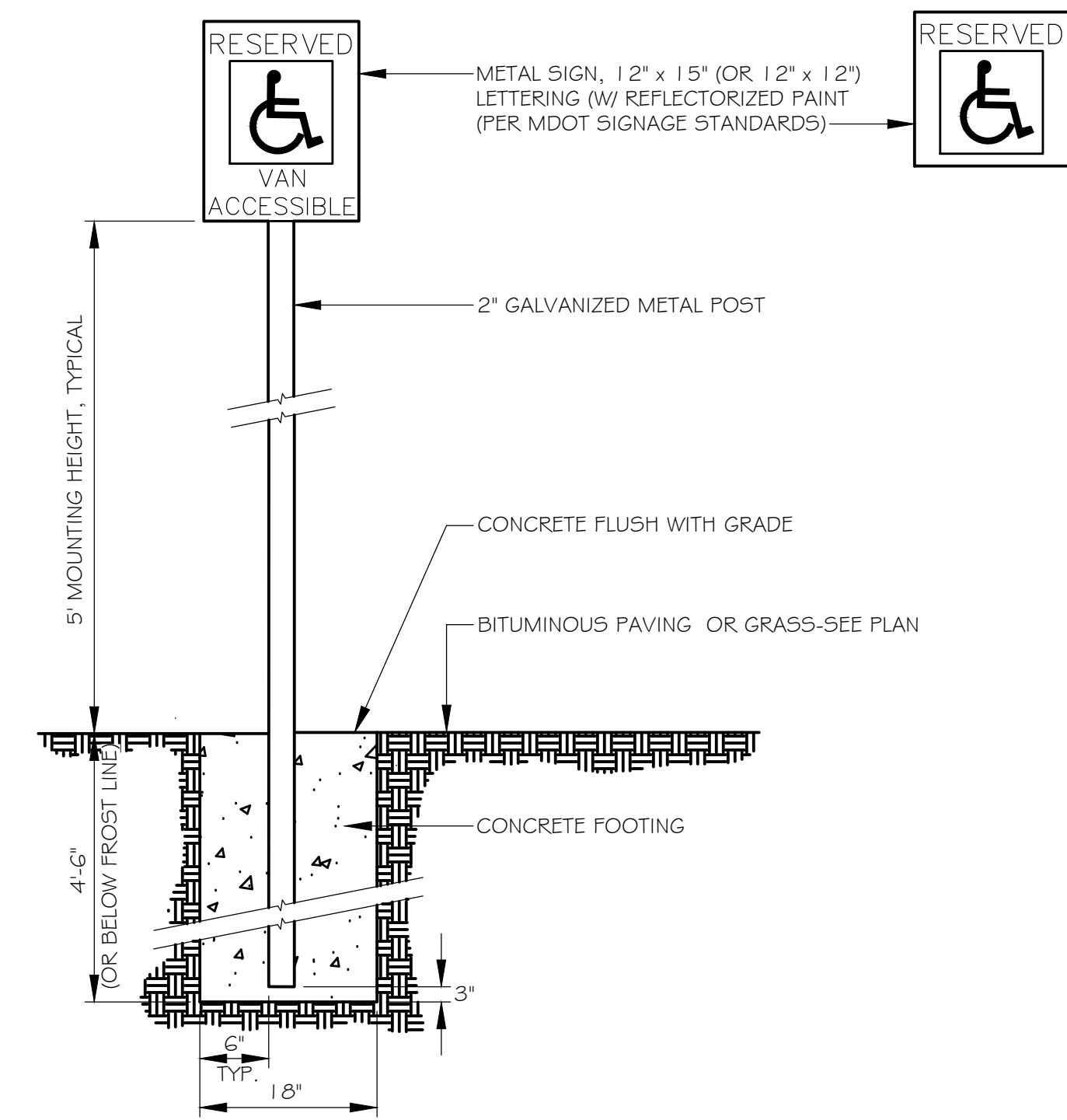


TOP VIEW



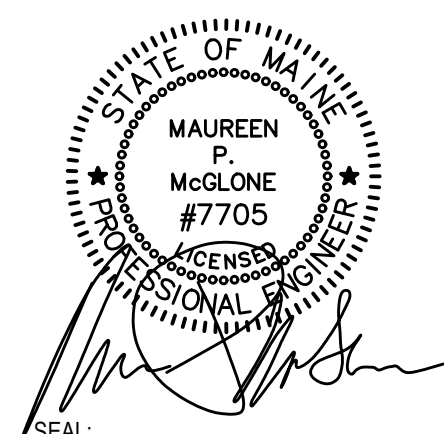
4 POWERBLOCK OPEN JOINT PAVER

- NOTES:
1. SIGNS SHALL BE FABRICATED & INSTALLED IN ACCORDANCE WITH MAINE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, HIGHWAYS AND BRIDGES REVISION OF DECEMBER 2002, SECTION 645.
 2. ALL PERMANENT SIGNS ON THIS PROJECT ARE CLASSIFIED UNDER SECTION 645.03(b) TYPE 1 REGULATORY WARNING AND ROUTE MARKER ASSEMBLY SIGNS.
 3. SIGN MATERIAL SHALL BE AS SPECIFIED IN SECTION 719 OF THE MDOT STANDARD SPECIFICATIONS.
 4. POSTS MAY BE 2\"



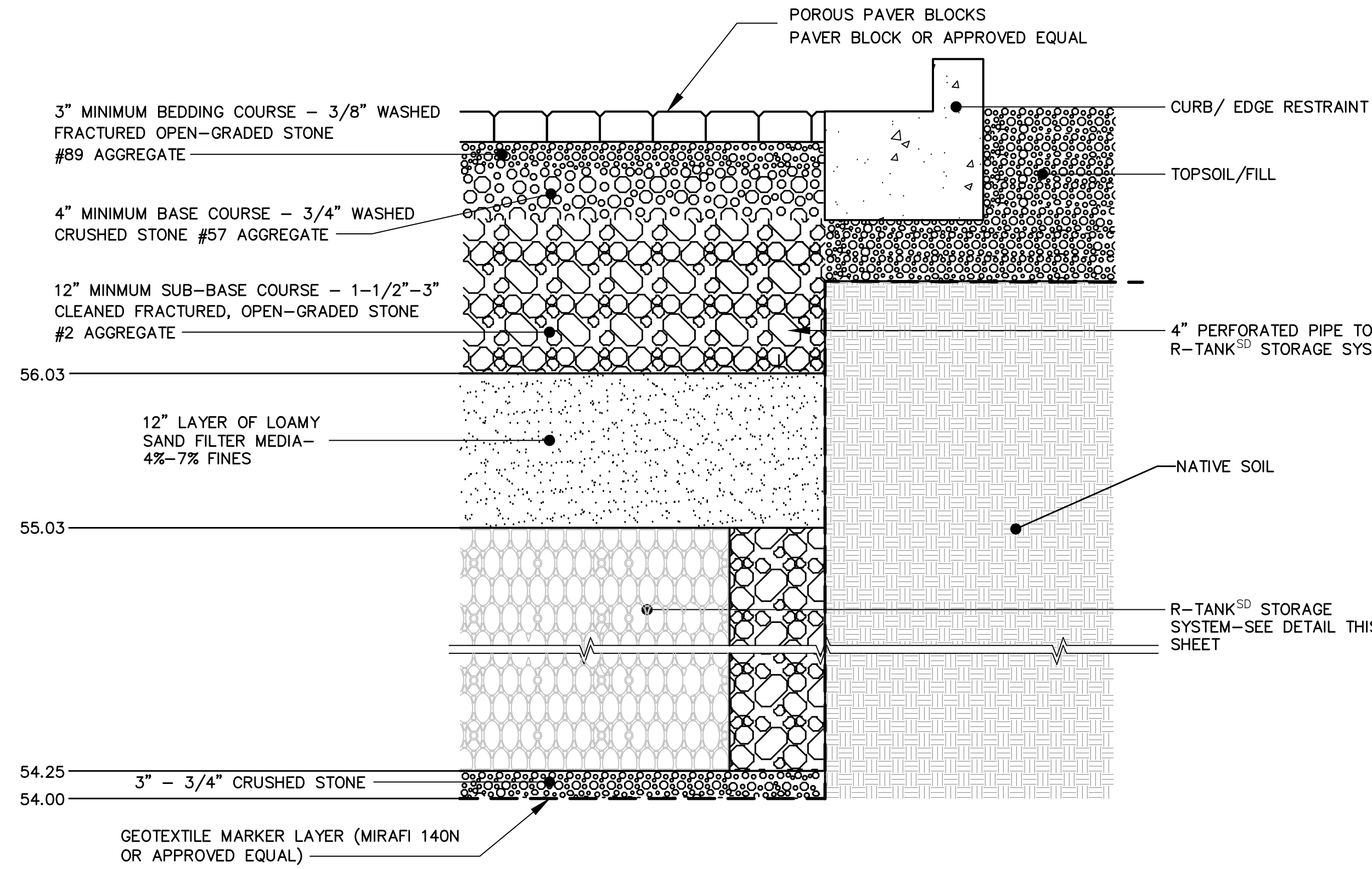
11 A.D.A. PARKING SIGNAGE

REV DESCRIPTION	DATE
A DEP PERMITTING	08/23/19
B DEP REVICITY PRELIM	10/22/19
C 90% CD OWNER REVIEW	11/20/19
D CITY SUBMISSION	11/21/19
E ISSUED FOR CONSTRUCTION	01/09/20
F PER CITY COMMENTS	03/06/20

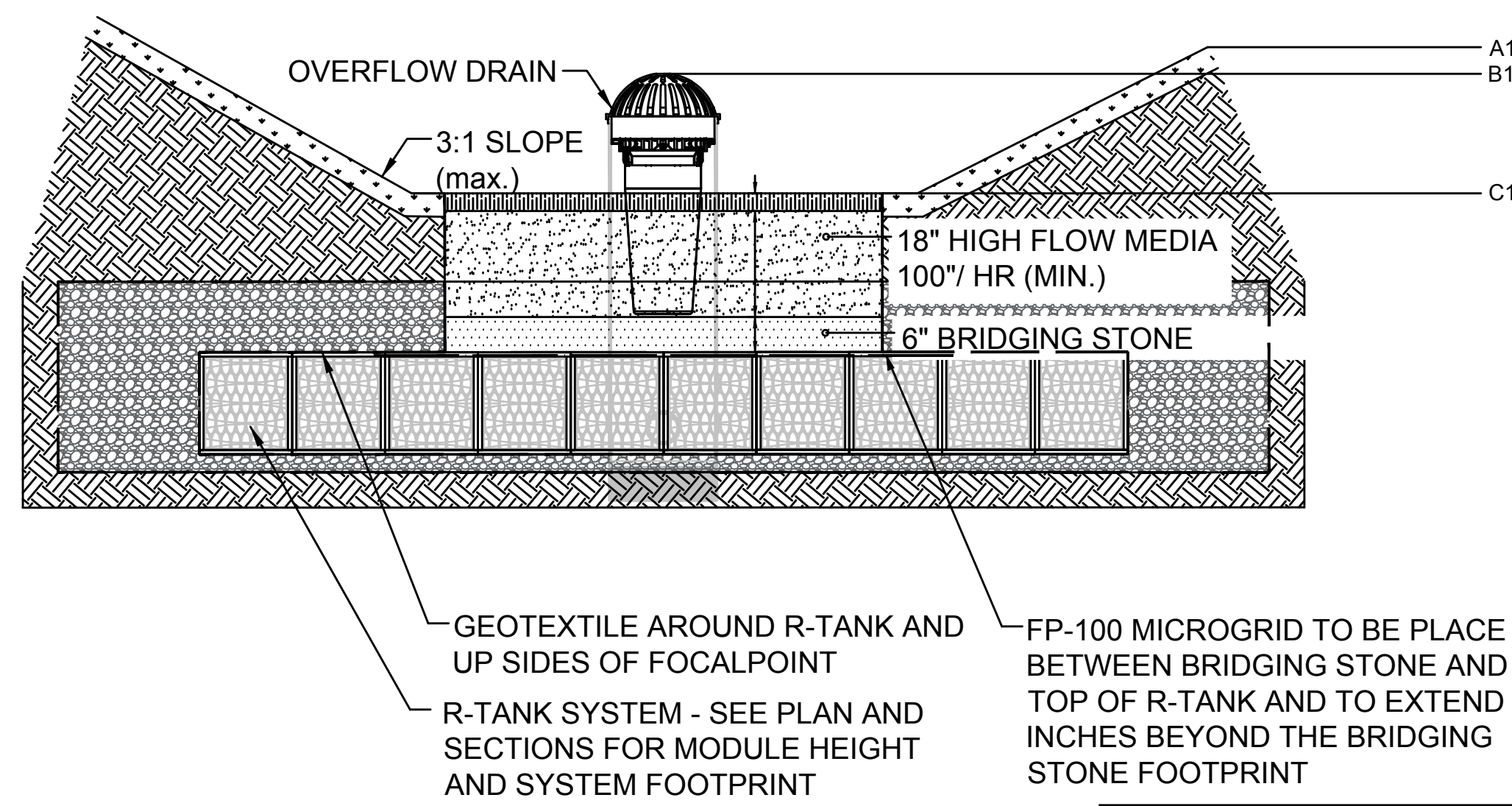
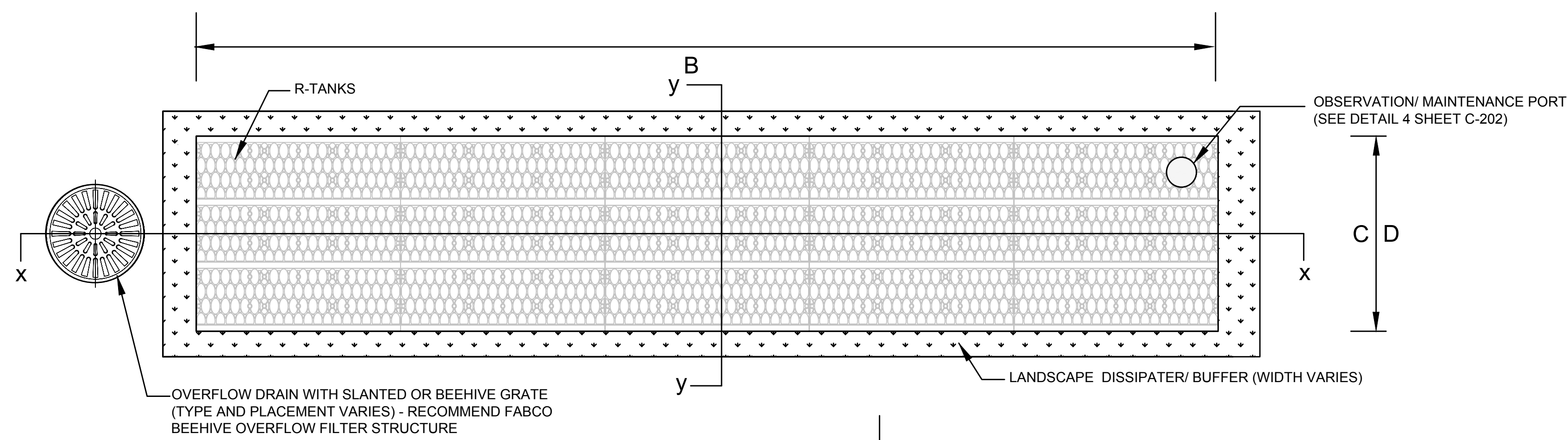


PROJECT NUMBER:	181.00008
DATE:	08/16/2019
SHEET TITLE AND NUMBER:	

DETAILS



1 PERVIOUS PAVER ABOVE R-TANK^{SD} (TYPICAL)
NOT TO SCALE

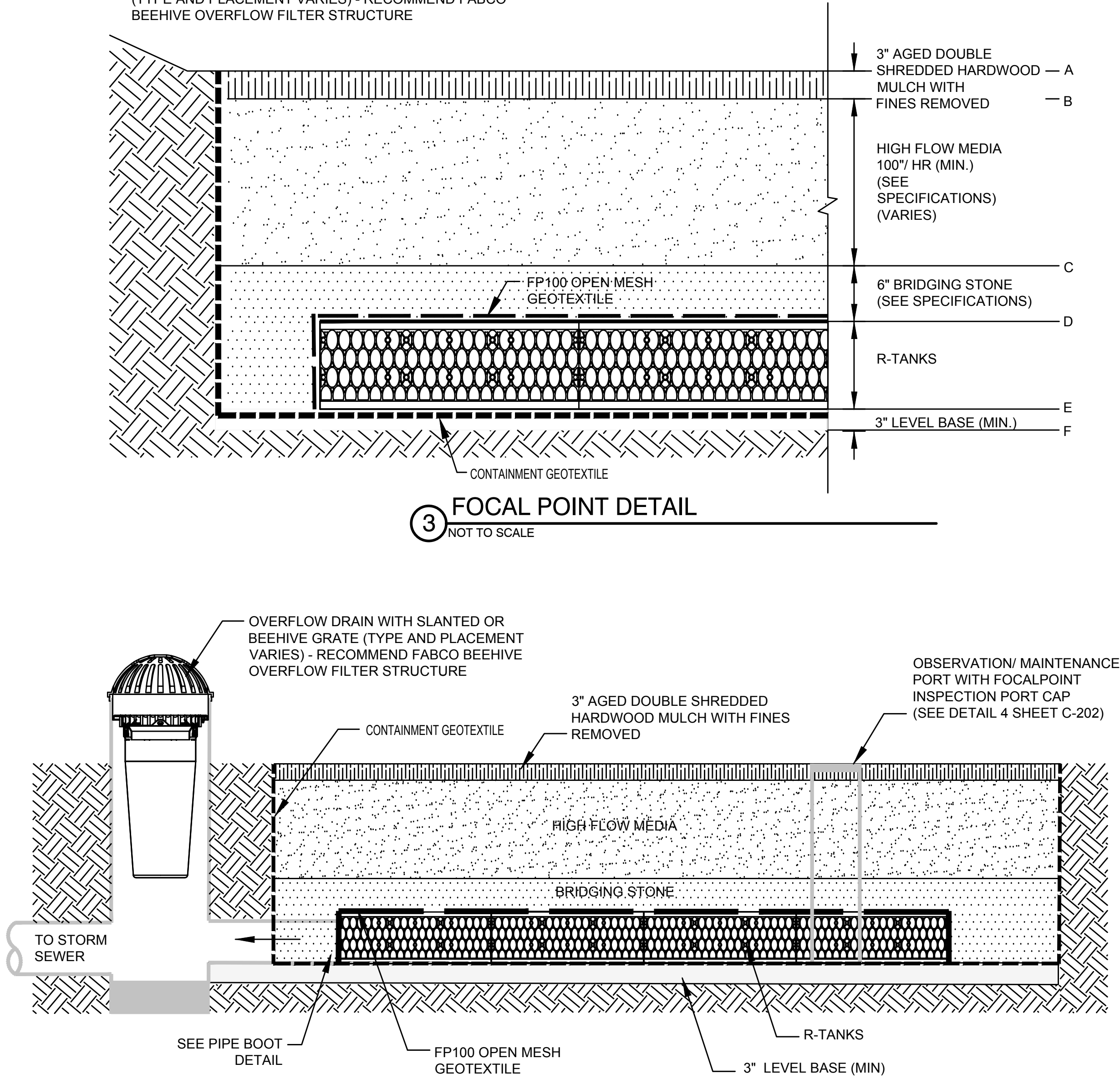


3 FOCAL POINT DETAIL
NOT TO SCALE

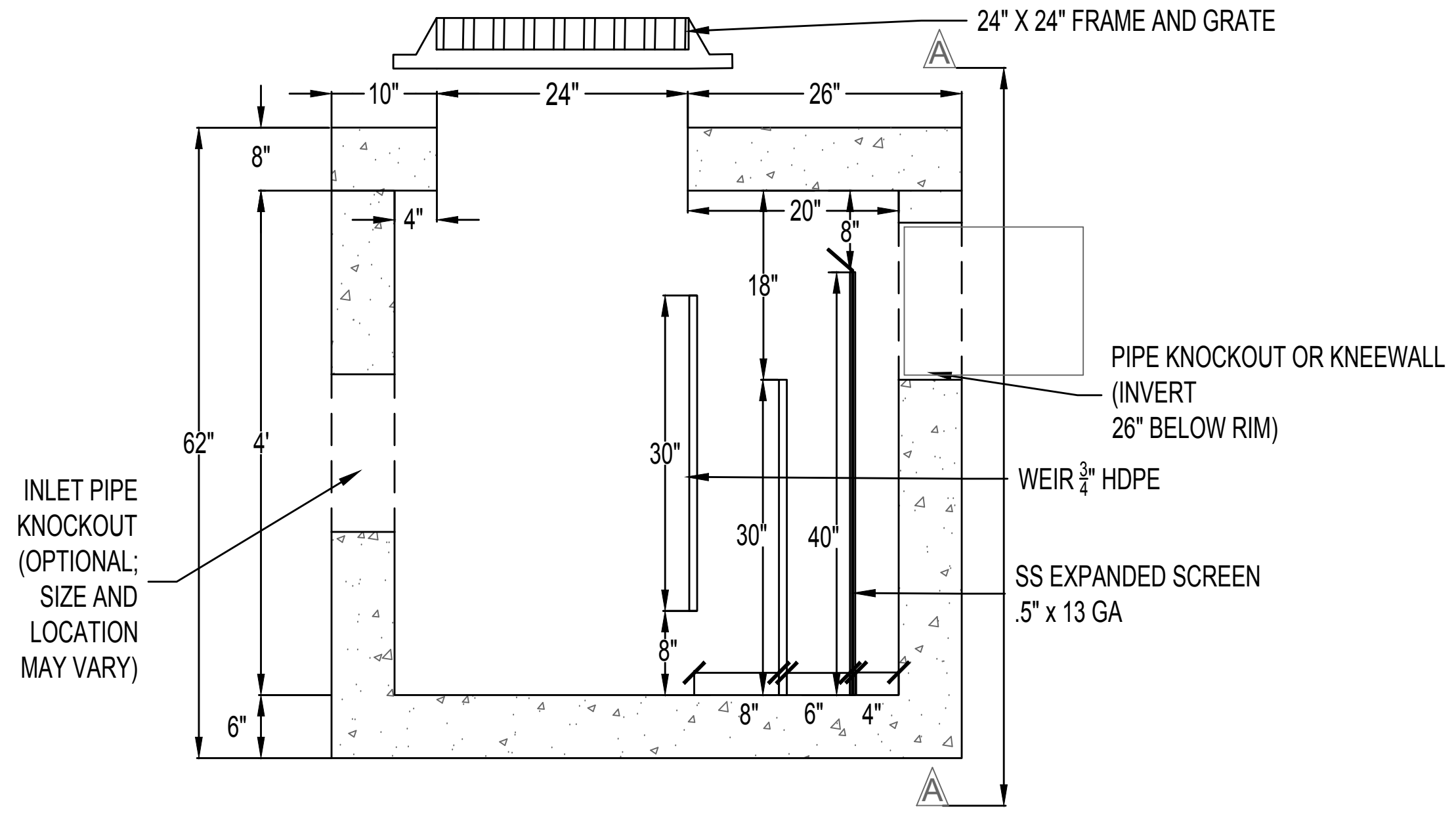
FOCAL POINT DIMENSIONS				
	FP1	FP2	FP3	FP4
A	58.20	59.00	59.00	58.75
B	57.95	58.75	58.75	58.50
C	56.19	56.19	56.19	56.19
D	55.69	55.69	55.69	55.69
E	54.25	54.25	54.25	54.25
F	54.00	54.00	54.00	54.00

4 FOCAL POINT SECTION Y-Y
NOT TO SCALE

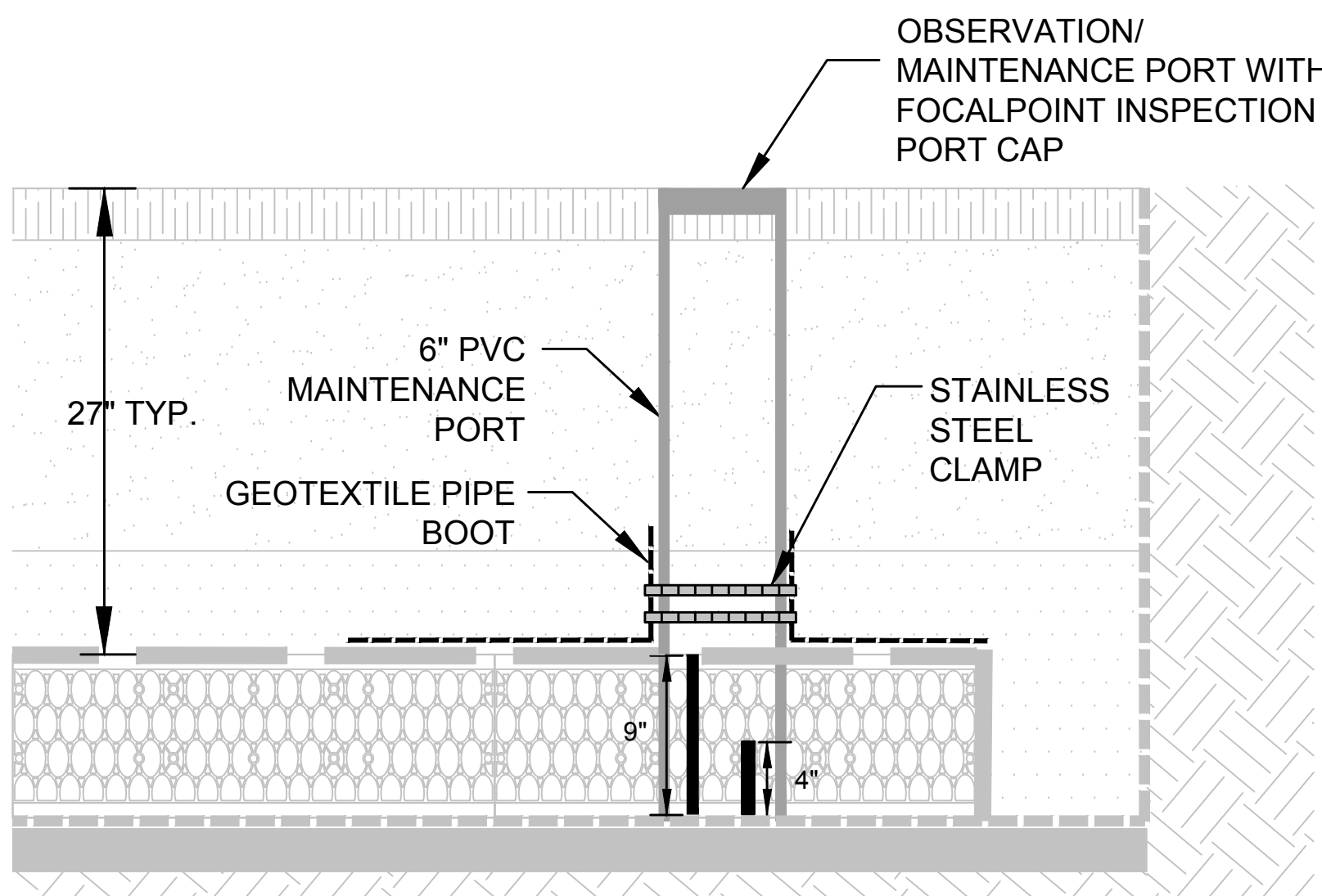
FOCAL POINT ELEVATIONS				
	FP1	FP2	FP3	FP4
A1	59.20	59.75	59.75	59.75
B1	58.95	59.60	59.40	59.30
C1	58.20	59.00	59.00	58.75



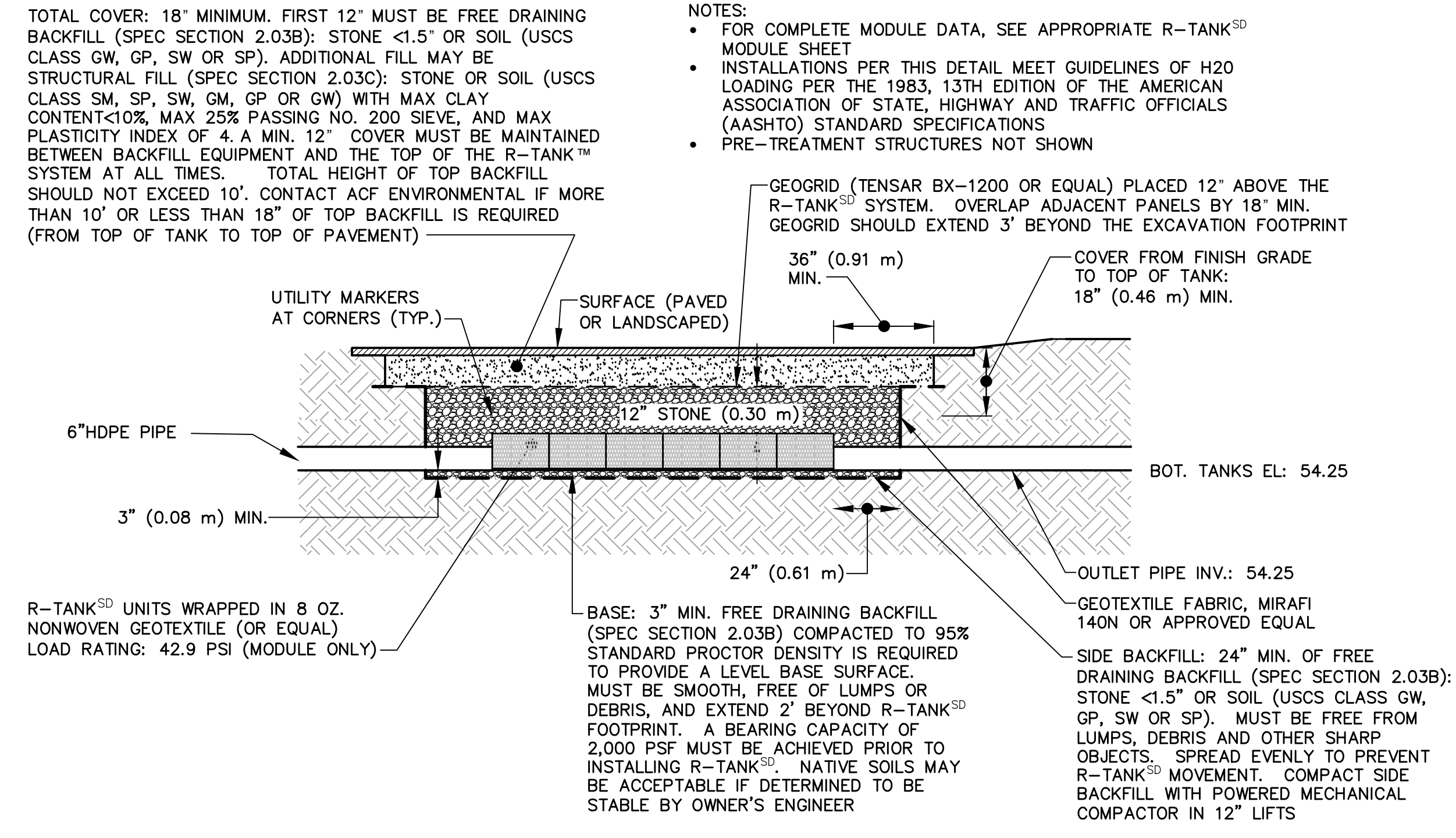
5 FOCAL POINT SECTION X-X
NOT TO SCALE



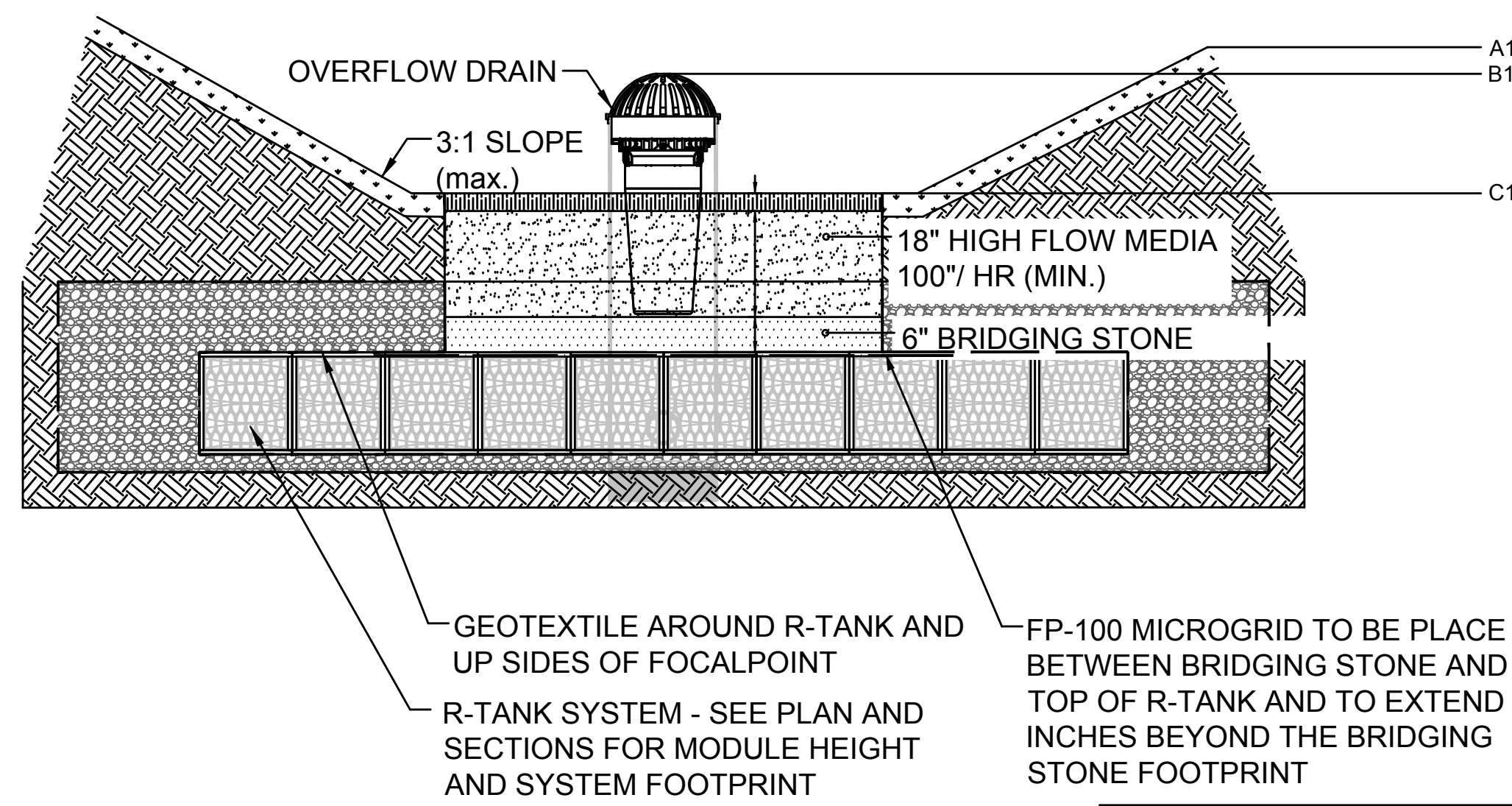
6 PRETX DROP INLET PRETREATMENT CROSS SECTION
NOT TO SCALE



7 OBSERVATION/MAINTENANCE PORT
NOT TO SCALE

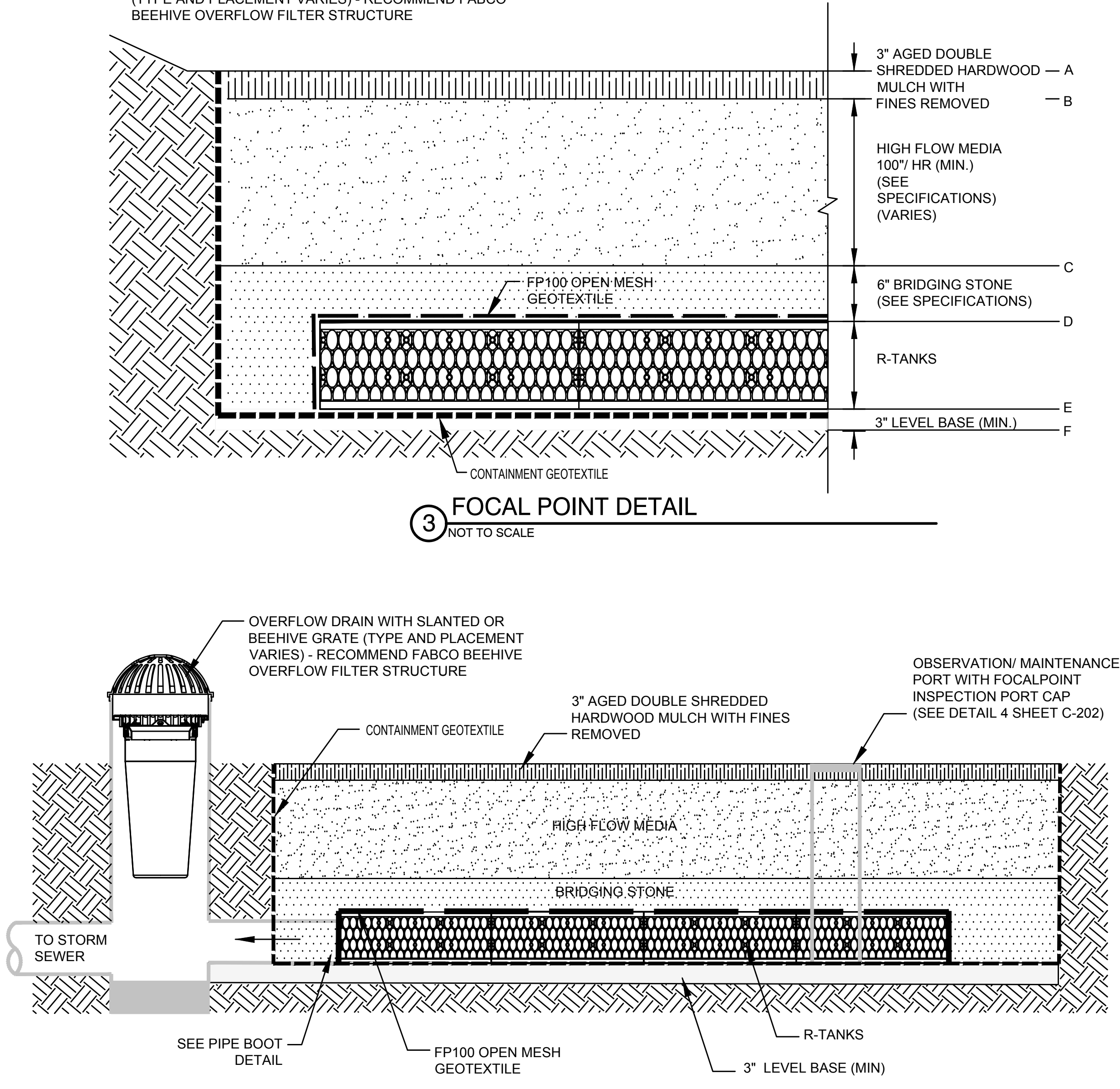


2 R-TANK^{SD} - HS-20 LOADS
NOT TO SCALE

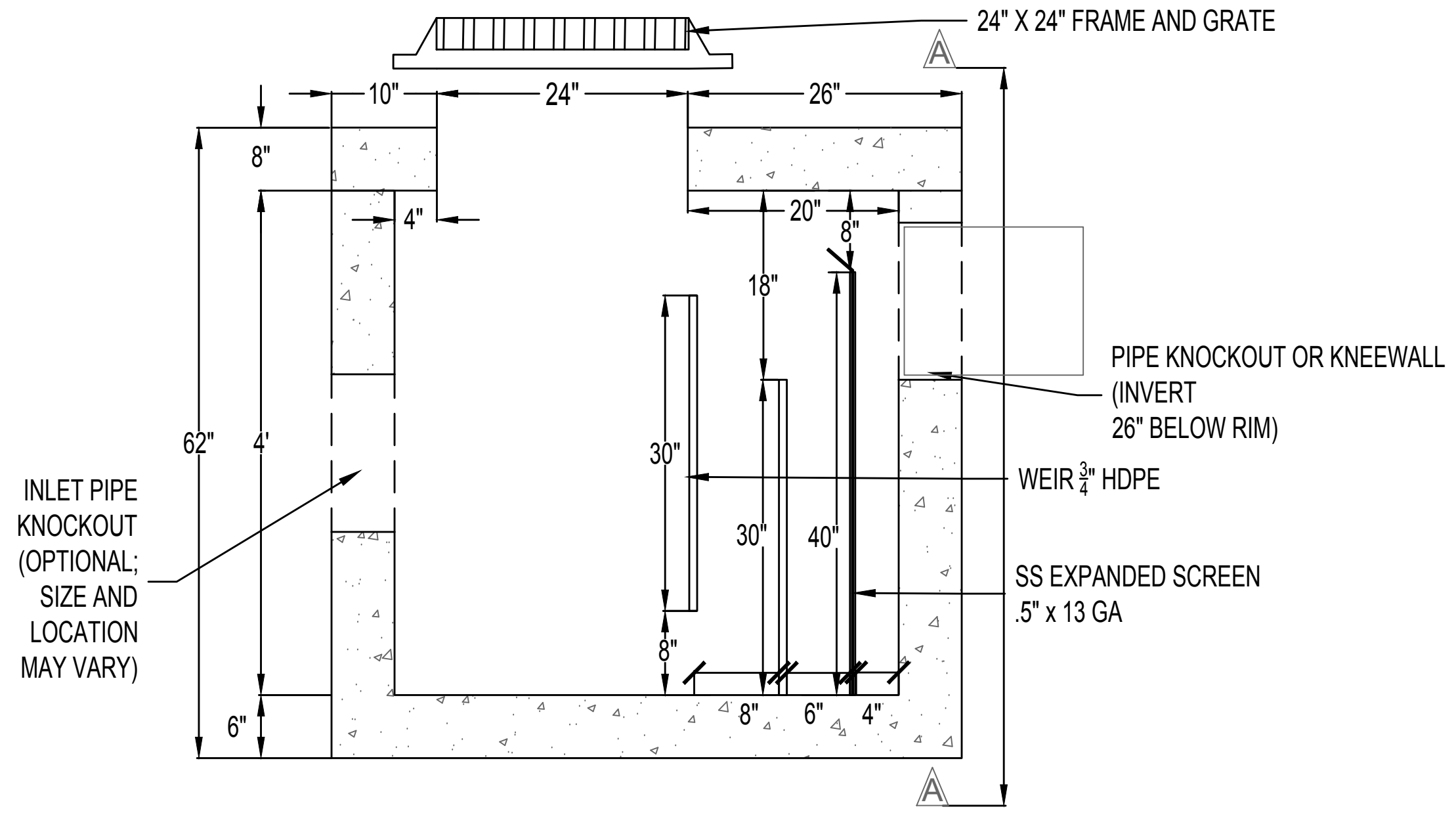


4 FOCAL POINT SECTION Y-Y
NOT TO SCALE

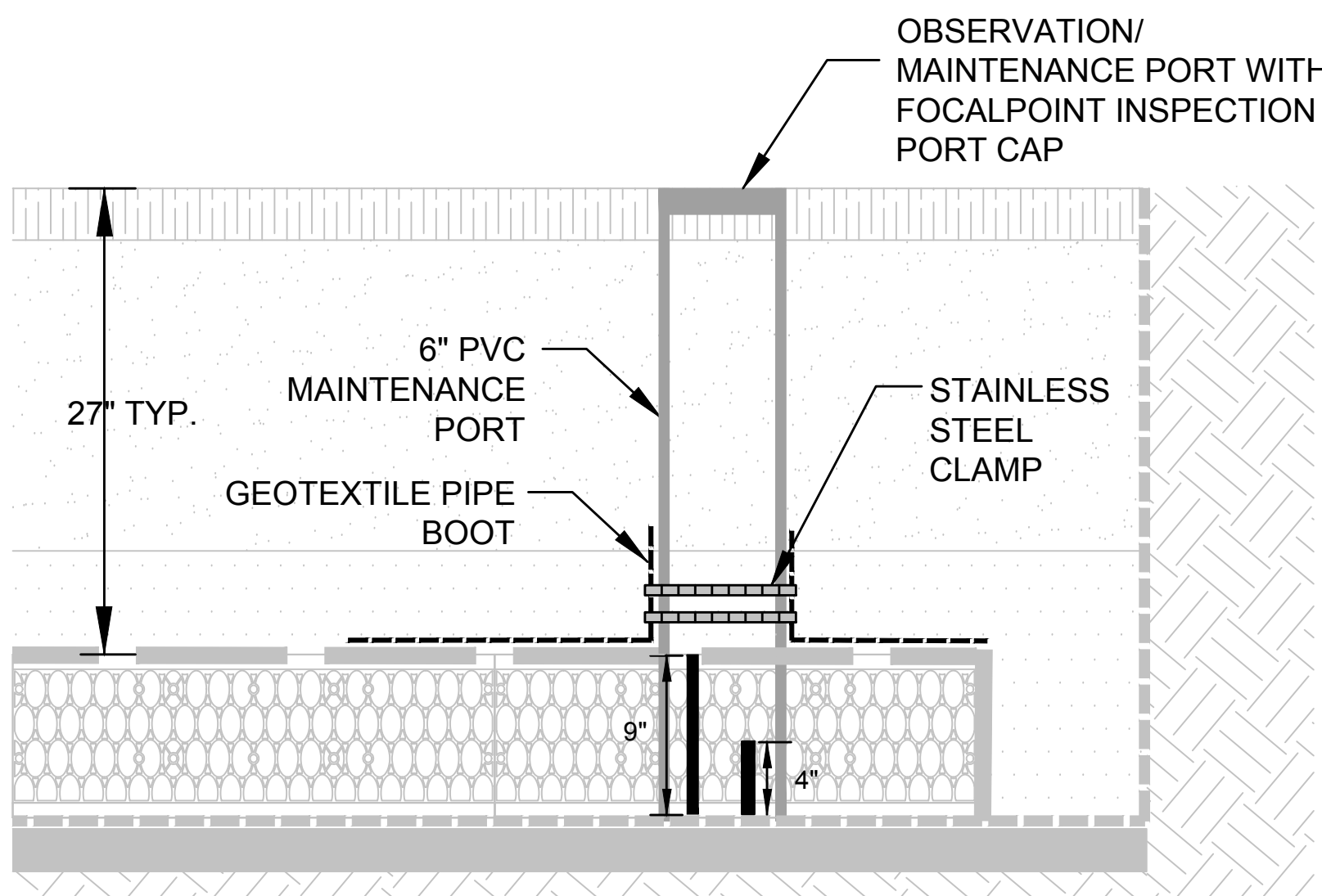
FOCAL POINT ELEVATIONS				
	FP1	FP2	FP3	FP4
A1	59.20	59.75	59.75	59.75
B1	58.95	59.60	59.40	59.30
C1	58.20	59.00	59.00	58.75



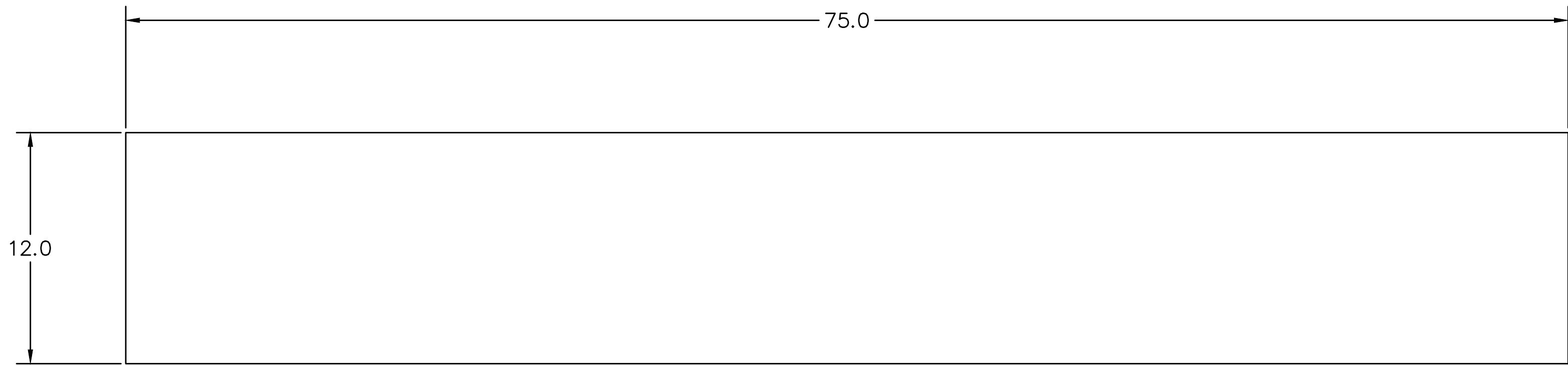
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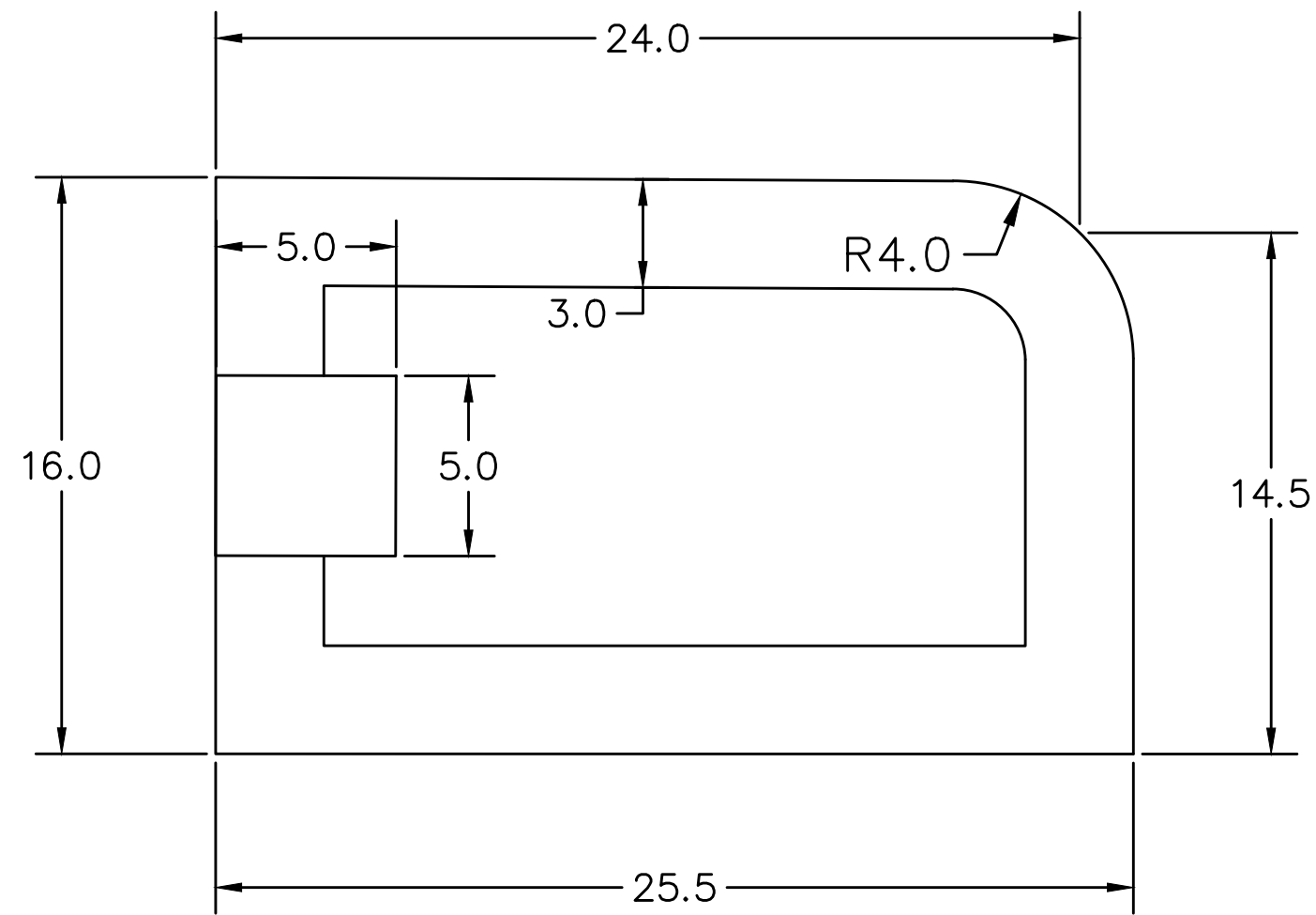
6 PRETX DROP INLET PRETREATMENT CROSS SECTION
NOT TO SCALE



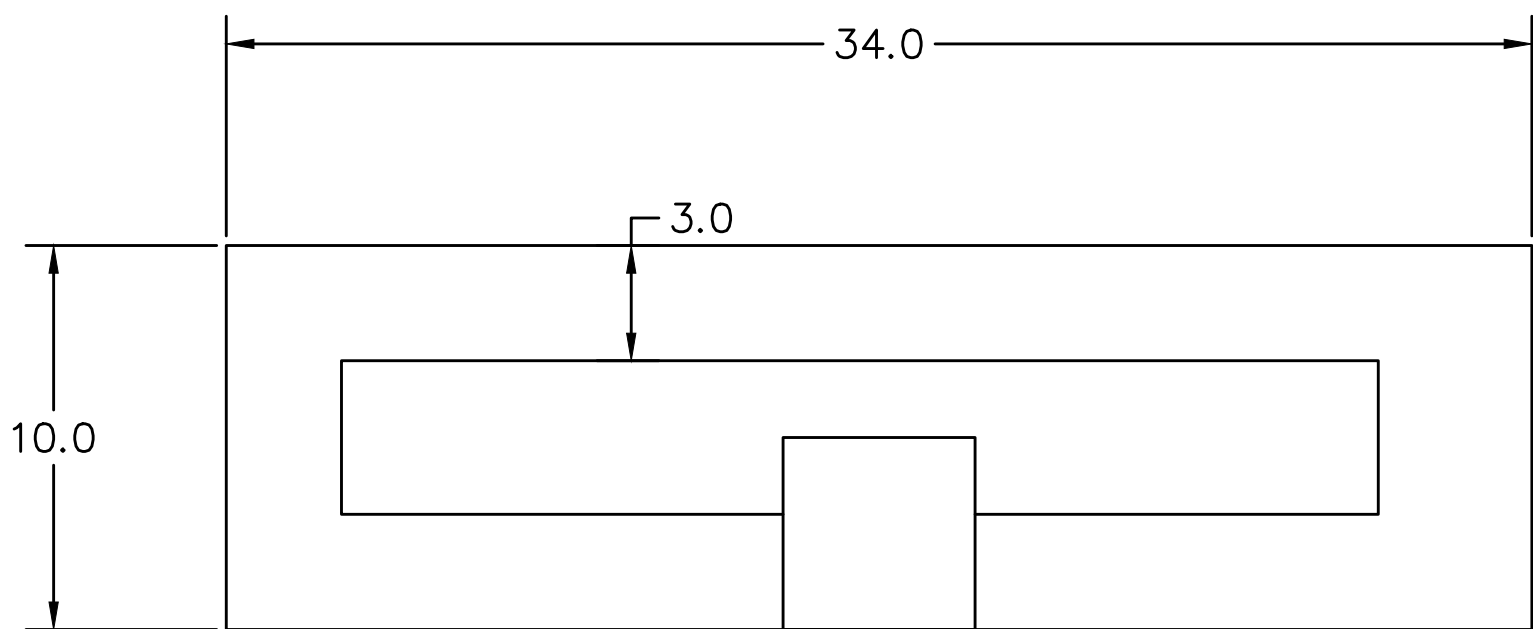
7 OBSERVATION/MAINTENANCE PORT
NOT TO SCALE



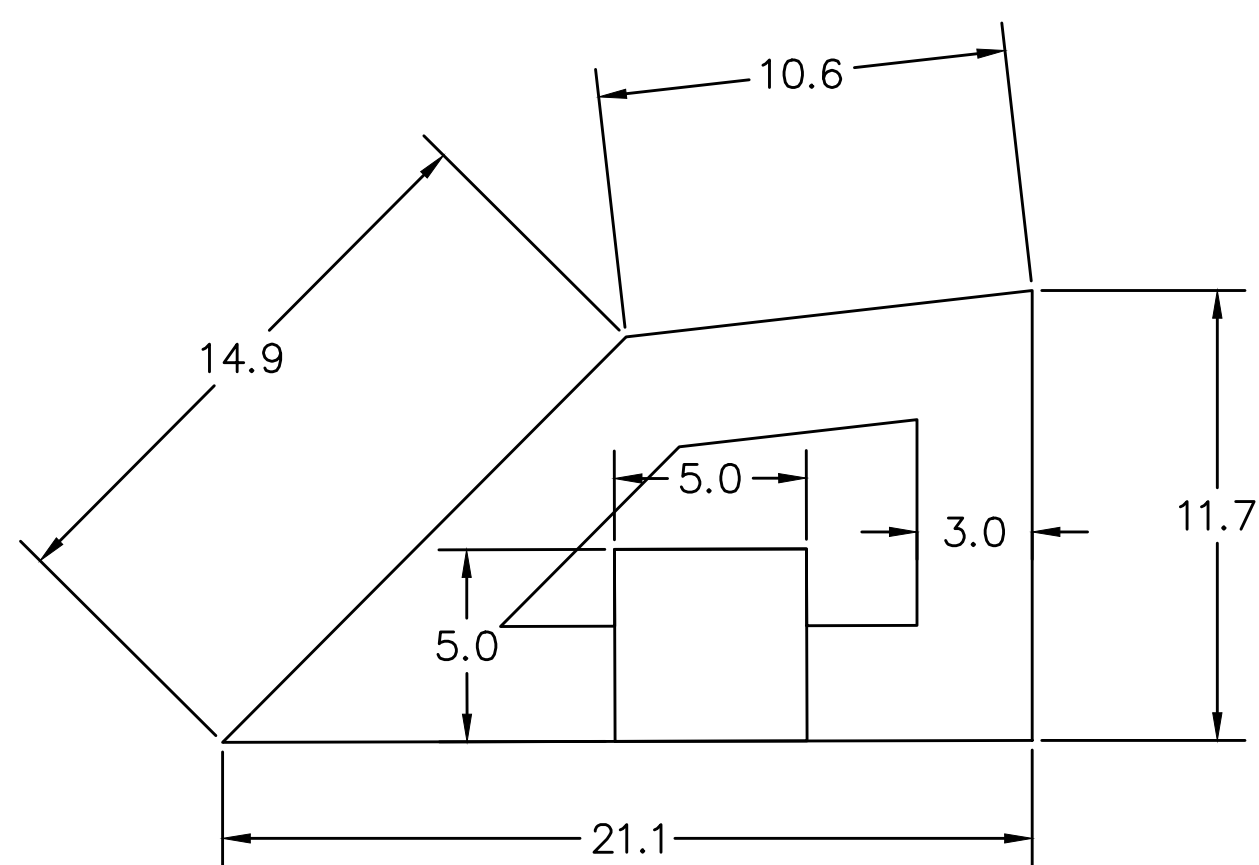
1 FOCAL POINT DETAIL FP1 (PLAN VIEW)
NOT TO SCALE



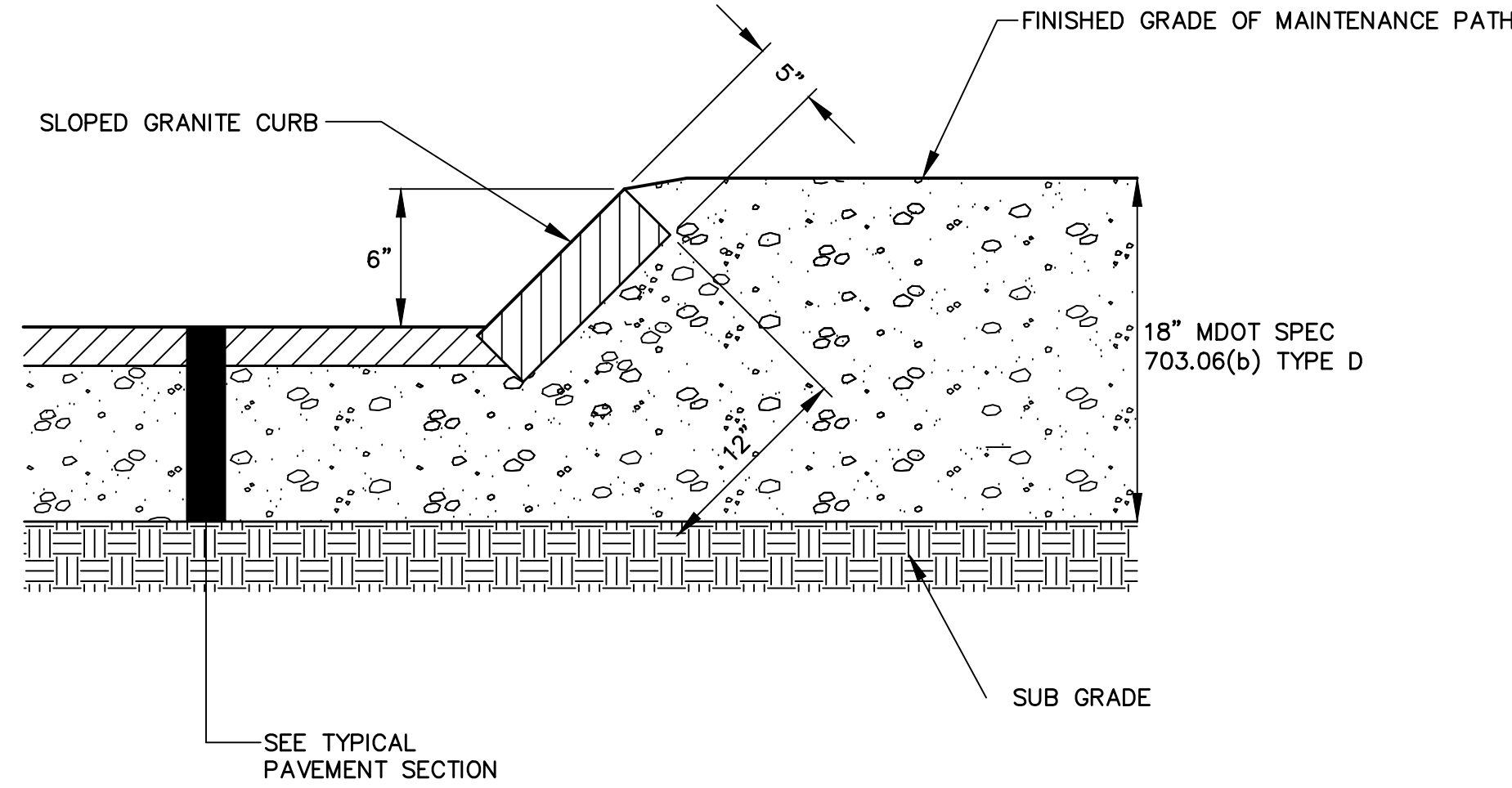
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NOT TO SCALE



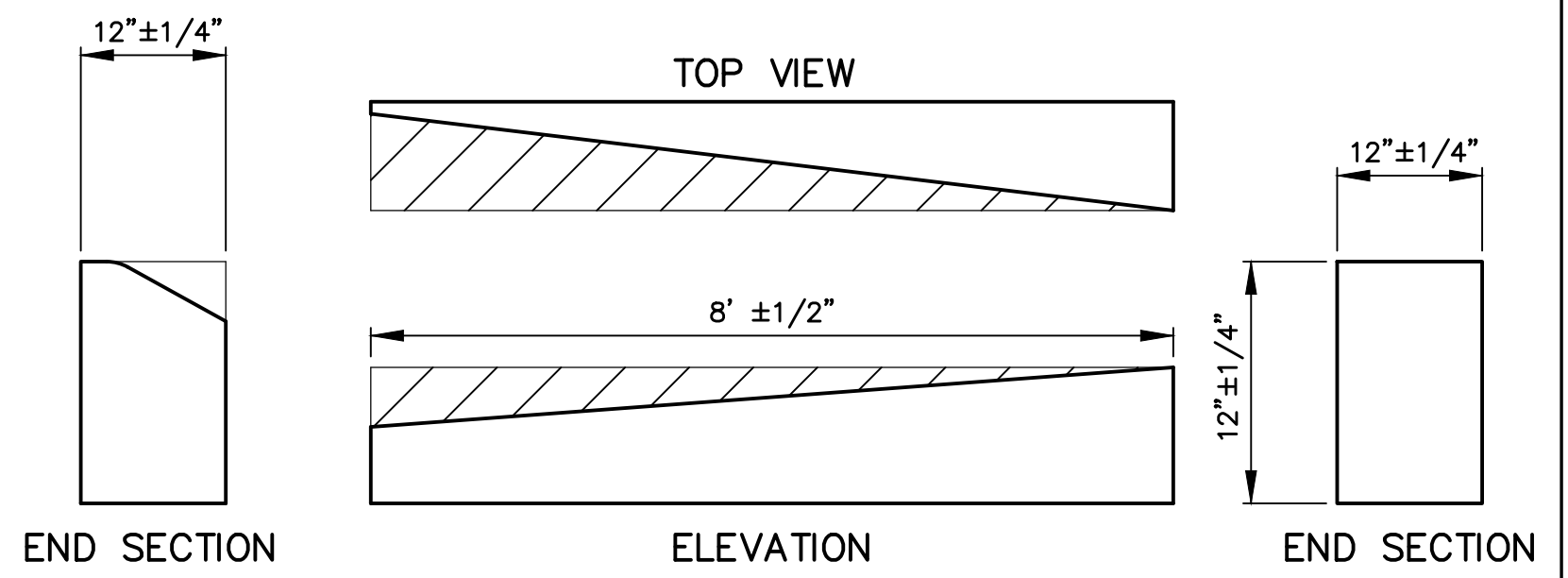
7 FOCAL POINT DETAIL FP3 (PLAN VIEW)
NOT TO SCALE



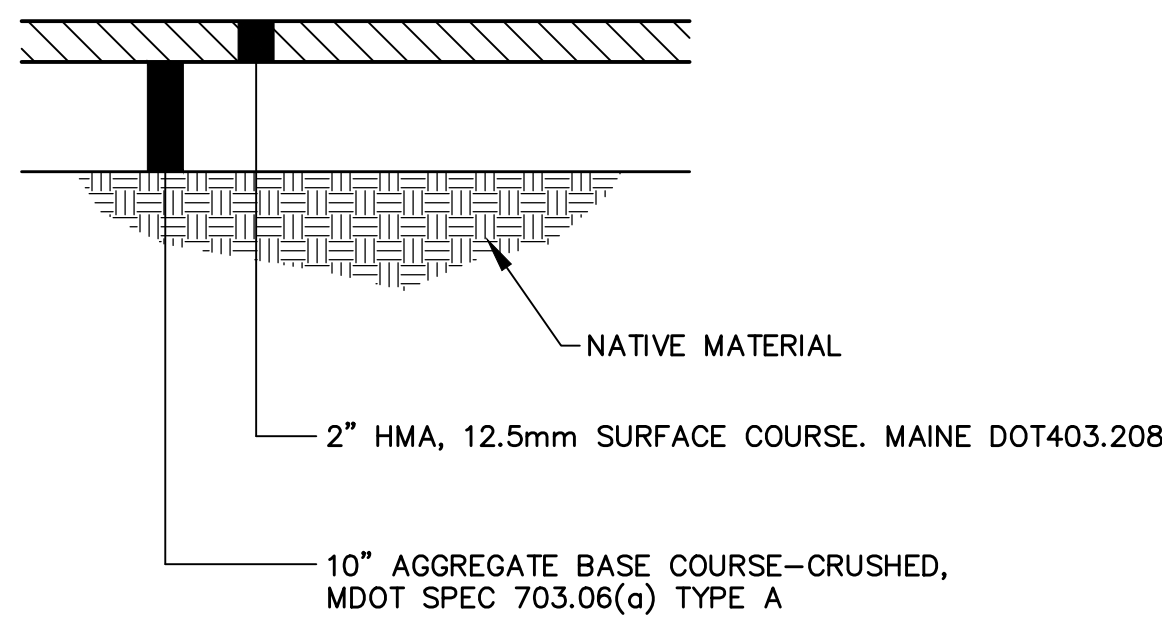
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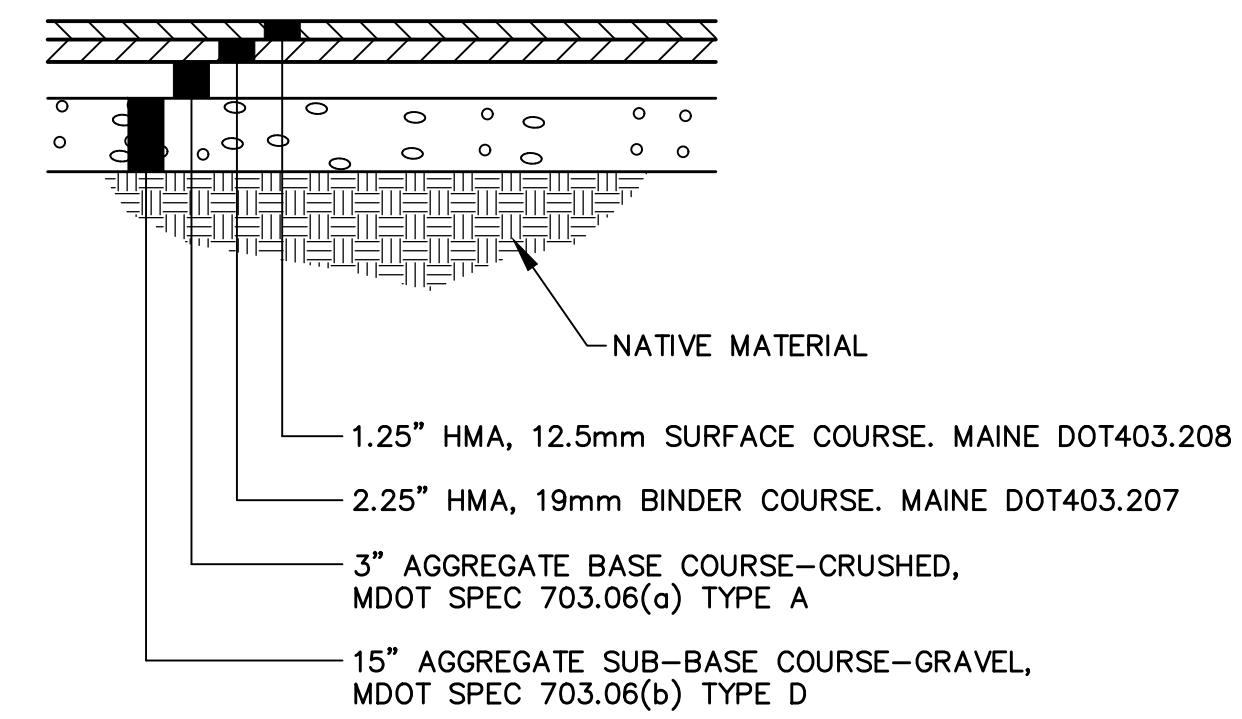
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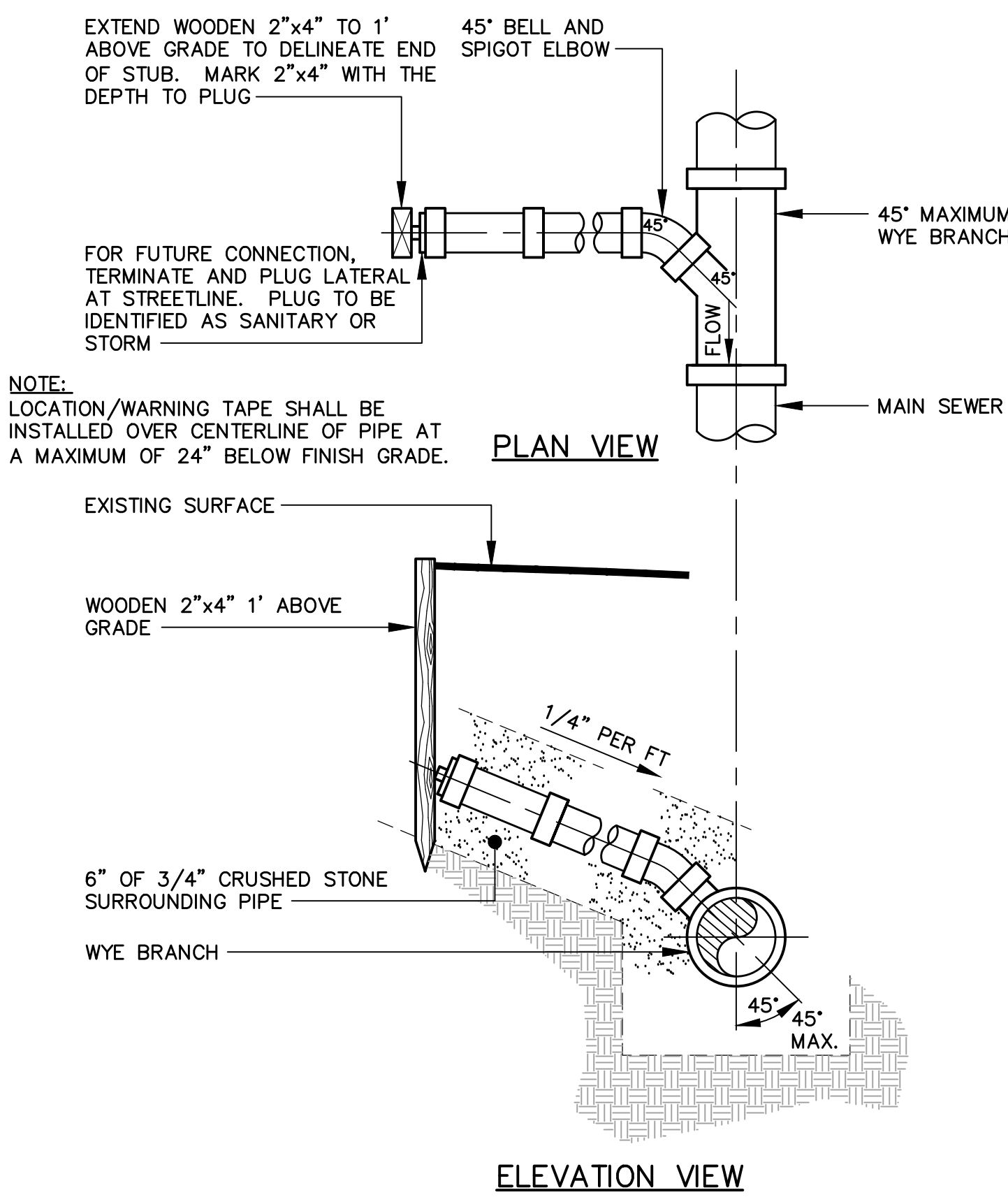
3 GRANITE TRANSITION CURB DETAIL
NOT TO SCALE



5 PAVEMENT BUILDUP FOR WALKWAY
NOT TO SCALE



6 PAVEMENT BUILDUP FOR PARKING LOT & DRIVE
NOT TO SCALE



9 TYPICAL HOUSE LATERAL TEE/WYE CONNECTION
NOT TO SCALE

ITEM #E-2
WEIGHT - SEE CHART BELOW

ITEM #	TYPE	LENGTH	QUANTITY FOR 90 DEG ANGLE	WEIGHT (LBS)
E-201	STRAIGHT	6'-0"	2	760
E-202	2' RAD	3'-1 3/4"	1	400
E-203	3' RAD	4'-8 1/2"	1	640
E-204	5' RAD	3'-11 1/2"	2	560
E-205	9' RAD	4'-8 1/2"	3	600
E-206	10' RAD	5'-2 7/8"	3	680
E-207	15' RAD	5'-10 3/4"	4	800
E-208	20' RAD	5'-2 7/8"	6	560
E-209	25' RAD	5'-7 3/8"	7	680
E-210	30' RAD	5'-10 3/4"	8	800
E-211	35' RAD	5'-6"	10	760
E-212	40' RAD	5'-8 1/2"	11	760
E-213	45' RAD	5'-10 3/4"	12	800
E-214	50' RAD	5'-7 3/8"	14	690
E-215	60' RAD	5'-10 3/4"	16	800

PLAN VIEW

FRONT VIEW

TYPICAL SECTION VIEW

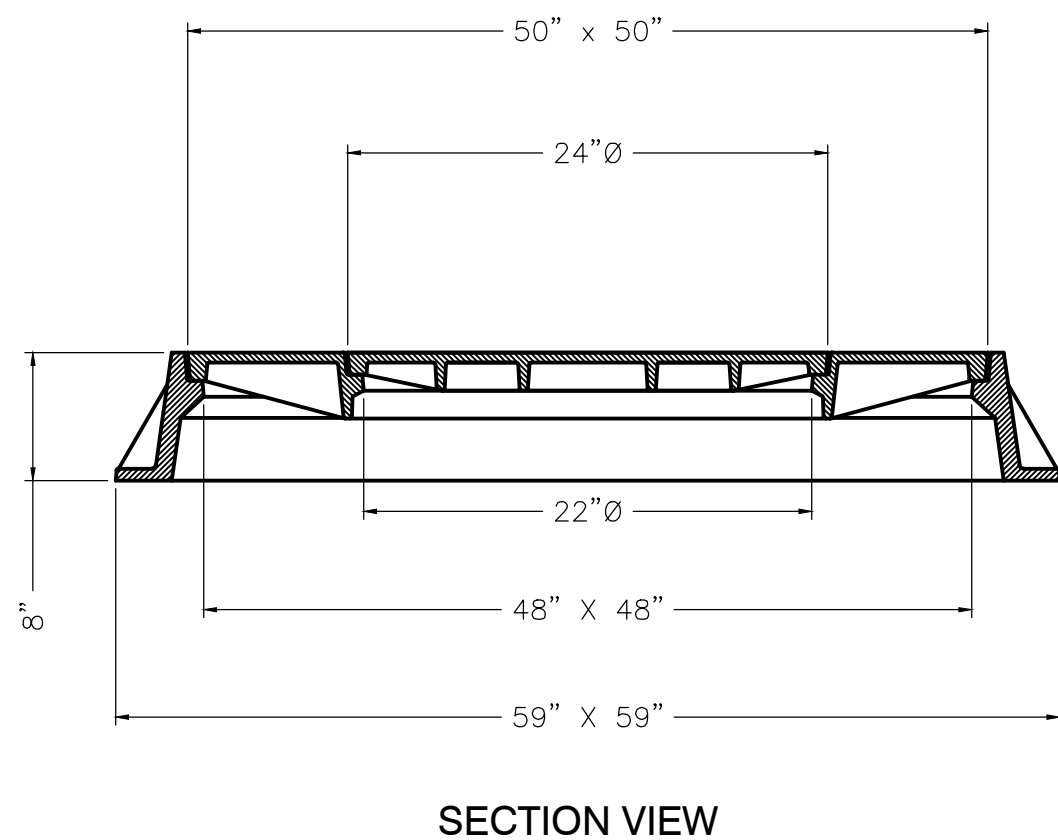
RADIUS DIMENSIONING

DESIGN NOTES:

- 1 - CONCRETE 6000 PSI AT 28 DAYS.
- 2 - REINFORCING WITH (2) - #4 REBARS.
- 3 - APPROXIMATE WEIGHT 130 LBS/LF.
- 4 - RADII LARGER THAN 60FT ARE FORMED FROM STRAIGHT SECTIONS.
- 5 - ALL CURBING SHOULD BE COATED WITH A CLEAR SEALER EACH FALL TO PROTECT FROM ROAD SALT DAMAGE. CHECK WITH US FOR APPROPRIATE TYPE.

PRECAST CONCRETE PRODUCTS OF MAINE, INC. (207) 729-1628 FAX (207) 729-8710

10 PRECAST CONCRETE CURB
NOT TO SCALE



NOTES

1. HEAVY DUTY CASTING RATED
FOR H-20 LOADING



1. ALTERNATE CONSTRUCTION METHODS OR PAYMENT METHODS SHALL BE APPROVED BY THE CITY.
2. IN PAVED AREAS, DEPTHS OF GRAVEL AND HOT MIX ASPHALT PAVEMENT SHALL MATCH THE GREATER OF EXISTING CONDITIONS OR THE REQUIREMENTS FOR THE CORRESPONDING CORRECT REPAIR SPECIFICATION.
3. DIMENSION B SHALL BE SUFFICIENT TO ALLOW CRUSHED STONE BEDDING TO BE PLACED AND COMPACTED UNDER THE HAUNCHES OF THE PIPE, BUT IN ALL CASES DIMENSION B SHALL BE AT LEAST 9".
4. DIMENSION A IS THE MAXIMUM WIDTH ALLOWED FOR CALCULATING PAY QUANTITIES UNDER GRANULAR BORING OR CRUSHED STONE BEDDING FOR STRUCTURE EXCAVATION, AND STRUCTURAL ROCK EXCAVATION. DIMENSION A SHALL BE BASED ON PIPE DIAMETER D, AS SET FORTH IN THE FOLLOWING TABLE:

PIPE DIAMETER, D (INCHES)	MAX. TRENCH WIDTH, A (FEET)
4	4.0
6	4.0
8	4.0
10	4.0
12	5.0
15	5.0
18	5.0
21	5.0
24	6.0
27	6.0
30	6.0
36	6.0
42	7.0
48	7.0

PAVED AREAS ← → GRASS AREAS

FINISH GRADE

LOAM AND SEED

PAVEMENT, AGGREGATE BASE, AND AGGREGATE SUBBASE PER DRAWINGS

PLASTIC MARKER 12" BELOW GRADE

CLEAN BACKFILL CONTAINING NO ROCKS LARGER THAN 4" IN DIAMETER

TELEPHONE CABLE

CABLE TELEVISION

SECONDARY OR SERVICE CABLE

PRIMARY CABLE

BEDDING OF SOIL CONTAINING NO ROCKS

GEOTEXTILE MARKER LAYER

30" MIN.

36"

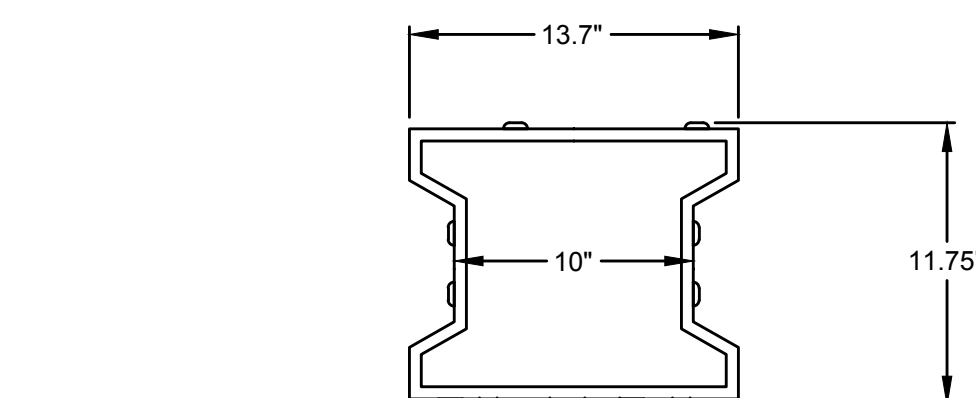
6"

6" MIN. 12" 6"

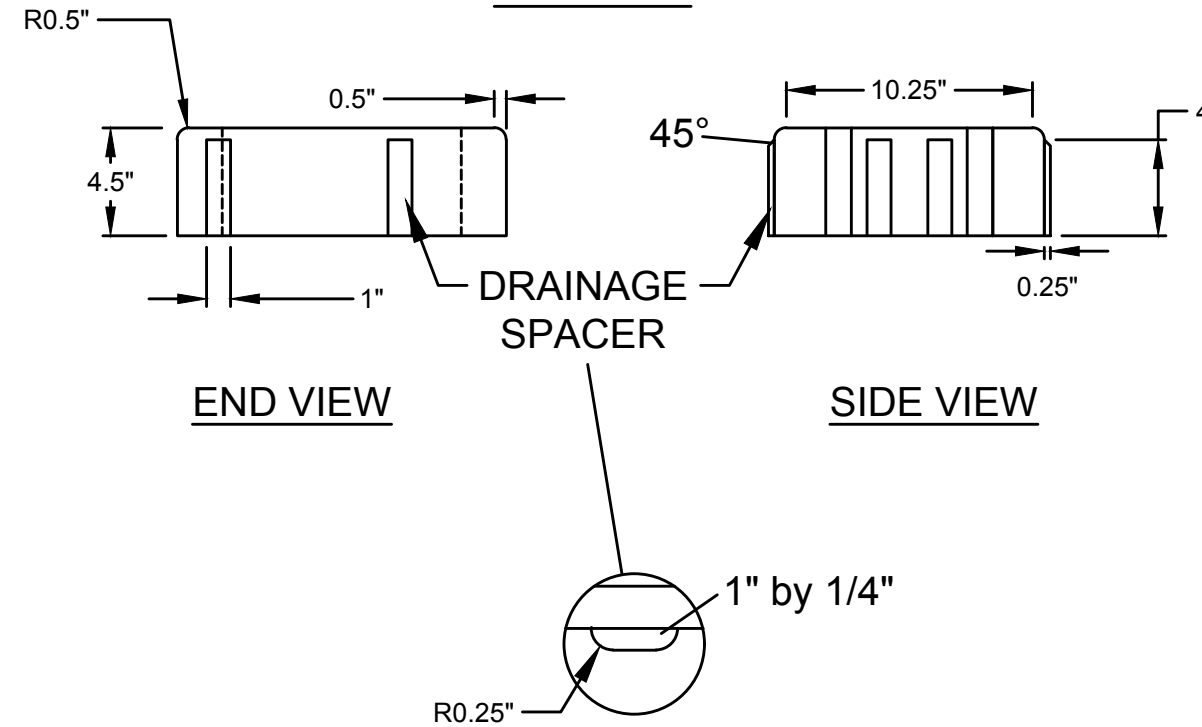
30" MINIMUM TRENCH WIDTH

EN JOINT (TYP)

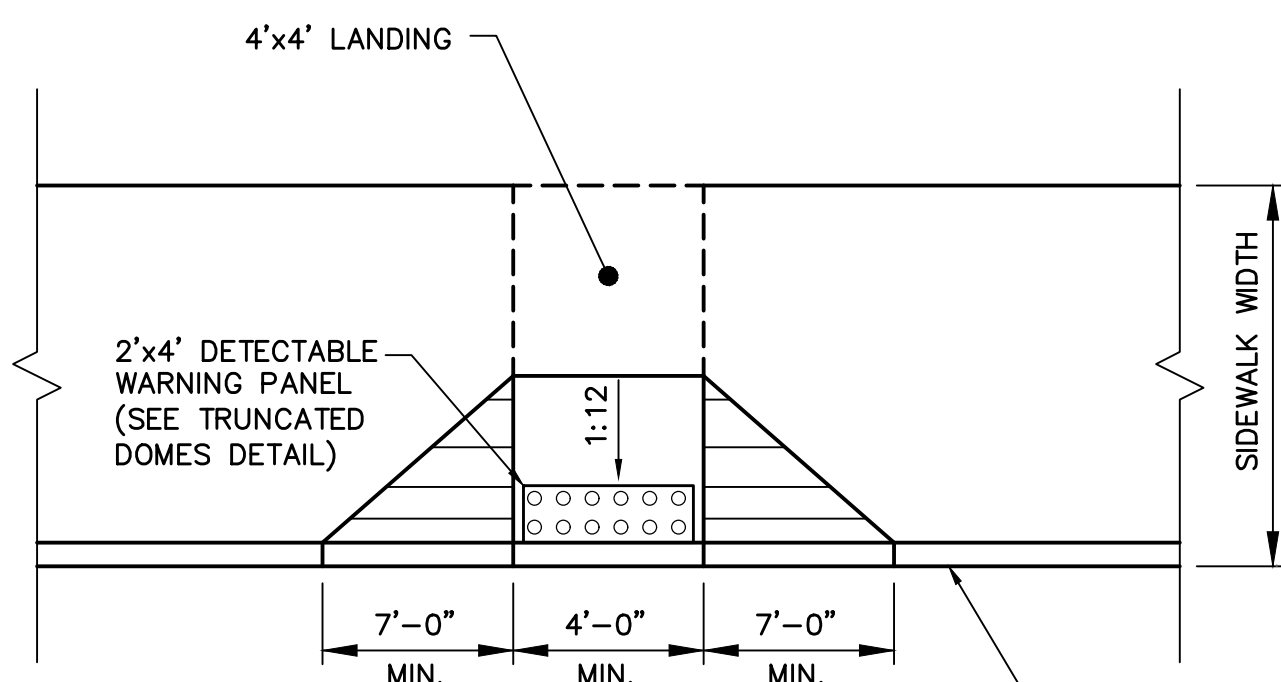
TOP VIEW - INTERCONNECTED BLOCKS



TOP VIEW

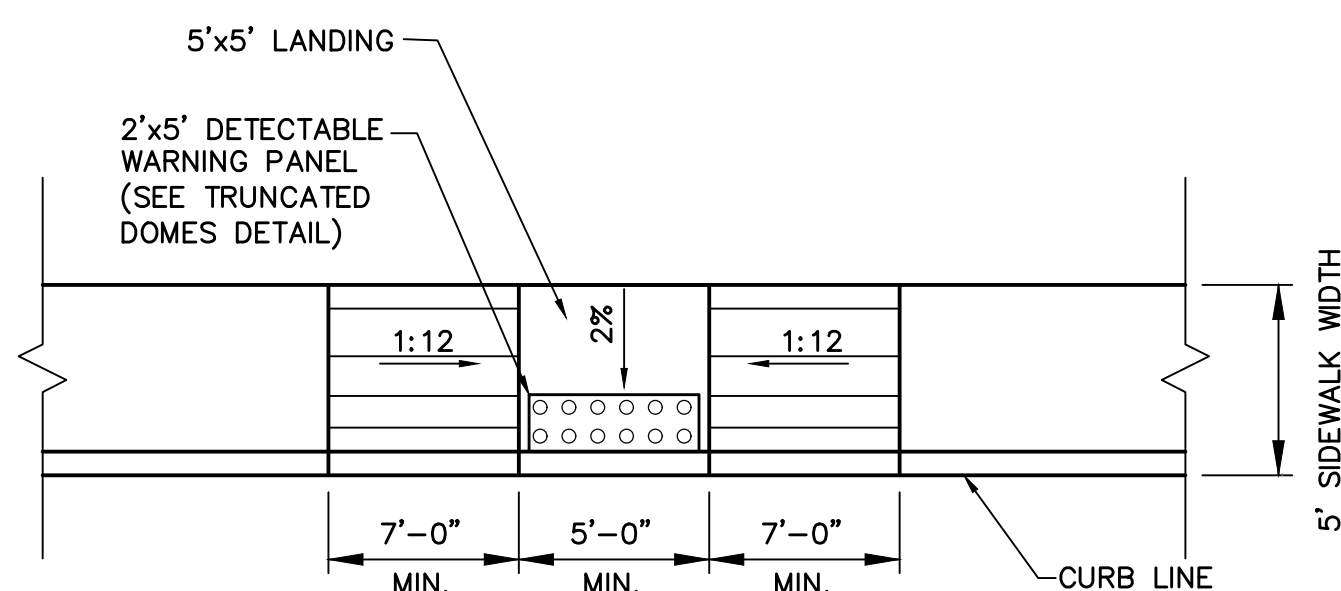


4 POWERBLOCK OPEN JOINT PAVER
NOT TO SCALE



PLAN

⑥ **SIDEWALK RAMP**
NOT TO SCALE



PLAN

7 PARALLEL SIDEWALK RAMP
NOT TO SCALE

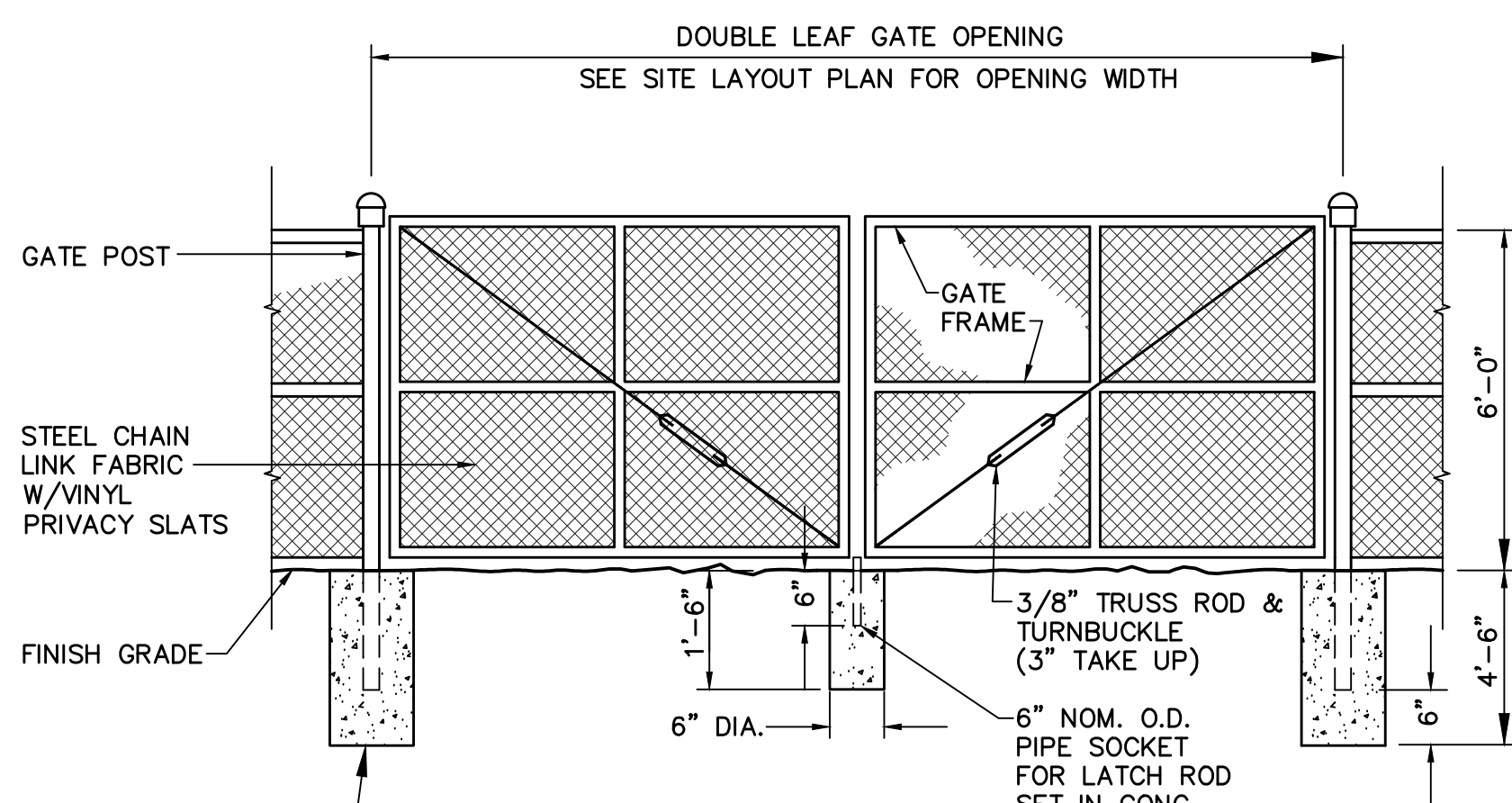
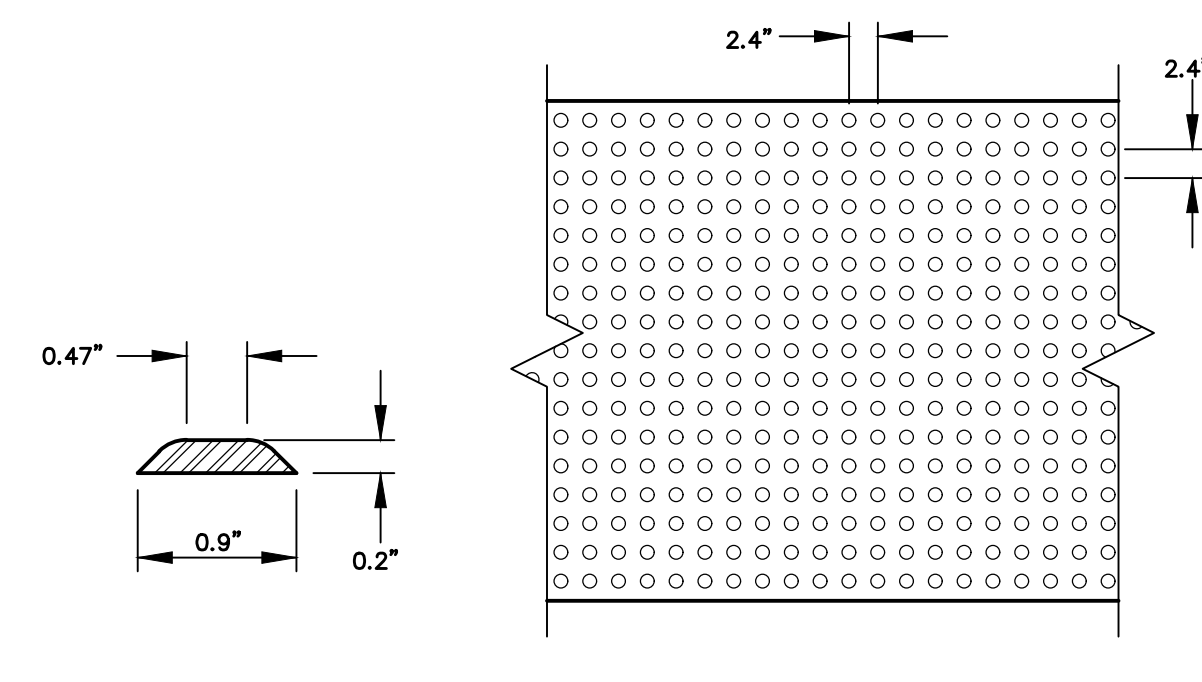


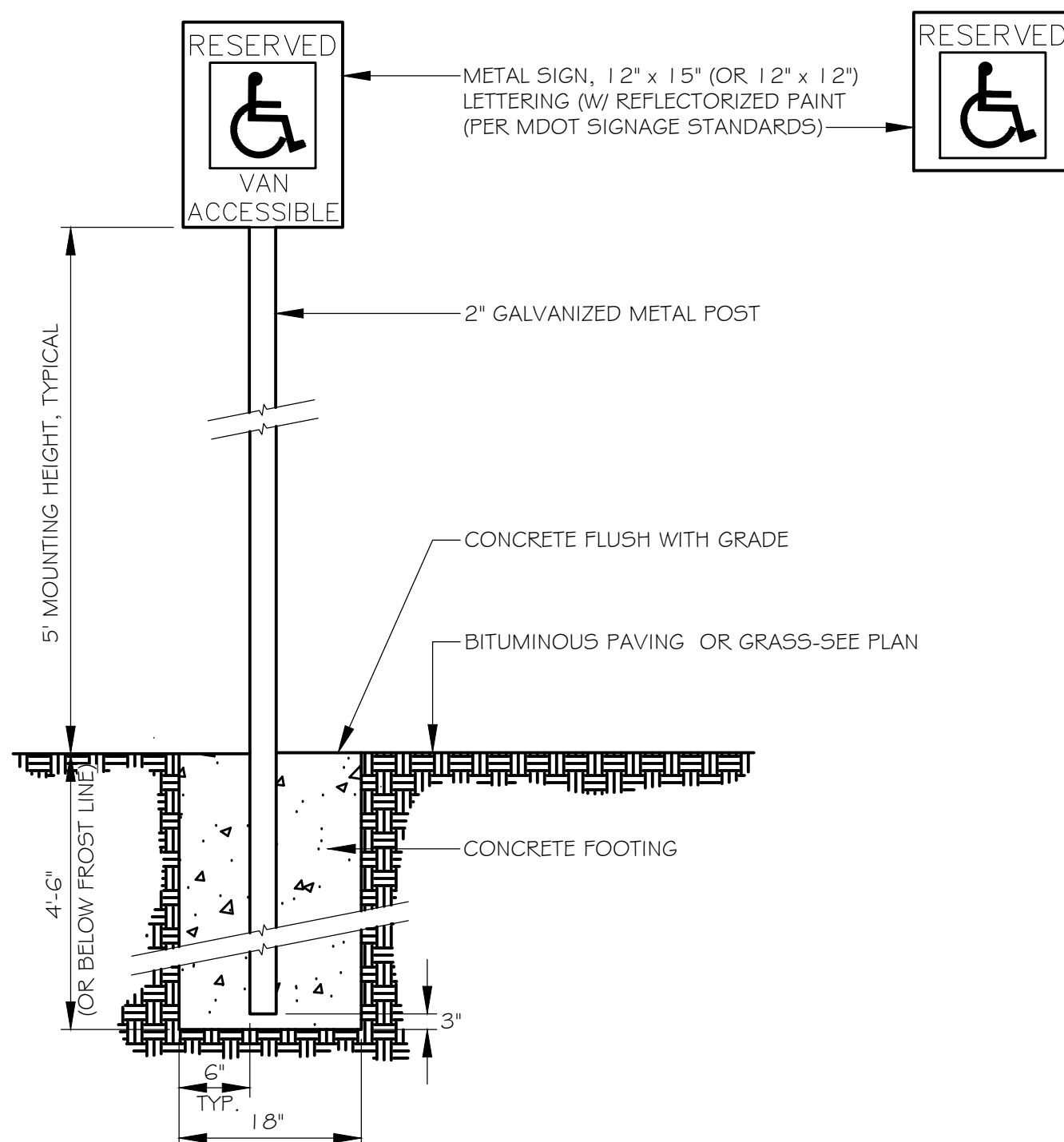
Diagram illustrating the cross-section of a trench installation, showing various layers and dimensions:

- GRAVEL
- GRASS AREAS
- PIPE AND TRENCH
- LOAM AND SEED
- FINISH GRADE
- DEPTH VARIES
- BACKFILL W/ SAND BEDDING MATERIAL (6")
- 2" RIGID INSULATION WIDTH OF TRENCH WHERE SPECIFIED OR WHERE COVER IS LESS THAN 4"
- 1/2 O.D. + 6"
- 3'-0" + PIPE I.D.
- TRENCH WIDTH

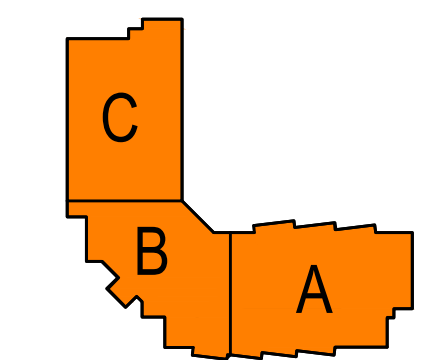
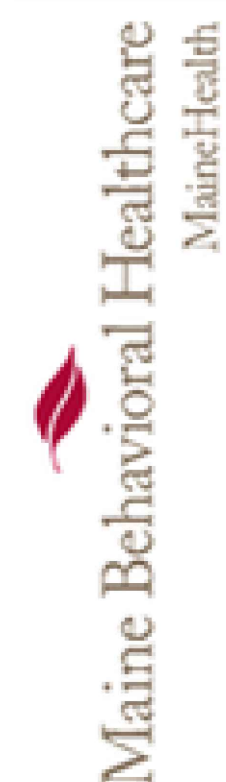
9 WATER TRENCH SECTION
NOT TO SCALE



10 TRUNCATED DOMES DETAIL
NOT TO SCALE

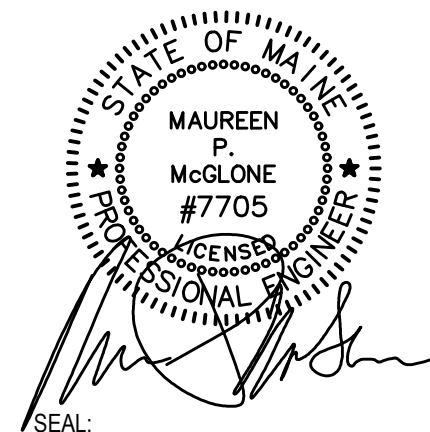


11 A.D.A. PARKING SIGNAGE
NOT TO SCALE



KEY PLAN

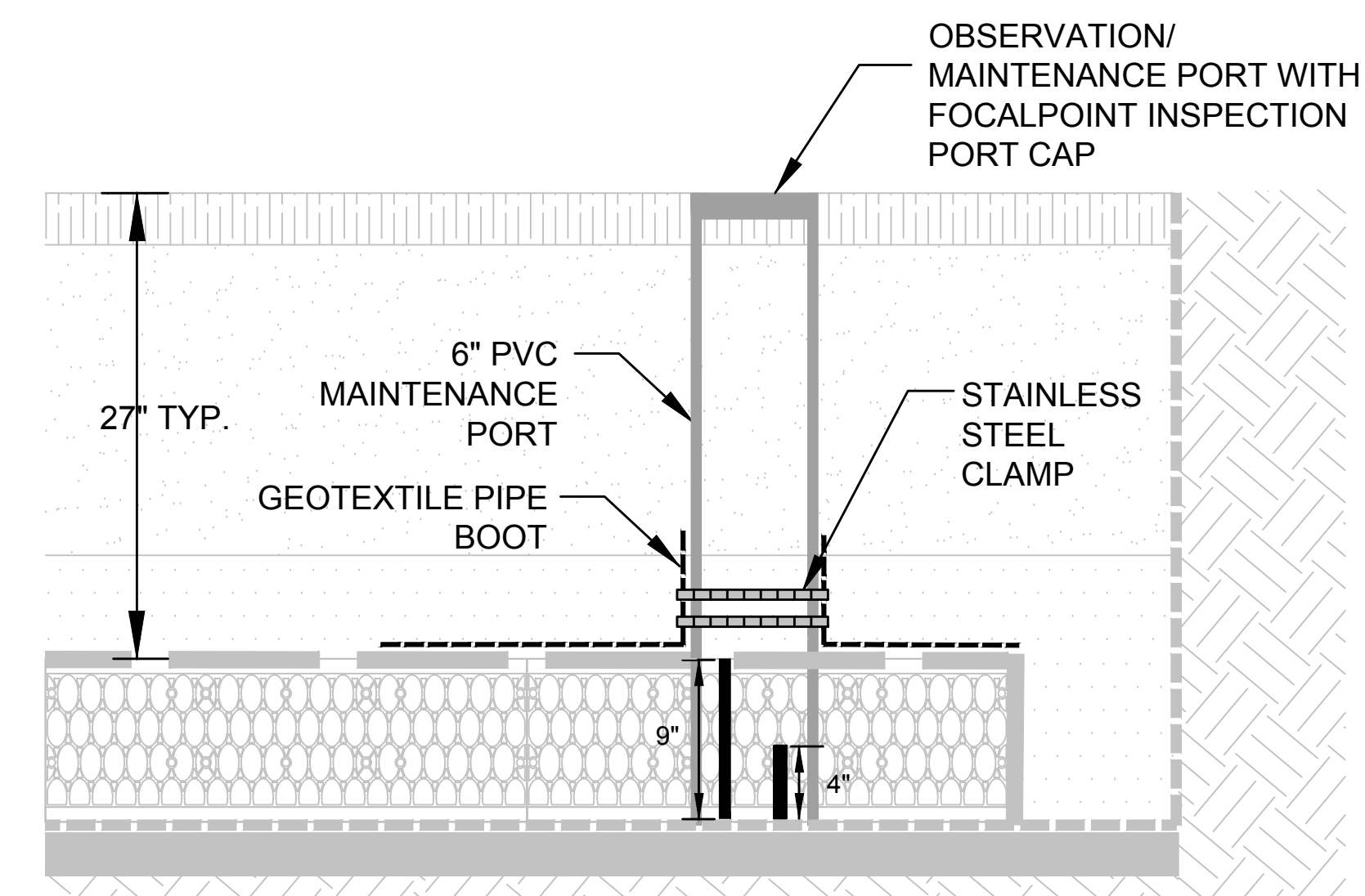
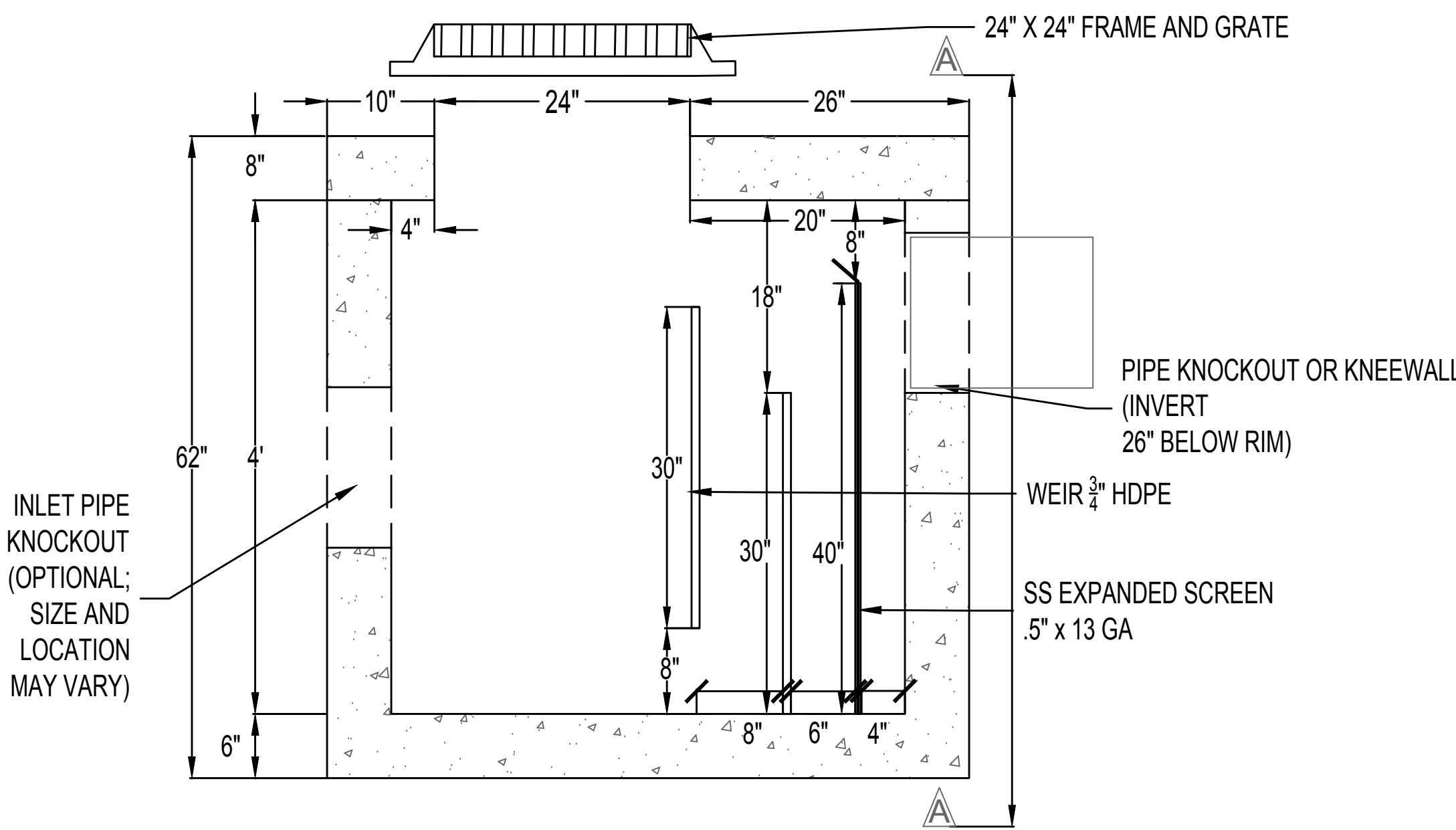
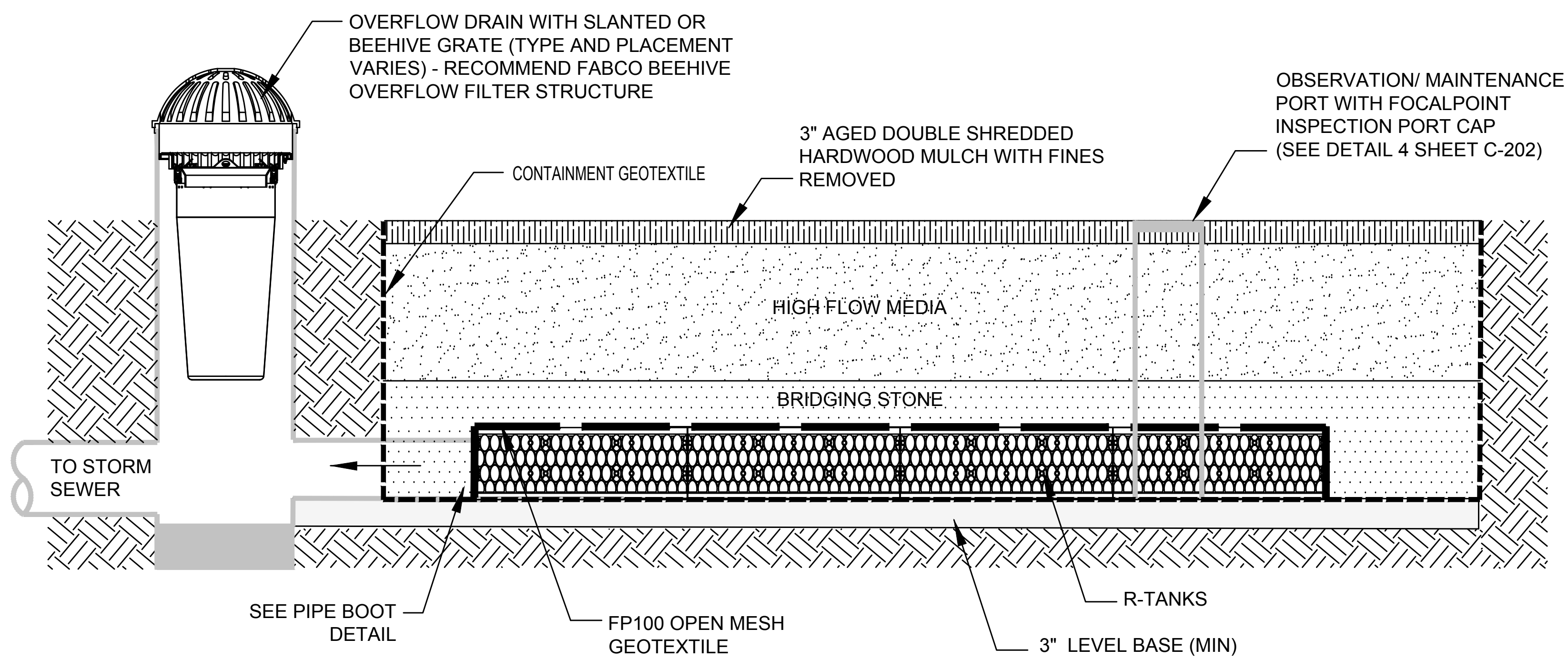
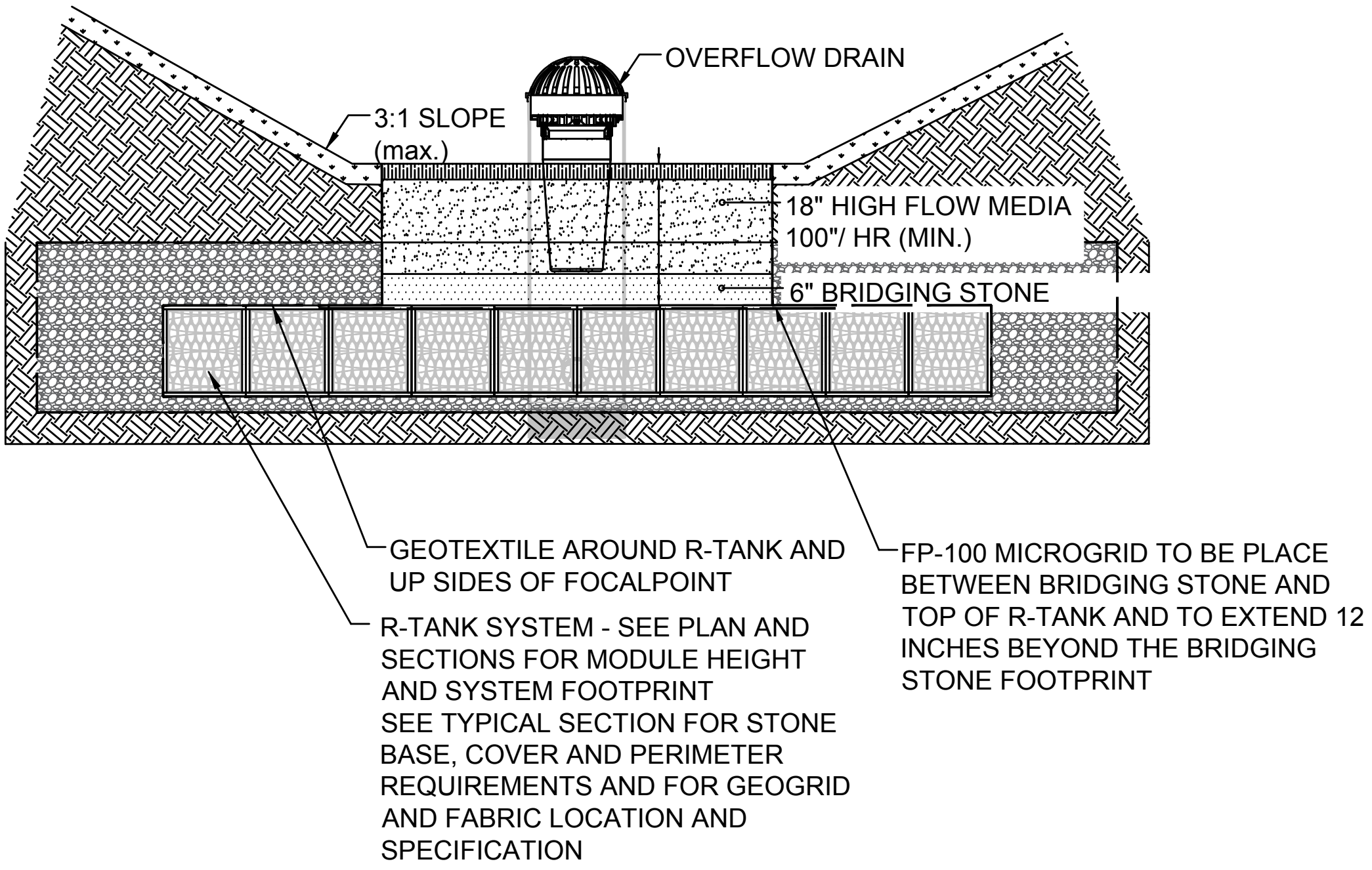
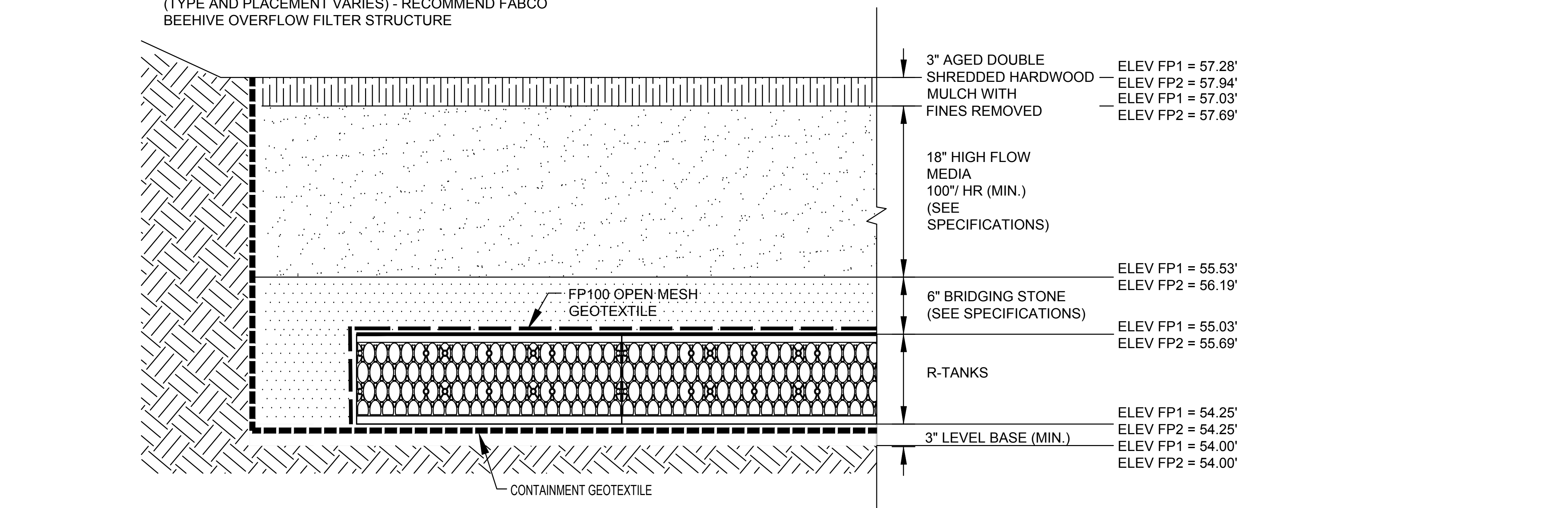
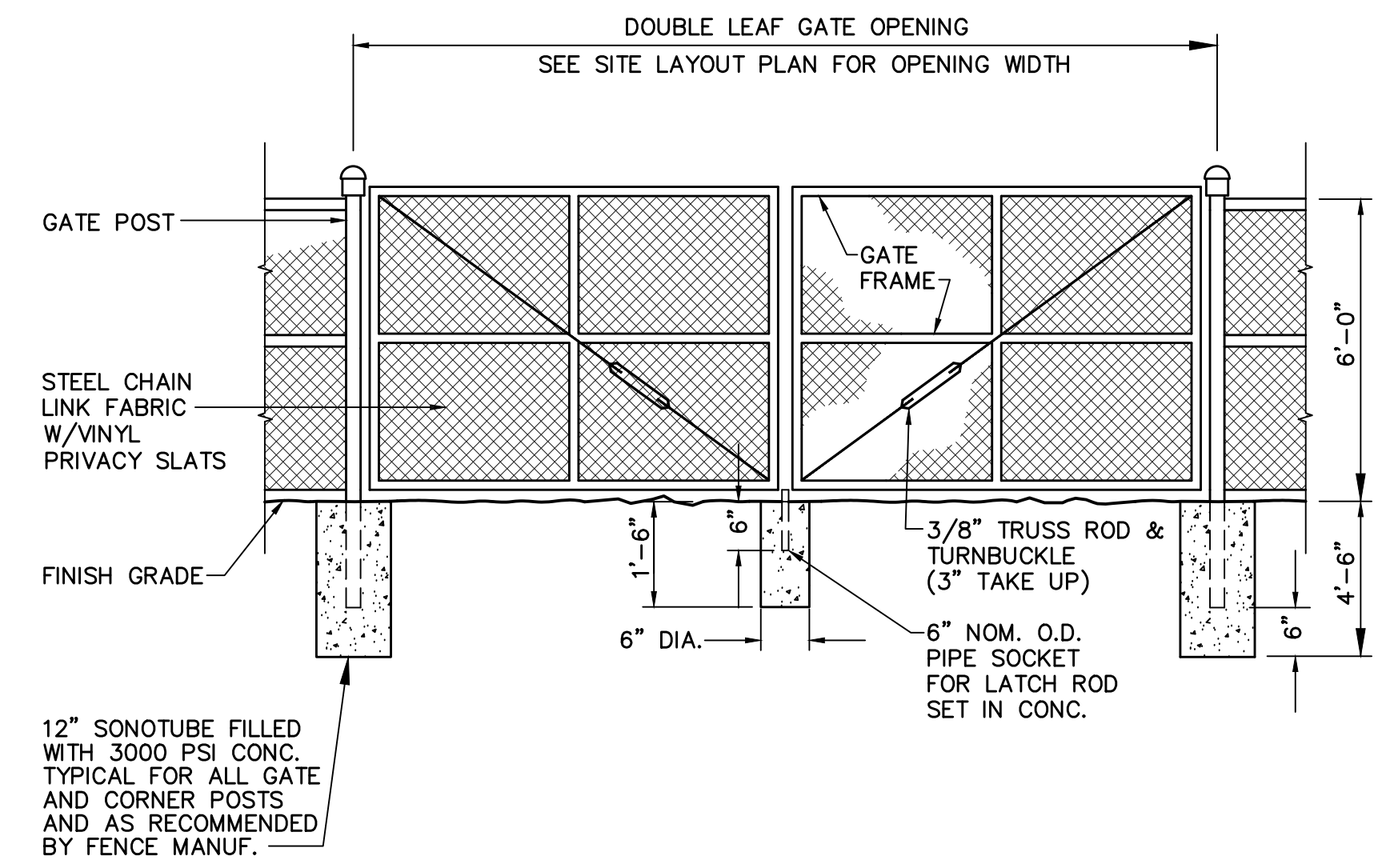
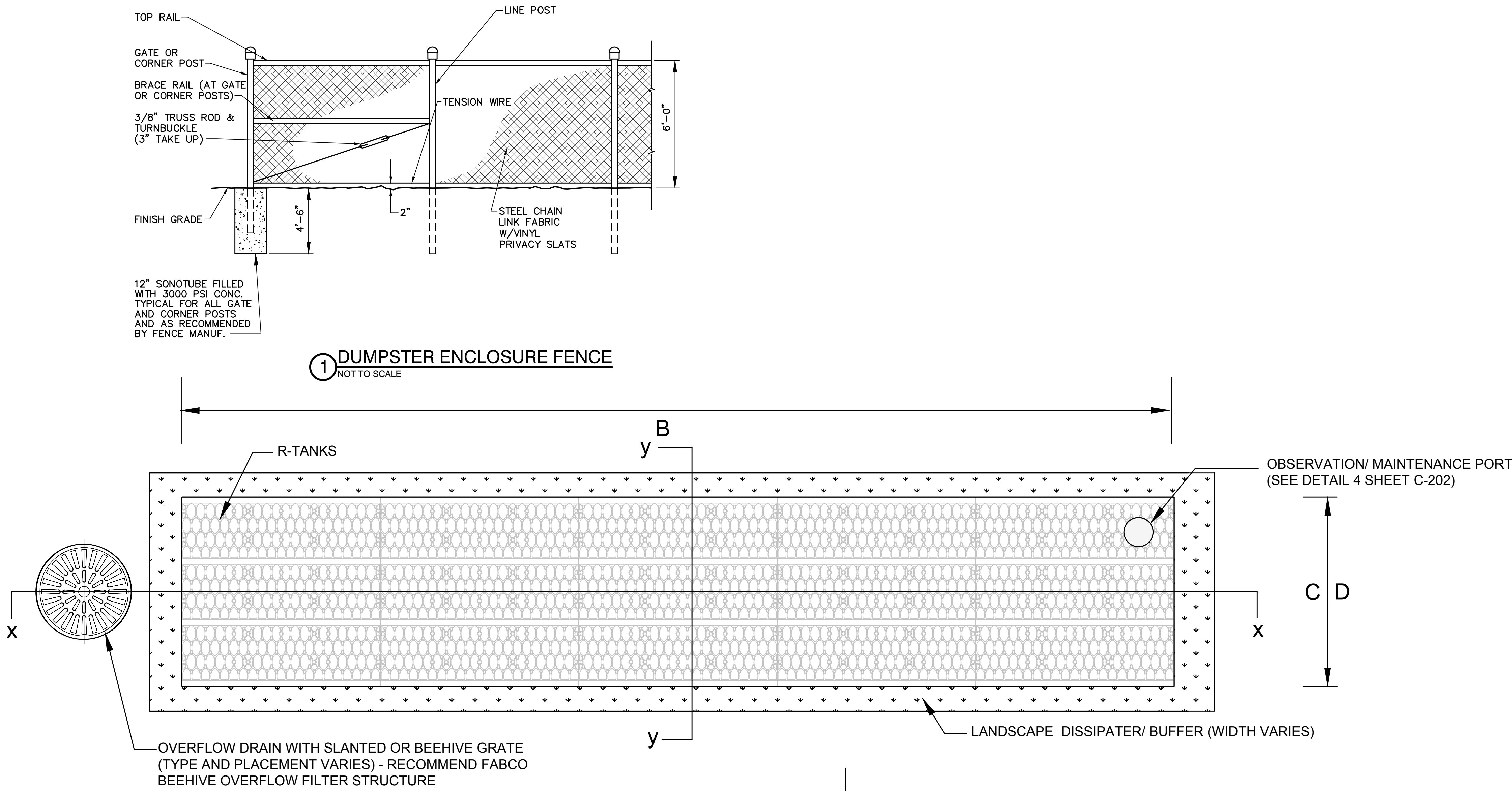
**MAINE BEHAVIORAL HEALTHCARE
CENTER OF EXCELLENCE IN AUTISM
AND DEVELOPMENTAL DISORDERS**
100 ANDOVER ROAD
PORTLAND, ME

[illegible]

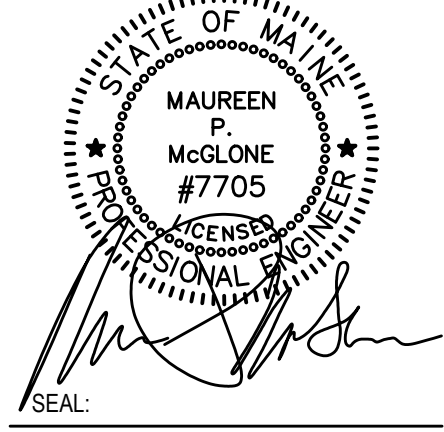
PROJECT NUMBER:	181.0606
DATE:	08/16/201
SHEET TITLE AND NUMBER:	

DETAILS

C-201



REV DESCRIPTION	DATE
A DEP PERMITTING	02/23/19
B DEP REVICITY PRELIM	10/22/19
C 90% CD OWNER REVIEW	11/20/19
D CITY SUBMISSION	11/21/19
E ISSUED FOR CONSTRUCTION	01/09/20



PROJECT NUMBER:	181.06068
DATE:	08/16/2019
SHEET TITLE AND NUMBER:	

PLANNING BOARD REPORT

PORTLAND, MAINE



77 Lambert Street Development
Level III Site Plan & Subdivision Review
JP Schwartz, Applicant
PL-000893-2019 CBL: 382A Bo15

Submitted to: Portland Planning Board
Public Hearing Date: April 28, 2020

Prepared by: Andrew Tufts, Planner
Date: April 24, 2020



Figure 1: Aerial Context

I. INTRODUCTION

Project developer JP Schwartz, and property owner, 75-81 Lambert, LLC, have submitted a Level III Site Plan and Subdivision Application for the development of three residential duplex buildings on a 00.88 acre lot at 77 Lambert Street, in the North Deering Neighborhood. The site is located in the R-5 residential zone.

The Planning Department sent 93 notices advertising this meeting to property owners within 500 feet of the site. Legal advertisements ran in the April 17th & April 18th editions of the Portland Press Herald.

Consultants: Blais Civil Engineers (Engineer) Titcomb Associates (Surveyor) TDArchitect (Architect)
AlliedCook Construction (Agent)

II. REQUIRED REVIEWS

<i>Review</i>	<i>Applicable Standards</i>
Site Plan	<i>Section 14-526</i>
Subdivision	<i>Section 14-497</i>

III. PROJECT DATA

Existing Zoning	R-5 Zone
Existing Use	Vacant, Vegetated
Proposed Use	6 Residential Units
Bedroom Mix	6 three-bedroom units
Parcel Size	38,332 square feet

	<i>Existing</i>	<i>Proposed</i>	<i>Net Change</i>
Building Footprint	0 SF	2,669 SF	+2,669 SF
Building Footprint	0 SF	2,669 SF	+2,669 SF
Building Footprint	0 SF	2,669 SF	+2,669 SF
Building Floor Area	32 SF	12,870 SF	+12,870 SF
Impervious Surface Area	54 SF	16,532 SF	+16,478 SF
Parking Spaces	0	17	+17
Bicycle Parking Spaces	0	6	+6
Estimated Cost of Project	Not Provided		



Figure 2: Existing Conditions

IV. EXISTING CONDITIONS

The proposed development site is located at 77 Lambert Street, between Auburn Street and outer Washington Avenue. The site is a 38,332 square foot (0.88 acre) parcel that is currently vacant with a mix of tree cover and open grassy area. The current owner is listed as 75-81 Lambert, LLC. The parcel was previously owned by an adjacent parcel and was used as a lawn and garden area. The surrounding area is largely residential. The parcel is zoned R-5 along with three additional parcels to the south and east, while the surrounding area is zoned R-3, R-2, and B-1. The site is bordered by single-family residential to the north and east, Terra Apartment's to the south, and Lambert Street along its western edge.

The site has a drainage swale as well as wetlands on the northern edge of the property. Trees with a diameter greater than 10" have been identified and surveyed as part of the existing conditions plan.

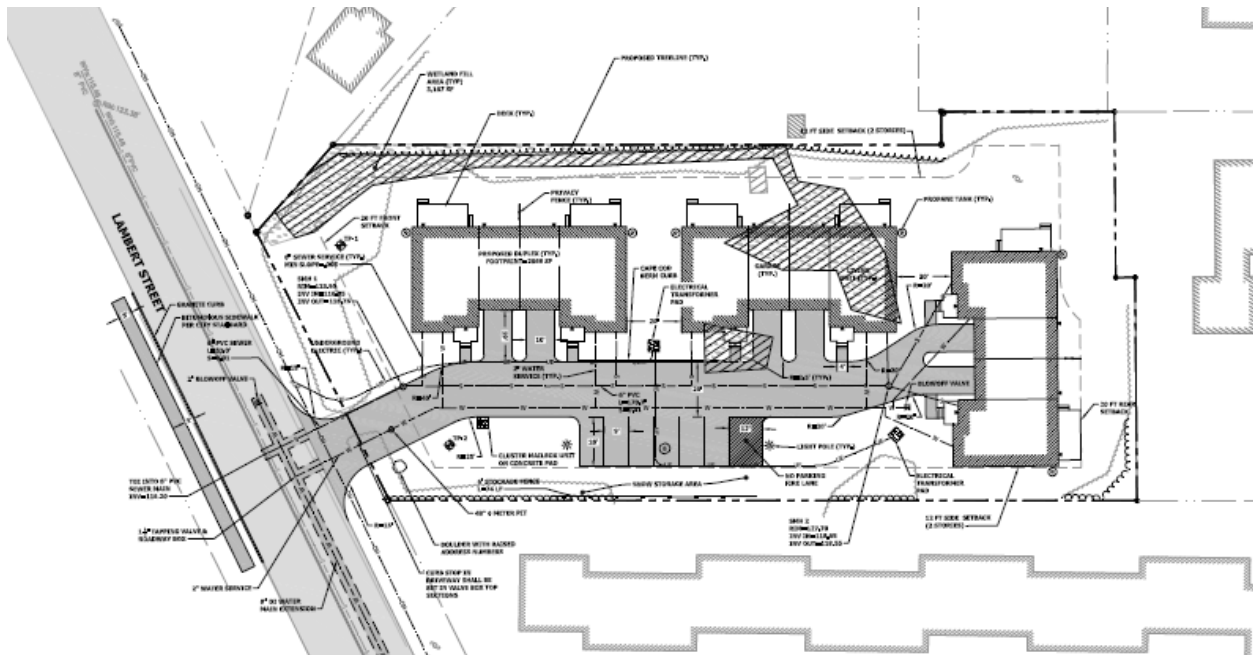


Figure 3: Proposed Site Plan

V. PROPOSED DEVELOPMENT

The development is proposed as three two-story, three-bedroom duplexes. As measured from grade, each of the buildings would be 27 ft 8 inches tall. The site layout consists of two duplex residential buildings on the north side of the parcel, and one duplex residential building in the rear (east) side. There is a total of six residential units. Each building has a 2,669 square foot footprint. There would be an associated shared access drive for the units with surface parking for 17 vehicles. The site driveway would be 24 feet in width and accessed off Lambert Street, between the neighboring Terra Apartments and the intersection with Summit Street. Each dwelling unit consists of a garage with parking for one vehicle, with a driveway that could fit an additional vehicle. In addition to the twelve parking spaces provided for the units, there are five shared parallel spaces proposed for guest and overflow parking.

Public sewer and water for the development will be accessed at Lambert Street. Electric and telecommunication services will be provided below grade from the utility pole in front of the Site on Lambert Street. City of Portland curbside trash pick-up will be used for solid waste.

VI. Public Comment and Neighborhood Meeting

As of the writing of this report, no written comments have been received by the Planning Division. The neighborhood meeting was held December 19, 2019 at 6:00pm at Lyman Moore Middle School. Four members of the public attended. Attending on behalf of the applicants were JP Schwartz, Steve Blais, and

Mike Triglione. An overview was provided of the architectural, site, grading, and landscape plans. Questions include but were not limited to site drainage, landscape preservation, and neighborhood walkability. The meeting concluded at 7:00 p.m.

VII. RIGHT, TITLE, & INTEREST AND FINANCIAL & TECHNICAL CAPACITY

The owner of the property is Mr. Robert Nelson and 71-81 Lambert LLC. The applicant has provided a copy of the warranty deed, recorded at the Cumberland County Registry of Deeds (Book 35513, Page 340), which demonstrates their right, title and interest in the property.

As evidence to demonstrate sufficient financial and technical capacity, the applicant has provided a letter from Biddeford Savings indicating that between the applicant's funds and bank financing, that applicant has sufficient financial capacity to complete the proposed project. Similarly, information has been provided on the development team demonstrating the capacity to design and construct the project.

IX. ZONING ANALYSIS

Dimensional requirements for this project are dictated by the R-5 Residential Zone.

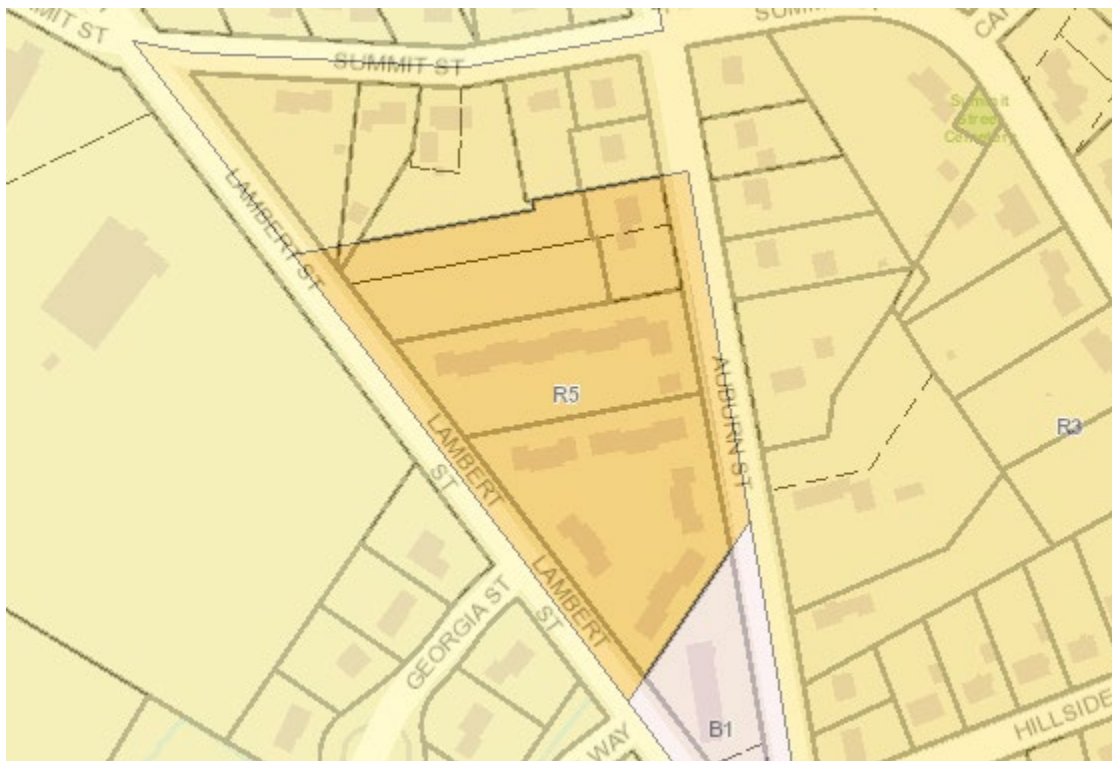


Figure 4: City of Portland Zoning Map

	Required	Proposed
Lot Size	9,000 SF	38,332 SF
Area Per Dwelling Unit	6,000 SF	6,389 SF
Minimum Street Frontage	50' LF	108' LF
Front Yard Minimum	20 LF	3' LF
Front Yard Maximum	N/A	N/A
Rear Yard	20 LF	20 LF
Yard Right	12 LF	12 LF
Yard Left	12 LF	12 LF
Side Street Setback	NA	NA
Step Back	None	None
Maximum Lot Coverage	40%	20%
Minimum Lot Coverage	NA	NA
Maximum Height	35 ft	28 ft
Off-Street Parking	12	17
Minimum Lot Width	60 ft	128 ft

X. DEVELOPMENT REVIEW

A. SITE PLAN SUBMISSION REQUIREMENTS (Section 14-527) and SUBDIVISION PLAT AND RECORDING PLAT REQUIREMENTS (Section 14-496)

The applicant has submitted a recording plat. The final plat will need to be revised to reflect any waivers and conditions of approval that relate to the subdivision plan. Any waivers granted must be recorded at the Registry of Deeds within two years of a Planning Board decision.

B. SUBDIVISION (Section 14-496)

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's Subdivision Ordinance and applicable regulations. Staff comments are listed below.

1. *Will Not Result in Undue Water and Air Pollution (Section 14-497 (a) 1), and Will Not Result in Undue Soil Erosion (Section 14-497 (a) 4)*

The topography generally gently slopes to the drainage channel on the north and west property lines. This channel flows into the roadside ditch in the northwest corner of the Site. The abutting lots on Summit and Auburn Streets drain onto the Site. The total additional impervious cover on the site will be 15,325 sf. Total developed area associated with the project is 36,826 sf. Approximately 3,167 sf of wetlands will be filled as part of this project.

An erosion control plan is included in the applicant's materials and was reviewed by City staff. **(See Attachment P7. EROSION CONTROL PLAN & DETAILS)**

2. *Sufficient Water Available (Section 14-497 (a) 2 and 3)*

An ability to serve letter from Portland Water District is pending and will be included as a condition in this report.

3. *Will Not Cause Unreasonable Traffic Congestion (Section 14-497 (a) 5)*

The site driveway will be accessed off of Lambert Street, between the neighboring Tara Apartments and the intersection with Summit Street. The development is not anticipated to have

any major impact on traffic flows of any public streets. The two-way driveway will be 24 feet wide. The driveway apron radii are 15 feet, per requirements for passenger cars in section 1.7.2.5. of the City of Portland Technical Manual.

Chief Robert Thompson, Division Chief of the Fire Prevention and Community Outreach Division, provided the following comment:

The dead end roadway shall provide a 30' x 30' turnaround at the closed end. This turnaround shall be on the right side of the roadway. Please refer to Figure I-5 in the City of Portland Technical Manual.

Response: The access to the development is intended to be a driveway, not a dead end roadway. We have added an additional 12'x18' paved area to the east of the head-in parking and marked it a no parking zone. This will provide area for an emergency vehicle to turn around on the Site.

This response was reviewed by City staff and was found to satisfy the requirement.

4. Will Provide for Adequate Sanitary Sewer and Stormwater Disposal (Section 14-497 (a) 6), and Will Not Cause an Unreasonable Burden on Municipal Solid Waste and Sewage (Section 14-497 (a) 7)

The applicant is proposing a new sanitary sewer service connection into the existing sewer main beneath Lambert Street.

The applicants have submitted a Wastewater Capacity Authorization Letter, and are awaiting approval.

5. Comprehensive Plan (Section 14-497 (a) 9)

The development has been designed to be consistent with the City's Comprehensive Plan, adopted in June of 2017, by increasing Portland's housing stock.

B. SITE PLAN STANDARDS (Section 14-526)

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's site plan ordinance and applicable regulations. Staff comments are listed below.

1. Transportation Standards
 - a. Impact on Surrounding Street Systems and Access and Circulation

The site driveway will be accessed off of Lambert Street, between the neighboring Tara Apartments and the intersection with Summit Street. The development is not anticipated to have any major impact on traffic flows of any public streets. The two-way driveway will be 24 feet wide. The driveway apron radii are 15 feet, per requirements for passenger cars in section 1.7.2.5. of the City of Portland Technical Manual. Each residential unit will have a garage, so there will be individual driveways for each duplex to access their garages. Sight distance exceeds 250 feet, the required distance for 35 mph, which is 5 mph over the posted speed limit of 30 mph. **(See Attachment H - COMMENT RESPONSE LETTERS)**

b. Sidewalks

No sidewalk exists along the frontage of the site. The applicant has proposed building out their frontage of sidewalk and curbing on the opposite side of Lambert Street connecting to where the sidewalk currently ends north of Georgia Street. The positioning of the sidewalk is included as a condition of this report.

c. Public Transit Access

The public transit requirements do not apply to this project.

d. Parking

Two parking spaces are required per unit, resulting in a required twelve spaces on site. The applicant is proposing seventeen total spaces, with the additional five being parallel parking for guests and overflow.

e. Bicycle Parking

The proposal includes a garage for every unit which allows for internal bicycle storage, satisfying the requirement.

2. Environmental Quality Standards

a. Preservation of Significant Natural Features

There are no known significant natural features on the site. Trees with a diameter of greater than 10 inches on site have been identified and surveyed as part of the existing conditions plan by Titcomb Associates. Trees will be preserved on the perimeter of the site to whatever extent possible. Trees have been included in the landscaping plan to restore some of the canopy post-construction.

b. Landscaping and Landscape Preservation

A landscaping plan with plant schedules has been provided as part of this application. Plant schedule and sizes are in accordance with section 4 of the technical manual. This design incorporates trees and plants that will add to the aesthetic of the buildings and the site.

(See ATTACHMENT P4. LANDSCAPE)

c. Water Quality, Storm Water Management and Erosion Control

The project is held to MDEP Chapter 500 Stormwater rules for basic, general, and flooding standards. A stormwater report was submitted to and reviewed by staff and can be found in the attachments. The topography generally gently slopes to the drainage channel on the north and west property lines. This channel flows into the roadside ditch in the northwest corner of the site. The abutting lots on Summit and Auburn Streets drain onto the site. The total additional impervious cover on the site will be 15,325 SF. Total developed area associated with the project is 36,826 sf. Approximately 3,167 SF of wetlands will be filled as part of this project.

Stormwater on site will be treated by a grassed underdrain soil filter on the northwest corner of the site, and roof line drip edges on the rear of each duplex building, and a roof line drip edge on the east side of Building 2. Because a significant amount of stormwater drains onto the site from abutting lots, diversion swales will be constructed on the perimeter of the new development to divert off-site water away from treatment devices. Permanent stone check dams will be installed in the diversion swales to provide some treatment for additional stormwater. Post-development flows will be reduced from pre-development flows.

Lauren Swett, P.E. with Woodard and Curran Engineering, has reviewed the erosion and sediment control plans and details, and inspection and maintenance requirements and found the plans to meet the Chapter 500 requirements. The following comment was address in the most recent revisions:

For 77 Lambert Street, my remaining comment is relative to the amount of treatment they are providing. As I'd noted previously in my comments, Maine DEP Chapter 500 General Standards require treatment of 95% of impervious surface and 80% of developed area. Their response notes that they have updated their system, but are still only treating 87.1% of impervious area and 56.3% of developed area, with no specific justification as to why they are not meeting the standard. They should address this comment.

Response: Per our meeting on April 17th, we have added permanent stone check dams to the diversion swales on the north and south sides of the Site. This will provide a level of treatment for additional developed area. See attached revised stormwater report and maintenance plan.

(See Attachment H - COMMENT RESPONSE LETTERS)

3. Public Infrastructure and Community Safety Standards

a. Public Safety and Fire Prevention

Mike Thompson, Division Chief of the Fire Prevention and Community Outreach Division, has reviewed the submitted plans and found them to be acceptable, noting the following points (Attachment 1):

The official address shall be approved by the City E911 addressing officer prior to the building permit process.

The approved street address shall be marked on the structure in numerals.

Jason Grant, Life Safety CEO / Plan Reviewer from the Permitting and Inspections Division, reviewed the remaining comments from the now retired Chief Thompson, and worked with the applicant to add an adequate turn around area on site for emergency vehicles.

b. Availability and Adequate Capacity of Public Utilities

The project will be served by Central Maine Power, the Portland Water District, and the City's Department of Public Works. Evidence of utility capacity has been provided for all but sewer capacity, which is currently being reviewed. The applicant is applying for a water main

extension from the Portland Water District along Lambert Street. Updates will be forwarded to the City as a condition of approval

4. Site Design Standards

- a. Snow and Ice Loading
Snow will be plowed and stored on site, south of the parking area.
- b. View Corridors
This site is not within a Protected View Corridor as per the “View Corridor Protection Plan” approved by the Portland City Council in 2001.
- c. Historic Resources
N/A
- d. Exterior Lighting
The applicant has submitted a lighting and photometric plan which was reviewed and accepted by staff.
- e. Noise and Vibration
It is not anticipated that the on-site equipment will result in adverse conditions related to noise and vibration.
- f. Signage and Wayfinding
N/A
- g. Zoning Related Design Standards
A design review was conducted by the City’s Urban Designer and the proposal was found to be in conformance with design standards. **(See Attachment R – R5 DESIGN REVIEW)**
- h. Construction Management Plan
The applicant has submitted a construction management plan which was reviewed and accepted by staff.

X. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Division staff recommends that the Planning Board find the 77 Lambert Street development project meets the applicable standards of Portland’s Land Use Code.

XI. PROPOSED MOTIONS FOR THE BOARD TO CONSIDER

A. SUBDIVISION REVIEW

On the basis of the application, plans, reports and other information submitted by the applicant, findings and recommendations contained in the Planning Board Report for the public hearing on April 28, 2020, for application # PL-000893-2019 77 Lambert Street relevant to the subdivision regulations, and the testimony presented at the Planning Board hearing, the Planning Board **[finds/does not find]** that the plan is in conformance with the subdivision standards of the land use code subject to the following conditions of approval:

PRIOR TO THE SUBMISSION OF THE PLAT FOR PLANNING BOARD SIGNATURE

1. The subdivision plat shall be finalized to the satisfaction of the Planning Authority, Corporation Counsel and Department of Public Works and include clear descriptions of the number, location, type and size of all subdivided units, along with relevant notes and conditions.

PRIOR TO ISSUANCE OF A BUILDING PERMIT

2. The applicant shall provide confirmation of adequate wastewater capacity from the Department of Public Works for review and approval by the Planning Authority; and
3. The signed subdivision plat shall be recorded at the Cumberland County Registry of Deeds.

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 April 28, 2020, for application #PL-000893-2019, 77 Lambert 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 A BUILDING PERMIT

1. The applicant shall provide confirmation of adequate wastewater capacity from the Department of Public Works for review and approval by the Planning Authority; and
2. The applicant will submit an updated site plan showing the final sidewalk and curbing placement to be reviewed and approved by Public Works.
3. The applicant shall submit an updated landscaping plan to the Planning Authority identifying suitable locations onsite to fulfil the requirement for provision of six street trees.

XIII. ATTACHMENTS
PLANNING BOARD REPORT ATTACHMENTS

APPLICANT'S SUBMITTALS

A - PROJECT DESCRIPTION
B - SUBMISSION CHECKLIST
C - RIGHT, TITLE, & INTEREST
D - FINANCIAL CAPACITY
E - ZONING ASSESSMENT
F - NEIGHBORHOOD MEETING
G - TECHNICAL ABILITY
H - COMMENT RESPONSE LETTERS
I - WASTEWATER CAPACITY
J - E911 ADDRESS MAP
K - ENVIRONMENTAL & LANDSCAPE SUMMARY
L - PUBLIC INFRASTRUCTURE & SAFETY SUMMARY
M - CONSTRUCTION MANAGEMENT PLAN
N - HYDROCAD
O - STORMWATER
P - LIGHTING CUT SHEETS
Q - TRANSPORTATION SUMMARY
R - R5 DESIGN REVIEW

PLANS

P1. TITLE SHEET
P2. COVER SHEET
P3. SITE & UTILITY PLAN
P4. LANDSCAPE
P5. BOUNDARY SURVEY
P6. CONSTRUCTION MANAGEMENT PLAN
P7. EROSION CONTROL PLAN & DETAILS
P8. GRADING AND DRAINAGE PLAN
P9. LIGHTING PHOTOMETRIC PLAN
P10. FLOOR PLANS
P11. ELEVATIONS & SECTIONS
P12. POST-DEVELOPMENT DRAINAGE PLAN
P13. GENERAL NOTES
P14. SITE DETAILS I
P15. SITE DETAILS II



October 15, 2019

BCE File: 19120

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

**Re: Level III Site and Subdivision Plan Application
77 Lambert Condo Development
77 Lambert Street, Portland**

Dear Mr. Rather:

On behalf of the developer, JP Schwartz, and the Owner, 75-81 Lambert, LLC, we are pleased to submit the enclosed Site Plan and Subdivision Application and Project Drawings for the subject project.

The developer is proposing to construct three (3) duplex 2-family residential buildings on a 0.88 acre lot (382A B015/382A B016) at 77 Lambert Street in Portland. The lot is currently vacant with light tree cover. The lot is in the R-5 residential zone, where the use of two-family residential housing is a permitted use. Neighboring lots include a multifamily development and single family homes. This project will fit in well to the character of the neighborhood.

The site layout consists of two duplex residential buildings on the north side of the parcel, and one duplex residential building in the rear (east) side. There is a total of six residential units. Each building has a 2,669 sf footprint. Each dwelling unit consists of a garage with parking for one vehicle, 3 bedrooms and 3 bathrooms. Each has a driveway that can fit an additional vehicle, and 5 visitor parking spaces are provided along the driveway for a total of 17 parking spaces.

On-Site stormwater will be treated by a grassed, underdrained soil filter and roofline drip edges at the rear side of each building. Grassed swales will direct offsite stormwater away from the stormwater treatment devices to the ditch along Lambert Street. The Stormwater Report attached as part of this application gives a summary of how this project is designed consistent with the Maine Department of Environmental Protection (DEP) Chapter 500 Standards.

Public sewer and water will be tapped in Lambert Street for the development. Electric and telecommunication services will be provided underground from the utility pole in front of the Site on Lambert Street. City of Portland curbside trash pick-up will be used for solid waste.

We look forward to presenting this project at the next available planning board meeting. In the meantime, please contact me if you have any questions or require further information.

Sincerely,
BLAIS CIVIL ENGINEERS,

A handwritten signature in blue ink, appearing to read 'S. Blais', with a horizontal line drawn through the middle of the signature.

Steve Blais, PE
Project Manager

Attachments:

We are uploading application material via the City of Portland Self Service Portal

CITY OF PORTLAND
Planning & Urban Development Department

LEVEL II and LEVEL III SITE PLAN
GENERAL DOCUMENT AND DRAWINGS CHECKLIST

Please submit each document as a separate PDF file
Please confirm by electronically checking the boxes to the left

**** PLEASE FILL OUT AND UPLOAD SEPARATELY THE ZONING TABLE
AND WAIVER TABLE AS NOTED BELOW ****

GENERAL APPLICATION DOCUMENTS

Yes ☒	NA ☐	Project Description Cover Letter with detailed project description
Yes ☒	NA ☐	Completed Checklist – Level II and Level III Site Plan (this document)
Yes ☒	NA ☐	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 Table listing required and proposed uses and dimensional standards Zoning Assessment Table
Yes ☐	NA ☒	Existing and/or Proposed Easements or Covenants, applicable. Evidence of existing easements and any proposed easements
Yes ☒	NA ☐	Waiver Requests Written request for waiver describing request and reason Waiver Table
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

**LEVEL II AND LEVEL III SITE PLAN
STANDARDS AND SUBMISSION CHECKLIST**
Provide assessment of compliance with standards and include
supplemental documentation, as applicable
Please Submit each document as a separate PDF file

TRANSPORTATION

Yes ☒	NA ☐	Transportation Analysis- Traffic Impact (14-526 (a) 1) - Provisions for pedestrian, bicycle, vehicle, and loading circulation and incremental volume of traffic impacts - Traffic Impact Study (Technical Manual, Section 1) if applicable
Yes ☒	NA ☐	Access and Circulation (14-526 (a) 2 a) - Access and internal circulation, addressing ADA access - Access and egress impacts on traffic flows - Description and use of drive-up features, if applicable
Yes ☐	NA ☒	Loading and Servicing (14-526 (a) 2 b) - Loading and servicing needs, route and travel way geometrics for deliveries - Turning templates for delivery vehicles, if applicable
Yes ☐	NA ☒	Sidewalks (14-526 (a) 2 c) - Sidewalks and condition along street frontages and internal walkways - Engineered details for ADA ramps and public sidewalk details meeting sidewalk materials policy and ADA ramp construction details as applicable (Technical Manual, Section 1)
Yes ☐	NA ☒	Public Transit (14-526 (a) 3), if applicable - Existing available transit services - Proposed site plan design details, such as easement, pad base, and shelter
Yes ☒	NA ☐	Off-Street Parking: Vehicle & Motorcycle/Scooter) (14-526 (a) 4 a and c) - Expected parking demand, proposed parking supply, ADA parking, and applicable Zoning Requirements - Address Technical Manual standards (Section 1) for curb cut separation and parking lot layout and locate on site plan
Yes ☒	NA ☐	Bicycle Parking (14-526 (a) 4 b) - Address bicycle parking requirements and identify locations on-site - Construction details for bike racks (Technical Manual, Section 1)
Yes ☒	NA ☐	Snow Storage (14-526 (a) 4 d) Management plan for snow removal and locate snow storage areas on plan
Yes ☐	NA ☒	Traffic Demand Management (TDM) (14-526 (a) 5), if applicable Develop TDM with Trip Reduction Targets and Strategies

ENVIRONMENTAL AND LANDSCAPE FEATURES		
Yes ☐	NA ☒	Preservation of Significant Natural Features (14-526 (b) 1), if applicable - Trees, plants, habitats listed on State or Federal list of endangered or threatened - High and moderate value waterfowl and wading habitat - Aquifers on Casco Bay Islands - Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) - Proposed preservation areas and protection measures - Documentation from environmental consultants, determinations from applicable state agencies
Yes ☒	NA ☐	Landscaping and Landscape Preservation (14-526 (b) 2 a) - Preservation of trees and preservation within required zoning setbacks (Technical Manual, Section 4) - Protection measures of existing vegetation during construction - Protection measures within Shoreland Zone, if applicable
Yes ☒	NA ☐	Site Landscaping (14-526 (b) 2 b) - Screening and buffering of service areas and between non-residential and residential uses - Planting plans with plant schedule and sizes (Technical Manual, Section 4)
Yes ☐	NA ☒	Parking Lot Landscaping (14-526 (b) 2 b ii), if applicable Landscaped islands within parking areas (Technical Manual, Section 4)
Yes ☐	NA ☒	Street Trees (14-526 (b) 2 b iii) - Existing Heritage or Feature Trees on site and measures to preserve - Identify street trees on the plan meeting the site plan and Technical Manual standards (Section 4) or identify alternative measures, if applicable
ENVIRONMENTAL AND STORMWATER		
Yes ☒	NA ☐	Water Quality, Stormwater Management and Erosion Control (14-526 (b)3 a) - Stormwater report in compliance with Section 5 of Technical Manual and DEP Chapter 500 stormwater for basic, general and flooding standards, as applicable - Erosion control plan and measures - Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater, as applicable - Subsurface sanitary sewage disposal and groundwater protection

PUBLIC INFRASTRUCTURE AND SAFETY		
Yes ☒	NA ☐	Consistency with City Master Plans (14-526 (c) 1) - Identify consistency with master plans - Proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
Yes ☒	NA ☐	Public Safety and Fire Prevention (14-526 (c)) - Address Crime Prevention through Environmental Design (CPTED) (Technical Manual, Section 3) - Emergency vehicle access - Address consistency with public safety standards (Technical Manual, Section 3) - Submit a code summary referring NFPA 1 and all Fire Department standards (Technical Manual, Section 3) – Fire Checklist
Yes ☒	NA ☐	Availability and Adequacy of Public Utilities (14-526 (c) 3) (Technical Manual, Sections 2 & 9) - Electrical services, including providing underground services - Identify existing and proposed connections for public utilities and required public utility upgrades - Sewer line connections are required, if there is a main within 200 feet - Proposed solid waste management facilities on-site and management for the site - Written evidence of the ability to serve from utility companies, as applicable
SITE DESIGN		
Yes ☐	NA ☒	Massing, Ventilations and Wind Impact (14-526 (d) 1) - Wind and ventilation impacts on adjoining structures and/or adjacent public spaces. Wind study, if applicable - Bulk, location or height impacts on adjoining structures - Identify and locate HVAC equipment and venting away from public spaces and residential properties - Identify screening and manufacturing specifications for noise, if applicable
Yes ☐	NA ☒	Shadows (14-526 (d) 2), if applicable Shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
Yes ☐	NA ☒	Snow and Ice Loading (14-526 (d) 3) Building design to prevent snow and ice from loading or falling onto adjacent properties or public ways
Yes ☐	NA ☒	View Corridors (14-526 (d) 4), if applicable Protection of designated view corridors (Portland Design Manual, Appen. 1)

Yes ☐	NA ☒	Historic Resources (14-526 (d) 5), if applicable - Identify developments within Historic Districts or affecting Designated Landmarks - Certificate of Appropriateness or other evidence - Identify Developments within 100 feet of Historic Districts or affecting Designated Landmarks. Advisory HP review may be required - Address preservation and documentation of Archaeological Resources
Yes ☒	NA ☐	Exterior Lighting (14-526 (d) 6) - Cut sheets of on-site light fixtures and any architectural or specialty lights (Technical Manual, Section 12) - Engineered details for any lights proposed in street right-of-way (Technical Manual, Section 10)
Yes ☐	NA ☒	Noise and Vibration (14-526 (d) 7) Evidence of noise levels for equipment, such as equipment specifications, to demonstrate consistency with zoning requirements
Yes ☒	NA ☐	Signage and Wayfinding (14-526 (d) 8), if applicable - Signage plan showing the location, dimensions, height and setback of all existing and proposed signs. Signs in Historic Districts are reviewed by Historic Preservation staff - Proposed commercial and directional signage on site
Yes ☒	NA ☐	Zone Related Design Standards (14-526 (d) 5) - Address Historic Preservation Design Review, if applicable - Address any applicable design review standards by zone - Address submission requirements from Design Manual, page 1, addressing neighborhood context - Description of exterior materials, color, finish, and samples
Construction Management Plan		
Yes ☒	NA ☐	Construction Management Plan Construction Management Document and Plan

**LEVEL II AND LEVEL III SITE PLAN
DRAWINGS CHECKLIST**

Please upload the following DRAWINGS with the listed details into e-Plan as separate pdfs

RECENT BOUNDARY SURVEY (stamped by Maine Licensed Surveyor)

- ☒ Must be in compliance with Technical Manual, Section 13

SITE PLAN(s) (stamped by Maine Licensed Engineer) including:

Existing Conditions

- ☒ Approximate location of structures on abutting property
- ☒ Topography
- ☒ Locate water courses
- ☒ Delineate wetlands
- ☒ Zone lines

Proposed Site Plan

- ☒ Ground floor area, and grade elevations for all buildings

Access, Circulation, and Parking

- ☒ Streets and intersections adjacent to site, any proposed geometric modifications
- ☒ Location, dimensions and materials of all existing and proposed driveways, vehicle, bicycle, & pedestrian access ways with corresponding curb lines
- ☒ Engineered specifications/ cross-sections for proposed driveways, sidewalks & paved areas
- ☐ Location and dimensions of proposed loading areas
- ☐ Existing and proposed transit infrastructure with dimensions/ engineering specifications
- ☒ Location of vehicle and bicycle parking with dimensions and engineering specifications

Site Considerations

- ☒ Identify snow storage areas
- ☒ Location of fire hydrants
- ☐ Location of solid waste management facilities

UTILITY PLAN including:

- ☒ Existing utilities on site and within public streets
- ☒ Location, sizing and directional flows of all existing and proposed utilities
- ☒ Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site
- ☒ Electric utility infrastructure

GRADING AND DRAINAGE PLAN including:

- ☒ Existing grades and drainage
- ☒ Proposed grades
- ☐ Proposed stormwater management meeting Technical Manual (Section 5), standards
- ☒ Location and proposed alteration of a water course
- ☒ Preservation or alteration of wetlands

EROSION CONTROL

- ☒ Must be in compliance with Technical Manual, Section 5

LANDSCAPE PLAN including:

- ☐ Existing vegetation to be preserved and preservation measures
- ☒ Proposed landscaping and buffers
- ☒ Planting schedule

RECORDING PLAT, if applicable
☐ If Subdivision, must be in compliance with requirements of Section 14-496 (b)
ARCHITECTURAL PLANS AND RENDERINGS including:
☒ Exterior building elevations, color renderings, illustrations of all sides
☒ Location and dimensions of all existing and proposed HVAC and mechanical equipment, all proposed screening
☐ Provide context drawings, if applicable (Design Manual, page 1)
☒ Floor plans

WARRANTY DEED

Maine Statutory Short Form

MAINE REAL ESTATE TAX PAID

Know all Men by these presents, that STEPHEN R. ROOP of Portland, County of Cumberland and State of Maine, for consideration paid, grants to 75-81 LAMBERT, LLC, a Maine limited liability company with a business address of 5 Sandpiper Lane, Falmouth, ME 04105, with Warranty Covenants, the land in the City of Portland, County of Cumberland and State of Maine, as more particularly described on the attached **Schedule A**.

Also hereby conveying all rights, easements, privileges, and appurtenances belonging to the premises hereinabove described.

Witness my hand this 13th day of March, 2019.

WITNESS:

Michael H. Hill

Stephen R. Roop

STATE OF MAINE
CUMBERLAND, SS.

March 13, 2019

Then personally appeared the above named Stephen R. Roop and acknowledged the foregoing instrument to be his free act and deed.

Before me,

Michael H. Hill

Notary Public/Maine Attorney at Law

MICHAEL H. HILL Bar #3838
Printed Name

SCHEDULE A

A certain lot or parcel of land located on the northeasterly side of Lambert Street in the City of Portland, County of Cumberland, State of Maine, bounded and described as follows:

Beginning at a 1" iron pipe on the northeasterly side of Lambert Street at the southerly corner of land now or formerly of Lori Austill and Anthony Gaboury as described in a deed recorded in the Cumberland County Registry in Book 32977, Page 194. Thence:

- 1) N 30°48'16" E by said land of Austill and Gaboury a distance of Forty-Two and 03/100 (42.03) feet to a 5/8" iron rod "PLS 1273" at the southwesterly corner of land now or formerly of April R. Lewis Sarell as described in a deed recorded in said Registry in Book 28250, Page 326;
- 2) N 79°25'44" E by said land of Sarell a distance of Two Hundred Nineteen and 36/100 (219.36) feet to a 5/8" iron rod "PLS 1273";
- 3) N 10°34'16" W by said land of Sarell a distance of Twelve and 00/100 (12.00) feet to a 5/8" iron rod "PLS 1273" on the southerly line of land now or formerly NMP Investments, LLC as described in a deed recorded in said Registry in Book 34394, Page 146;
- 4) N 79°25'44" E by said land of NMP Investments, LLC and land now or formerly of Adam E. Lamarre and Elizabeth G. Thomas as described in a deed recorded in said Registry in Book 34370, Page 94 a distance of Sixty-Two and 51/100 (62.51) feet to a point at the northwesterly corner of land now or formerly of Anthony Salisbury as described in a deed recorded in said Registry in Book 34779, Page 20;
- 5) S 11°04'09" E by said land of Salisbury a distance of Fifty-Nine and 74/100 (59.74) feet to a point;
- 6) N 78°55'51" E by said land of Salisbury a distance of Seven and 00/100 (7.00) feet to a point;
- 7) S 11°04'09" E by said land of Salisbury a distance of Eighty and 49/100 (80.49) feet to a point on the northerly line of land now or formerly of Tara Apts., LLC as described in a deed recorded in said Registry in Book 14149, Page 92;
- 8) S 79°25'00" W by said land of Tara Apts., LLC a distance of Two Hundred Sixty-Nine and 81/100 (269.81) feet to a point on the northeasterly side of said Lambert Street;
- 9) N 36°59'58" W by said Lambert Street a distance of One Hundred Seven and 96/100 (107.96) feet to the point of beginning.

Bearings are referenced to true north.

Being a portion of the premises described in deed from Robert Allan Poore to Stephen R. Roop dated June 10, 2015 and recorded in the Cumberland County Registry of Deeds in Book 32342, page 90.

\\ML1\dn1a\MM\H10\Nelson, Robert\Lambert Property\Warranty Deed.doc

Received
Recorded Register of Deeds
Mar 13, 2019 03:34:02P
Cumberland County
Nancy A. Lane



September 16, 2019

City of Portland, Planning Division
389 Congress Street, 4th Floor
Portland, ME 04101

RE: Mr. Robert Nelson 75-81 Lambert Street Portland Maine.

To whom it may concern:

Biddeford Savings is pleased to entertain a request for financing by Mr. Robert Nelson and 71-81 Lambert, LLC for the development of residential units at 71-81 Lambert St, Portland, Maine. Mr. Nelson and 71-81 Lambert, LLC are customers in good standing and have the track record to engage in a project of this size.

The Bank is currently entertaining financing of the above referenced project and based on the current information on the project and subject to completion of underwriting and approval I am supportive of the request and it is my view that they have the financial capacity and wherewithal to complete the proposed project.

If you have any questions or comments regarding this letter, please call me at 571-5673, or send an e-mail to djones@biddefordsavings.com.

Sincerely,

A handwritten signature in blue ink, appearing to read "Doug Jones", is written over a large, stylized blue circular stamp or watermark.

Doug Jones
Senior Vice President
Business Banking Officer



Member FDIC



ZONING ANALYSIS Relevant Zone(s) R5

All Projects:

	Required	Proposed
Lot Size	9,000 SF	38,332 SF
Area Per Dwelling Unit	6,000 SF	6,389 SF
Minimum Street Frontage	50 LF	108 LF
Front Yard Minimum	20 LF	35 LF
Front Yard Maximum	N/A	N/A
Rear Yard	20 LF	20 LF
Yard Right	12 LF	12 LF
Yard Left	12 LF	30 LF
Side Street Setback	N/A	N/A
Step Back	N/A	N/A
Maximum Lot Coverage	40%	20%
Minimum Lot Coverage	N/A	N/A
Maximum Height	35'	27'8"
Open Space	N/A	N/A
Maximum Impervious Area	N/A	N/A
Pavement Setback	N/A	N/A
Floor Area Ratio	N/A	N/A
Off Street Parking Spaces	12	17
Loading Bays	N/A	N/A
Other 1 Minimum Lot Width	60 FT	128 FT
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):			

Neighborhood Meeting Certification for 77 Lambert Condo Development

I, Steve Blais, PE, hereby certify that a neighborhood meeting was held on December 19, 2019 at Lyman Moore Middle School at 6 PM for the proposed project located at 77 Lambert Street.

I also certify that on December 9, 2019, invitations were mailed to the following:

1. All addresses on the mailing list provided by the Planning Division which includes property owners within 500 feet of the proposed development or within 1000 feet of a subdivision within an industrial zone or industrial zone change
2. Residents on the "interested parties" list.

Signed,

Steve Blais, PE

Attached to this certification are:

1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes

NEIGHBORHOOD MEETING MINUTES

Date/Time: DECEMBER 19, 2019 at 6:00PM

BCE File: 19120

Participants: JP SCHWARTZ (OWNERS REPRESENTATIVE)
STEVE BLAIS (BLAIS CIVIL ENGINEERS)
MIKE TRIGLIONE (BLAIS CIVIL ENGINEERS)
SEE ATTENDANCE SHEET

Mtg. Place/ LYMAN MOORE
Tel.No. MIDDLE SCHOOL

Re: 77 LAMBERT CONDO DEVELOPMENT

Notes By: MIKE TRIGLIONE

-
- We reviewed Architectural Elevations, Site Layout & Utility Plan, Grading & Drainage Plan, & Landscaping Plan with attendees.
 - A question was raised about trees on site being retained were asked. We said that not many will be saved but referred to landscaping plan for new plantings. Also mentioned site walk with City Planner and Arborist.
 - Drainage concerns referencing the water in the roadside ditch on Lambert St were brought up. We explained city requirements for peak flows, stormwater modeling, and our underdrained soil filter that should prevent flooding.
 - Someone asked if sidewalks were being constructed on Lambert St. We answered that no sidewalks were planned as part of this project, and we do not know of any plans on Lambert St. Walkability of Lambert St was a concern.
 - An abutter mentioned that a neighbor on Summit St recently installed solar on their garage and asked whether our buildings will block it. It is believed that the existing trees that will remain on their property are taller than our proposed building.
 - Someone asked how the units will be heated. We answered there will be heat pumps and propane for hot water.
 - A concern was risen about the Summit and Lambert St intersection. A suggestion was making it a 4-way stop.
 - Someone asked what the market price of the units would be. We said middle to high end, but we did not have specific knowledge.
 - A question was asked about whether there was any notification of construction. We explained about construction permits needed for street opening, etc., but no specific notifications were likely to be made for construction.
 - A neighbor said that they had a hard time viewing all the documents on the Portland website.
 - The meeting was concluded at about 7:00 PM.



BCE FILE:19120
DECEMBER 19, 2019
LYMAN MOORE MIDDLE SCHOOL

NEIGHBORHOOD MEETING
77 LAMBERT CONDO DEVELOPMENT
77 LAMBERT ST, PORTLAND, MAINE

MEMBERS OF PUBLIC IN ATTENDANCE:

	NAME	E-MAIL
1.	Adam Lamarre	
2.	Ruth Bettinger	bettinger.ruth@gmail.com
3.	Bob Mentzinger	bobforhuse43@gmail.com
4.	Jared Wichenbach	JWichenbach@GorillPalmer.com
5.		
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22. _____
23. _____
24. _____
25. _____
26. _____
27. _____

DEVELOPER AND CONSULTANT TEAM IN ATTENDANCE

NAME

E-MAIL

28. JP SCHWARTZ JPSCHWARTZ@ALLIEDCOOK.COM
29. STEVE BLAIS SBLAIS@BLAISC.COM
30. MIKE TRIGLIONE MTRIGLIONE@BLAISC.COM
31. _____
32. _____



Experience

- ◆ 21 years

Licenses & Certifications

- ◆ Licensed Professional Engineer in: ME, NH, MA, and VA
- ◆ US Green Building Council LEED® Accredited Professional

Education

Villanova University

- ◆ BS, Civil Engineering, 1996, Business Minor
- ◆ Member of Chi Epsilon National Engineering Honors Society

Affiliations

- ◆ Associate member of the American Society of Civil Engineers
- ◆ Member of Maine Aggregates Association Board of Directors

Recognition

- ◆ 2013 MEREDA Public Policy Award Recipient

STEVE G. BLAIS, P.E. President

Steve's experience in civil engineering includes site design, permitting, planning and construction administration. He has engineered and managed large and small projects for residential, commercial and institutional clients. Steve is familiar with many local, state, and federal permitting processes.

Prior to starting Blais Civil Engineers, PA (formerly Land Consulting Engineers) based in South Portland, Maine in 2005, Steve gained diverse experience by working in both small and large consulting companies in Virginia, Massachusetts, and Maine.

Representative projects Steve has been involved with include:

Beachmont Subdivision Old Orchard Beach, Maine

Provided project management, permitting and associated design and construction services through municipal/state approvals for a 44 lot clustered subdivision for 1,700 sf. single family ranch and cape style detached homes with a minimum 20,000 sf. lot size and an 8.7 acre open space parcel on this 35 +/- acre lot.

Cape Elizabeth Engineering and Construction Services Cape Elizabeth, Maine

As part of our contact with the town, we will be reviewing submittal/drawing packages, attending department head review meetings, generating plan review comment letters, reviewing construction cost estimates and escrow draw down letters, attending pre-construction meetings, performing site observations during construction, completing construction observation reports, and coordinating with other design consultants.

Casco Bay Practice Ice Falmouth, Maine

Reviewed Existing MaineDEP Permits, prepared letter addressing VC-1 standards and designed preliminary site and landscape plans for a covered pavilion and seasonal, refrigerated ice rink at the site of the current Twombly outdoor rink at Village Park in Falmouth. Revised the zoning map, conducted meetings to determine Town and MaineDEP permitting requirements and researched the town zoning ordinance and site plan approval process.

Colby Green at Colby College Waterville, Maine

Designed drainage and utility systems for a campus expansion to host four new buildings and a green area. The project was required to meet

Maine DEP site location of development and LEED standards.

Damariscotta Shore & Harbor Project

Damariscotta, Maine

Assisted others in providing conceptual low impact development engineering design alternatives for Town to consider in the redevelopment of the Main Street waterfront public parking facility. Stormwater quality treatment and flooding potential were among the many design attributes taken into consideration.

Family Wellness Center

Scarborough, Maine

Provided research, municipal/state permitting and associated civil/site design services for a newly constructed 4,000 sf building project on 1.5 acres while reusing the majority of an existing parking surface.

Green Acres Subdivision

Scarborough, Maine

Provided civil/site design, permitting and associated services for this 5.85 acre, 7 custom home conservation subdivision project. 4 acres of this site have been preserved for use as open space.

Kents Hill School Stormwater Analysis

Kents Hill, Maine

Performed overall campus stormwater analysis for the Kents Hill School Campus using the current DEP phosphorus standard resulting in surplus capacity in the school's existing wet pond and bark filter basin. Also worked with Maine DOT in creating a maintenance agreement for these devices. 254 acres of land were studied in this analysis.

Maine Yacht Center

Portland, Maine

Worked with client's attorney to rezone a portion of the Maine Yacht Center property to allow additional storage of boats. Provided permitting, design, construction documentation, and construction administration services. Stormwater was treated using an under-drained, grassed, soil filter before it was discharged into Casco Bay.

Merrill's Wharf Cumberland Cold Storage/Pierce Atwood

Portland, Maine

Designed a stormwater management system to treat stormwater consistent with the City and Maine DEP standards. This project re-developed 100,000 square feet of office/retail space as well as 38,000 square feet of parking lot on the Portland waterfront. Treatment measures included a tree filter inlet, and a bio-filtration swale.

Provided design, permitting, and construction documentation services. Construction administration services will follow.

Riverside Drainage Study at Sugarloaf

Carrabassett Valley, Maine

Analyzed an existing problem-prone stormwater system for the Riverside Homeowners Association. The study encompassed approximately 170 acres and several single family and townhouse units. Recommended improvements to mitigate the steep slopes, erodible soils, and large quantities of concentrated stormwater flows. These improvements were ranked in order of importance and will be carried out in the association's long term plan.

The Ridges Apartments

Hallowell, Maine

Designed and inspected a stormwater system and erosion & sedimentation controls for a 45-unit, 3 building apartment complex. This 56 acre property is situated on fairly steep slopes. An underdrained soil filter, a dry detention basin, and stormwater buffers were used to mitigate stormwater. Disturbed area: 6.3 acres.

Third Party Inspections - Merrill's Wharf Cumberland Cold Storage

Portland, Maine

Prepared a report on degradation observed and provided recommendations for continued maintenance compliance for their stormwater management facilities.

Waterhouse Field

Biddeford, Maine

Providing preliminary civil engineering services throughout the due diligence phase of the project. This includes review of existing conditions, local GIS information & applicable zoning and site plan ordinances, community meeting attendance to determine potential project concerns, research of utilities and of planning/engineering department files for historical information, identification of potential local & state permitting triggers as the project evolves, and creation of design alternatives and conceptual sketches of the site layout.

West End Place

Portland, Maine

Provided civil and site engineering plans, regulatory permitting, a stormwater management report and a construction management plan for a new 4-story project providing 39 modern energy-efficient residential apartments, 2 ground level retail spaces and covered parking.



Experience

- ◆ < 2 years

Licenses & Certifications

- ◆ Engineer in Training in:
ME

Education

University of Maine

- ◆ BS, Civil Engineering,
2017
- ◆ Member of Chi Epsilon
Civil Engineering
Honor Society

Affiliations

- ◆ American Society of
Civil Engineers

MICHAEL K. TRIGLIONE, E.I.T. Civil Engineer

Mike recently joined BCE and brings with him a great understanding of environmental and infrastructure design and standards on commercial site development and municipal projects. He has experience with New Hampshire Department of Environmental Services and Maine Department of Environmental Protection standards and permitting requirements, a proficiency in AutoCad Civil 3D as well as experience with HydroCAD. Mike also has a great understanding of hydrology and hydraulic engineering principles, construction surveying equipment and calculations. His leadership, communication, and teamwork experience will be a great asset to our team.

Mike has participated in commercial site development design, assessment, and permit documentation; municipal infrastructure site evaluation and design, roadway design, opinions of probable costs, permitting documentation, and landfill monitoring; and hydrologic and hydraulic calculations and technical reports. And as a construction inspector, Mike has overseen several Maine Department of Transportation (MDOT) highway restoration and reconstruction projects.

Representative projects Mike has been involved with include:

32 Hampshire Street Portland, Maine

Provided site plan to support a Level I Site Plan Review application. Specifically generated site layout and utility plan, grading/drainage/erosion control plan, erosion & sedimentation control notes and details. Also prepared a stormwater operations and maintenance plan.

52 Pleasant Street Westbrook, Maine

Provided due diligence and prepared site/subdivision plan application for a 3-unit multi-family building on a 7,511 square foot lot. The new building will use existing public utilities. The driveway and parking area will be paved and six parking spaces will be provided on site. The impervious area will flow to proposed drainage structures and piped to the municipal stormwater systems within Pleasant Street. A portion of the parking lot and half the building's roof runoff (3,164 SF) will also be treated by an underdrained soil filter for water quality/quantity control before reaching the municipal system.

204 Saco Ave Old Orchard Beach, Maine

Completed a site plan for the construction of a 992 square foot building with 4 seasonal individual motel units, fencing and site improvements to replace a previously substandard one. Improvements includ-

ed upgraded curb cuts, repaved sidewalks, wood fencing.

Berwick Fire Department

Berwick, Maine

Completed a site plan application for planning board review to construct a new 17,888 square foot fire station. Civil design drawings designed include a site layout and utilities plan, a grading & drainage plan, and erosion & sediment control details. Site improvements include additional parking and expanded pavement areas for vehicular access and truck turning. Also providing permitting and construction administration.

Berwick Parking Lot

Berwick, Maine

Provided site plan for an improved parking area including 68 parking spaces on a gravel surface. Improvements included removal of existing pavement, relocation of granite block curb, recirculation of traffic flow, relocated drive entrance, landscaping, stormwater drainage and wood fencing.

Biddeford High School Track Retaining Wall

Biddeford, Maine

Provided review of existing conditions and coordinated with wall manufacturer regarding wall specifications. Prepared a preliminary site plan for review by school representatives and designed a retaining wall with associated drainage. Completed construction drawings including grading and drainage, and erosion & sediment control details and specifications. The construction of the wall has increased the usable area around the track by 20' – 30' and provides for improved circulation around the track and for additional area for teams to set up tents during competitions. This allows Biddeford High School to host larger events and between this effort and the resurfacing of the track will result in an enhanced facility for the community.

Corinth Pellets

Corinth, Maine

Design of grading and stormwater treatment ponds to bring a wood pellet manufacturing facility into compliance with MDEP Stormwater and Site Location of Development Permitting standards.

Econolodge

South Portland, Maine

Assisted with application and plan preparation for the City of South Portland Site Plan Review and MDEP Site Location of Development Permit Amendment for the redevelopment of the Econolodge Hotel.

KK&W Water District Tank Access Drive

Arundel, Maine

Design of an access road up a steep area to allow large tractor trailers to access a site where a 1.3 million gallon water storage tank will be constructed to serve the Kennebunk, Kennebunkport & Wells Water District distribution system.

Maxwell Woods Subdivision Inspections

Cape Elizabeth, Maine

Inspections on behalf of the town on the Maxwell Woods Subdivision construction, including oversight of roadway construction as well as sewer and drainage infrastructure.

The Borough Development, 31 Haigis Parkway

Scarborough, Maine

Providing research and project management including civil drawings and land development permitting. This project is for the construction of a 5,000 square foot building on a 17.48 acre lot. The facility will offer a commercial kitchen for producers to rent, a bar/restaurant with 123 seats, 2 meals per day and a group dining space for hosting multiple events throughout the year. The parking area will include 60 spaces.

Tidewater Lofts

Old Orchard Beach

Provided due diligence efforts for development of proposed improvements for reconstruction of an existing parking lot, sidewalks and pool area. This phase included observing existing conditions and issues, reviewing available GIS information, providing an existing topographic survey of the Site, preparing a conceptual sketch plan of proposed improvements, preparing a summary of options with plan sketches, and discuss proposed improvements with the homeowners association.

January 27, 2020

BCE File: 19120

Mr. Andrew Tufts

City of Portland Planning and Urban Development Department

389 Congress Street 4th Floor

Portland, ME 04101

Re: Response to Review Comments
77 Lambert Condo Development City Review
Application ID#: PL-000893-2019
CBL: 382A B015

Dear Andrew:

We have received comments from Mike Tremblay, PE, and Lauren Swett. The following responses address comments received from both reviewers in regards to the above-referenced project.

- *We discussed the wetlands impacts and the potential benefits of swapping the parking area and the duplexes. The Applicant should explore this as an option.*

Response: A layout with the buildings on the south side of the lot was originally considered, however, to maximize back yard privacy for this project and the adjacent Tara Apartments, we flipped the layout. This layout also reduces Site grade changes as the parking/driveway pitch from south to north, more closely following existing grades.

- *Additional clarity is needed with regards to circulation on the site. There are proposed parallel parking spaces that would appear to require motorists to use the individual duplex driveways in order to turn around. This may be difficult if most or all of these driveways are full.*

Response: The layout has been changed so that the additional parking will be head-in.

- *The duplex driveways are 25 feet wide. While Portland technical standards largely do not apply within private developments, these driveways are significantly wider than the city would allow a typical driveway serving low-*

medium-density residential use to have along its right-of way. It is likely these driveways could provide the same access at 16 total feet wide, a reduction of 180sf of driveway area per driveway. This could help reduce the scale of impacts to the wetlands.

Response: The width of the driveways have been reduced so each garage door has an 10' wide driveway entering. This reduced the total width. The new impervious cover of the site is 15,107 SF, which is a reduction of 1,425 SF of impervious cover.

- *Similar to the above, the parallel parking spaces provided are significantly larger than what DPW would expect on a public ROW. The 9x22-foot spaces are 1-2 feet wider and 2-4 feet longer than necessary. While minor, reducing the size of these spaces could provide the same function while reducing the amount of impervious surface.*

Response: The parallel parking spaces have been changed to 9-foot x 18-foot head-in parking spaces.

- *A sidewalk is not proposed. The Applicant would need a sidewalk waiver.*

Response: See waiver table submitted with original application.

- *The Applicant should confirm which trees are proposed for removal. Large-scale tree removal may exacerbate stormwater and erosion issues. The Applicant has indicated that much of the site will be cleared but that trees on the perimeter of the site will be preserved; some specificity is requested.*

Response: The stormwater study accounts for all trees to be removed within the developed areas. The soil filter has been designed to mitigate stormwater impact resulting in a decrease of peak flows leaving the Site. While some perimeter trees may be saved, we can only count on saving trees that fall outside the tree line shown on the plans.

- *Runoff appears to be directed past the westernmost building's walkway, which will likely result in erosion. In heavier storms, stormwater may not reach the stormwater BMP and instead run directly down the driveway and into the roadway. We acknowledge the grade challenges on site, but additional measures should be considered to improve stormwater runoff and erosion control.*

Response: According to the Maine DEP BMP Manual, the maximum allowable velocity in a grass swale for a Q10 (10-yr frequency 24-hour duration storm) should be 3 fps. We have modeled the velocity of the flow in HydroCAD using a

reach, and the 100-year storm has a max velocity of 1.62 fps. This flow should not cause significant erosion. Any minor erosion that occurs can be repaired as needed. We have added language under the “Paved Surfaces” section of the Operations and Maintenance Plan for Stormwater Management Facilities to ensure surface flows will not flow to the street. We have also raised the grade just past this area, creating a low point at the pavement edge ensure runoff will flow into the underdrained soil filter.

- *Ensure that the existing culvert north of the site can handle additional runoff. Confirm the size, material, and condition of this culvert.*

Response: There are two culverts north of the site that will have flows from the Site directed towards them. Immediately north of the site there is a 15” CMP driveway culvert that is in moderate condition. Downstream from there, there is a 24” HDPE culvert in good condition that crosses Lambert St. This project will decrease peak flows to these culverts, so their current capacity will be sufficient. See below photo of further downstream culvert outlet.



- *The applicant should show utility connections and the extents of trench repair and pavement restoration.*

Response: Plans have been revised to show utility connections and trenching/pavement restoration.

- *The project is required to comply with Maine DEP Chapter 500 and City of Portland Section 5 Stormwater management regulations. The project proposes*

to utilize an underdrain soil filter and roof drip line filters to provide treatment and flood control. I have the following comments:

- *Basic Standards*
- *General Standards – The applicant has provided stormwater treatment measures that generally meet the regulations, however the project is not meeting the Maine DEP’s treatment area requirements of 95% treatment on new impervious surface and 80% treatment of developed area. It appears based on the post-development drainage plan, that more area may be directed to the proposed stormwater systems. The post-development HydroCAD model appears to have been inadvertently left out. We will review the model relative to the system design and site grades. Sizing calculations should be provided to verify that the proposed systems have been adequately designed to manage the proposed flows.*
- *Flooding Standards – The applicant is proposing a small increase in flow during the 2-year storm.*

Response: An additional roof line drip edge has been added to the east side of building 2 to capture and treat runoff from the roof on that side of building 2. With the adjusted layout and additional roof line drip edge, 87.1% of impervious cover is treated, and 56.3% of developed area is treated. Updated post-development peak flows are as follows:

2-Year = 2.51 cfs
10-Year = 5.00 cfs
25-year = 7.11 cfs

The proposed conditions HydroCAD data has been submitted as part of this comment response.

- *The Applicant has requested utility ability to serve letters and will provide them upon receipt.*

Response: Noted. We are applying for a water main extension from the Portland Water District along Lambert Street. Updates will be forwarded to the City when they arise.

We trust the information provided addresses the City’s concerns. Please call me if you have any questions.

Sincerely,

BLAIS CIVIL ENGINEERS

Steve G. Blais, PE, LEED AP

A circular professional seal for the State of Maine. The outer ring contains the text "STATE OF MAINE" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by two stars. Inside the ring, the text reads "STEVE G. BLAIS" and "No. 10084". Below the seal is a large, stylized handwritten signature in blue ink, and to the right of the signature is the date "1/27/2020".

April 24, 2020
BCE File: 19120

Mr. Andrew Tufts
City of Portland Planning and Urban Development Department
389 Congress Street 4th Floor
Portland, ME 04101

Re: Response to Review Comments
77 Lambert Condo Development City Review
Application ID#: PL-000893-2019
CBL: 382A B015

Dear Andrew:

We have received comments from Mike Tremblay, PE, and Lauren Swett. The following responses address comments received from both reviewers in regards to the above-referenced project:

- *For 77 Lambert Street, my remaining comment is relative to the amount of treatment they are providing. As I'd noted previously in my comments for stormwater Maine DEP Chapter 500 General Standards require treatment of 95% of impervious surface and 80% of developed area. Their response notes that they have updated their system, but are still only treating 87.1% of impervious area and 56.3% of developed area, with no specific justification as to why they are not meeting the standard. They should address this comment.*

Response: Per our meeting on April 17th, we have added permanent stone check dams to the diversion swales on the north and south sides of the Site. This will provide a level of treatment for additional developed area. See attached revised stormwater report and maintenance plan.

- *They've also noted that utility approvals are pending, and they will provide them when available.*

Response: We are working with utilities and expect approval shortly. We respectfully request a condition to the Site Plan approval for this item.

- *The dead end roadway shall provide a 30' x 3'- turnaround at the closed end. This turnaround shall be on the right side of the roadway. Please refer to Figure I-5 in the City of Portland Technical Manual.*

Response: The access to the development is intended to be a driveway, not a dead end roadway. We have added an additional 12'x18' paved area to the east of the head-in parking and marked it a no parking zone. This will provide area for an emergency vehicle to turn around on the Site.

- *The building address shall be approved by the City of Portland E911 Addressing Officer. Each building, and unit(s) shall be designated in accordance to the City of Portland Fire Department Rules and Regulations.*

Response: We have been assigned addresses by Charles Wordell, and they are pending Fire Department Approval. See enclosed Map showing E-911 street addressing assignments for proposed buildings at 77 Lambert St.

- *Portland Water District should review the water main extension. They may require that it be extended the length of the project frontage, not just the project driveway.*

Response: The water main extension is currently being reviewed and pending approval by the Portland Water District.

- *The sidewalk waiver requires that two criteria be met. The applicant has only provided on (loss of site features).*

Response: Plans have been revised to include a sidewalk along the frontage of the property on the opposite side of Lambert St. See enclosed revised plans.

We trust the information provided addresses the City's concerns. Please call me if you have any questions.

Sincerely,

BLAIS CIVIL ENGINEERS



Steve G. Blais, PE, LEED AP

Enclosures:

1. 77 Lambert St E-911 addressing map
2. HydroCAD Report – Proposed Conditions_v3
3. Stormwater Management Report_v3
4. Stormwater O&M Plan_v3
5. Blank Stormwater Maintenance Log_v3
6. C-102 Site Layout & Utility Plan_v3
7. C-103 Grading & Drainage Plan_v3
8. C-302 Erosion Control Notes & Details_v3

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

Department of Public Services,
55 Portland Street,
Portland, Maine 04101-2991



Bradley Roland, P.E.
Water Resources Division

Date: October 15, 2019

1. Please, Submit Utility, Site, and Locust Plans.

Site Address: 77 Lambert Street

Chart Block Lot Number: 382A B010/382A B009

Proposed Use: Multi-unit Residential

Previous Use: Vacant

Existing Sanitary Flows: 0 GPD

Existing Process Flows: 0 GPD

Description and location of City sewer that is to
receive the proposed building sewer lateral.

Existing 8" sewer main in Lambert Street

Site Category	
Commercial (<i>see part 4 below</i>)	☐
Industrial (<i>complete part 5 below</i>)	☐
Governmental	☐
Residential	☒
Other (<i>specify</i>)	☐

Clearly, indicate the proposed connections, on the submitted plans.

2. Please, Submit Contact Information.

City Planner's Name: James Rather Phone: (207) 874-8699

Owner/Developer Name: 75-81 Lambert, LLC

Owner/Developer Address: 1035 Ocean Ave, Portland, ME 04103

Phone: (207) 838-8256 Fax: E-mail: bob@nelsonproperty.com

Engineering Consultant Name: Steve Blais, PE, Blais Civil Engineers

Engineering Consultant Address: 27 Gorham Road, Scarborough, ME 04074

Phone: (207) 730-7200 Fax: E-mail: sblais@blaisce.com

Note: Consultants and Developers should allow +/- 15 days, for capacity status, prior to Planning Board Review.

3. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 1,620 GPD

Peaking Factor/ Peak Times:

Specify the source of design guidelines: (*i.e.* "Handbook of Subsurface Wastewater Disposal in Maine," "Plumbers and Pipe Fitters Calculation Manual," Portland Water District Records,
Other (specify) State of Maine Subsurface Wastewater Disposal Rules

Note: Please submit calculations showing the derivation of your design flows, either on the following page, in the space provided, or attached, as a separate sheet.

4. Please, Submit External Grease Interceptor Calculations.

Total Drainage Fixture Unit (DFU) Values: _____

Size of External Grease Interceptor: _____

Retention Time: _____

Peaking Factor/ Peak Times: _____

Note: In determining your restaurant process water flows, and the size of your external grease interceptor, please use The Uniform Plumbing Code. Note: In determining the retention time, sixty (60) minutes is the minimum retention time. Note: Please submit detailed calculations showing the derivation of your restaurant process water design flows, and please submit detailed calculations showing the derivation of the size of your external grease interceptor, either in the space provided below, or attached, as a separate sheet.

5. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated: _____ GPD

Do you currently hold Federal or State discharge permits? _____

Yes _____ No _____

Is the process wastewater termed categorical under CFR 40? _____

Yes _____ No _____

OSHA Standard Industrial Code (SIC): _____

(<http://www.osha.gov/oshstats/sicser.html>)

Peaking Factor/Peak Process Times: _____

Note: On the submitted plans, please show where the building's domestic sanitary sewer laterals, as well as the building's industrial-commercial process wastewater sewer laterals exits the facility. Also, show where these building sewer laterals enter the city's sewer. Finally, show the location of the wet wells, control manholes, or other access points; and, the locations of filters, strainers, or grease traps.

Note: Please submit detailed calculations showing the derivation of your design flows, either in the space provided, or attached, as a separate sheet.

FROM "STATE OF MAINE" SUBSURFACE WASTEWATER
DISPOSAL RULES" E. 2.
SECTION 4)

MULTI FAMILY DWELLING UNITS

90 GAL/D/BEDROOM + 3 BEDROOMS = 270 G/DAY

270 G/D x 6 UNITS = 1,620 GAL/DAY → ADJUSTED WATER FLOW



October 15, 2019
BCE File: 19120

Portland Water District
225 Douglass Street
Portland, ME 04104

**Re: Lambert Street Development
77 Lambert Street, Portland, Maine**

To whom it may concern:

We are assisting 75-81 Lambert, LLC with design and permitting services for their new subdivision to be located at 77 Lambert Street in Portland, Maine. The subdivision will consist of three (3) separate two-family duplex style buildings. Each building will have a 2,600 sf footprint. We are looking to get a letter from the District stating that there is a willingness to serve and that there is adequate capacity to handle our proposed flows.

See attached the proposed Utility Plan as a reference. It is proposed to tap the adjacent main in Lambert Street with a larger capacity pipe, then run services to each building off of that. Each unit is to be individually metered. The fixture count in each individual unit is as follows:

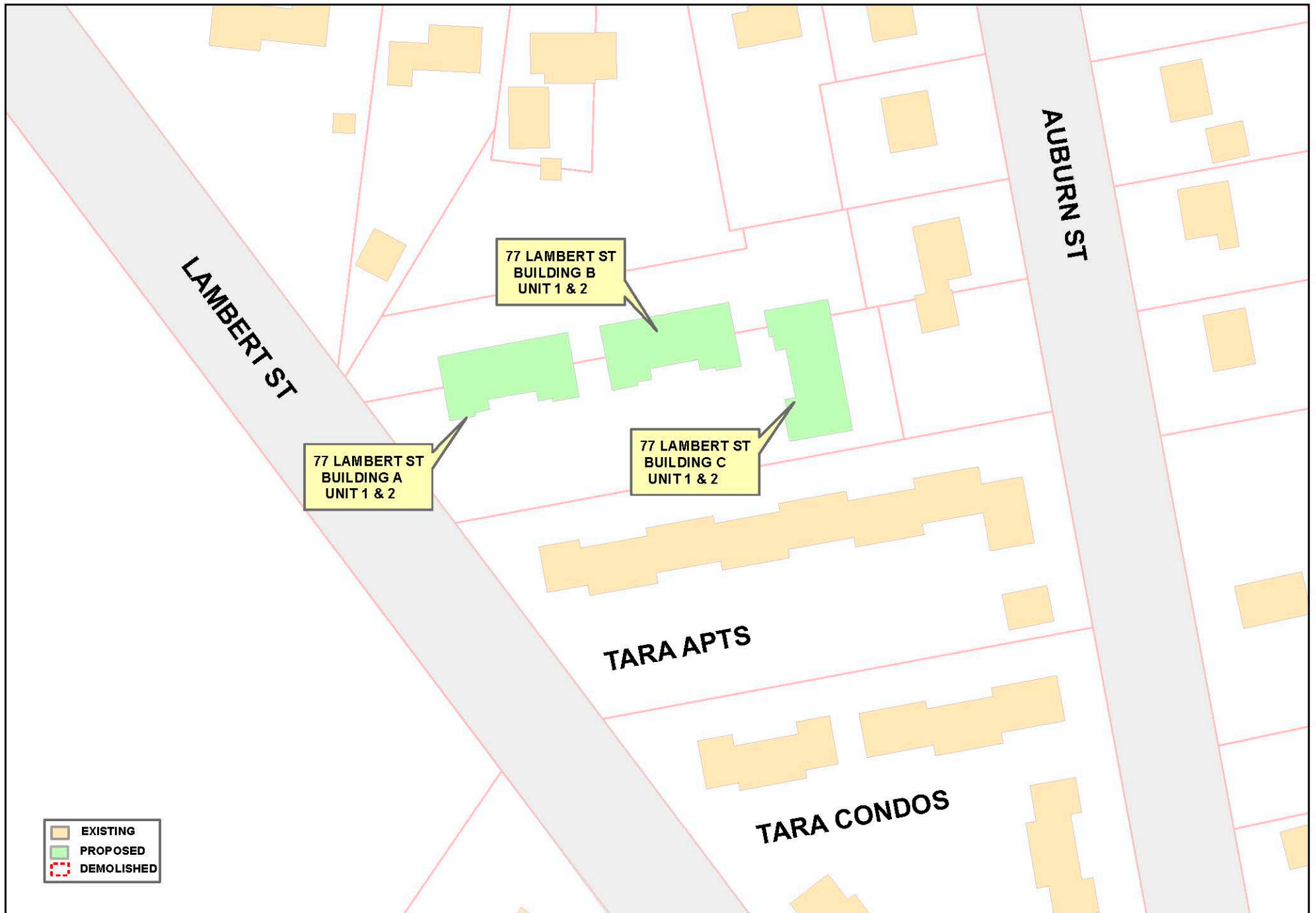
Bathtubs: 1
Kitchen Sink: 1
Bathroom Sink: 4
Toilet: 3
Dishwasher: 1
Washing Machine: 1
Hose (Outdoor Spigot):1

There are a total of six individual units with these fixture counts. See also enclosed the location map and the PWD spreadsheet, with totals for the whole development. If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

BLAIS CIVIL ENGINEERS

Steve Blais, PE



Map showing the E-911 street addressing assignments for proposed buildings at 77 Lambert St

Portland, ME 04103

April 21, 2020



**ENVIRONMENTAL AND LANDSCAPE SUMMARY
77 LAMBERT CONDO DEVELOPMENT
77 LAMBERT STREET
PORTLAND, ME
OCTOBER 15, 2019**

INTRODUCTION

The subject property (the Site) is located at 77 Lambert Street in Portland. The Site is a 38,332 SF parcel that is currently vacant, with a mix of tree cover and open grassy area. The proposed development consists of three (3) duplex two-family dwelling buildings, for a total of six new residential units on the lot. There will be an associated shared driveway for the units with parking. This report discusses how this project plans to meet environmental and landscape feature requirements for Level III Site Plan and Subdivision approval.

PRESERVATION OF SIGNIFICANT NATURAL FEATURES

The Site does have a drainage swale as well as wetlands on the northern edge of the property. The drainage swale will be regraded and partially filled as part of this project, but will remain a functioning drainage swale. The regrading is proposed to direct the water away from our stormwater treatment BMP, since this edge of the property takes on a significant amount of runoff from the adjacent lots. There is a total of 3,753 SF of wetlands on this lot, which were mapped on August 28 by Ian Broadwater of Broadwater Environmental, LLC. The wetlands that will be filled is a total of 3167 SF, which is below the amount required to trigger an Army Corps wetlands permit. Filling the wetlands is necessary to divert offsite water away from the proposed development and proposed stormwater treatment BMP.

LANDSCAPING AND LANDSCAPE PRESERVATION

Trees with a diameter of greater than 10" on site have been identified and surveyed as part of the existing conditions plan by Titcomb Associates. Trees will be preserved on the perimeter of the site to whatever extent possible. However, due to grading necessary to divert stormwater, much of the site will be cleared. Trees have been included in the landscaping plan to restore some of the canopy post-construction.

SITE LANDSCAPING

A landscaping plan with plant schedules has been provided as part of this application. Plant schedule and sizes are in accordance with section 4 of the technical manual. This design incorporates trees and plants that will add to the aesthetic of the buildings and the Site.

STREET TREES

There are no known existing heritage or feature trees on the Site that will need to be preserved.

**PUBLIC INFRASTRUCTURE AND SAFETY SUMMARY
77 LAMBERT CONDO DEVELOPMENT
77 LAMBERT STREET
PORTLAND, ME
OCTOBER 15, 2019**

INTRODUCTION

The subject property (the Site) is located at 77 Lambert Street in Portland. The site is a 38,332 SF parcel that is currently vacant, with a mix of tree cover and open grassy area. The proposed development consists of three (3) duplex two-family dwelling buildings, for a total of six new residential units on the lot. There will be an associated shared driveway for the units with parking. This report discusses how this project plans to meet public infrastructure and safety requirements for Level III Site Plan and Subdivision approval.

PUBLIC INFRASTRUCTURE AND SAFETY

The Site is designed to provide natural surveillance in accordance with section 3.1 of the City of Portland Technical Manual. The design minimizes fences and walls as potential hiding spaces, and the open design allows for easy surveillance opportunities to and from the site. Lighting will be provided in accordance with the City's technical standards with wall packs and lamp posts adjacent to each front door walkway.

The nearest fire hydrant is at the intersection of Lambert Street and Summit Street, about 400 feet away from the Site. Emergency vehicles shall be able to access the site through the main driveway.

See enclosed with this application a code summary referring NFPA 1 and Fire Department Standards.

AVAILABILITY AND ADEQUACY OF PUBLIC UTILITIES

This development will utilize public sewer and water, electricity, and trash removal services. The sewer and water main will be tapped in Lambert Street. See included requests for capacity letters from Portland Water District and City of Portland Department of Public Services Water Resources Division. Electricity will be taken from the utility pole directly in front of the Site by underground conduit. See included a request for capacity

to CMP. The capacity letters will be forwarded to the city upon receipt. The buildings will have private propane tanks for heat. Solid waste will utilize City of Portland curbside trash and recycling pickup. Each resident will be responsible for bringing their own waste to the curbside.

Construction Management Plan Narrative

75-81 Lambert, LLC

11.7.19

The project construction will begin with installing erosion and sedimentation controls then general site demolition, site preparation, construction of all (3) foundations, and the construction of the 1st duplex building. The entire site package will be completed with the construction of the 1st duplex building. Construction will start the spring of 2020, and will take approximately 6-8 months, with the other phases following after the sales of the first initial condos. Sales of the condos will dictate the construction of the remaining 2 buildings.

A. Construction Management Principles

The following narrative provides an overview of the construction management principles that have been identified to minimize impacts from the construction, such as noise, truck traffic, pedestrian traffic and other construction related factors to the surrounding buildings and communities.

B. Development Review of Construction Management Plan

The Construction Management Plan outlines the overall logistics and safety program for the construction project. This is considered a residential project, no job trailer required. No site fence is required.

It is anticipated that lane closures, sidewalk closures, etc. will only be required when utilities are run on to the site. A street opening permit will be applied for and traffic / pedestrian logistics will be determined at that time. Very little impact to traffic or pedestrian ways is anticipated.

Controlled Construction entrances will be installed and maintained throughout the construction project to control dust outside of the construction site. Any major construction deliveries requiring traffic control may have flaggers as necessary.

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

Prior to scheduling a preconstruction meeting and the issuance of any city required permits, 75-81 Lambert LLC shall meet all of the requirements contained in Section 14-530.

Development review fees and post approval requirements and 14-532. Other permits, as applicable, include

1. **Street Opening and Street Occupancy Permits:** All required street opening and street occupancy permits shall be obtained through the Department of Public Works and the requests shall conform with the approved construction management plan.

D. Construction Administration and Communication

75-81 Lambert LLC will work diligently to implement a communication strategy. The Owner 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.

E. Construction Schedule

The project construction will begin with installation of erosion and sedimentation controls followed by general site demolition, site preparation, construction of all (3) foundations, and the construction of the 1st duplex building. The entire site package will be completed with the construction of the 1st duplex building. Construction will start the spring of 2020, and will take approximately 6-8 months, with the 2nd and 3rd buildings following after the sales of the first initial condos. Sales of the condos will dictate the construction of the remaining 2 buildings.

1. Hours of Construction. Construction may occur during the daytime hours as defined in Section 17-18.

F. Security & Public Safety

1. Fire Safety Program. An overall construction fire safety program shall be developed. Essential items to be emphasized include the following:
 - Good Housekeeping
 - On-site monitoring
 - Rapid communication

G. Construction Permitting and Traffic Control Plans

1. Construction Activity in Public Streets: 75-81 Lambert LLC will work with the Department of Public Works as to coordinate these types of closures. Any necessary street closure, street opening, or parking spot closure permit will be obtained prior to the closure commencing.
2. Sewer and Stormwater: 75-81 Lambert LLC will pull any required sewer and/or storm water connection permits required through the Street Opening Clerk at the Department of Public Works.
3. Traffic Control Plans: 75-81 Lambert LLC will develop any required traffic control plans as needed for street opening permits.

H. Site Management and Controls

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

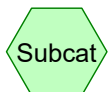
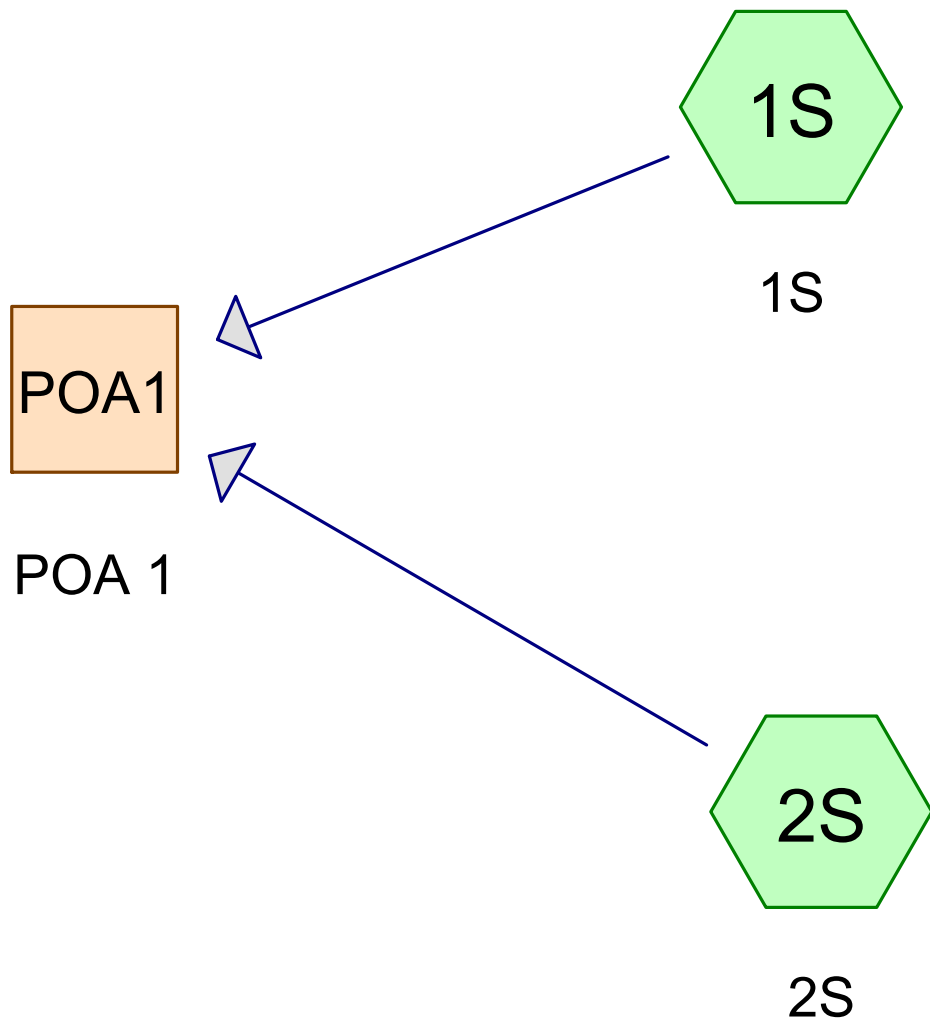
1. Regular trash and debris removal from the site on a as-needed basis.
2. Construction Entrances will be enacted through the construction process and will limit dirt/debris throughout roadways.
3. The construction shall comply with Portland's requirements under Section 25-129 on Noise, dust and debris.
4. Rodent Control will be provided, if deemed required.
5. Snow Removal: The following measures will be taken within the work zone:
 - 1) Remove snow and ice as needed within the work zone.
 - 2) Clear all walkways and sidewalk ramps within the work zone
 - 3) Sand or Salt as needed within the work zone.
 - 5) Clear all basins and/or drainage to help snow melt, as needed.

I. Erosion Control and Preservation of Trees

1. 75-81 Lambert LLC shall install all erosion and sedimentation controls as depicted on the approved erosion and sedimentation control plan. The sitework 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.

J. Parking During Construction

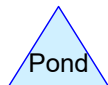
1. Construction Parking: All workers and subcontractors will park onsite.



Subcat



Reach



Pond



Link

Routing Diagram for 77 Lambert St - Existing

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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.137	74	>75% Grass cover, Good, HSG C (1S, 2S)
0.008	98	Paved parking, HSG A (1S)
0.050	98	Paved roads w/curbs & sewers, HSG C (2S)
0.082	98	Roofs, HSG A (1S)
0.101	98	Roofs, HSG C (1S, 2S)
1.075	70	Woods, Good, HSG C (1S, 2S)
2.453	75	TOTAL AREA

77 Lambert St - Existing

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.091	HSG A	1S
0.000	HSG B	
2.362	HSG C	1S, 2S
0.000	HSG D	
0.000	Other	
2.453		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	1.137	0.000	0.000	1.137	>75% Grass cover, Good	1S, 2S
0.008	0.000	0.000	0.000	0.000	0.008	Paved parking	1S
0.000	0.000	0.050	0.000	0.000	0.050	Paved roads w/curbs & sewers	2S
0.082	0.000	0.101	0.000	0.000	0.183	Roofs	1S, 2S
0.000	0.000	1.075	0.000	0.000	1.075	Woods, Good	1S, 2S
0.091	0.000	2.362	0.000	0.000	2.453	TOTAL AREA	

77 Lambert St - Existing

Type III 24-hr 25-year Rainfall=5.80"

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Time span=0.00-20.00 hrs, dt=0.05 hrs, 401 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: 1S

Runoff Area=71,057 sf 7.26% Impervious Runoff Depth>2.80"
Flow Length=347' Tc=10.9 min CN=74 Runoff=4.86 cfs 0.381 af

Subcatchment2S: 2S

Runoff Area=35,799 sf 14.96% Impervious Runoff Depth>2.99"
Flow Length=449' Tc=10.8 min CN=76 Runoff=2.61 cfs 0.205 af

Reach POA1: POA 1

Inflow=7.47 cfs 0.585 af
Outflow=7.47 cfs 0.585 af

Total Runoff Area = 2.453 ac Runoff Volume = 0.585 af Average Runoff Depth = 2.86"
90.16% Pervious = 2.212 ac 9.84% Impervious = 0.241 ac

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 1S: 1S

Runoff = 4.86 cfs @ 12.16 hrs, Volume= 0.381 af, Depth> 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
642	98	Roofs, HSG A
834	98	Roofs, HSG A
736	98	Roofs, HSG A
153	98	Roofs, HSG A
272	98	Roofs, HSG A
147	98	Roofs, HSG A
281	98	Roofs, HSG A
3,314	74	>75% Grass cover, Good, HSG C
5,596	74	>75% Grass cover, Good, HSG C
1,567	74	>75% Grass cover, Good, HSG C
360	98	Paved parking, HSG A
36,283	70	Woods, Good, HSG C
10,298	74	>75% Grass cover, Good, HSG C
2,494	74	>75% Grass cover, Good, HSG C
6,347	74	>75% Grass cover, Good, HSG C
54	98	Roofs, HSG A
620	98	Roofs, HSG C
457	98	Roofs, HSG C
471	98	Roofs, HSG A
131	98	Roofs, HSG C
71,057	74	Weighted Average
65,899		92.74% Pervious Area
5,158		7.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	134	0.0485	0.25		Sheet Flow, Sheet Flow A-B Grass: Short n= 0.150 P2= 3.10"
1.9	89	0.0232	0.76		Shallow Concentrated Flow, Shallow Concentrated B-C Woodland Kv= 5.0 fps
0.2	124	0.0180	8.60	309.66	Channel Flow, Channel Flow C-D Area= 36.0 sf Perim= 19.4' r= 1.86' n= 0.035 High grass
10.9	347	Total			

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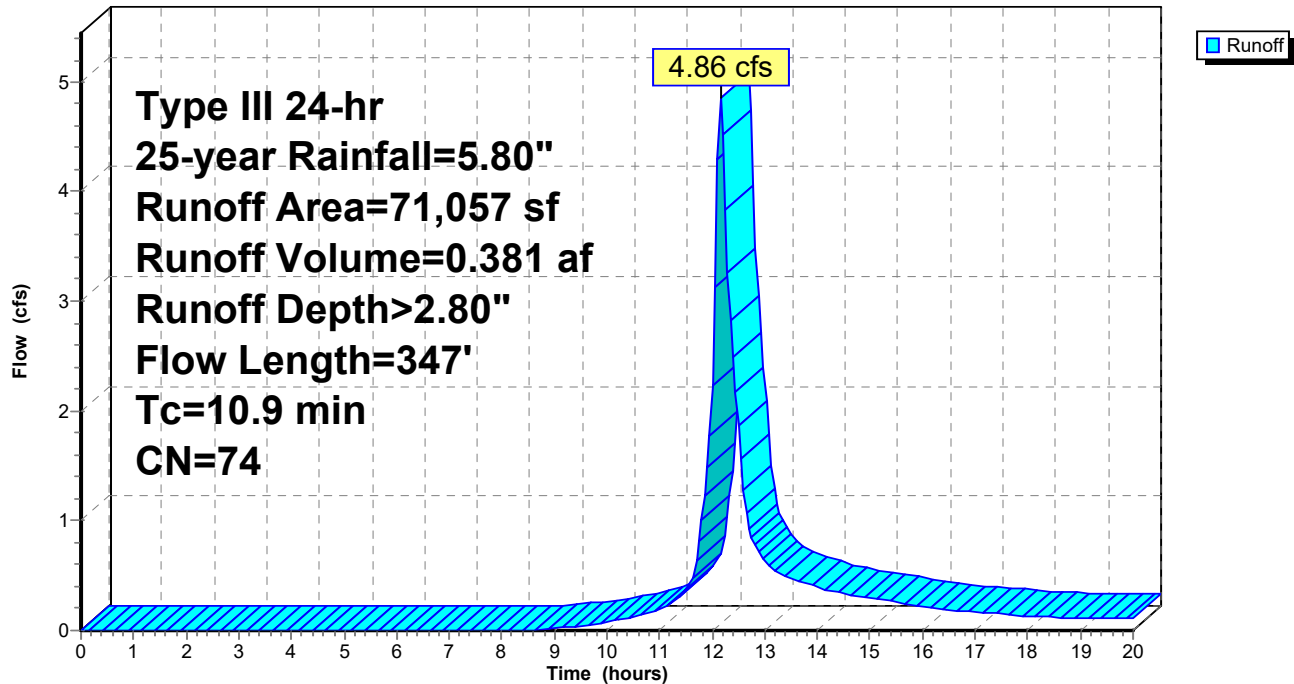
Type III 24-hr 25-year Rainfall=5.80"

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Subcatchment 1S: 1S

Hydrograph



77 Lambert St - Existing

Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 2S: 2S

Runoff = 2.61 cfs @ 12.15 hrs, Volume= 0.205 af, Depth> 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
2,169	98	Paved roads w/curbs & sewers, HSG C
19,900	74	>75% Grass cover, Good, HSG C
3,186	98	Roofs, HSG C
10,544	70	Woods, Good, HSG C
35,799	76	Weighted Average
30,444		85.04% Pervious Area
5,355		14.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	71	0.0421	0.21		Sheet Flow, Sheet Flow A-B Grass: Short n= 0.150 P2= 3.10"
0.2	28	0.1430	1.89		Shallow Concentrated Flow, Shallow Concentrated B-C Woodland Kv= 5.0 fps
0.6	46	0.0652	1.28		Shallow Concentrated Flow, Shallow Concentrated C-D Woodland Kv= 5.0 fps
4.3	253	0.0200	0.99		Shallow Concentrated Flow, Shallow Concentrated D-E Short Grass Pasture Kv= 7.0 fps
0.1	51	0.0200	13.13	315.02	Channel Flow, Channel Flow E-F Area= 24.0 sf Perim= 14.9' r= 1.61' n= 0.022 Earth, clean & straight
10.8	449	Total			

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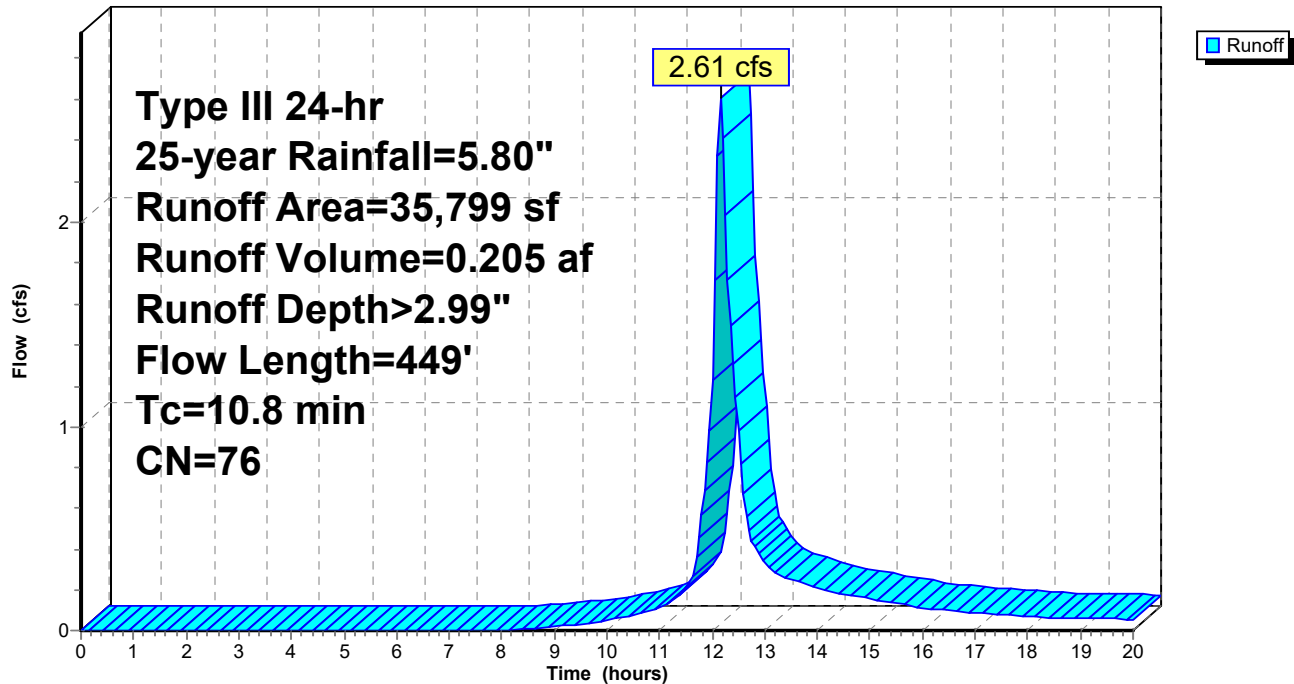
Type III 24-hr 25-year Rainfall=5.80"

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Subcatchment 2S: 2S

Hydrograph



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Type III 24-hr 25-year Rainfall=5.80"

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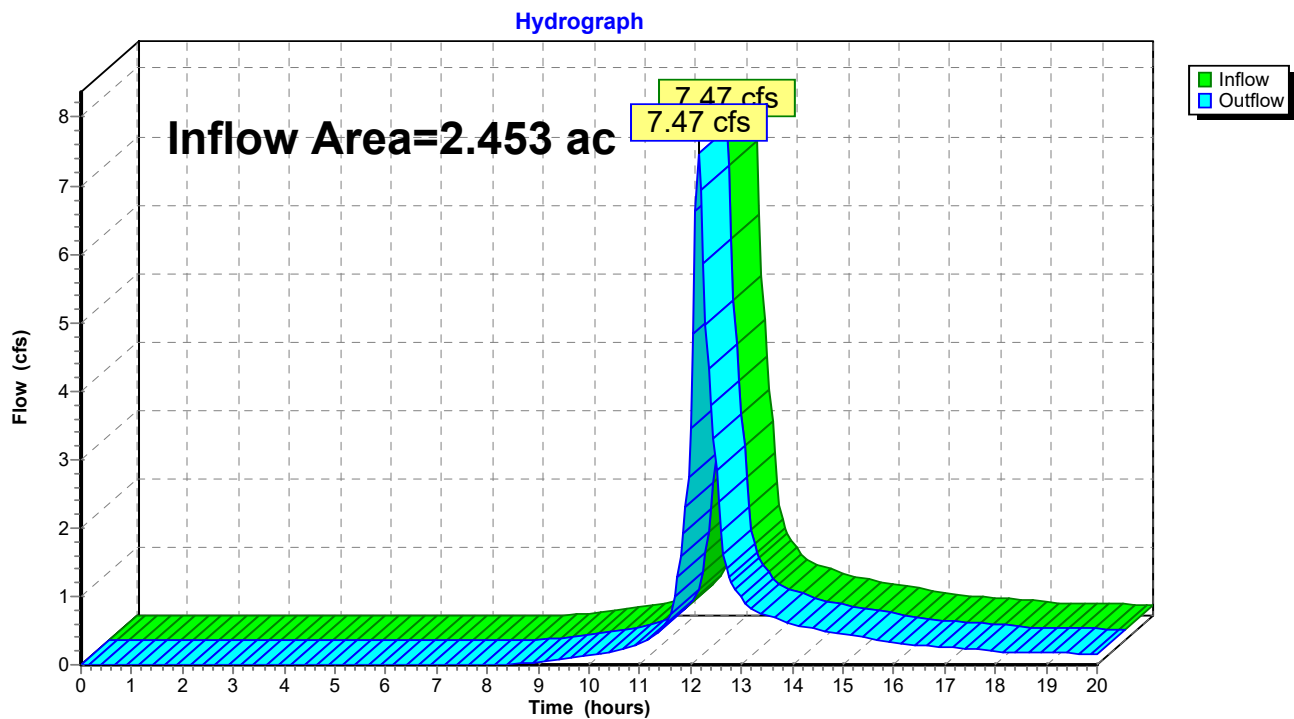
Summary for Reach POA1: POA 1

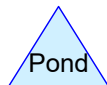
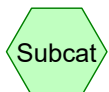
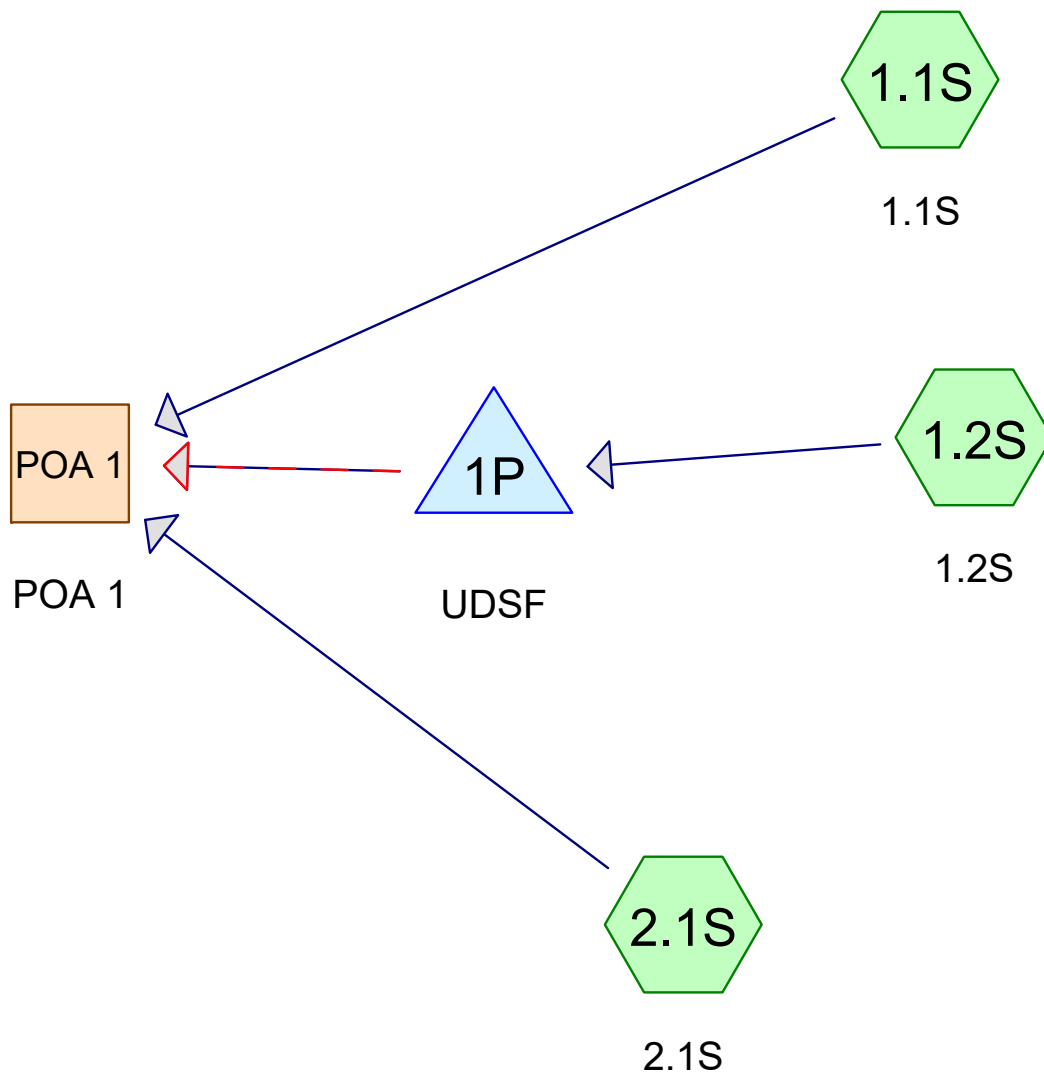
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.453 ac, 9.84% Impervious, Inflow Depth > 2.86" for 25-year event
Inflow = 7.47 cfs @ 12.16 hrs, Volume= 0.585 af
Outflow = 7.47 cfs @ 12.16 hrs, Volume= 0.585 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Reach POA1: POA 1





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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.046	74	(1.2S)
0.879	74	>75% Grass cover, Good, HSG C (1.1S, 1.2S, 2.1S)
0.211	98	Paved parking, HSG C (1.2S, 2.1S)
0.015	98	Roof (1.1S)
0.031	98	Roofs, HSG B (1.1S)
0.497	98	Roofs, HSG C (1.1S, 1.2S, 2.1S)
0.008	98	Unconnected pavement, HSG C (1.1S)
0.769	70	Woods, Good, HSG C (1.1S, 2.1S)
2.455	80	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.031	HSG B	1.1S
2.364	HSG C	1.1S, 1.2S, 2.1S
0.000	HSG D	
0.061	Other	1.1S, 1.2S
2.455		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.046	0.046		1.2S
0.000	0.000	0.879	0.000	0.000	0.879	>75% Grass cover, Good	1.1S, 1.2S, 2.1S
0.000	0.000	0.211	0.000	0.000	0.211	Paved parking	1.2S, 2.1S
0.000	0.000	0.000	0.000	0.015	0.015	Roof	1.1S
0.000	0.031	0.497	0.000	0.000	0.528	Roofs	1.1S, 1.2S, 2.1S
0.000	0.000	0.008	0.000	0.000	0.008	Unconnected pavement	1.1S
0.000	0.000	0.769	0.000	0.000	0.769	Woods, Good	1.1S, 2.1S
0.000	0.031	2.364	0.000	0.061	2.455	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	2.1S	0.00	0.00	32.0	0.0100	0.013	18.0	0.0	0.0
2	1P	120.75	120.53	44.0	0.0050	0.010	6.0	0.0	0.0

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Type III 24-hr 2-year Rainfall=3.10"

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Time span=0.00-20.00 hrs, dt=0.05 hrs, 401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1.1S: 1.1S

Runoff Area=61,710 sf 22.94% Impervious Runoff Depth>1.10"
Flow Length=350' Tc=10.9 min CN=78 Runoff=1.64 cfs 0.130 af

Subcatchment1.2S: 1.2S

Runoff Area=16,905 sf 61.48% Impervious Runoff Depth>1.87"
Tc=5.0 min CN=89 Runoff=0.91 cfs 0.060 af

Subcatchment2.1S: 2.1S

Runoff Area=28,317 sf 30.49% Impervious Runoff Depth>1.22"
Flow Length=494' Tc=6.4 min CN=80 Runoff=0.97 cfs 0.066 af

Reach POA 1: POA 1

Inflow=2.51 cfs 0.256 af
Outflow=2.51 cfs 0.256 af

Pond 1P: UDSF

Peak Elev=123.42' Storage=1,601 cf Inflow=0.91 cfs 0.060 af
Primary=0.05 cfs 0.060 af Secondary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.060 af

Total Runoff Area = 2.455 ac Runoff Volume = 0.257 af Average Runoff Depth = 1.25"
68.97% Pervious = 1.693 ac 31.03% Impervious = 0.762 ac

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Type III 24-hr 2-year Rainfall=3.10"

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Summary for Subcatchment 1.1S: 1.1S

Runoff = 1.64 cfs @ 12.16 hrs, Volume= 0.130 af, Depth> 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description			
* 642	98	Roof			
3,114	74	>75% Grass cover, Good, HSG C			
360	98	Unconnected pavement, HSG C			
734	98	Roofs, HSG C			
5,596	98	Roofs, HSG C			
272	98	Roofs, HSG C			
153	98	Roofs, HSG C			
834	98	Roofs, HSG C			
147	98	Roofs, HSG C			
1,567	74	>75% Grass cover, Good, HSG C			
6,347	74	>75% Grass cover, Good, HSG C			
131	98	Roofs, HSG C			
281	98	Roofs, HSG C			
471	98	Roofs, HSG C			
457	98	Roofs, HSG C			
25,203	70	Woods, Good, HSG C			
620	98	Roofs, HSG C			
11,323	74	>75% Grass cover, Good, HSG C			
830	98	Roofs, HSG C			
1,292	98	Roofs, HSG C			
1,336	98	Roofs, HSG B			
61,710	78	Weighted Average			
47,554		77.06% Pervious Area			
14,156		22.94% Impervious Area			
360		2.54% Unconnected			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	134	0.0485	0.25		Sheet Flow, Sheet Flow A-B Grass: Short n= 0.150 P2= 3.10"
1.9	88	0.0232	0.76		Shallow Concentrated Flow, Challow Concentrated B-C Woodland Kv= 5.0 fps
0.2	128	0.0180	8.60	309.66	Channel Flow, Channel Flow C-D Area= 36.0 sf Perim= 19.4' r= 1.86' n= 0.035 Earth, dense weeds
10.9	350	Total			

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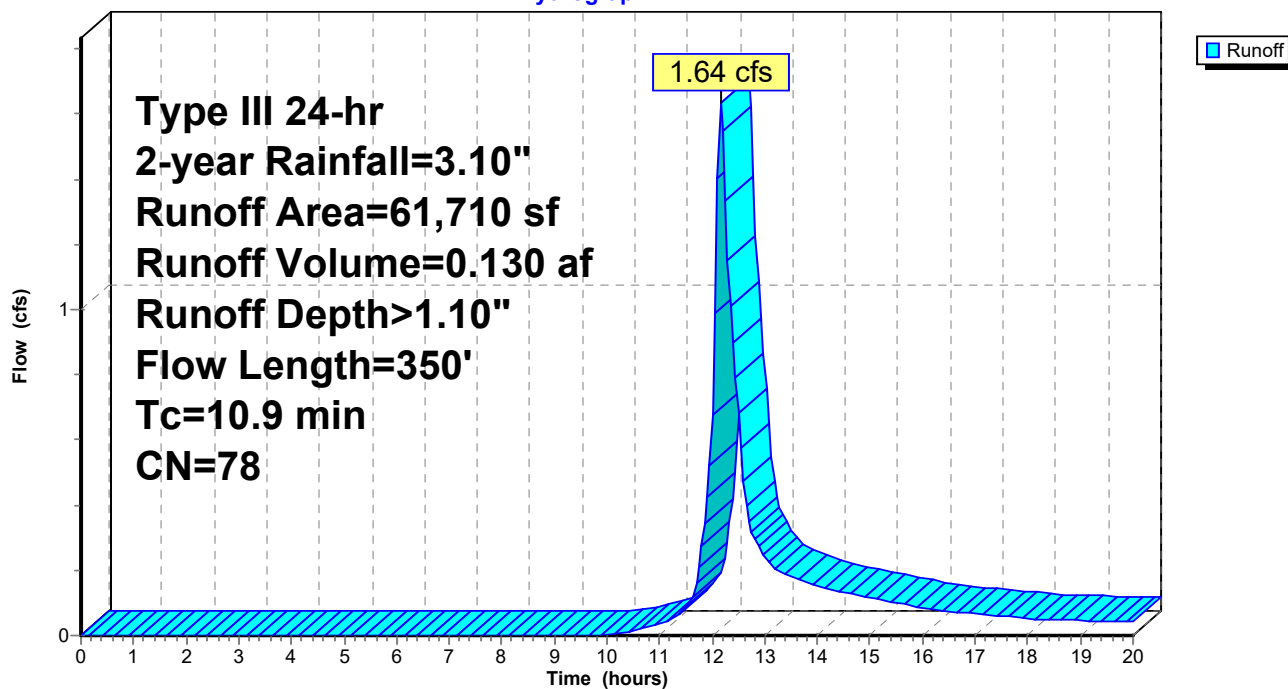
Type III 24-hr 2-year Rainfall=3.10"

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Subcatchment 1.1S: 1.1S

Hydrograph



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Type III 24-hr 2-year Rainfall=3.10"

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Summary for Subcatchment 1.2S: 1.2S

Runoff = 0.91 cfs @ 12.07 hrs, Volume= 0.060 af, Depth> 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
2,487	74	>75% Grass cover, Good, HSG C
57	74	>75% Grass cover, Good, HSG C
96	74	>75% Grass cover, Good, HSG C
57	74	>75% Grass cover, Good, HSG C
1,078	74	>75% Grass cover, Good, HSG C
57	74	>75% Grass cover, Good, HSG C
96	74	>75% Grass cover, Good, HSG C
57	74	>75% Grass cover, Good, HSG C
398	74	>75% Grass cover, Good, HSG C
36	74	>75% Grass cover, Good, HSG C
96	74	>75% Grass cover, Good, HSG C
6,014	98	Paved parking, HSG C
1,947	98	Roofs, HSG C
1,483	98	Roofs, HSG C
950	98	Roofs, HSG C
* 37	74	
* 1,557	74	
* 391	74	
* 11	74	
16,905	89	Weighted Average
6,511		38.52% Pervious Area
10,394		61.48% Impervious Area

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

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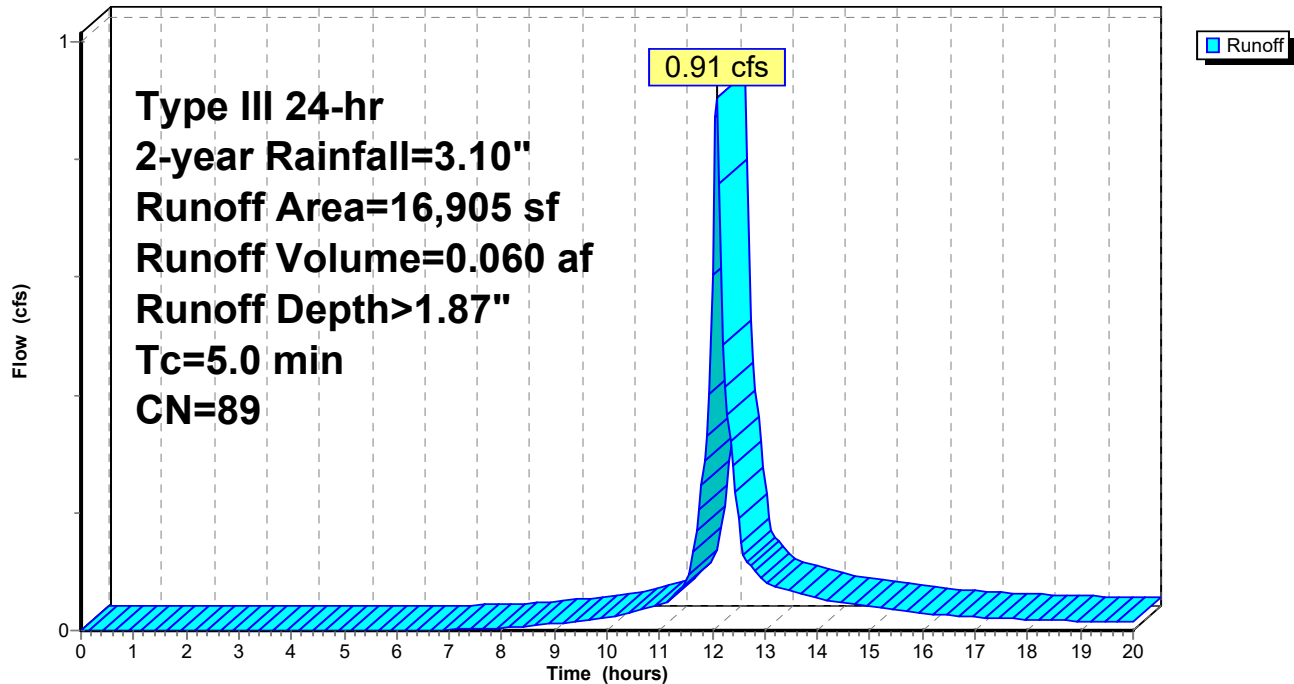
Type III 24-hr 2-year Rainfall=3.10"

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Subcatchment 1.2S: 1.2S

Hydrograph



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Type III 24-hr 2-year Rainfall=3.10"

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Summary for Subcatchment 2.1S: 2.1S

Runoff = 0.97 cfs @ 12.10 hrs, Volume= 0.066 af, Depth> 1.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
489	98	Roofs, HSG C
1,611	98	Roofs, HSG C
11,406	74	>75% Grass cover, Good, HSG C
3,188	98	Paved parking, HSG C
3,186	98	Roofs, HSG C
159	98	Roofs, HSG C
8,278	70	Woods, Good, HSG C
28,317	80	Weighted Average
19,684		69.51% Pervious Area
8,633		30.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	71	0.0421	0.21		Sheet Flow, Sheet Flow A-B Grass: Short n= 0.150 P2= 3.10"
0.2	31	0.2090	3.20		Shallow Concentrated Flow, Shallow Concentrated B-C Short Grass Pasture Kv= 7.0 fps
0.4	301	0.0200	11.93	167.01	Channel Flow, Channel Flow C-D Area= 14.0 sf Perim= 6.3' r= 2.22' n= 0.030 Short grass
0.1	32	0.0100	5.94	10.50	Pipe Channel, Pipe Channel E-D 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	59	0.0200	13.13	315.02	Channel Flow, Channel Flow E-F Area= 24.0 sf Perim= 14.9' r= 1.61' n= 0.022
6.4	494	Total			

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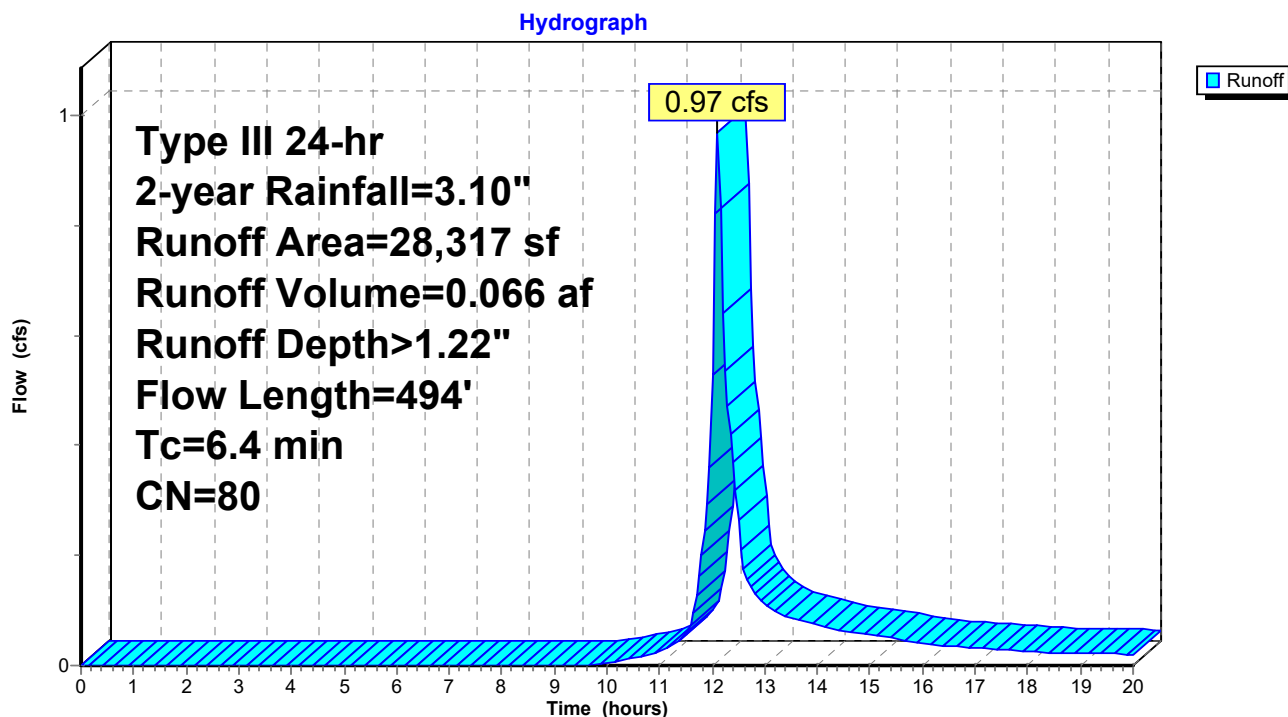
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Subcatchment 2.1S: 2.1S



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Summary for Reach POA 1: POA 1

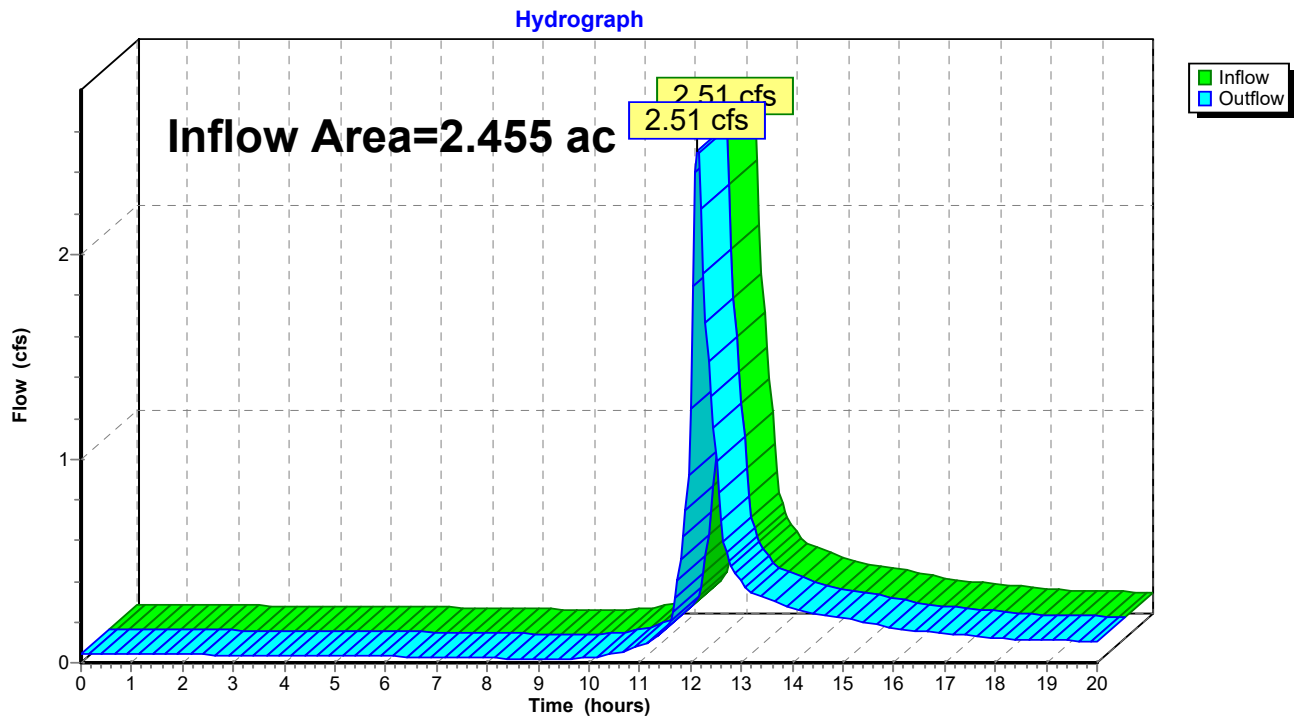
Inflow Area = 2.455 ac, 31.03% Impervious, Inflow Depth > 1.25" for 2-year event

Inflow = 2.51 cfs @ 12.14 hrs, Volume= 0.256 af

Outflow = 2.51 cfs @ 12.14 hrs, Volume= 0.256 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Reach POA 1: POA 1



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Type III 24-hr 2-year Rainfall=3.10"

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Summary for Pond 1P: UDSF

Inflow Area = 0.388 ac, 61.48% Impervious, Inflow Depth > 1.87" for 2-year event
 Inflow = 0.91 cfs @ 12.07 hrs, Volume= 0.060 af
 Outflow = 0.05 cfs @ 14.61 hrs, Volume= 0.060 af, Atten= 95%, Lag= 151.9 min
 Primary = 0.05 cfs @ 14.61 hrs, Volume= 0.060 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
 Starting Elev= 123.00' Surf.Area= 786 sf Storage= 1,180 cf
 Peak Elev= 123.42' @ 14.61 hrs Surf.Area= 1,228 sf Storage= 1,601 cf (421 cf above start)

Plug-Flow detention time= 232.6 min calculated for 0.033 af (54% of inflow)
 Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	120.33'	4,625 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.33	786	0.0	0	0
121.00	786	30.0	158	158
122.00	786	30.0	236	394
123.00	786	100.0	786	1,180
124.00	1,841	100.0	1,314	2,493
124.50	2,127	100.0	992	3,485
125.00	2,430	100.0	1,139	4,625

Device	Routing	Invert	Outlet Devices
#1	Device 3	120.75'	6.0" Round 6" UD Outlet L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 120.75' / 120.53' S= 0.0050 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Secondary	124.75'	10.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#3	Primary	120.33'	1.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.05 cfs @ 14.61 hrs HW=123.42' (Free Discharge)

↑ **3=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.40 fps)

↑ **1=6" UD Outlet** (Passes 0.05 cfs of 1.29 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=123.00' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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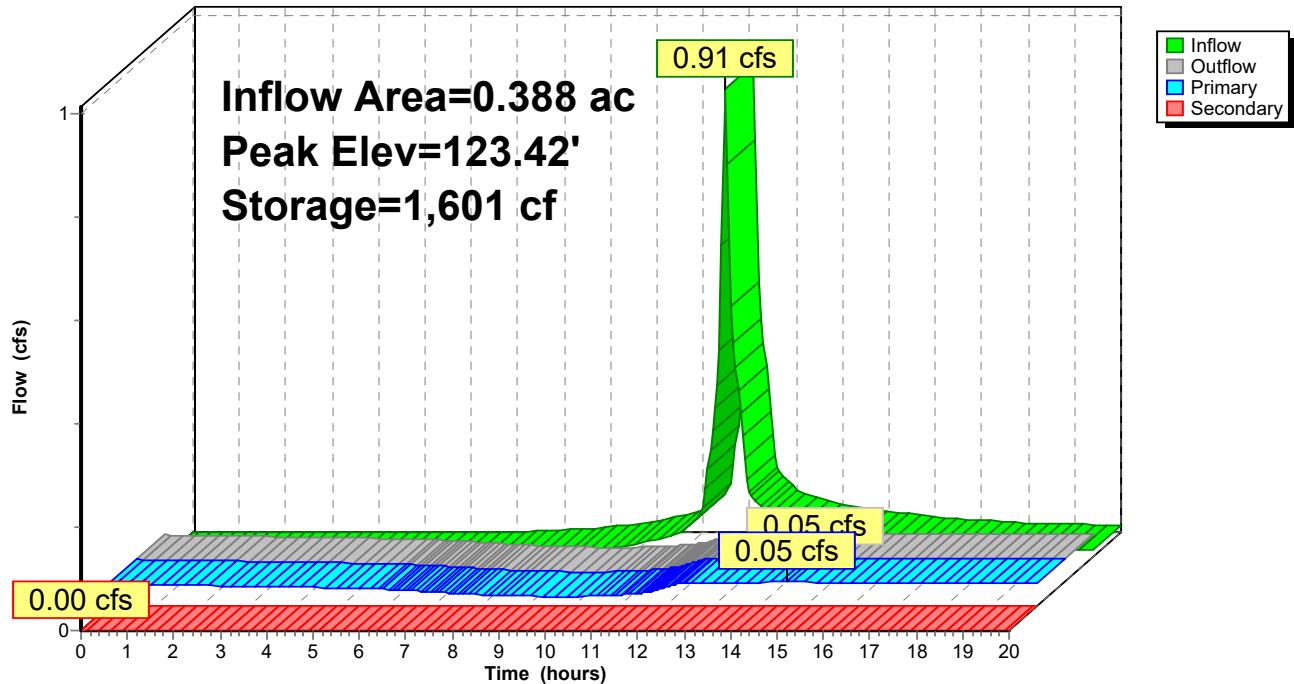
Type III 24-hr 2-year Rainfall=3.10"

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Pond 1P: UDSF

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Type III 24-hr 10-year Rainfall=4.60"

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Time span=0.00-20.00 hrs, dt=0.05 hrs, 401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1.1S: 1.1S

Runoff Area=61,710 sf 22.94% Impervious Runoff Depth>2.21"
Flow Length=350' Tc=10.9 min CN=78 Runoff=3.32 cfs 0.260 af

Subcatchment 1.2S: 1.2S

Runoff Area=16,905 sf 61.48% Impervious Runoff Depth>3.20"
Tc=5.0 min CN=89 Runoff=1.51 cfs 0.103 af

Subcatchment 2.1S: 2.1S

Runoff Area=28,317 sf 30.49% Impervious Runoff Depth>2.37"
Flow Length=494' Tc=6.4 min CN=80 Runoff=1.88 cfs 0.129 af

Reach POA 1: POA 1

Inflow=5.00 cfs 0.456 af
Outflow=5.00 cfs 0.456 af

Pond 1P: UDSF

Peak Elev=124.30' Storage=3,074 cf Inflow=1.51 cfs 0.103 af
Primary=0.05 cfs 0.067 af Secondary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.067 af

Total Runoff Area = 2.455 ac Runoff Volume = 0.492 af Average Runoff Depth = 2.41"
68.97% Pervious = 1.693 ac 31.03% Impervious = 0.762 ac

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Type III 24-hr 10-year Rainfall=4.60"

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Summary for Subcatchment 1.1S: 1.1S

Runoff = 3.32 cfs @ 12.16 hrs, Volume= 0.260 af, Depth> 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description			
* 642	98	Roof			
3,114	74	>75% Grass cover, Good, HSG C			
360	98	Unconnected pavement, HSG C			
734	98	Roofs, HSG C			
5,596	98	Roofs, HSG C			
272	98	Roofs, HSG C			
153	98	Roofs, HSG C			
834	98	Roofs, HSG C			
147	98	Roofs, HSG C			
1,567	74	>75% Grass cover, Good, HSG C			
6,347	74	>75% Grass cover, Good, HSG C			
131	98	Roofs, HSG C			
281	98	Roofs, HSG C			
471	98	Roofs, HSG C			
457	98	Roofs, HSG C			
25,203	70	Woods, Good, HSG C			
620	98	Roofs, HSG C			
11,323	74	>75% Grass cover, Good, HSG C			
830	98	Roofs, HSG C			
1,292	98	Roofs, HSG C			
1,336	98	Roofs, HSG B			
61,710	78	Weighted Average			
47,554		77.06% Pervious Area			
14,156		22.94% Impervious Area			
360		2.54% Unconnected			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	134	0.0485	0.25		Sheet Flow, Sheet Flow A-B Grass: Short n= 0.150 P2= 3.10"
1.9	88	0.0232	0.76		Shallow Concentrated Flow, Challow Concentrated B-C Woodland Kv= 5.0 fps
0.2	128	0.0180	8.60	309.66	Channel Flow, Channel Flow C-D Area= 36.0 sf Perim= 19.4' r= 1.86' n= 0.035 Earth, dense weeds
10.9	350	Total			

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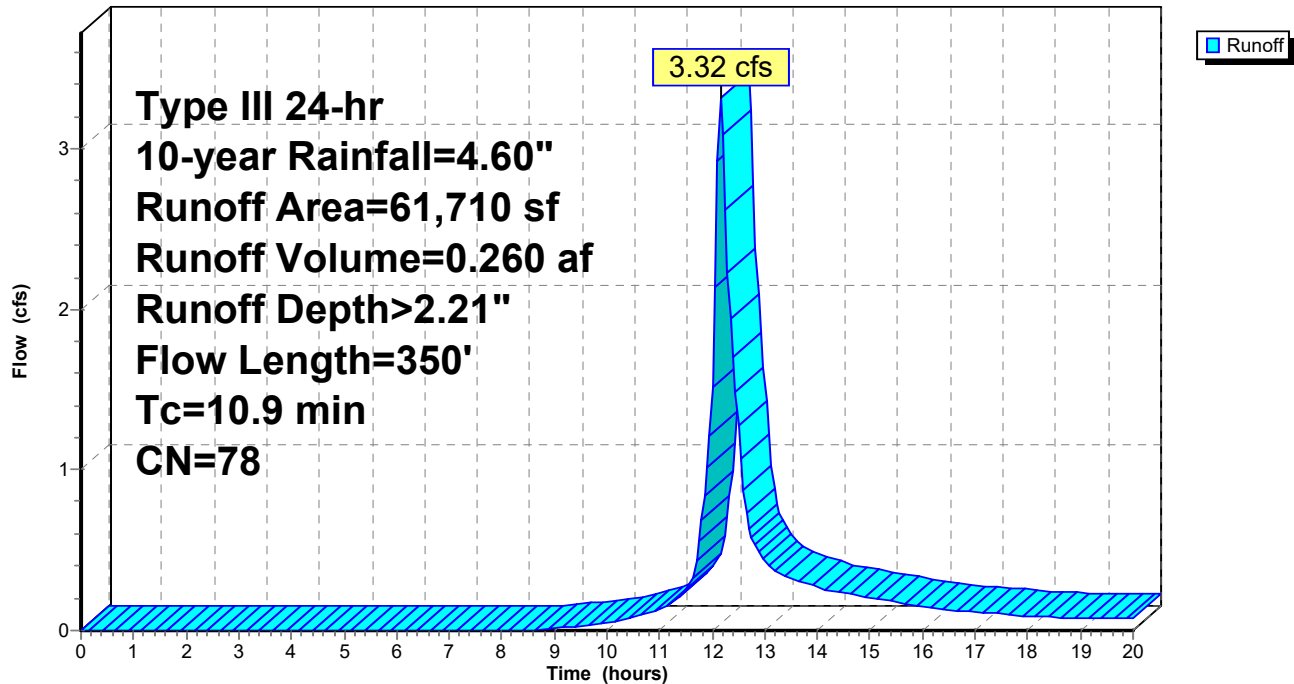
Type III 24-hr 10-year Rainfall=4.60"

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Subcatchment 1.1S: 1.1S

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Type III 24-hr 10-year Rainfall=4.60"

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Summary for Subcatchment 1.2S: 1.2S

Runoff = 1.51 cfs @ 12.07 hrs, Volume= 0.103 af, Depth> 3.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
2,487	74	>75% Grass cover, Good, HSG C
57	74	>75% Grass cover, Good, HSG C
96	74	>75% Grass cover, Good, HSG C
57	74	>75% Grass cover, Good, HSG C
1,078	74	>75% Grass cover, Good, HSG C
57	74	>75% Grass cover, Good, HSG C
96	74	>75% Grass cover, Good, HSG C
57	74	>75% Grass cover, Good, HSG C
398	74	>75% Grass cover, Good, HSG C
36	74	>75% Grass cover, Good, HSG C
96	74	>75% Grass cover, Good, HSG C
6,014	98	Paved parking, HSG C
1,947	98	Roofs, HSG C
1,483	98	Roofs, HSG C
950	98	Roofs, HSG C
* 37	74	
* 1,557	74	
* 391	74	
* 11	74	
16,905	89	Weighted Average
6,511		38.52% Pervious Area
10,394		61.48% Impervious Area

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

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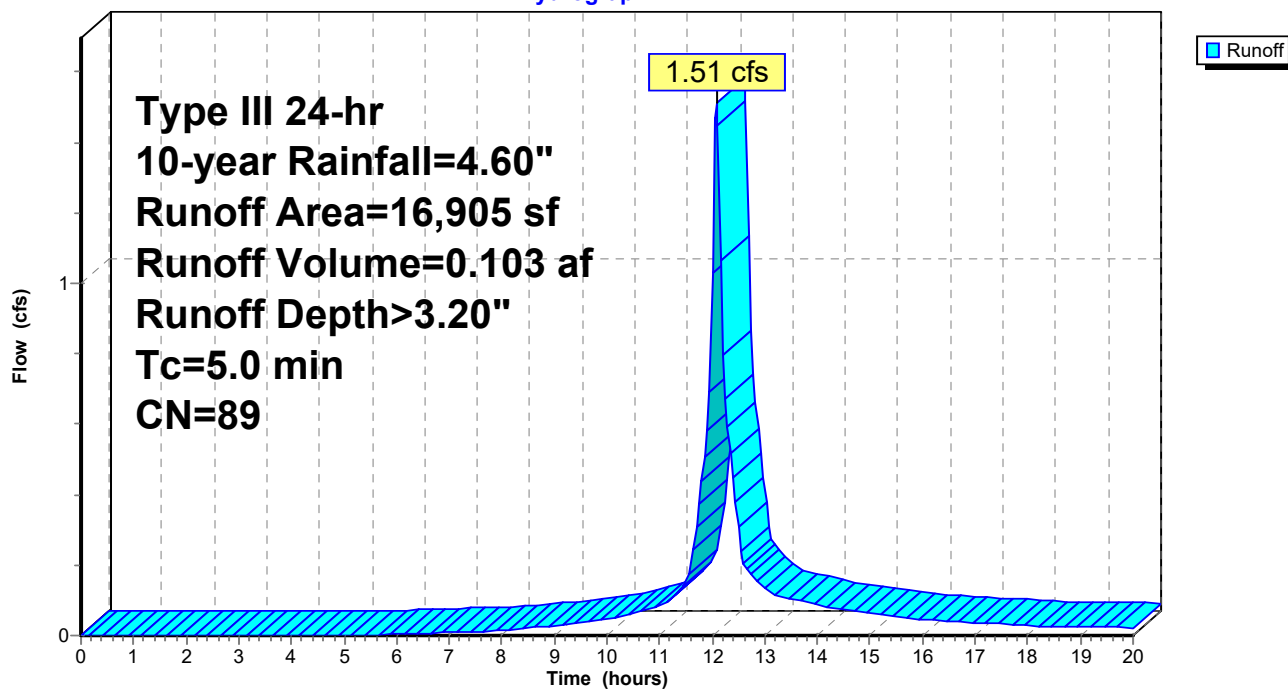
Type III 24-hr 10-year Rainfall=4.60"

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Subcatchment 1.2S: 1.2S

Hydrograph



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Type III 24-hr 10-year Rainfall=4.60"

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Summary for Subcatchment 2.1S: 2.1S

Runoff = 1.88 cfs @ 12.10 hrs, Volume= 0.129 af, Depth> 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
489	98	Roofs, HSG C
1,611	98	Roofs, HSG C
11,406	74	>75% Grass cover, Good, HSG C
3,188	98	Paved parking, HSG C
3,186	98	Roofs, HSG C
159	98	Roofs, HSG C
8,278	70	Woods, Good, HSG C
28,317	80	Weighted Average
19,684		69.51% Pervious Area
8,633		30.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	71	0.0421	0.21		Sheet Flow, Sheet Flow A-B Grass: Short n= 0.150 P2= 3.10"
0.2	31	0.2090	3.20		Shallow Concentrated Flow, Shallow Concentrated B-C Short Grass Pasture Kv= 7.0 fps
0.4	301	0.0200	11.93	167.01	Channel Flow, Channel Flow C-D Area= 14.0 sf Perim= 6.3' r= 2.22' n= 0.030 Short grass
0.1	32	0.0100	5.94	10.50	Pipe Channel, Pipe Channel E-D 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	59	0.0200	13.13	315.02	Channel Flow, Channel Flow E-F Area= 24.0 sf Perim= 14.9' r= 1.61' n= 0.022
6.4	494	Total			

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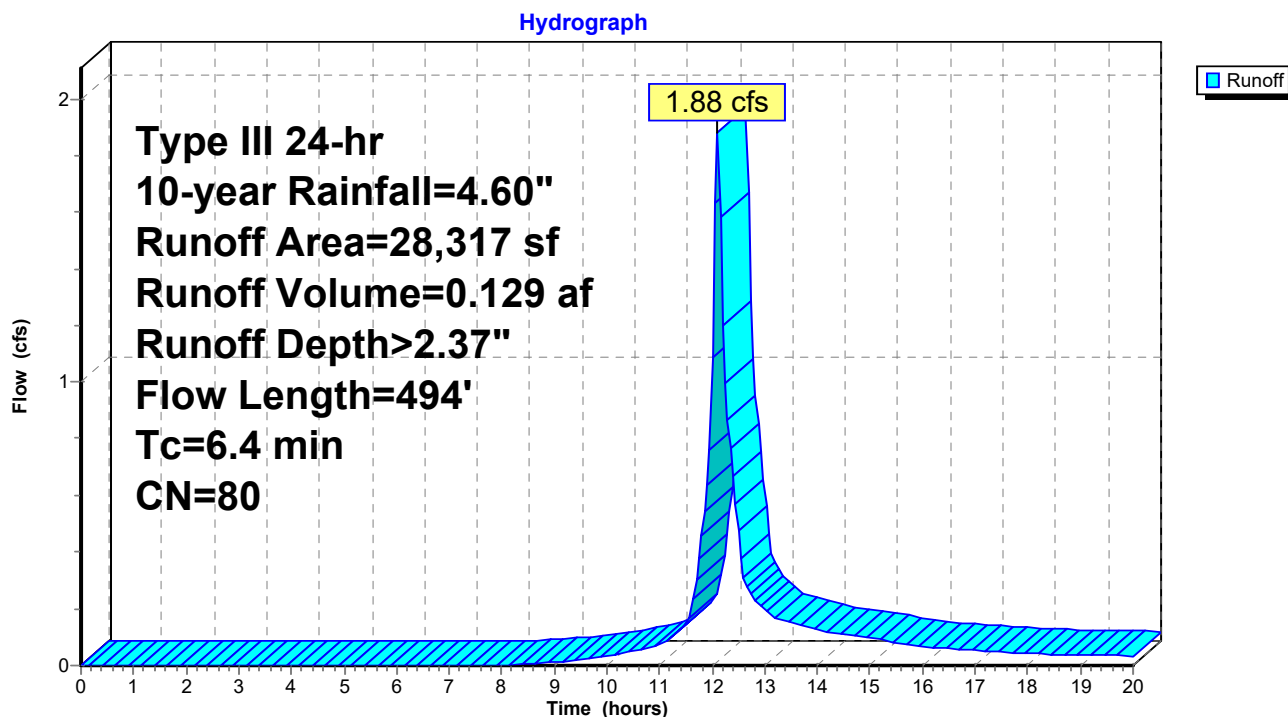
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Subcatchment 2.1S: 2.1S



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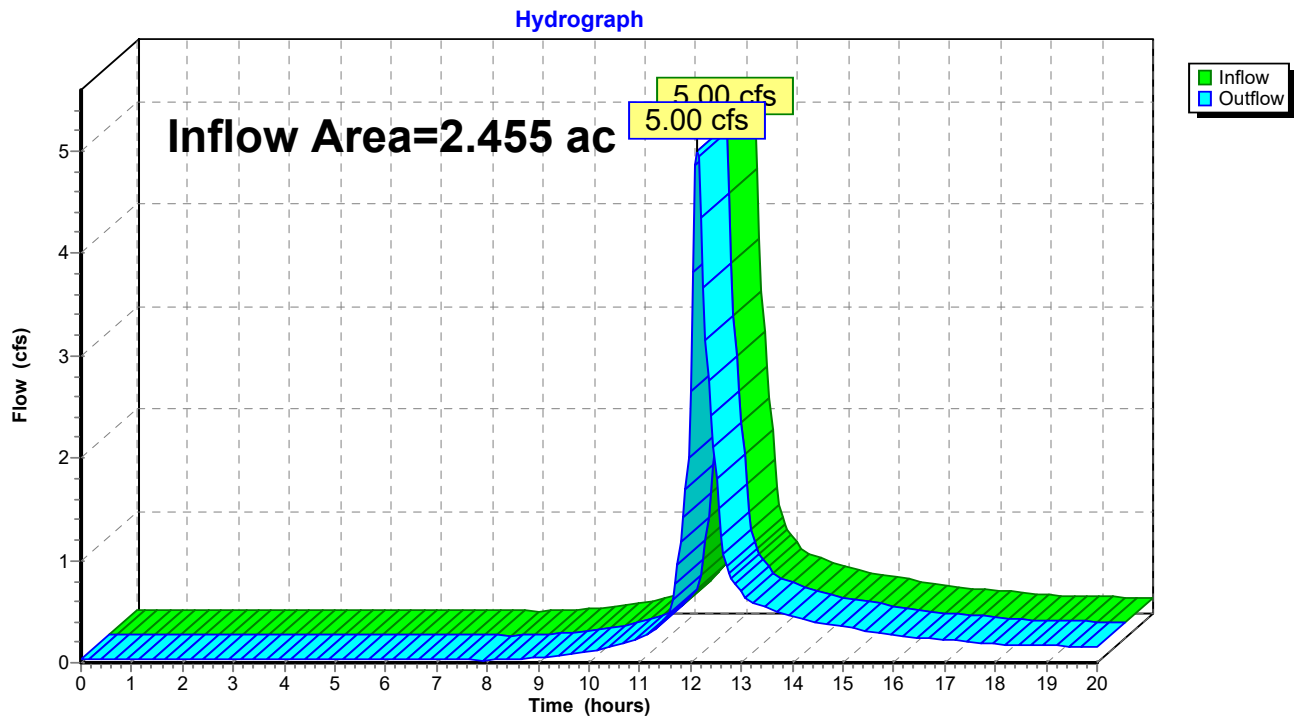
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Summary for Reach POA 1: POA 1

Inflow Area = 2.455 ac, 31.03% Impervious, Inflow Depth > 2.23" for 10-year event
Inflow = 5.00 cfs @ 12.13 hrs, Volume= 0.456 af
Outflow = 5.00 cfs @ 12.13 hrs, Volume= 0.456 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Reach POA 1: POA 1



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Summary for Pond 1P: UDSF

Inflow Area = 0.388 ac, 61.48% Impervious, Inflow Depth > 3.20" for 10-year event
 Inflow = 1.51 cfs @ 12.07 hrs, Volume= 0.103 af
 Outflow = 0.05 cfs @ 15.66 hrs, Volume= 0.067 af, Atten= 97%, Lag= 215.2 min
 Primary = 0.05 cfs @ 15.66 hrs, Volume= 0.067 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Starting Elev= 123.00' Surf.Area= 786 sf Storage= 1,180 cf

Peak Elev= 124.30' @ 15.66 hrs Surf.Area= 2,013 sf Storage= 3,074 cf (1,894 cf above start)

Plug-Flow detention time= 248.5 min calculated for 0.040 af (39% of inflow)

Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	120.33'	4,625 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.33	786	0.0	0	0
121.00	786	30.0	158	158
122.00	786	30.0	236	394
123.00	786	100.0	786	1,180
124.00	1,841	100.0	1,314	2,493
124.50	2,127	100.0	992	3,485
125.00	2,430	100.0	1,139	4,625

Device	Routing	Invert	Outlet Devices
#1	Device 3	120.75'	6.0" Round 6" UD Outlet L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 120.75' / 120.53' S= 0.0050 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Secondary	124.75'	10.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#3	Primary	120.33'	1.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.05 cfs @ 15.66 hrs HW=124.30' (Free Discharge)↑ **3=Orifice/Grate** (Orifice Controls 0.05 cfs @ 9.54 fps)↑ **1=6" UD Outlet** (Passes 0.05 cfs of 1.51 cfs potential flow)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=123.00' (Free Discharge)↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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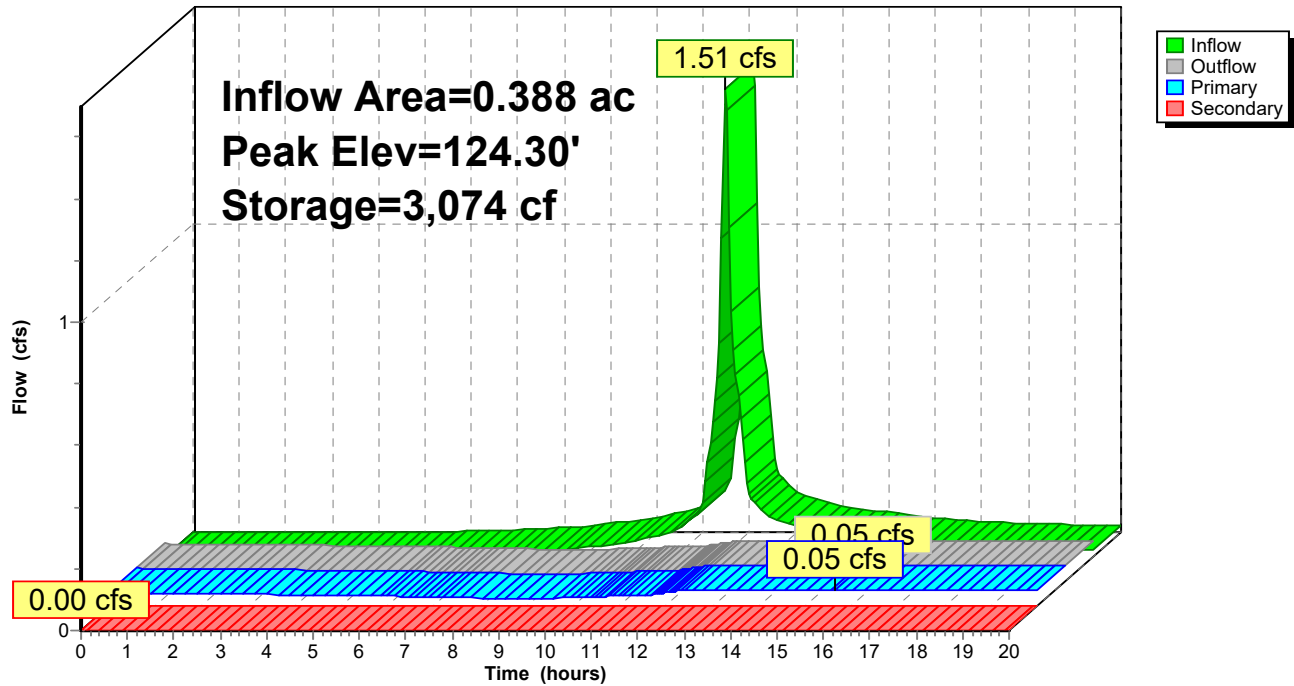
Type III 24-hr 10-year Rainfall=4.60"

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Pond 1P: UDSF

Hydrograph



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Type III 24-hr 25-year Rainfall=5.80"

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Time span=0.00-20.00 hrs, dt=0.05 hrs, 401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1.1S: 1.1S

Runoff Area=61,710 sf 22.94% Impervious Runoff Depth>3.18"
Flow Length=350' Tc=10.9 min CN=78 Runoff=4.76 cfs 0.375 af

Subcatchment1.2S: 1.2S

Runoff Area=16,905 sf 61.48% Impervious Runoff Depth>4.30"
Tc=5.0 min CN=89 Runoff=2.00 cfs 0.139 af

Subcatchment2.1S: 2.1S

Runoff Area=28,317 sf 30.49% Impervious Runoff Depth>3.37"
Flow Length=494' Tc=6.4 min CN=80 Runoff=2.65 cfs 0.183 af

Reach POA 1: POA 1

Inflow=7.11 cfs 0.636 af
Outflow=7.11 cfs 0.636 af

Pond 1P: UDSF

Peak Elev=124.77' Storage=4,077 cf Inflow=2.00 cfs 0.139 af
Primary=0.06 cfs 0.071 af Secondary=0.06 cfs 0.008 af Outflow=0.12 cfs 0.079 af

Total Runoff Area = 2.455 ac Runoff Volume = 0.697 af Average Runoff Depth = 3.41"
68.97% Pervious = 1.693 ac 31.03% Impervious = 0.762 ac

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 1.1S: 1.1S

Runoff = 4.76 cfs @ 12.15 hrs, Volume= 0.375 af, Depth> 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description			
*	642	98 Roof			
3,114	74	>75% Grass cover, Good, HSG C			
360	98	Unconnected pavement, HSG C			
734	98	Roofs, HSG C			
5,596	98	Roofs, HSG C			
272	98	Roofs, HSG C			
153	98	Roofs, HSG C			
834	98	Roofs, HSG C			
147	98	Roofs, HSG C			
1,567	74	>75% Grass cover, Good, HSG C			
6,347	74	>75% Grass cover, Good, HSG C			
131	98	Roofs, HSG C			
281	98	Roofs, HSG C			
471	98	Roofs, HSG C			
457	98	Roofs, HSG C			
25,203	70	Woods, Good, HSG C			
620	98	Roofs, HSG C			
11,323	74	>75% Grass cover, Good, HSG C			
830	98	Roofs, HSG C			
1,292	98	Roofs, HSG C			
1,336	98	Roofs, HSG B			
61,710	78	Weighted Average			
47,554		77.06% Pervious Area			
14,156		22.94% Impervious Area			
360		2.54% Unconnected			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	134	0.0485	0.25		Sheet Flow, Sheet Flow A-B Grass: Short n= 0.150 P2= 3.10"
1.9	88	0.0232	0.76		Shallow Concentrated Flow, Challow Concentrated B-C Woodland Kv= 5.0 fps
0.2	128	0.0180	8.60	309.66	Channel Flow, Channel Flow C-D Area= 36.0 sf Perim= 19.4' r= 1.86' n= 0.035 Earth, dense weeds
10.9	350	Total			

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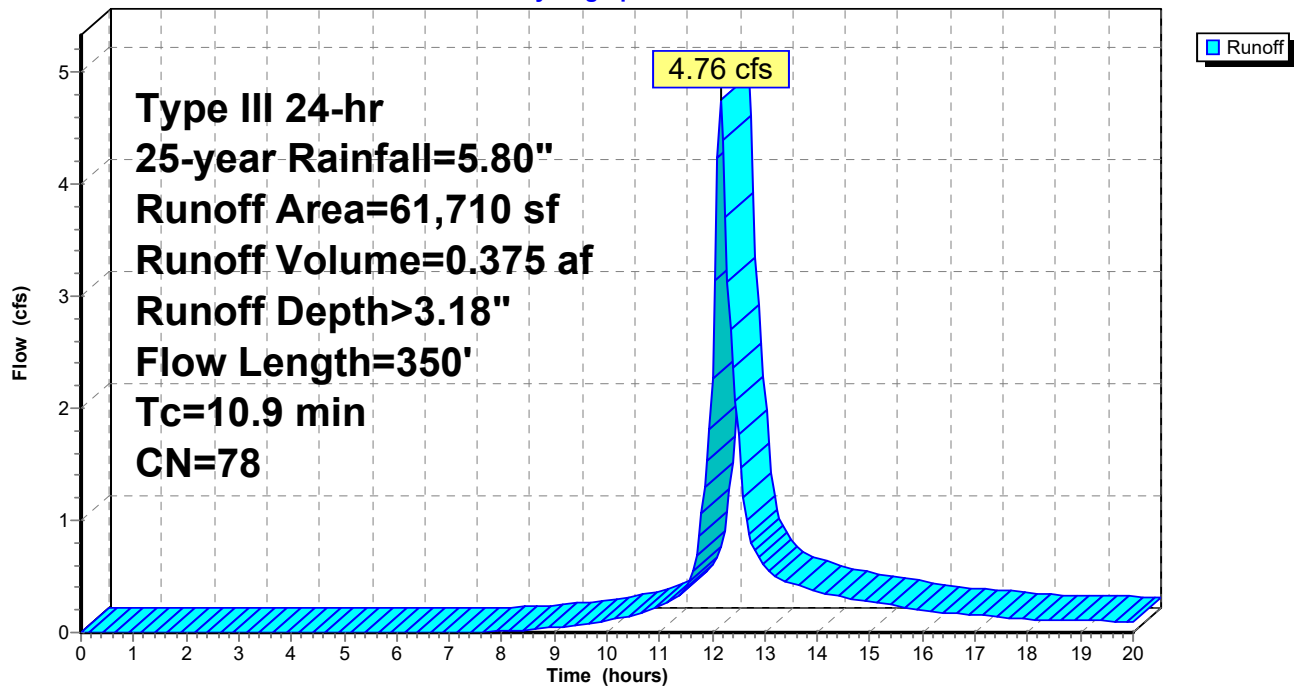
Type III 24-hr 25-year Rainfall=5.80"

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Subcatchment 1.1S: 1.1S

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 1.2S: 1.2S

Runoff = 2.00 cfs @ 12.07 hrs, Volume= 0.139 af, Depth> 4.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
2,487	74	>75% Grass cover, Good, HSG C
57	74	>75% Grass cover, Good, HSG C
96	74	>75% Grass cover, Good, HSG C
57	74	>75% Grass cover, Good, HSG C
1,078	74	>75% Grass cover, Good, HSG C
57	74	>75% Grass cover, Good, HSG C
96	74	>75% Grass cover, Good, HSG C
57	74	>75% Grass cover, Good, HSG C
398	74	>75% Grass cover, Good, HSG C
36	74	>75% Grass cover, Good, HSG C
96	74	>75% Grass cover, Good, HSG C
6,014	98	Paved parking, HSG C
1,947	98	Roofs, HSG C
1,483	98	Roofs, HSG C
950	98	Roofs, HSG C
* 37	74	
* 1,557	74	
* 391	74	
* 11	74	
16,905	89	Weighted Average
6,511		38.52% Pervious Area
10,394		61.48% Impervious Area

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

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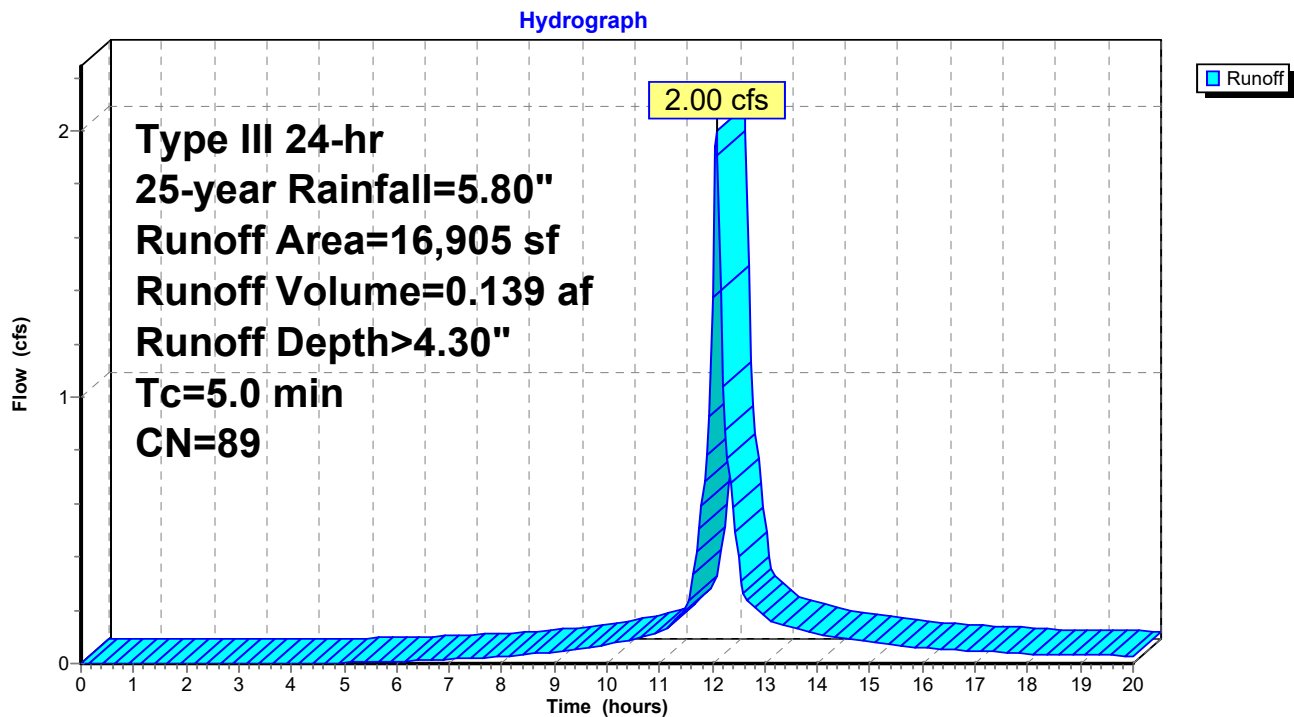
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Type III 24-hr 25-year Rainfall=5.80"

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Subcatchment 1.2S: 1.2S



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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 2.1S: 2.1S

Runoff = 2.65 cfs @ 12.10 hrs, Volume= 0.183 af, Depth> 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
489	98	Roofs, HSG C
1,611	98	Roofs, HSG C
11,406	74	>75% Grass cover, Good, HSG C
3,188	98	Paved parking, HSG C
3,186	98	Roofs, HSG C
159	98	Roofs, HSG C
8,278	70	Woods, Good, HSG C
28,317	80	Weighted Average
19,684		69.51% Pervious Area
8,633		30.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	71	0.0421	0.21		Sheet Flow, Sheet Flow A-B Grass: Short n= 0.150 P2= 3.10"
0.2	31	0.2090	3.20		Shallow Concentrated Flow, Shallow Concentrated B-C Short Grass Pasture Kv= 7.0 fps
0.4	301	0.0200	11.93	167.01	Channel Flow, Channel Flow C-D Area= 14.0 sf Perim= 6.3' r= 2.22' n= 0.030 Short grass
0.1	32	0.0100	5.94	10.50	Pipe Channel, Pipe Channel E-D 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	59	0.0200	13.13	315.02	Channel Flow, Channel Flow E-F Area= 24.0 sf Perim= 14.9' r= 1.61' n= 0.022
6.4	494	Total			

77 Lambert St - Proposed

Prepared by {enter your company name here}

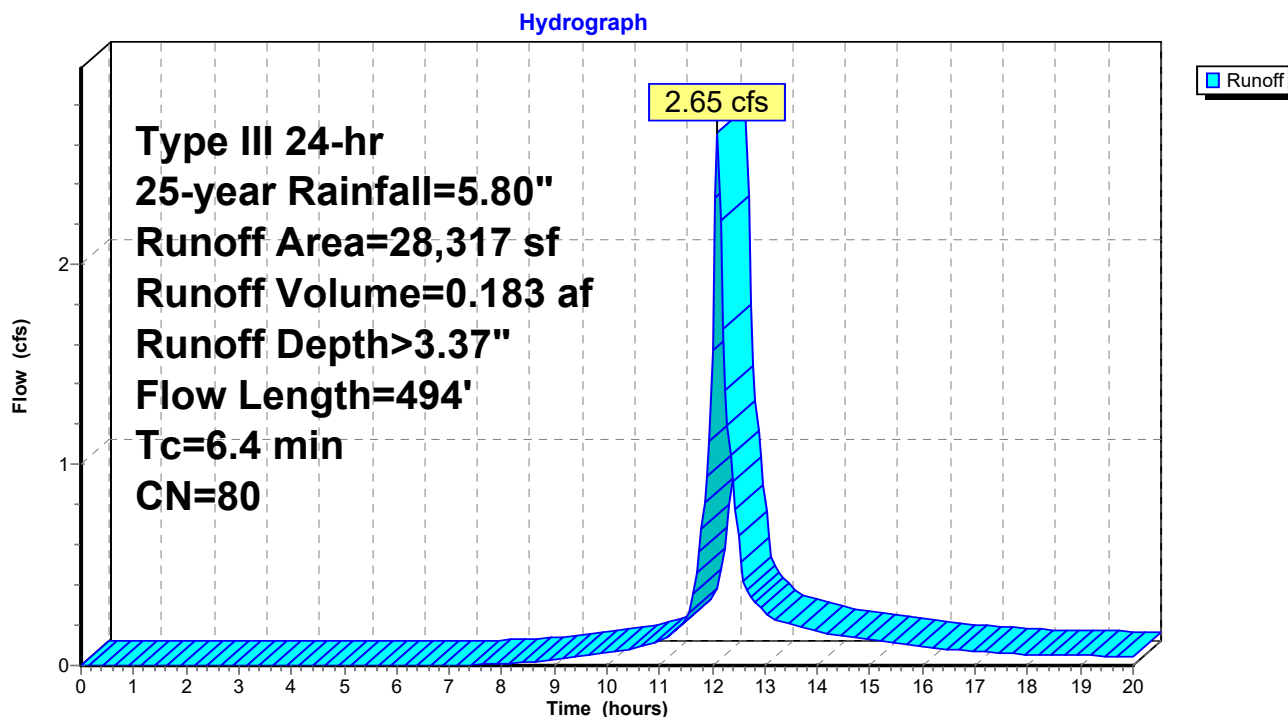
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Type III 24-hr 25-year Rainfall=5.80"

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Subcatchment 2.1S: 2.1S



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Type III 24-hr 25-year Rainfall=5.80"

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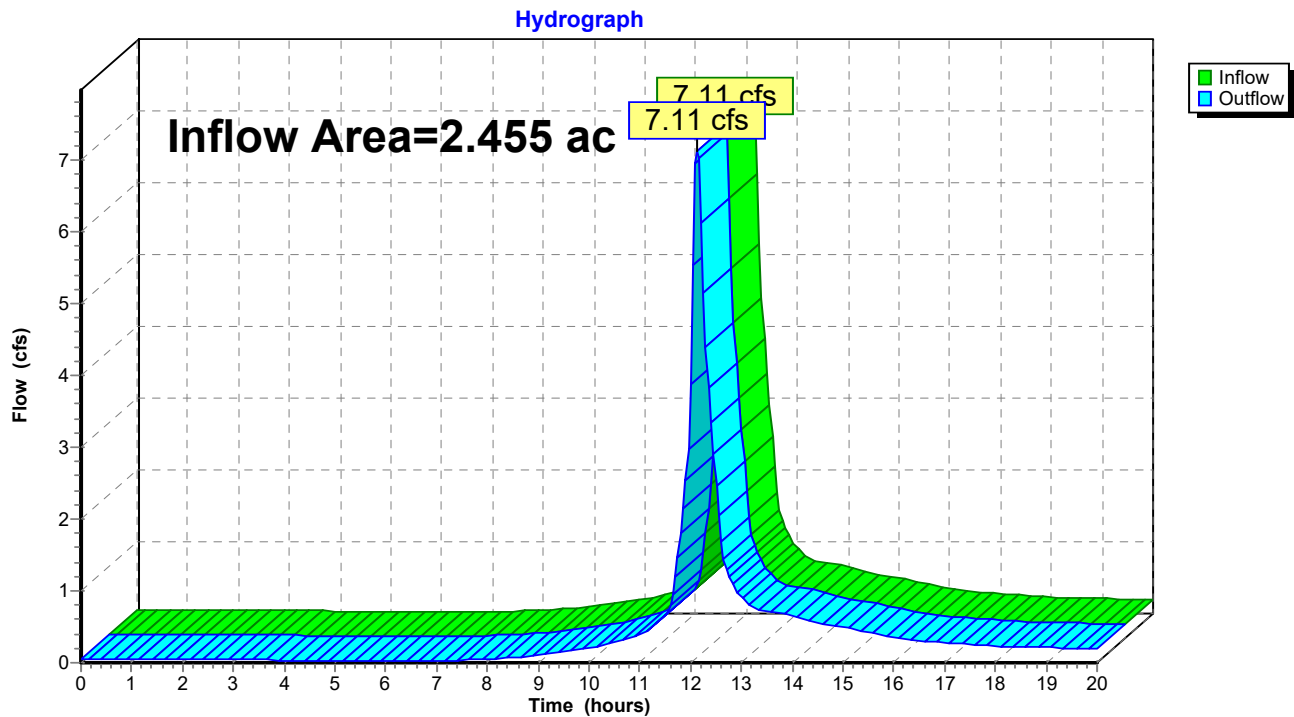
Page 33

Summary for Reach POA 1: POA 1

Inflow Area = 2.455 ac, 31.03% Impervious, Inflow Depth > 3.11" for 25-year event
Inflow = 7.11 cfs @ 12.13 hrs, Volume= 0.636 af
Outflow = 7.11 cfs @ 12.13 hrs, Volume= 0.636 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Reach POA 1: POA 1



77 Lambert St - Proposed

Type III 24-hr 25-year Rainfall=5.80"

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Summary for Pond 1P: UDSF

Inflow Area = 0.388 ac, 61.48% Impervious, Inflow Depth > 4.30" for 25-year event
 Inflow = 2.00 cfs @ 12.07 hrs, Volume= 0.139 af
 Outflow = 0.12 cfs @ 13.88 hrs, Volume= 0.079 af, Atten= 94%, Lag= 108.5 min
 Primary = 0.06 cfs @ 13.88 hrs, Volume= 0.071 af
 Secondary = 0.06 cfs @ 13.88 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.05 hrs

Starting Elev= 123.00' Surf.Area= 786 sf Storage= 1,180 cf

Peak Elev= 124.77' @ 13.88 hrs Surf.Area= 2,289 sf Storage= 4,077 cf (2,897 cf above start)

Plug-Flow detention time= 247.8 min calculated for 0.052 af (37% of inflow)

Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	120.33'	4,625 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.33	786	0.0	0	0
121.00	786	30.0	158	158
122.00	786	30.0	236	394
123.00	786	100.0	786	1,180
124.00	1,841	100.0	1,314	2,493
124.50	2,127	100.0	992	3,485
125.00	2,430	100.0	1,139	4,625

Device	Routing	Invert	Outlet Devices
#1	Device 3	120.75'	6.0" Round 6" UD Outlet L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 120.75' / 120.53' S= 0.0050 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Secondary	124.75'	10.0' long x 4.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#3	Primary	120.33'	1.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.06 cfs @ 13.88 hrs HW=124.77' (Free Discharge)

3=Orifice/Grate (Orifice Controls 0.06 cfs @ 10.10 fps)

1=6" UD Outlet (Passes 0.06 cfs of 1.61 cfs potential flow)

Secondary OutFlow Max=0.06 cfs @ 13.88 hrs HW=124.77' (Free Discharge)

2=Broad-Crested Rectangular Weir (Weir Controls 0.06 cfs @ 0.32 fps)

77 Lambert St - Proposed

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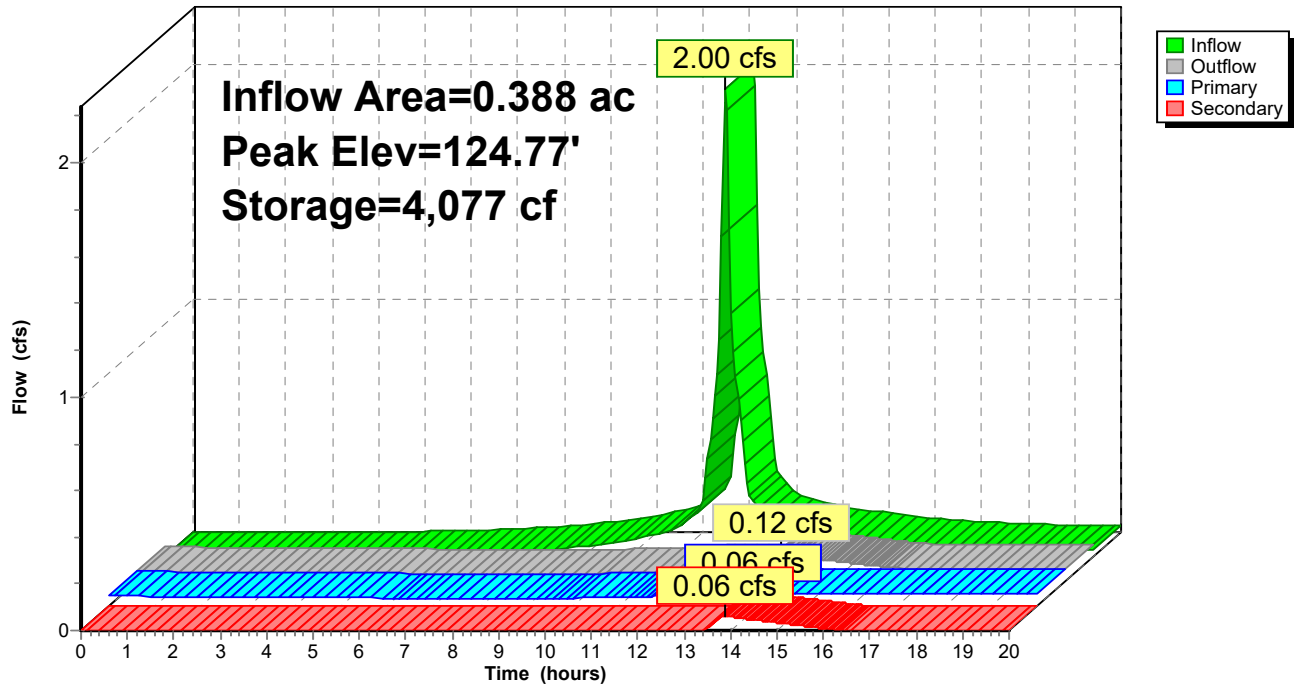
Type III 24-hr 25-year Rainfall=5.80"

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Pond 1P: UDSF

Hydrograph



Project Name: 77 Lambert Condo Development
Form Title: Inspection/ Maintenance Log
Area inspected: Paved Surfaces, Ditches & Swales, Culverts & Storm Drainage Pipes, Underdrained Soil Filters

Summary					
Date	Initials/ Organization		Inspection Observation	Maintenance Activity Performed	Comments
			Gravel & Paved Areas		
			Ditches & Swales		
			Culverts & Storm Drainage Pipes		
			Underdrained Soil Filter		
			Check Dams		

**STORMWATER MANAGEMENT REPORT
77 LAMBERT CONDO DEVELOPMENT
77 LAMBERT STREET
PORTLAND, ME
OCTOBER 15, 2019, REVISED APRIL 22, 2020**

INTRODUCTION

The subject property (the Site) is located at 77 Lambert Street in Portland. The Site is a 38,332 SF parcel that is currently vacant, with a mix of tree cover and open grassy area. The proposed development consists of three (3) duplex two-family dwelling buildings, for a total of six new residential units on the lot. There will be an associated shared driveway for the units with parking. This project requires Level III Site Plan and Subdivision approval from the City of Portland, and is therefore held to MDEP Chapter 500 Stormwater Rules for basic, general, and flooding standards. This report discusses the Site's hydrological conditions and compares stormwater runoff between existing and proposed conditions.

DATA COLLECTION AND ASSUMPTIONS

Site data was gathered from an on-site survey performed by Titcomb Associates of Falmouth, Maine, GIS data from the Maine GIS Website, and field observation. Wetlands were flagged by Broadwater Environmental, LLC, and mapped by Blais Civil Engineers. Project drawings are provided by Blais Civil Engineers. A HydroCAD stormwater model was created which is based on the United States Department of Agriculture's (USDA) Technical Release 20 (TR-20) and Technical Release 55 (TR-55) hydraulic programs.

Curve numbers (CN's) assigned to differing land cover and soil types were taken from tables within the HydroCAD software. The twenty-four-hour rainfall depths were taken from the MDEP "Stormwater Management for Maine: Appendix H: 24-Hour Duration Rainfalls for Various Return Periods".

The existing and proposed watershed subcatchments for this analysis are shown on plan sheets D-101 Pre-Development Drainage Plan and D-102 Post-Development Drainage Plan. Modeling assumptions are summarized in the attached HydroCAD output.

EXISTING SITE CONDITIONS

The existing Site is vacant with some tree cover and grassy areas. The topography generally gently slopes to the drainage channel on the north and west property lines.

This channel flows into the roadside ditch in the northwest corner of the Site. The abutting lots on Summit and Auburn Streets drain onto the Site.

The pre-development analysis consists of two subcatchments that are routed to the Point of Analysis. Subcatchment 1S drains to the ditch on the northern property line of the Site, draining much of the Site and the single home residential abutting lots to the north and east. Subcatchment 2S drains to the west side of the Site, along Lambert Street. The 2S Subcatchment area consists of the South portion of the Site, as well as the back side of the neighboring Tara apartments and the abutting lot on the southeast corner of the lot. The predominant soil is Swanton Fine Loamy Sand which is hydrologic "C/D" soil. The soil information was obtained from the USDA Natural Resources Conservation Service online soils mapper.

PROPOSED SITE CONDITIONS

The proposed project includes the construction of a three (3) duplex residential buildings. Also part of the project is a 20 foot wide shared drive with parking and 10 foot wide driveways to the garages of each unit. The total additional impervious cover on the site will be 15,325 SF. Total developed area associated with the project is 36,826 sf. 3,167 SF of wetlands will be filled as part of this project.

Stormwater on Site will be treated by a grassed underdrain soil filter on the northwest corner of the site, and roof line drip edges on the rear of each duplex building, and a roof line drip edge on the east side of Building 2. Because a significant amount of stormwater drains onto the Site from abutting lots, diversion swales will be constructed on the perimeter of the new development to divert off-site water away from treatment devices. Permanent stone check dams will be installed in the diversion swales to provide some treatment for additional stormwater.

BASIC STANDARDS

Erosion and sedimentation control measures can be seen on Drawing C-103, Grading & Drainage Plan, as well as D-102, Erosion and Sediment Control Notes and details. These controls include, but are not limited to, sediment barriers, check dams in ditches, culvert inlet and outlet protection, and a stabilized construction entrance.

An inspection and maintenance plan as well as an example inspection log are included as part of this application package. General housekeeping notes are included on sheet C-100, General Notes & Legend, of the plan set.

GENERAL STANDARDS

City of Portland standards require developments subject to Level III Site Plan Review to meet MDEP Chapter 500 Stormwater Rules General Standards for stormwater treatment. Stormwater is treated on-Site by a grassed underdrained soil filter and three (3) roof line drip edges.

The grassed underdrained soil filter treats 10,400 SF of impervious area and 6,538 SF of non-impervious developed area. The impervious area treated consists of paved driveway and walkways as well as roof area from the three duplexes. Treatment volume and filter area are taken from the MDEP stormwater BMP manual. Required treatment volume is 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped developed area. Required volume for treatment of this area is 1,085 CF. The surface area of the filter must be no less than the sum of 5% times impervious area and 2% of the landscaped area draining to the filter. Required filter surface area for treatment is 651 SF. See the following equations for area and volume:

$$\text{Area} = 0.05 \times 10,400 \text{ SF} + 0.02 \times 6,538 \text{ SF} = 651 \text{ SF}$$

$$\text{Volume} = 1.0 \text{ inch} \times 10,400 \text{ SF} + 0.4 \text{ inch} \times 6,538 \text{ SF} = 1,085 \text{ CF}$$

Filter surface area provided is 779 SF. Total volume to 18-inch treatment volume above the filter is 2,558 CF. These each exceed water quality requirements laid out by MDEP.

The four roof line drip edges will treat roof water that falls off of the back of each building, and the east side of Building 2. The roof area draining to each roof line drip edge is a maximum of 829 SF. The rear drip edge dimensions are 21.33 ft long by 4 ft wide. MDEP requires BMPs to treat the first inch of stormwater. That means that the volume equation of water that needs to be treated is: impervious area x 1-inch = treatment volume. This equation gives 829 SF x 1-inch = 69.1 CF. In order to treat this amount of water, the reservoir layer of the drip edge needs to be 8.25 inches thick. The roof line drip edge consists of this 8.25-inch reservoir layer, a 12-inch filter layer, and an 8-inch underdrain layer per MDOT BMP Handbook Chapter 7.5.

The drip edge on the east side of building 2 treats 466 SF of roof water. The drip edge dimensions are 38 ft long by 4 ft wide. The required volume of treatment is 38.3 CF. Using the same buildup dimensions as the rear drip edges will be sufficient to treat the stormwater from this section of roof. The underdrains from all the drip edges will outlet in the drainage ditch on the north side of the development.

In total, with the grassed underdrained soil filter and the roof line drip edges, a total of 13,376 SF of impervious cover is treated, and 20,729 SF of developed area is treated. That makes for 87% of the added impervious treated and 56% of developed area treated.

Additionally, permanent check dams will be provided in the diversion around the perimeter of the site to provide a level of treatment for developed areas not directed to the filter or roof line drip edge BMPs. The swale on the south side of the site collects stormwater from 20,160 SF of area consisting of roofs, grassed areas, and some undeveloped trees areas. The swale on the north side of the site collects stormwater from approximately 58,800 SF of area consisting of undeveloped treed areas, roofs, grassed areas.

FLOODING STANDARDS

Of the 36,826 SF of developed area produced by this project, 16,617 SF will be impervious area. In the proposed conditions, there are 3 subcatchments. Subcatchment 1.1S is the area of on the north side of the Site and abutting lots to the north and northeast. The water is captured in the proposed drainage ditch and flows to POA 1 in the roadside ditch off Lambert Street. Subcatchment 1.2S consists of the area that flows to the grassed underdrain soil filter. This area is most of the interior of the Site, including the parking and driveway area and roof runoff. The filter outlets into the roadside ditch along Lambert St, POA #1. Subcatchment 2.1S consists of the south portion of the Site, and area of the neighboring lots to the south and southeast. The subcatchment runoff is captured by the drainage ditch to be constructed on the south side of the Site, and flows into the roadside ditch of Lambert St and to POA #1. See below a summary of peak flows pre- and post-development.

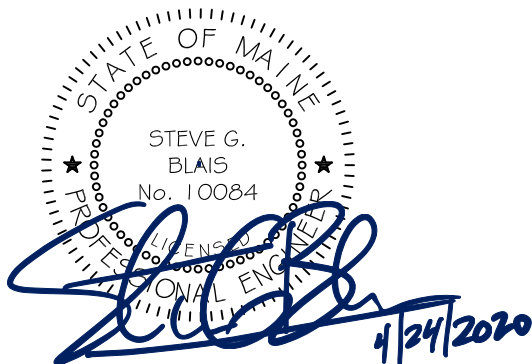
Table 1: Summary of Peak Flows

POA	Pre-development			Post-development		
	2-Year Peak Flow (cfs)	10-Year Peak Flow (cfs)	25-Year Peak Flow (cfs)	2-Year Peak Flow (cfs)	10-Year Peak Flow (cfs)	25-Year Peak Flow (cfs)
#1	2.31	5.06	7.47	2.51	5.00	7.11

The peak flow rates for the post-development are decreased for each of the 10 and 25-year storm events. Peak flow rates for the 2-year flow increase by a negligible amount.

CONCLUSIONS

Erosion and sedimentation controls and maintenance and housekeeping requirements will be met to have the project meet basic standards. The proposed stormwater design will utilize a grassed underdrained soil filter and roof line drip edges to treat the stormwater on-Site. 87% of impervious and 56% of developed area runoff will be treated on-Site by measures approved by MDEP. Additional treatment will be provided by the permanent stone check dams in the swales on the north and south sides of the development. Post-development flows will be reduced from pre-development flows.



**Operations and Maintenance Plan
For Stormwater Management Facilities
for
77 Lambert Condo Development
77 Lambert Street
Portland, Maine**

**January 27, 2020
Revised April 22, 2020**

Stormwater management facilities include paved surfaces, swales, culverts, storm pipes, and one underdrained soil filter. During construction activities the maintenance of all stormwater measures will be the direct responsibility of the Contractor. After acceptance by the Owner, the maintenance of all stormwater management facilities, the establishment of any contract services required for implementing the program, and the keeping of records and maintenance log book will be the responsibility of the owner. At a minimum, the following maintenance activities for each stormwater management system shall be performed on the prescribed schedule.

Paved Surfaces

Accumulations of sediment and other deposits along paved surfaces shall be cleared at least once a month and periodically during the year on an as-needed basis in order to minimize transportation of sediment during rainfall events. Accumulations on pavement may be removed by pavement sweeping or vacuuming.

The driveway adjacent to the underdrained soil filter is designed direct surface flows to it. This area should be check after every significant stormwater runoff event to ensure surface flows do not flow to the street.

Ditches and Swales

Open swales and ditches shall be inspected twice per year (in spring and fall) to assure that debris and/or sediments do not reduce the effectiveness of the system. Debris and sediments shall be removed at that time. Any sign of erosion or blockage shall be immediately repaired to assure a vigorous growth of vegetation for the stability of the ditches and slopes proper function. Maintenance shall include, but not be limited to, mowing, trimming, and removal of vegetation in the ditches and slopes as required in order to prevent vegetation from blocking or diverting storm flows; replacement of riprap channel lining to prevent scour of the channel invert; and removing vegetation and debris from the culverts.

Vegetated ditches should be mowed at least monthly during the growing season. Larger brush or trees must not be allowed to become established in the channel. Any areas

where the vegetation fails will be subject to erosion and should be reseeded and mulched immediately.

Riprap ditches and aprons where stone is displaced should be replaced and chinked to assure stability. With time, additional riprap may be added. Vegetation growing through riprap should be removed on an annual basis.

Culverts and Storm Drainage Pipes

Culverts and piped drainage systems shall be inspected on an annual basis to remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit; and to repair any erosion damage at the pipe inlet and outlet. Sediment should be removed when its level exceeds 20% of the pipe diameter. This may be accomplished by hydraulic flushing or any mechanical means; however, care should be taken to contain the sediment at the pipe outlet and not flush the sediments into the detention/infiltration areas as this will reduce capacity and ability to infiltrate runoff and will hasten the time in between further cleaning or maintenance.

Underdrained Soil Filter

The basin should be inspected semi-annually and following major storm events. Debris and sediment buildup should be removed from the forebay and basin as needed. Any bare area or erosion rills should be repaired with new filter media, seeded, and mulched. Sediment and plant debris should be removed from the pretreatment structure at least annually. If mowing is desired, only hand-held string trimmers or push-mowers are allowed on the filter (no tractor) and the grass bed should not be mowed more than 2 times per growing season to maintain grass heights of no less than 6 inches. Harvesting and pruning of excessive growth should be done occasionally. Weeding to control unwanted or invasive plants may also be necessary. If ponding over the filter exceeds 48 hours, the top of the filter bed should be rototilled to reestablish the soil's filtration capacity. The top several inches of the filter can be replaced with fresh material if water is ponding for more than 72 hours.

Permanent Check Dams

Check dams should be inspected regularly, especially after rainfall events. Debris and sediment buildup should be removed from the check dams when accumulation reaches one-half of the dam height. Inspections should ensure that the center of the dam is lower than the edges, and the structural integrity of the dam is not compromised. Check for scour underneath the check dam and bypasses on the sides and fill in areas where undercutting or bypasses have occurred.

Disposal

Any sediment or debris removed during maintenance of the stormwater system must be disposed of in accordance with all local, state, and federal regulations.

Recordkeeping

The Owner will keep a written maintenance log that summarizes inspections, maintenance, and any corrective actions taken. The log shall include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean-out of any sediment or debris, the location where the sediment or debris was disposed after removal will be indicated. This log shall be made available to the Maine Department of Environmental Protection and Design Engineer upon request.

For more in-depth information on the stormwater management facilities included in this report, see *Volume III: BMP Technical Design Manual* of the Maine Stormwater Best Management Practices Manual from the Department of Environmental Protection.



New and Existing Construction

LBSLEDA10L

LBSQLEDA10L

LED Surface Mount
1000 Lumen Module
Wet Location
120V

DATE: _____ TYPE: _____

FIRM NAME: _____

PROJECT: _____

LiteBox 7"



APPLICATIONS:

LiteBox Surface Mount LED modules are designed for use in new construction or retrofit IC or non-IC applications. It can be installed onto a standard 4" J-box, or into a 4", 5" or 6" recessed housing with optional mounting kit. Lumen output and distribution comparable to a 100 watt incandescent lamp while consuming only 17 watts of electricity. Energy Star qualified. Suitable for use with continuous room side temperatures up to 40°C (104°F).

LIGHT ENGINE:

High efficacy LED light engine integrated with durable aluminum heat sink for excellent thermal management. 120V, 50/60Hz, powered directly to AC without the need for a driver. Output over-voltage, over-current, and short circuit protection. System designed for optimal life and lumen maintenance (42,000 hours at 70% lumen maintenance per TM-21).

DIMMING:

Continuous dimming to 15% with many LED rated dimmer controls. (See Dimming Notes on pg 3 for recommended dimmers.)

LENS/REFLECTOR:

All LiteBox LED modules are provided standard with a diffuse impact resistant polycarbonate lens for uniform illumination.

INSTALLATION:

New Construction: Install onto a standard 4" J-Box, or use with Prescolite's DBX Quicklink Housing. Quicklink connector mates directly to housing connector without a screw-base adapter.

Retrofit: Install onto a standard 4" J-Box, or use in Prescolite or competitive 4", 5" or 6" recessed cans with optional mounting kit.

CERTIFICATIONS:

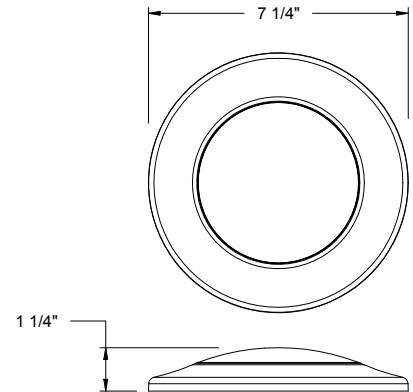
CSA certified to US and Canadian safety standards. ENERGY STAR qualified. Suitable for wet locations.

WARRANTY:

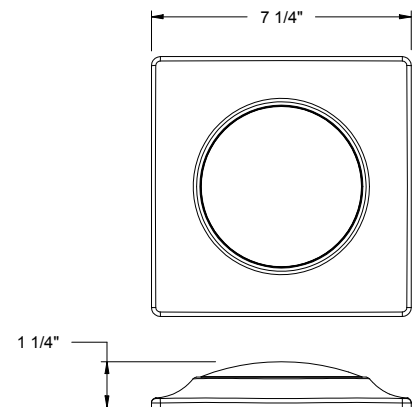
5 year warranty

See www.prescolite.com for details.

7" Round LiteBox LED



7" Square LiteBox LED



CATALOG NUMBER

EXAMPLE: LBSLEDA10L30K9 WH

TRIM	LED COLOR	CRI	TRIM COLOR	ACCESSORIES
☐ LBSLEDA10L 7" Surface Mount Round LED Module	☐ 27K¹ 2700 Kelvin	☐ 8 80+ CRI	☐ WH White	☐ LBSMTGKIT Mounting Kit for LiteBox LED Surface fixtures to install into most 4", 5", or 6" recessed cans. Set of 8. Not required for J-Box mounting.
☐ LBSQLEDA10L 7" Surface Mount Square LED Module	☐ 30K¹ 3000 Kelvin	☐ 9 90+ CRI	☐ BL Black	
	☐ 35K¹ 3500 Kelvin		☐ Z Zet	
	☐ 40K 4000 Kelvin		☐ BZ Bronze	
	☐ 50K² 5000 Kelvin			

Notes

¹Available only in 90 CRI

²Available only in 80 CRI



A Division of Hubbell Lighting, Inc.

In a continuing effort to offer the best product possible we reserve the right to change, without notice, specifications or materials that in our opinion will not alter the function of the product.
Web: www.prescolite.com • Tech Support: (888) 777-4832

LB-LED-011

PHOTOMETRIC DATA

LiteBox LED - Surface Mount LED Downlight Modules

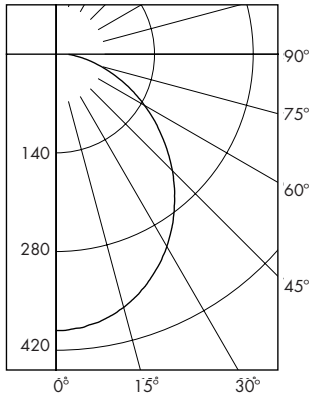
ELECTRICAL DATA	LBSLEDA10L	LBSQLEDA10L
Input Voltage	120V AC	120V AC
Input Frequency	50/60 Hz	50/60 Hz
Input Current	0.14A	0.14A
Input Power	16.4W	16.4W
Power Factor	>0.90	>0.90
THD	<20%	<20%
EMI Filtering	FCC 47CFR	FCC 47CFR
	Part 15, Class B	Part 15, Class B
Operating Temperature	-30°C to 40°C	-30°C to 40°C
Dimming	Yes*	Yes*
Over-voltage, over-current, short-circuit protected		
*See Dimming Notes for more information		

LBSLEDA10L30K9 WH

LED Light Engine: 3000K, 90+ CRI
 System Wattage: 16.4
 Fixture delivered lumens: 1032
 Fixture Efficacy: 63.0
 Spacing Criteria: 1.2

Performance Datachart

Single Unit, Initial Footcandles, 30" Work Plane						Ceiling to Floor Height (ft)	Multiple Units, Initial Footcandles, 30" Work Plane				
Nadir		10°		20°			Spacing is Maximum Over Work Plane, SMH= 1.2				
FC	Dia (ft)	FC	Dia (ft)	FC	Dia (ft)		Fixture Spacing (ft)		RCR 2	RCR 5	RCR 7
29	28	1	22	3	16	4	6	4.0	50	35	29
12	11	2	9	4	6	6	8	7.0	20	14	12
6	5	3	4	6	3	9	10.5	10.0	9	7	5
4	4	3	3	7	2	11	12	11.0	7	5	4



CANDELA DISTRIBUTION

DEG	CANDELA
0	392
5	390
15	372
25	337
35	290
45	234
45	175
55	117
65	66
75	28
90	16

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0-30	297	28.8
0-40	478	46.3
0-60	814	78.9
0-90	1032	100.0

COEFFICIENTS OF UTILIZATION

Zonal Cavity Method

Room Cavity Ratio	% Effective Ceiling Cavity Reflectance															
	80%				70%				50%				30%			
	20% Effective Floor Cavity Reflectance															
	% Wall Reflectance															
	70	50	30	10	70	50	30	10	50	30	50	30				
1	108	104	99	95	106	94	97	94	93	90						
3	90	80	71	65	88	64	75	69	72	67						
5	76	63	54	58	74	47	60	53	58	52						
7	65	52	43	37	64	37	50	42	48	41						
9	57	44	35	30	56	30	42	35	41	34						

LBSLEDA10L30K9 WH

Test No. 14.00619 2768255-3

Test No. 14.00619 2768255-3

Tested at 25° Ambient in accordance to IESNA LM-79-2008

Central Inverters

For full fixture output in back-up mode, we recommend you visit www.dual-lite.com for your Central Lighting Inverter options. Please contact your local Hubbell representative for any assistance with proper sizing and loading of your inverter selection. Central lighting inverters must be ordered separately.

LiteGear: www.dual-lite.com/products/litegear_lg_series

LPS Series: www.dual-lite.com/products/lps

NOTES

Refer to www.prescolite.com for additional photometric tests (IES Files).



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HUBBELL
Lighting

DIMMING NOTES:

Surface Mount LED modules are designed to be compatible with many dimmer controls. Electronic low-voltage rated dimmer controls may offer favorable dimming performance. Incandescent type dimmers are not recommended. The following is a list of known compatible dimmer controls:

Manufacturer	Series	Part Number
Leviton	Renoir II	AWRMG-EAW
Leviton	Sure Slide	6615-8
Lutron	Diva Series	(Part Number DVELV-300)
Lutron	Maestro Series	(Part Number MAELV-600)
Lutron	Nova T Series	(Part Number NTELV-300)
Lutron	Spacer Series	(Part Number SPSELV-600)
Lutron	Vierti Series	(Part Number VTELV-600)

LED Rated Controls

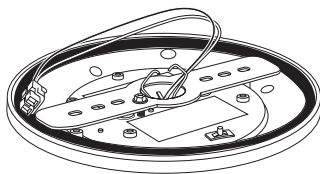
Pass & Seymour (Part Number DCL453PTCCCV6)

Incandescent Digital type dimmers are not recommended

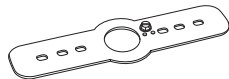
Dimming capabilities will vary depending on the dimmer control, load, and circuit installation. Always refer to dimmer manufacturer instructions or a controls specialist for specific requirements.

Dimmer control brand names where identified above are tradenames or registered trademarks of each respective company.

J-Box Mount with quick link



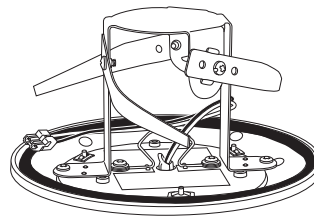
J-Box Adapter



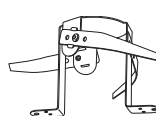
Optional LBSMTGKIT Mounting

Options:

Recessed Mount with quick link



Recessed Adapter



E26 Edison Base Adapter



LNC SERIES

Cat.#

Job

Type



HUBBELL
Outdoor Lighting

Approvals

SPECIFICATIONS

Intended Use:

The compact LED LNC is designed for entry/perimeter illumination for safety, security and identity. Typical mounting height is up to 12 feet with 40ft fixture spacing (without acrylic diffuser) and 30ft spacing with acrylic diffuser installed. Photocontrol option is available to provide dusk-to-dawn control for additional energy savings.

Construction:

Decorative die-cast aluminum housing and door. Rugged design protects internal components and provides excellent thermal management for long life – 60,000 hours minimum LED life at L96 rating per IESNA TM-21-11. Powder paint finishes provide lasting appearance in outdoor environments.

Optics/Electrical

LED:

Drivers are 120-277V, 50/60Hz Type II, III and Type IV lenses provide wide lateral spread.

0-10V dimming 120-277V only.

- LNC5L – 5 LEDs, Types II, III or IV available, see page 2 for electrical details
- LNC7L – 7 LEDs, Type II, III or IV available, see page 2 for electrical details
- LNC9L – 9 LEDs, Types II, III or IV available, see page 2 for electrical details
- 3000K - 80 CRI, 4000K - 70 CRI, and 5000K - 70 CRI, CCT nominal
- Minimum operating temperature is -40°C/-40°F
- Drivers have greater than .90 power factor and less than 20% Total Harmonic Distortion

Lenses:

Full cut-off distribution: Ambient diffuser included, use for applications near entrances or locations where reduced brightness is desired.

Installation:

Quick mount adapter provides quick installation, designed for recessed box 4" square junction box.

Listings:

Listed and labeled to UL 1598 for wet locations, 25° C ambient environments. DesignLights Consortium® (DLC) qualified. Please refer to the DLC website for specific product qualifications at: <http://www.designlights.org/>

- IES Progress Award Winner - 2012

Warranty:

Five year limited warranty. For more information visit: <http://www.hubbelloutdoor.com/resources/warranty/>

PRODUCT IMAGE(S)



LNC-5L



LNC-7L



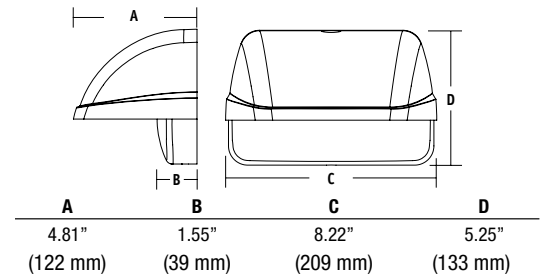
LNC-9L



With diffuser



DIMENSIONS



SHIPPING INFORMATION

Catalog Number	G.W(kg)/CTN	Carton Dimensions			Carton Qty. per Master Pack
		Length Inch (cm)	Width Inch (cm)	Height Inch (cm)	
LNC-5LU	9.6 (4.36)	14.5 (37)	9.6 (24.5)	6.8 (17.5)	2
LNC-7LU	9.6 (4.36)	14.5 (37)	9.6 (24.5)	6.8 (17.5)	2
LNC-9LU	9.6 (4.36)	14.5 (37)	9.6 (24.5)	6.8 (17.5)	2

CERTIFICATIONS/LISTINGS



*3000K and warmer CCTs only

ORDERING INFORMATION

ORDERING EXAMPLE: LNC-9LU-5K-3-1-PCU

SERIES	NUMBER OF LEDs	VOLTAGE	CCT	IES DISTRIBUTION	FINISH	OPTIONS
LNC	5L 5 LEDs 7L 7 LEDs 9L 9 LEDs	U 120V-277V 1 120V 2 208V 3 240V 4 277V	3K 3000K nominal, 70 CRI 4K 4000K nominal, 70 CRI 5K 5000K nominal	2 Type II 3 Type III 4 Type IV	1 Bronze 2 Black 3 Gray 4 White 5 Platinum	PCU Universal Button Photocell
AM¹ Amber (590 μm available for "Turtle Friendly"/observatory applications, 350 mA (consult factory))						

¹ Amber LEDs only available on 7LU and 9LU configurations, 350 mA only



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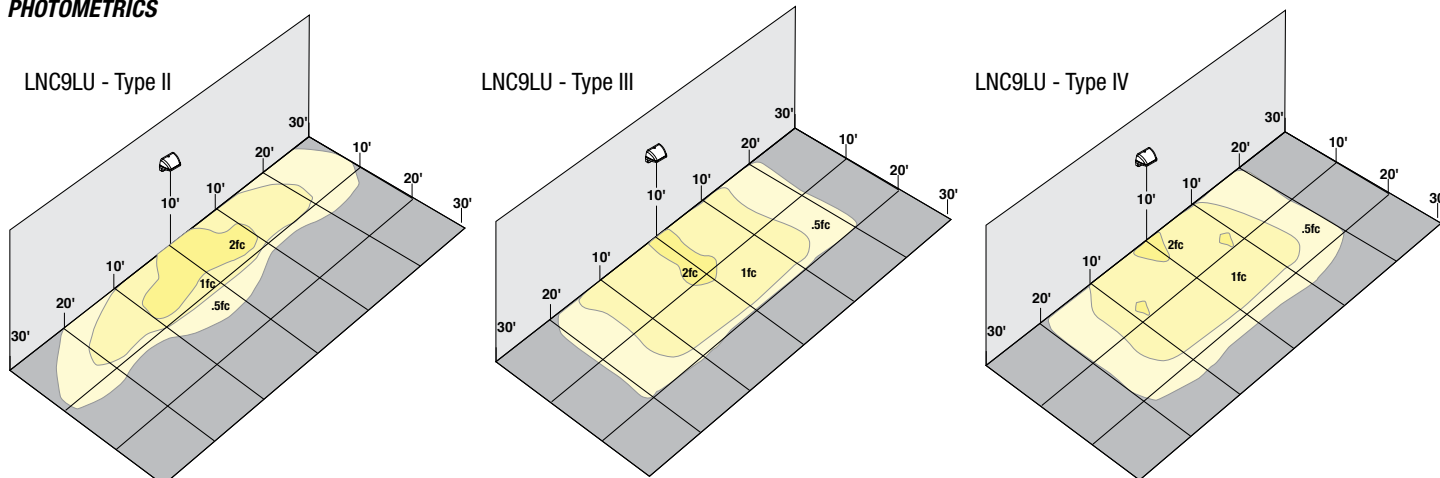
LAREDO LNC-SPEC

AUGUST 30, 2017 4:47 PM

REPLACEMENT PART

CATALOG NUMBER	DESCRIPTION
93039574	Frosted comfort shield, improved uniformity with only 5% reduction

PHOTOMETRICS



PERFORMANCE DATA

				5K (5000K nominal, 70 CRI)		4K (4000K nominal, 70 CRI)		3K (3000K nominal, 80 CRI)		AM (<580 nm wave-length)		
# OF LEDS	DRIVE CURRENT	SYSTEM WATTS	DIST. TYPE	LUMENS	LPW ¹	LUMENS	LPW ¹	LUMENS	LPW ¹	LUMENS	SYSTEM WATTS	LPW ¹
5	STD. (700mA) AM (350mA)	13W	2	1,150	88.5	1,052	81	883	68			
			3	1,132	87	1,077	83	833	64			
			4	1,146	88	1,053	81	849	65			
7		17W	2	1,515	89	1,369	80.5	1,272	75			
			3	1,500	88	1,539	90.5	1,392	82	268	6.6	59
			4	1,557	91.5	1,535	90	1,425	84			
9		22W	2	2,069	94	2,033	92	1,588	72			
			3	2,024	92	1,989	90	1,623	74			
			4	2,095	95	2,059	93.5	1,680	76	382	8.3	46

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application. Please consult IES files for BUG ratings.

PROJECTED LUMEN MAINTENANCE

Ambient Temp.	OPERATING HOURS					L70 (hours)
	0	25,000	50,000	TM-21-11 ¹ L96 60,000	100,000	
25°C / 77°F	1.00	0.98	0.97	0.96	0.95	>791,000
40°C / 104°F	0.99	0.98	0.96	0.96	0.94	>635,000

1. Projected per IESNA TM-21-11 * (Nichia 219B, 700mA, 85°C Ts, 10,000hrs)
Data references the extrapolated performance projections for the LNC-12LU-5K base model in a 40°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

LUMINAIRE AMBIENT TEMPERATURE FACTOR (LATF)

AMBIENT TEMPERATURE	LUMEN MULTIPLIER
0° C	1.02
10° C	1.01
20° C	1.00
25° C	1.00
30° C	1.00
40° C	0.99
50° C	0.98

Use these factors to determine relative lumen output for average ambient temperatures from 0-50°C (32-122°F).

ELECTRICAL DATA

# OF LEDS	DRIVE CURRENT (mA)	DRIVE CURRENT (mA)	INPUT VOLTAGE (V)	CURRENT (Amps)	SYSTEM POWER (w)
5	1	STD. (700mA)	120	0.11	13
			277	0.05	13
7	1	STD. (700mA)	120	0.14	17
			277	0.07	17
9	1	STD. (700mA)	120	0.17	22
			277	0.09	22



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LAREDO LNC-SPEC

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VIPER S

STRIKE

SMALL VIPER LUMINAIRE

Cat.#

Job

Type

Approvals



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SPECIFICATIONS

Intended Use:

The Beacon Viper luminaire is available with a wide choice of different LED Wattage configurations and optical distributions designed to replace HID lighting up to 400W MH or HPS.

Construction:

- Manufactured with die cast aluminum.
- Coated with a polyester finish that meets ASTM B117 corrosion test requirements and ASTM D522 cracking and loss of adhesion test requirements.
- External hardware is corrosion resistant.
- One piece optical cartridge system consisting of an LED engine, LED lamps, optics, gasket and stainless steel bezel.
- Cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one piece optical system.
- Two-piece silicone and micro-cellular polyurethane foam gasket ensures a weather-proof seal around each individual LED.

Electrical:

- 100V through 277V, 50 Hz to 60 Hz (UNV), or 347V or 480V input.
- Power factor is $\geq .90$ at full load.
- Dimming drivers are standard, but must contact factory to request wiring leads for purpose of external dimming controls.
- Component-to-component wiring within the luminaire may carry no more than 80% of rated load and is certified by UL for use at 600VAC at 90°C or higher.
- Plug disconnects are certified by UL for use at 600 VAC, 13A or higher. 13A rating applies to primary (AC) side only.
- Fixture electrical compartment shall contain all LED driver components and shall be provided with a push-button terminal block for AC power connections.
- Surge protection - 20kA.
- Optional 7-pin ANSI C136.41-2013 twist-lock photo control receptacle available. Compatible with ANSI C136.41 external wireless control devices.
- Lifeshield™ Circuit - protects luminaire from excessive temperature. The device shall activate at a specific, factory-preset temperature, and progressively reduce power over a finite temperature range. Operation shall be smooth and undetectable to the eye. Thermal circuit is designed to "fail on", allowing the luminaire to revert to full power in the event of an interruption of its power supply, or faulty wiring connection to the drivers. The device shall be able to co-exist with other 0-10V control devices (occupancy sensors, external dimmers, etc.).

Controls/Options:

- Available with an optional passive infrared (PIR) motion sensor capable of detecting motion 360° around the luminaire. When no motion is detected for the specified time, the Motion Response system reduces the wattage to factory preset level, reducing the light level accordingly. When motion is detected by the PIR sensor, the luminaire returns to full wattage and full light output. Please contact Beacon Products if project requirements vary from standard configuration.
- Available with Energeni for optional set dimming, timed dimming with simple delay, or timed dimming based on time of night (see www.beaconproducts.com/products/energeni).
- In addition, Viper can be specified with **SiteSync™** wireless control system for reduction in energy and maintenance costs while optimizing light quality 24/7. For more details, see ordering information or visit: www.hubbelllighting.com/sitesync

Installation:

- Mounting options for horizontal arm, vertical arm or traditional arm mounting available. Mounting hardware included.

Finish:

- IFS polyester powder-coat electrostatically applied and thermocured. IFS finish consists of a five stage pretreatment regimen with a polymer primer sealer and top coated with a thermoset super TGIC polyester powder coat finish.
- The finish meets the AAMA 2604 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pounds.

Certifications/Ratings:

- DesignLights Consortium (DLC) qualified, consult DLC website for more details: <http://www.designlights.org/QPL>
- Certified to UL 1598, UL 8750 and CSA C22.2 No.250.0
- **IDA approved**
- This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available at: <http://www.beaconproducts.com/products/vipersmall>

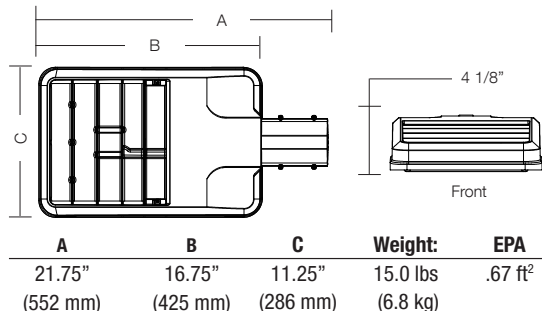
Warranty:

Five year limited warranty for more information visit: www.hubbelllighting.com/resources/warranty

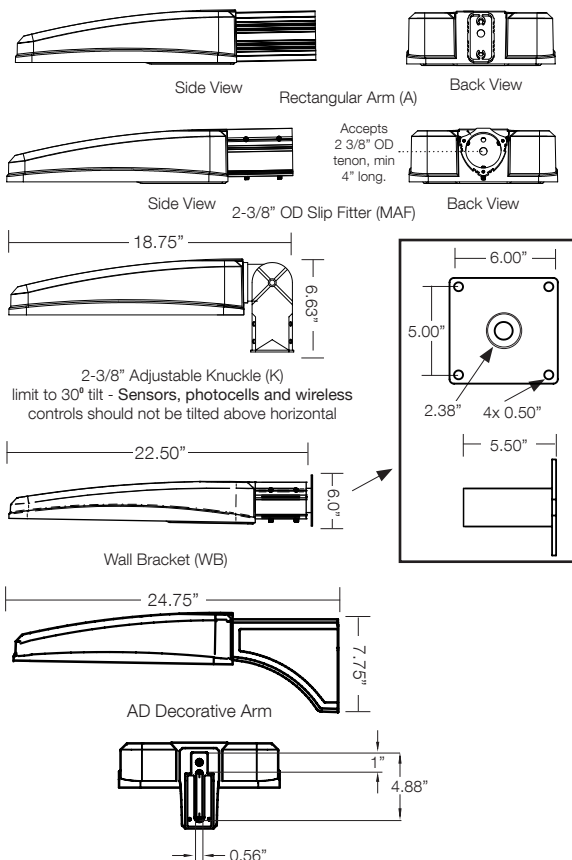
PRODUCT IMAGE(S)



DIMENSIONS



MOUNTING OPTIONS



CERTIFICATIONS/LISTINGS



3000K and warmer CCTs only



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ORDERING INFORMATION ORDERING EXAMPLE: VPS/24L-55/4K7/4W/UNV/A/DBT/7PR-TL/GENI-04/BC

VPS													
SERIES		LED ENGINE		CCT/CRI ⁷		ROTATION		VOLTAGE		COLOR		OPTIONS	
VPS	Viper	24L-55	55W, LED array	3K7	3000K, 70 CRI	Leave blank for no rotation		UNV	120-277V	BL	Black Textured	F Fusing	
		36L-65	65W, LED array	4K7	4000K, 70 CRI	L ⁵ Optic rotation left		120	120V	DB	Dark Bronze Textured	BSP Bird Spikes	
		36L-80	80W, LED array	5K7	5000K, 70 CRI	R ⁵ Optic rotation right		208	208V	GYS	Light Gray Smooth	BC Backsheild ¹ (available for FR, 2, 3, 4, 4W Optics)	
		48L-110	110W, LED array	DISTRIBUTION				240	240V	PS	Platinum Silver Smooth		
		60L-136	136W, LED array	FR	Type 1/Front Row			277	277V	WH	White Textured		
				2	Type 2			347	347V	CC	Custom Color		
				3	Type 3			480	480V				
				4	Type 4			MOUNTING					
				4W	Type 4 Wide			A Rectangular Arm (formerly RA) for square or round pole					
				5QM	Type 5QM			MAF Mast Arm Fitter (formerly SF2) for 2-3/8" OD horizontal arm					
				5R	Type 5R (rectangular)			K Knuckle (formerly PK2) limit to 45° tilt or 2-3/8" OD horizontal arm or vertical tenon					
				5W	Type 5W (round wide)			WB Wall Bracket					
				TC	Tennis Court			AD Universal Arm for square pole					
HOUSE SIDE SHIELD ACCESSORIES								AD3 Universal Arm for 2.4"-4.1" round pole					
HSS/VP-S/90-FB/XXX						90° shield front or back		AD4 Universal Arm for 4.2"-5.3" round pole					
HSS/VP-S/90-LR/XXX						90° shield left or right		AD5 Universal Arm for 5.5"-5.9" round pole					
HSS/VP-S/270-FB/XXX						270° shield front or back		AD6 Universal Arm for 6.0"-6.5" round pole					
								CONTROL OPTIONS					
								7PR 7-Pin Receptacle only (shorting cap, photo control, or wireless control provided by others)					
								7PR-SC 7-Pin Receptacle w/Shorting Cap					
								7PR-TL 7-Pin Receptacle w/Twist Lock photo control					
								SCP/_F ^{1,2,6} Programmable Occupancy Sensor w/ daylight control					
								GENI-XX ³ ENERGENI					
								SWP ^{1,4} SiteSync Pre-Commission					
								SWPM ^{1,2,4} SiteSync Pre-Comm w/ Sensor					

HOUSE SIDE SHIELD ACCESSORIES

- HSS/VP-S/90-FB/XXX** 90° shield front or back
HSS/VP-S/90-LR/XXX 90° shield left or right
HSS/VP-S/270-FB/XXX 270° shield front or back
HSS/VP-S/270-LR/XXX 270° shield left or right
HSS/VP-S/360/XXX Full shield

(Replace XXX with notation for desired finish color)
 (Refer to page 5 for shield images)

MOUNTING ACCESSORIES

- VPL-AD-RPA3** 2.4"-4.1" Round Pole Adapter for AD arm
VPL-AD-RPA4 4.2"-5.3" Round Pole Adapter for AD arm
VPL-AD-RPA5 5.5"-5.9" Round Pole Adapter for AD arm
VPL-AD-RPA6 6.0"-6.5" Round Pole Adapter for AD arm

¹ Not available with other wireless control or sensor options

² Specify mounting height; 8-8' or less, 40-9' to 40'

³ Specify routine setting code (example GENI-04). See ENERGENI brochure and instructions for setting table and options. Not available with sensor or SiteSync options.

⁴ Specify group and zone at time of order. See www.hubbellighting.com/sitesync for further details. Order at least one SiteSync interface accessory SWUSB or SWTAB. Each option contains SiteSync License, GUI, and Bridge Node

⁵ Only available with 1A, 2, 3, 4, 4W and 5R distributions

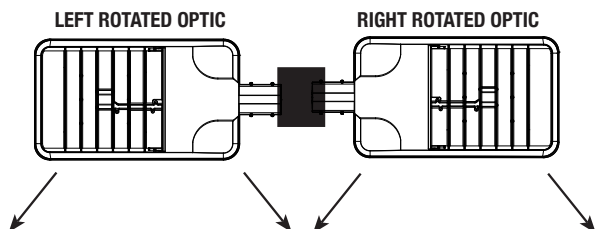
⁶ Order at least one SCP-REMOTE per project location to program and control the occupancy sensor.

⁷ This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available at: http://cdn.beaconproducts.com/content/products/specs/specs_files/Viper_Small_LED_turtle_spec_sheet.pdf

PRECOMMISSIONED SITESYNC ORDERING INFORMATION: When ordering a fixture with the SiteSync lighting control option, additional information will be required to complete the order. The SiteSync Commissioning Form or alternate schedule information must be completed. This form includes Project location, Group information, and Operating schedules. For more detailed information please visit www.hubbell-automation.com/products/sitesync/ or contact Hubbell Lighting tech support at (800) 345-4928.

SiteSync fixtures with Motion control (SWPM) require the mounting height of the fixture for selection of the lens.

Examples: VPS/24L-55/4K7/3/UNV/A/DBT/SWP/ SiteSync only
 VPS/24L-55/4K7/3/UNV/A/DBT/SWPM-40F/ SiteSync with Motion Control



Accessories and Services (Ordered Separately)

Catalog Number	Description
SWUSB*	SiteSync interface software loaded on USB flash drive for use with owner supplied PC (Windows based only). Includes SiteSync license, software and USB radio bridge node
SWTAB*	Windows tablet and SiteSync interface software. Includes tablet with preloaded software, SiteSync license and USB radio bridge node.
SWBRG	SiteSync USB radio bridge node only. Order if a replacement is required or if an extra bridge node is requested.
SCP-REMOTE	Remote Control for SCP/_F option. Order at least one per project to program and control
SW7PR*	SiteSync 7 Pin on fixture module On/Off/Dim, Daylight Sensor 120-480VAC

* When ordering SiteSync at least one of these two interface options must be ordered per project.

+ Available as a SiteSync retrofit solution for fixtures with an existing 7pin receptacle.

Hubbell Control Solutions - Accessories (sold separately)

Catalog Number	Description	HCS System
NXOFM-1R1D-UNV	On-fixture Module (7-pin), On / Off / Dim, Daylight Sensor with HubbNET Radio and Bluetooth® Radio, 120-480VAC	NX Distributed Intelligence™
WIR-RME-L	On-fixture Module (7-pin or 5-pin), On / Off / Dim, Daylight Sensor with wiSCAPE Radio, 110-480VAC	wiSCAPE® Lighting Control

For additional information related to these accessories please visit www.hubbellcontrolsolutions.com. Options provided for use with integrated sensor, please view specification sheet ordering information table for details.

SiteSync 7-Pin Module



SW7PR

- SiteSync features in a new form
- Available as an accessory for new construction or retrofit applications (with existing 7-Pin receptacle)
- Does not interface with occupancy sensors



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PERFORMANCE DATA

# LED'S	DRIVE CURRENT (MILLIAMPS)	SYSTEM WATTS	DISTRIBUTION TYPE	5K (5000K nominal, 70 CRI)					4K (4000K nominal, 70 CRI)					3K (3000K nominal, 70 CRI)				
				LUMENS	LPW ¹	B	U	G	LUMENS	LPW ¹	B	U	G	LUMENS	LPW ¹	B	U	G
24	700 mA	55W	FR	6357	118	1	0	1	6486	120	1	0	1	5804	107	1	0	1
			2	6132	114	1	0	1	6257	116	1	0	2	5599	104	1	0	1
			3	6015	111	1	0	2	6137	114	1	0	2	5492	102	1	0	2
			4	5921	110	1	0	2	6034	112	1	0	2	5400	100	1	0	2
			4W	5793	108	1	0	2	5909	110	1	0	2	5272	98	1	0	2
			5QM	6022	112	2	0	1	6145	114	2	0	1	5499	102	2	0	1
			5R	6063	112	3	0	3	6187	115	3	0	3	5536	103	3	0	3
			5W	5908	109	3	0	1	6028	112	3	0	1	5908	102	3	0	1
			TC	6183	113	1	0	1	6309	118	1	0	1	5645	105	1	0	1
36	560 mA	65W	FR	7864	121	1	0	1	8041	124	1	0	1	7189	111	1	0	1
			2	7586	117	1	0	2	7757	119	1	0	2	6934	107	1	0	2
			3	7441	114	1	0	2	7609	117	1	0	2	6802	105	1	0	2
			4	7317	110	1	0	2	7482	112	1	0	2	6688	100	1	0	2
			4W	8690	108	1	0	2	8864	110	1	0	2	7908	98	1	0	2
			5QM	7450	115	3	0	1	7618	117	3	0	1	6810	105	3	0	1
			5R	7501	115	3	0	3	7670	118	3	0	3	6857	105	3	0	3
			5W	7309	112	3	0	2	7473	115	3	0	2	6681	103	3	0	1
			TC	8275	115	1	0	1	8464	118	1	0	1	7688	105	1	0	1
36	700 mA	80W	FR	9535	118	1	0	1	9730	120	1	0	1	8706	107	1	0	1
			2	9197	114	1	0	2	9385	116	1	0	2	8398	104	1	0	2
			3	9022	111	1	0	2	9206	114	1	0	2	8238	102	1	0	2
			4	8871	110	1	0	2	9052	112	1	0	2	8100	100	1	0	2
			4W	11587	108	1	0	3	11819	110	1	0	3	10544	98	1	0	3
			5QM	9033	112	3	0	1	9217	114	3	0	1	8248	102	3	0	1
			5R	9095	112	3	0	3	9280	115	3	0	3	8304	103	3	0	3
			5W	8861	109	3	0	2	9043	112	3	0	2	8092	100	3	0	2
			TC	9275	115	1	0	1	9464	118	1	0	1	8468	105	1	0	1
48	700 mA	110W	FR	12713	118	1	0	1	12973	120	2	0	1	11608	107	1	0	1
			2	12263	114	2	0	2	12513	116	2	0	2	11197	104	2	0	2
			3	12029	111	2	0	2	11275	114	2	0	2	10984	102	1	0	2
			4	11828	110	1	0	3	12069	112	1	0	3	10800	100	1	0	2
			4W	14484	108	2	0	4	14774	111	2	0	4	13180	98	2	0	3
			5QM	12044	112	3	0	2	12290	114	3	0	2	10997	102	3	0	1
			5R	12126	112	3	0	3	12374	115	3	0	3	11072	103	3	0	3
			5W	12126	109	4	0	2	12057	112	4	0	2	10789	100	4	0	2
			TC	12366	115	1	0	2	12619	118	1	0	2	11290	105	1	0	2
60	700 mA	136W	FR	15891	117	2	0	2	16216	120	2	0	2	14511	107	2	0	1
			2	15329	113	2	0	2	15642	116	2	0	2	13997	103	2	0	2
			3	15037	111	2	0	3	15344	113	2	0	3	13730	101	2	0	3
			4	14784	109	1	0	3	15086	111	1	0	3	13500	100	1	0	3
			4W	14802	109	2	0	3	15104	112	2	0	3	13515	100	2	0	3
			5QM	15055	111	3	0	2	15362	114	3	0	2	13747	102	3	0	2
			5R	15158	112	4	0	4	15469	114	4	0	4	13841	102	4	0	4
			5W	14781	109	4	0	2	15083	111	4	0	2	13495	100	4	0	2
			TC	15458	115	1	0	2	15834	118	1	0	2	14113	105	1	0	2

PHOTOMETRICS

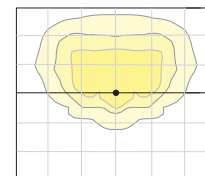
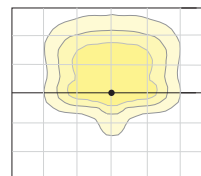
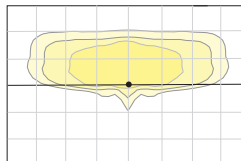
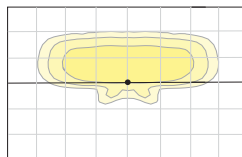
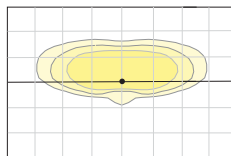
Type FR - Front Row/Auto Optic

Type 2

Type 3

Type 4

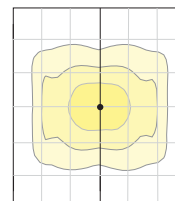
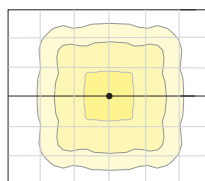
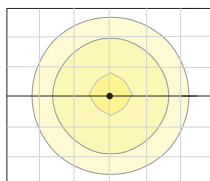
Type 4W



Type 5W

Type 5QM

Type 5R



*Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-use environment and application.

ELECTRICAL DATA

# OF LEDS	NUMBER OF DRIVERS	DRIVE CURRENT (mA)	INPUT VOLTAGE (V)	SYSTEM POWER (w)	CURRENT (Amps)
24	2	700 mA	120	55	0.5
			277		0.2
			347		0.2
			480		0.1
36	1	560 mA	120	65	0.65
			277		0.28
			347		0.22
			480		0.16
	1	700 mA	120	80	0.7
			277		0.3
			347		0.2
			480		0.2
48	1	700 mA	120	110	0.9
			277		0.4
			347		0.3
			480		0.2
60	1	700 mA	120	136	1.1
			277		0.5
			347		0.4
			480		0.3

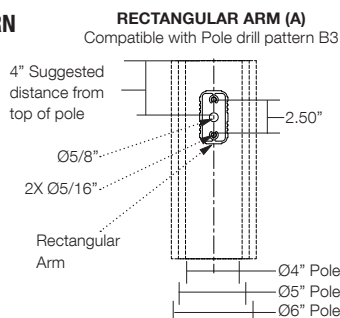
PROJECTED LUMEN MAINTENANCE

AMBIENT TEMP.	0	25,000	50,000	TM-21-11 60,000	100,000	Calculated L70 (HOURS)
25°C / 77°C	1.00	0.97	0.95	0.95	0.92	>377,000

* Projected per IESNA TM-21-11

Data references the extrapolated performance projections for the base model in a 25°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

DRILL PATTERN



EPA

Config.	EPA	Config.	EPA
1	.67	3 @ 120°	1.68
2 @ 90°	1.06	3 @ 90°	1.73
2 @ 180°	1.34	4 @ 90°	2.12

TENON TOP POLE BRACKET ACCESSORIES (Order Separately)

(2 3/8" OD tenon)

Catalog Number	Description
SETAVP-XX	Square tenon adapter (4 at 90°) for A - Rectangular Arm mounting option only
RETAVP-XX	Round tenon adapter (4 at 90°) for A - Rectangular Arm mounting option only
TETAVP-XX	Hexagonal tenon adapter (4 at 90°) for A - Rectangular Arm mounting option only
SETA2XX	Square tenon adapter (4 at 90°) for AD - Universal Arm mounting option only
RETA2XX	Round tenon adapter (4 at 90°) for AD3 - Universal Arm mounting option only
TETA2XX	Hexagonal tenon adapter (3 at 120°) for AD - Universal Arm mounting option only



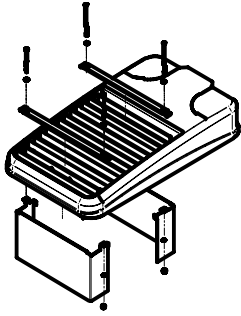
Beacon Products • 2041 58th Avenue Circle East Bradenton, FL 34203 • Phone: 800-345-4928
Due to our continued efforts to improve our products, product specifications are subject to change without notice.

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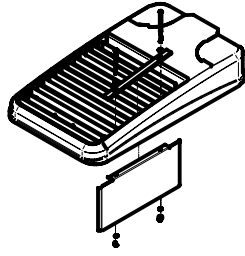


HUBBELL
Lighting

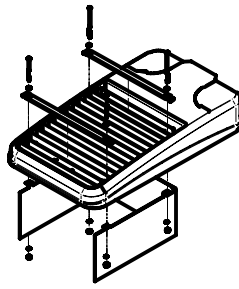
HOUSE SIDE SHIELD FIELD INSTALL ACCESSORIES



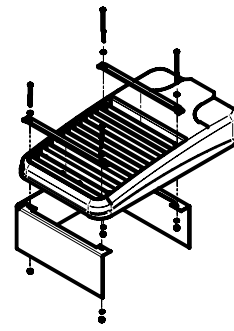
HSS/VP-S/90-FB/XXX
90° shield front or back
(2 shields shown)



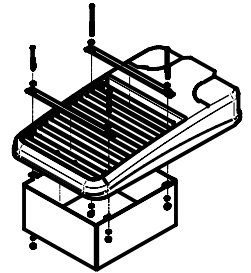
HSS/VP-S/90-LR/XXX
90° shield left or right
(1 shield shown in left orientation)



HSS/VP-S/270-FB/XXX
270° shield front or back
(1 shield shown in back orientation)

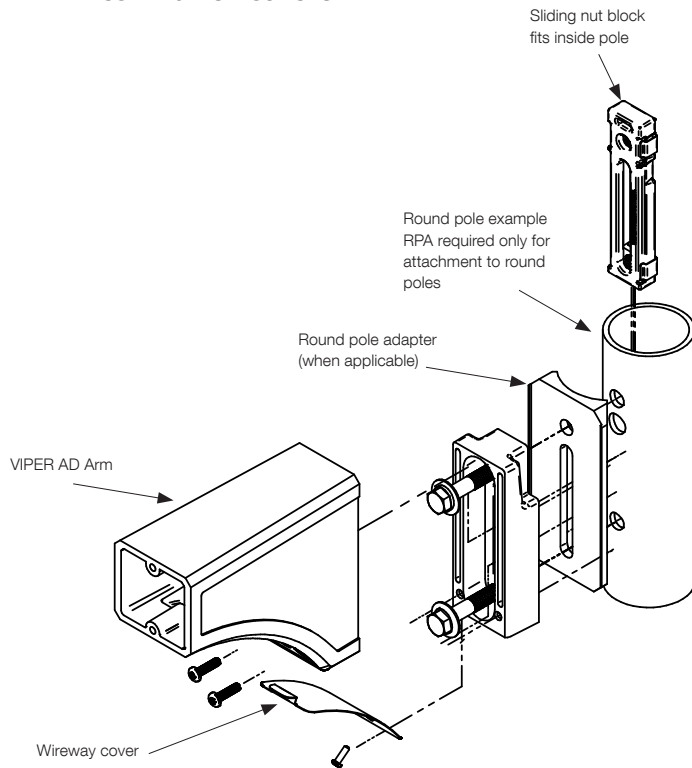


HSS/VP-S/270-LR/XXX
270° shield left or right
(1 shield shown in right orientation)



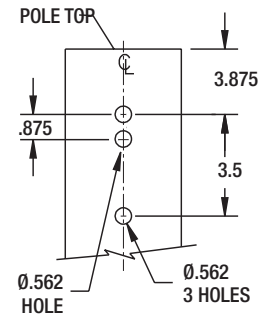
HSS/VP-S/360/XXX
Full shield (1 shield shown)

AD ARM MOUNTING INSTRUCTIONS



DECORATIVE ARM (AD)

Compatible with pole drill pattern S2



**TRANSPORTATION SUMMARY
77 LAMBERT CONDO DEVELOPMENT
77 LAMBERT STREET
PORTLAND, ME
OCTOBER 15, 2019**

INTRODUCTION

The subject property (the Site) is located at 77 Lambert Street in Portland. The site is a 38,332 SF parcel that is currently vacant, with a mix of tree cover and open grassy area. The proposed development consists of three (3) duplex two-family dwelling buildings, for a total of six new residential units on the lot. There will be an associated shared driveway for the units with parking. This report discusses how this project plans to meet transportation standards required for Level III Site Plan and Subdivision approval.

ACCESS AND CIRCULATION

The Site driveway will be accessed off of Lambert Street, between the neighboring Tara Apartments and the intersection with Summit Street. The development is not anticipated to have any major impact on traffic flows of any public streets. The two-way driveway will be 24 feet wide. The driveway apron radii are 15 feet, per requirements for passenger cars in section 1.7.2.5. of the City of Portland Technical Manual. Each residential unit will have a garage, so there will be individual driveways for each duplex to access their garages. Sight distance exceeds 250 feet, the required distance for 35 mph, which is 5 mph over the posted speed limit of 30 mph. ADA access will not be provided the residential units, since they will have a raised finished floor that will require stairs to access. However, grades in the driveway vary from 1% to 3%, which are suitable for ADA circulation of the driveway and parking area.

OFF STREET PARKING

Per City of Portland Land Use Ordinance, the required parking spaces for a residential development in the R5 zone is 2 spaces per unit. There are six (6) residential units, requiring a total of 12 spaces. A total of 17 parking spaces are provided. Each unit has a garage with one parking space, and there is room to park one car in each individual driveway in front of the garage. There are also 5 parallel parking spaces in the shared

driveway area for guest and overflow parking. These spaces are 22' long by 9' wide. No dedicated ADA parking is planned as part of this development.

Minimum driveway separation, based on the 30 mph speed limit posted and standards in section 1.7.2.7 in the City of Portland Technical Manual is 125 feet, center of driveway to center of driveway. The closest driveway is the driveway to the South on Lambert Street, the neighboring Tara Apartments driveway. This driveway is 145 feet away from the proposed driveway.

BICYCLE PARKING

Each individual Unit will have an attached garage, which will be able to be utilized for parking and storing bicycles. Therefore, bike racks should not be required with this development.

SNOW STORAGE

Snow will be plowed and stored on site, south of the parking area.

Planning and Urban Development Department

Planning Division



Subject: R-5 Design Review – 77 Lambert Street

Written by: Caitlin Cameron, Urban Designer

Date of Review: Friday, April 24, 2020

The multiplex proposal at 77 Lambert Street was reviewed against the *R-5 Multiplex and Small Residential Lot Development Design Standards* (Appendix 6 of the Design Manual). Reviewers: Caitlin Cameron, Urban Designer, Planning Division of the Department of Planning & Urban Development.

Design Review Comments (*red text denotes standards that are not met*):

1 Context – Met

- Form and massing of the new construction are generally compatible with the residential context – predominantly early 20th century neo-colonial, cape style, or more recent subdivisions. Site in a diverse context. Building includes gable roofs, some massing variation at front placing proper emphasis at entries.

2 Public Realm – Met

- The main entries to the building are front-facing with covered stoops. Project does not have a typical relationship to the street. “Front” in this case is the driveway.
- Lot is atypical, building placement is similar to neighboring multiplex developments but cannot match the orientation of the single-family neighbors based on lot configuration.

3 Massing – Met

- The context varies quite a bit. This project is adjacent to several developments with similar, attached buildings with the 1.5 story height and long, horizontal massing.

4 Orientation – Met

- Street is atypical situation – orientation is to the driveway
- The principal façades and entrances are front-facing to the driveway orientation

5 Articulation – Met

- Front façade has stoops, massing variation, overhangs
- At least 15% of front façade is fenestrated.
- The windows have a vertical proportion, regular pattern
- All elevations contain windows

6 Garages – Met

- Garage doors are less than 40% of façade.
- Doors are set back at least 4’ from front façade.

7 Roofs – Met

- Roofs are peaked with cross-gables and cornice treatment.

8 Materials – Met

- Clapboard is the dominant material – consistent with character of context.

9 Sound - Met

10 Light and Air - Met

77 LAMBERT CONDO DEVELOPMENT

77 LAMBERT STREET

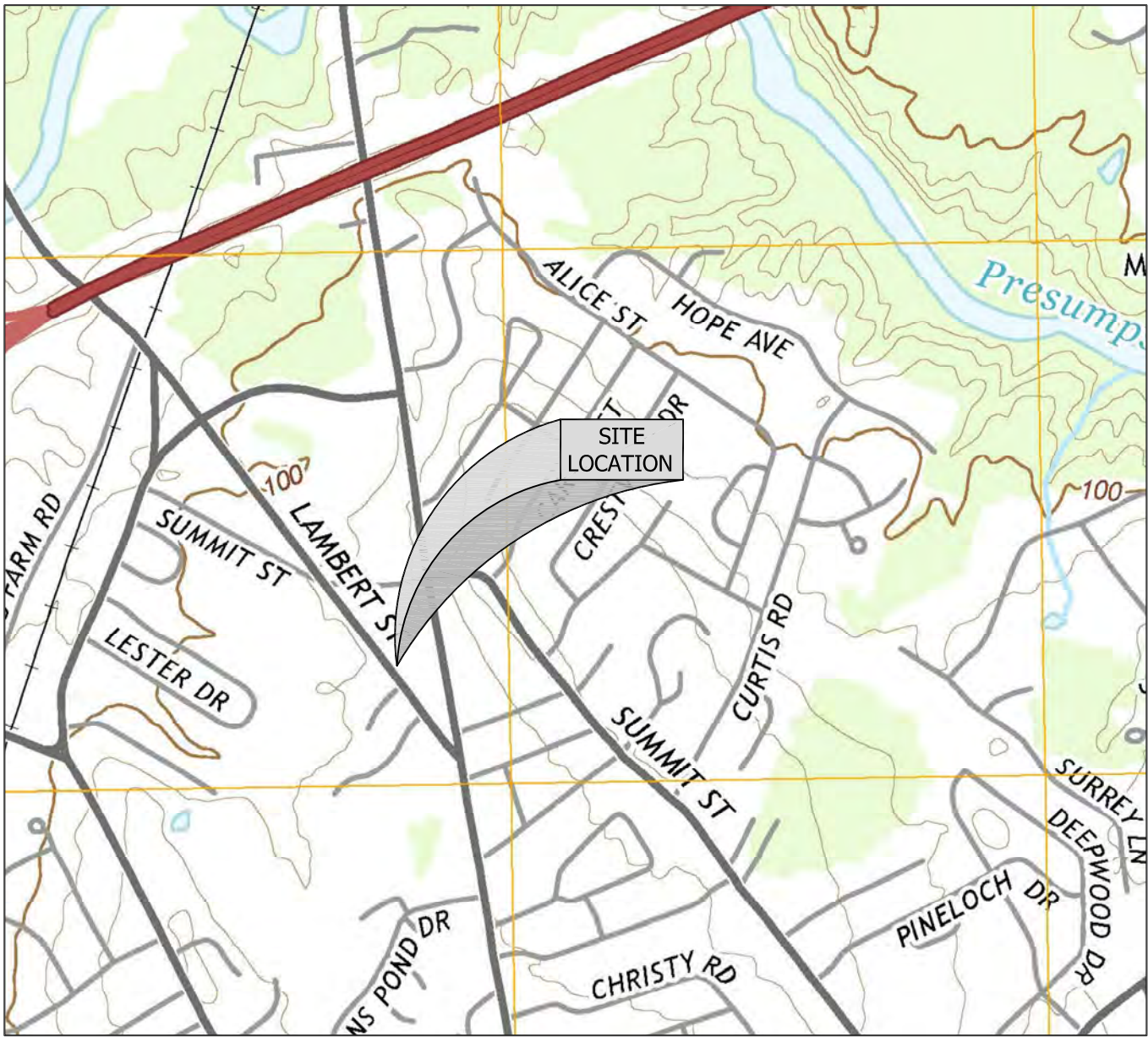
PORTLAND, MAINE 04103

PREPARED FOR:

75-81 LAMBERT, LLC

1035 OCEAN AVE

PORTLAND, MAINE 04103



VICINITY MAP

1"=1000'

PREPARED BY:

BLAIS CIVIL ENGINEERS

27 GORHAM ROAD, SUITE 207

SCARBOROUGH, MAINE 04074

(207) 730-7200

PROJECT TEAM:

ENGINEER:

BLAIS CIVIL ENGINEERS
27 GORHAM ROAD, SUITE 207
SCARBOROUGH, MAINE 04074
(207) 730-7200

SURVEYOR:

TITCOMB ASSOCIATES
133 GRAY ROAD
FALMOUTH, ME 04105
(207) 797-9199

ARCHITECT:

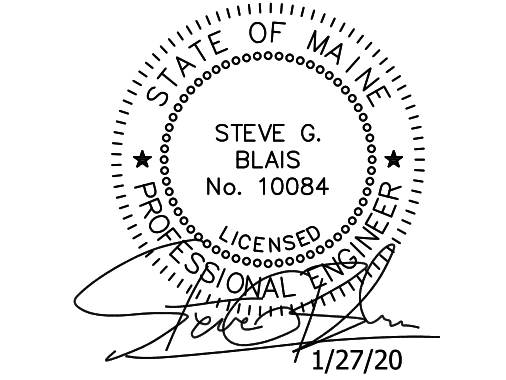
TDARCHITECT
92 PITT STREET #1
PORTLAND, ME 04103
(828) 231-2399

WETLAND SCIENTIST:

BROADWATER ENVIRONMENTAL, LLC
18 GRAND STREET
SOUTH PORTLAND, ME 04106
(207) 653-8737

INDEX OF DRAWINGS:

SHEET NO.	DRAWING TITLE
T-100	TITLE SHEET
REF-1	BOUNDARY & EXISTING CONDITIONS SURVEY
C-100	GENERAL NOTES & LEGEND
C-101	SITE LAYOUT & UTILITY PLAN
C-102	GRADING & DRAINAGE PLAN
L-201	LANDSCAPING PLAN
C-301	SITE DETAILS I
C-302	SITE DETAILS II
REF-2	SITE LIGHTING LAYOUT
C-303	EROSION CONTROL NOTES & DETAILS
D-100	PRE-DEVELOPMENT DRAINAGE PLAN
D-101	POST-DEVELOPMENT DRAINAGE PLAN



1. REVISED PER CITY COMMENTS 1/27/20

TITLE SHEET

77 LAMBERT CONDO DEVELOPMENT

77 LAMBERT STREET
PORTLAND, ME 04103

DRAWINGS PREPARED FOR:
75-81 LAMBERT, LLC
1035 OCEAN AVENUE
PORTLAND, ME 04103

DRAWING:

PROJECT:

PROJECT #: 19120

DESIGNED BY: MKT
DRAWN BY: MKT
CHECKED BY: SGB

ISSUED DATE: 10/15/19
ISSUED FOR: CITY REVIEW

THIS DOCUMENT IS ISSUED FOR REVIEW PURPOSES
ONLY AND NOT FOR CONSTRUCTION.

T-100

Code Information

- New Construction: Type V (000) - Unprotected Wood Frame
- Number of Stories: 2
- Building Height: 27' - 8"
- Finished Floor Area: 2,145 S.F. / Unit x 2 = 4,290 S.F. Total
- Occupancy: Residential Two-Family Dwelling Unit

Scope Summary

- New 2-family condo building on previously undeveloped lot
- Install NFPA 13R sprinkler system
- 1-hour fire seperation between units

Sheet Index

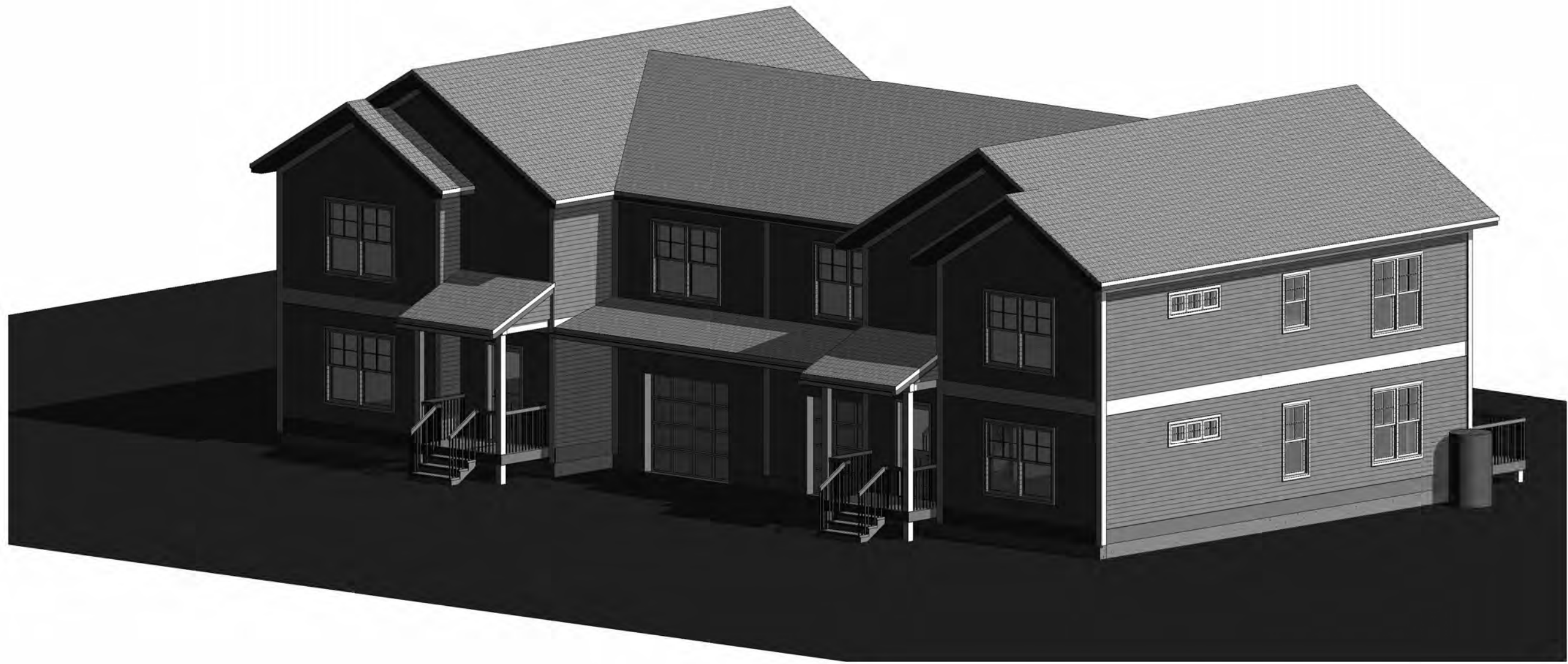
- A000 - Cover Sheet
- A100 - Basement Plan
- A101 - 1st FloorPlan
- A102 - 2nd Floor Plan
- A103 - Roof Plan
- A201 - Exterior Elevations
- A202 - Exterior Elevations
- A301 - Building Section

Additional Project Information

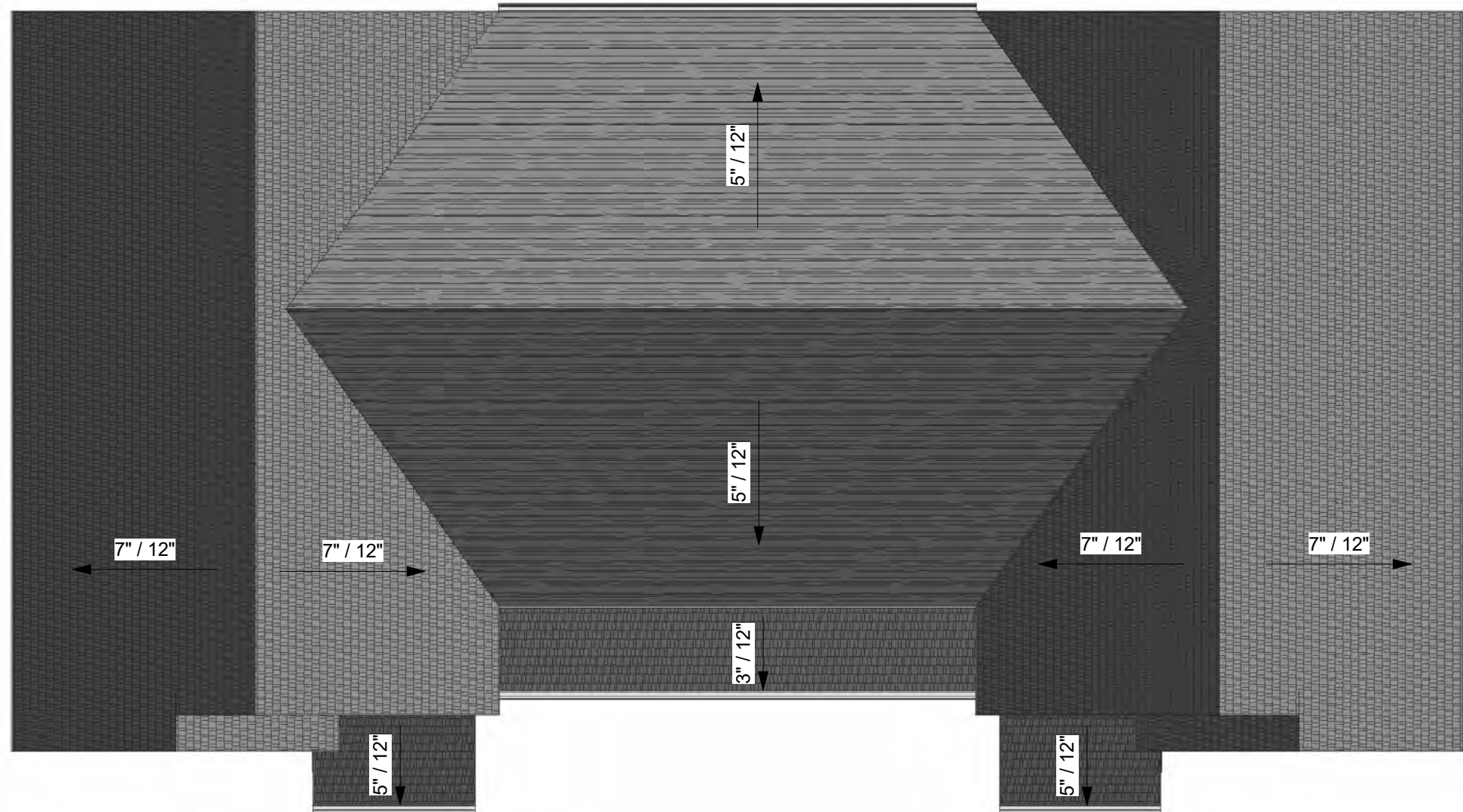
- Front facade area of glazing: 176 S.F. = 15% of front facade area.
(excluding garages)
- Total width of garage doors: 16' = 20% of front facade length.

TWO FAMILY RESIDENTIAL CONDO DEVELOPMENT
R5 Small Residential Lot
Lambert Street, Portland, ME 04103

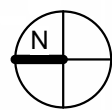
Owner: Joe Nelson
Architect: M. Ted Dickerson



1 Cover Image



2 Roof Plan
1/8" = 1'-0"



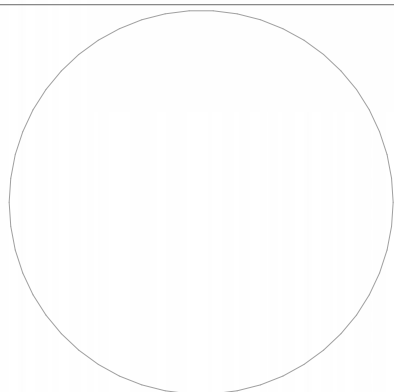
TDArchitect

828.231.2399
tdarchitect907.com
92 Pitt Street, #1, Portland, ME 04103

Project Name:
Duplex Condo

Project Address: Lambert Street, Portland, ME 04103

These drawings were prepared for:
Review



M.T. Dickerson, AIA

Nelson Property
Services

Cover Sheet

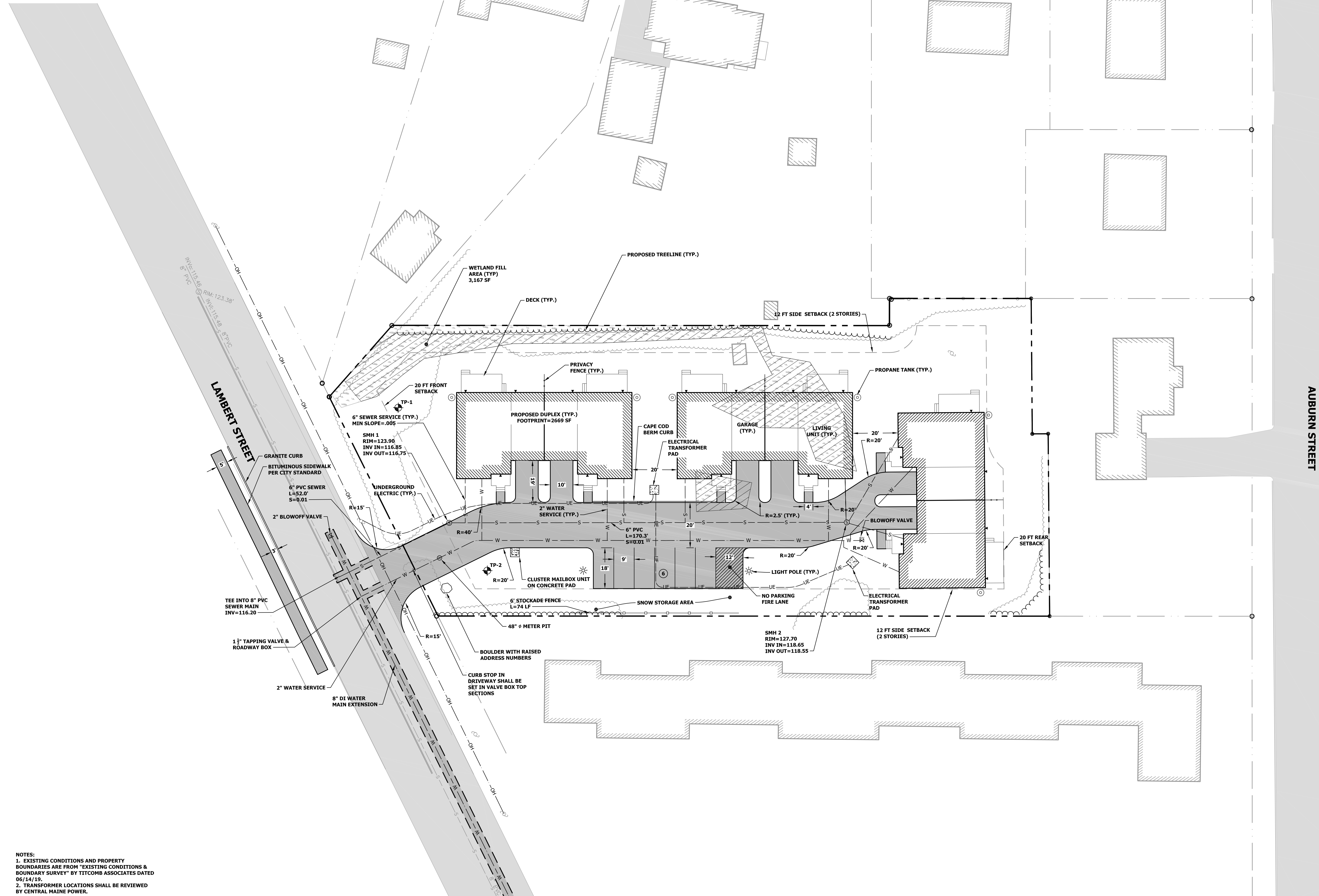
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Date	10.10.19
Drawn by	MTD
Checked by	

A000

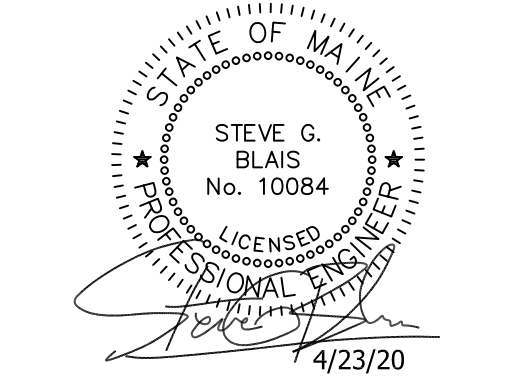
Scale	1/8" = 1'-0"
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SPACE AND BULK REGULATIONS		
DESCRIPTION	REQUIRED	PROVIDED
MINIMUM LOT AREA	36,000 SF	38,332 SF
AREA PER DWELLING UNIT	6,000 SF	6,389 SF
MINIMUM FRONTAGE	50 LF	108 LF
MINIMUM LOT WIDTH	60 LF	128 LF
MINIMUM FRONT YARD SETBACK	20 LF	35 LF
MINIMUM SIDE YARD SETBACK	12 LF	12 LF
MINIMUM REAR YARD SETBACK	20 LF	20 LF
MAXIMUM LOT COVERAGE	40 %	20%
MAXIMUM BUILDING HEIGHT	35'	27' 8"

PARKING SUMMARY	
RESIDENTIAL = 6 DWELLING UNITS AT 2 SPACE/UNIT = 12 SPACES	
TOTAL REQUIRED PARKING = 12 SPACES	
TOTAL PROVIDED PARKING = 18 SPACES	



NOTES:
1. EXISTING CONDITIONS AND PROPERTY BOUNDARIES ARE FROM "EXISTING CONDITIONS & BOUNDARY SURVEY" BY TITCOMB ASSOCIATES DATED 06/14/19.
2. TRANSFORMER LOCATIONS SHALL BE REVIEWED BY CENTRAL MAINE POWER.



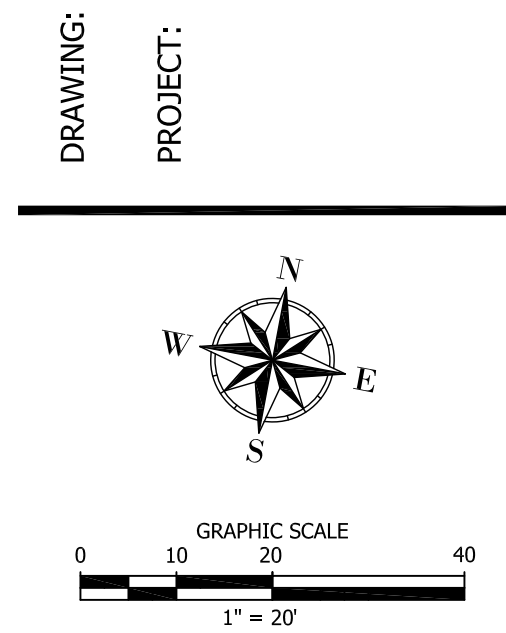
REV.	DESCRIPTION	DATE
1.	REVISED PER CITY COMMENTS	1/27/20
2.	REVISED PER CITY COMMENTS	4/23/20

SITE LAYOUT & UTILITY PLAN

77 LAMBERT CONDO DEVELOPMENT

77 LAMBERT STREET
PORTLAND, ME 04103

DRAWINGS PREPARED FOR:
75-81 LAMBERT, LLC
1035 OCEAN AVENUE
PORTLAND, ME 04103



PROJECT #: 19120
DESIGNED BY: MKT
DRAWN BY: MKT
CHECKED BY: SGB

ISSUED DATE: 10/15/19
ISSUED FOR: CITY REVIEW
THIS DOCUMENT IS ISSUED FOR REVIEW PURPOSES ONLY AND NOT FOR CONSTRUCTION.

1. LANDSCAPE DESIGN IS CONCEPTUAL. FINAL PLANT SELECTIONS TO BE DETERMINED BY OWNERS.

	COMMON NAME	LATIN NAME	SIZE	QTY
	YEW (COMPACT)	TAXUS X MEDIA 'NIGRA'	18-24"	33
	CASINO GOLD JUNIPER	JUNIPERUS CHINENSIS 'CASINO GOLD'	#2	12
	MISS KIM LILAC	SYRINGA PATULA 'MISS KIM'	#3	5
	DARK AMERICAN ABORVITAE	THUGA OCCIDENTALIS 'NIGRA'	3.5-4'	5
	EMERALD GREEN ABORVITAE	THUGA OCCIDENTALIS 'SMARAGD'	3.5-4'	5
	SERBIAN SPRUCE	PICEA 'OMORIKA'	6-7"	3
	WEEPING SERBIAN SPRUCE	PICEA OMORIKA 'PENDULA'	#5	1
	PJM RHODODENDRON	PJM COMPACT RHODODENDRON	#2	16
	DAYLILY	HEMEROCALLIS 'GOLDEN MINT'	34"	23

	COMMON NAME	LATIN NAME	SIZE	QTY
	YEW (COMPACT)	TAXUS X MEDIA 'NIGRA'	18-24"	33
	CASINO GOLD JUNIPER	JUNIPERUS CHINENSIS 'CASINO GOLD'	#2	12
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	EMERALD GREEN ABORVITAE	THUGA OCCIDENTALIS 'SMARAGD'	3.5-4'	5
	SERBIAN SPRUCE	PICEA 'OMORIKA'	6-7"	3
	WEEPING SERBIAN SPRUCE	PICEA OMORIKA 'PENDULA'	#5	1
	PJM RHODODENDRON	PJM COMPACT RHODODENDRON	#2	16
	DAYLILY	HEMEROCALLIS 'GOLDEN MINT'	34"	23

REV.	DESCRIPTION	DATE
1.	REVISED PER CITY COMMENTS	1/29/20

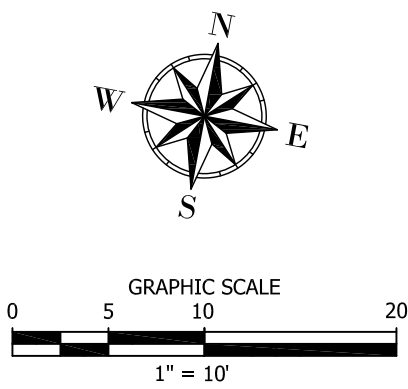
LANDSCAPING PLAN
77 LAMBERT CONDO DEVELOPMENT
77 LAMBERT STREET

77 LAMBERT STREET
PORTLAND, ME 04103

DRAWINGS PREPARED FOR:
75-81 LAMBERT, LLC
1035 OCEAN AVENUE
PORTLAND, ME 04103

DRAWING:

PROJECT:



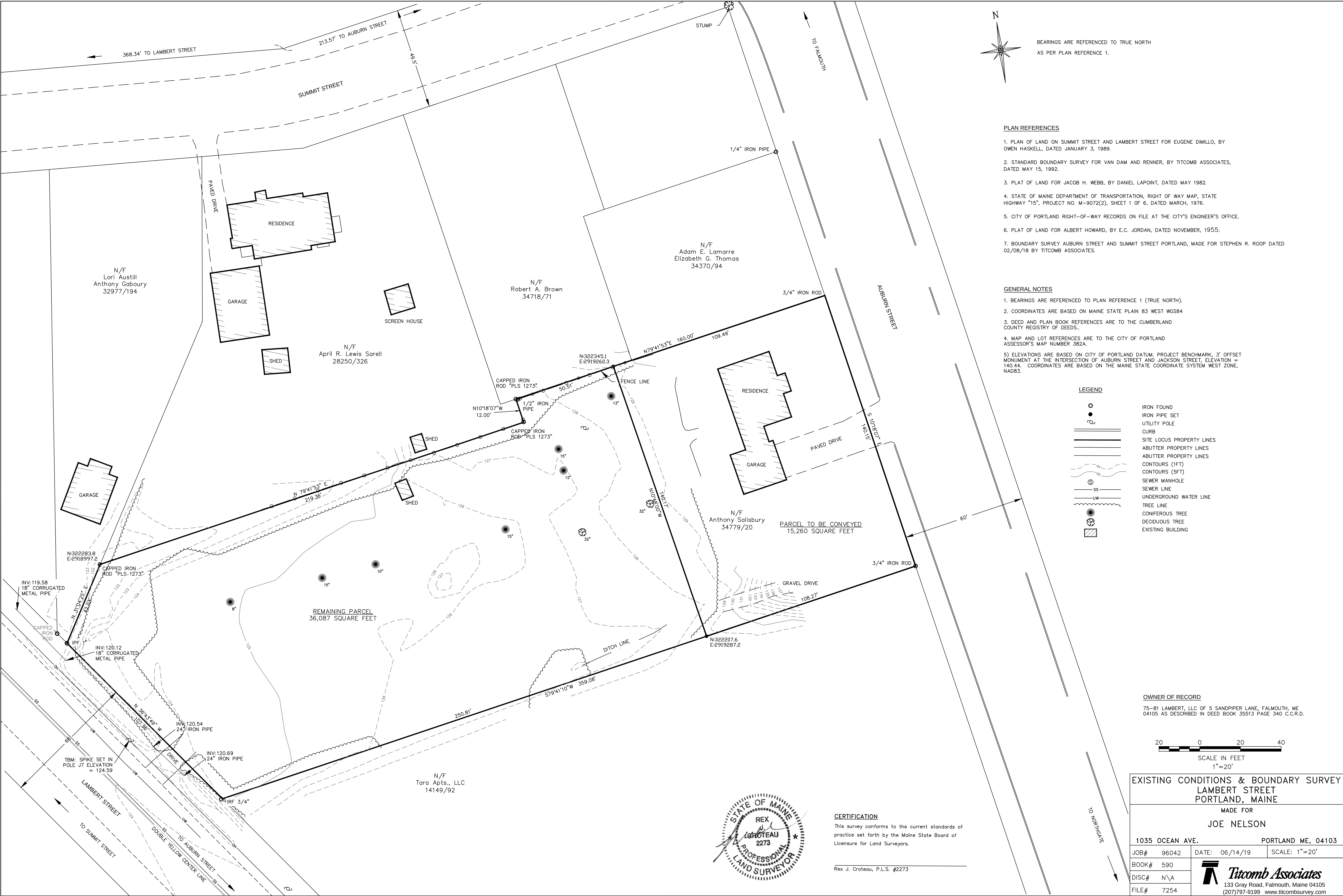
PROJECT #: 19120

DESIGNED BY: MKT
DRAWN BY: MKT
CHECKED BY: SGB

ISSUED DATE: 10/15/19
ISSUED FOR: CITY REVIEW
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L-201

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PLAN REFERENCES

1. PLAN OF LAND ON SUMMIT STREET AND LAMBERT STREET FOR EUGENE DIMILLO, BY OWEN HASKELL, DATED JANUARY 3, 1989.
2. STANDARD BOUNDARY SURVEY FOR VAN DAM AND RENNER, BY TITCOMB ASSOCIATES, DATED MAY 15, 1992.
3. PLAT OF LAND FOR JACOB H. WEBB, BY DANIEL LAPOINT, DATED MAY 1982.
4. STATE OF MAINE DEPARTMENT OF TRANSPORTATION, RIGHT OF WAY MAP, STATE HIGHWAY "15", PROJECT NO. M-9072(2), SHEET 1 OF 6, DATED MARCH, 1976.
5. CITY OF PORTLAND RIGHT-OF-WAY RECORDS ON FILE AT THE CITY'S ENGINEER'S OFFICE.
6. PLAT OF LAND FOR ALBERT HOWARD, BY E.C. JORDAN, DATED NOVEMBER, 1955.
7. BOUNDARY SURVEY AUBURN STREET AND SUMMIT STREET PORTLAND, MADE FOR STEPHEN R. ROOP DATED 02/08/18 BY TITCOMB ASSOCIATES.

GENERAL NOTES

1. BEARINGS ARE REFERENCED TO PLAN REFERENCE 1 (TRUE NORTH).
2. COORDINATES ARE BASED ON MAINE STATE PLAIN 83 WEST WGS84
3. DEED AND PLAN BOOK REFERENCES ARE TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS..
4. MAP AND LOT REFERENCES ARE TO THE CITY OF PORTLAND ASSESSOR'S MAP NUMBER 382A.
- 5) ELEVATIONS ARE BASED ON CITY OF PORTLAND DATUM. PROJECT BENCHMARK, 3' OFFSET MONUMENT AT THE INTERSECTION OF AUBURN STREET AND JACKSON STREET, ELEVATION = 140.44. COORDINATES ARE BASED ON THE MAINE STATE COORDINATE SYSTEM WEST ZONE, NAD83.

LEGEND

- IRON FOUND
- IRON PIPE SET
- UTILITY POLE
- CURB
- SITE LOCUS PROPERTY LINES
- ABUTTER PROPERTY LINES
- ABUTTER PROPERTY LINES
- CONTOURS (1FT)
- CONTOURS (5FT)
- SEWER MANHOLE
- SEWER LINE
- UNDERGROUND WATER LINE
- TREE LINE
- CONIFEROUS TREE
- DECIDUOUS TREE
- EXISTING BUILDING

OWNER OF RECORD
75-81 LAMBERT, LLC OF 5 SANDPIPER LANE, FALMOUTH, ME 04105 AS DESCRIBED IN DEED BOOK 35513 PAGE 340 C.C.R.D.

20 0 20 40
SCALE IN FEET
1"=20'

EXISTING CONDITIONS & BOUNDARY SURVEY
LAMBERT STREET
PORTLAND, MAINE

MADE FOR

JOE NELSON

1035 OCEAN AVE. PORTLAND ME, 04103

JOB# 96042 DATE: 06/14/19 SCALE: 1"=20'

BOOK# 590

DISC# N\A

FILE# 7254

Titcomb Associates
133 Gray Road, Falmouth, Maine 04105
(207)797-9199 www.titcombsurvey.com

CERTIFICATION

This survey conforms to the current standards of practice set forth by the Maine State Board of Licensure for Land Surveyors.

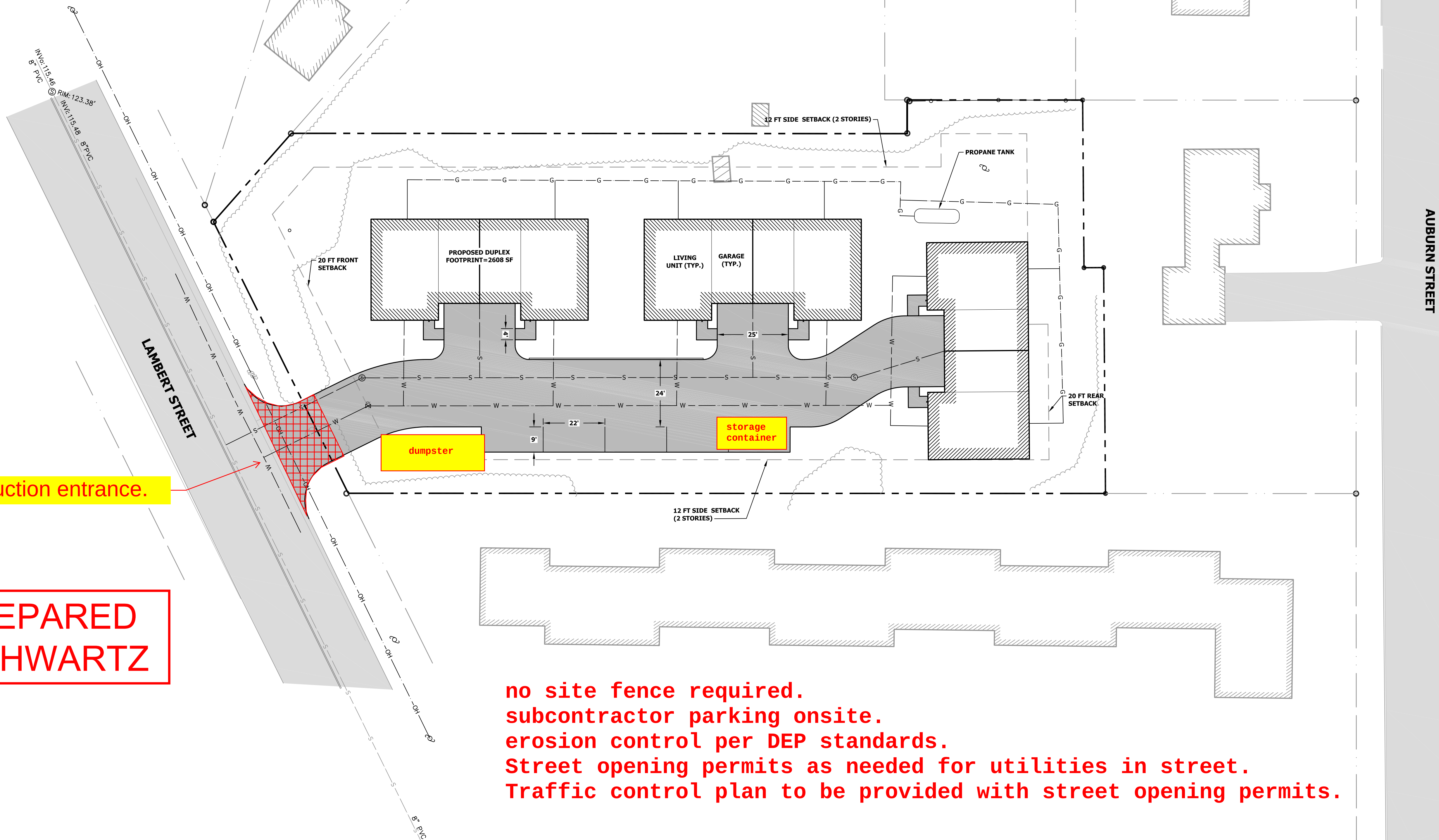
Rex J. Croteau, P.L.S. #2273



SPACE AND BULK REGULATIONS		
DESCRIPTION	REQUIRED	PROVIDED
MINIMUM LOT AREA	36,000 SF	38,332 SF
MINIMUM FRONTAGE	50 LF	108 LF
MINIMUM LOT WIDTH	60 LF	128 LF
MINIMUM FRONT YARD SETBACK	20 LF	43 LF
MINIMUM SIDE YARD SETBACK	12 LF	12 LF
MINIMUM REAR YARD SETBACK	20 LF	20 LF
MAXIMUM LOT COVERAGE	40 %	20%
MAXIMUM BUILDING HEIGHT	35 FT	XX FT

PARKING SUMMARY	
RESIDENTIAL = 6 DWELLING UNITS AT 2 SPACE/UNIT = 12 SPACES	
TOTAL REQUIRED PARKING = 12 SPACE	
TOTAL PROVIDED PARKING = 27 SPACES	

no job trailer on site.
one building to be built at a time.
materials storage as needed within parking area.



PLAN PREPARED
BY JP SCHWARTZ

no site fence required.
subcontractor parking onsite.
erosion control per DEP standards.
Street opening permits as needed for utilities in street.
Traffic control plan to be provided with street opening permits.

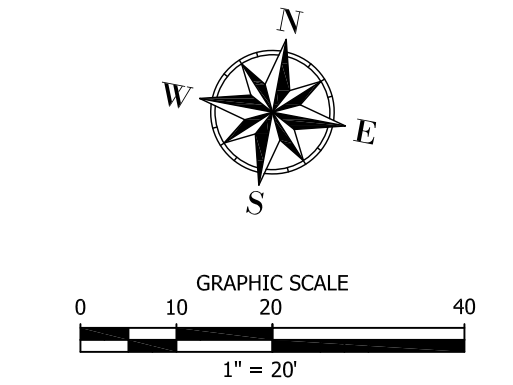
NOTES:
1. CONTOURS ARE BASED ON MAINE OFFICE OF GIS
DATA CATALOG ELEVATION CONTOURS.
2. PROPERTY BOUNDARIES ARE FROM "BOUNDARY
SURVEY" BY TITCOMB ASSOCIATES DATED 02/08/18.

PRELIMINARY SITE PLAN
LAMBERT STREET DEVELOPMENT

77 LAMBERT STREET
PORTLAND, ME 04103

DRAWINGS PREPARED FOR:
JOE NELSON
1035 OCEAN AVENUE
PORTLAND, ME 04103

DRAWING:
PROJECT:



PROJECT #: 19120

DESIGNED BY: MKT
DRAWN BY: MKT
CHECKED BY: SGB

ISSUED DATE:
ISSUED FOR: **PRELIMINARY REVIEW**
THIS DOCUMENT IS ISSUED FOR REVIEW PURPOSES
ONLY AND NOT FOR CONSTRUCTION.
DATE: 09/10/19

C-102

1. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE PROVIDED IN ACCORDANCE WITH THE LATEST "MAINE EROSION AND SEDIMENT CONTROL BMP'S" BY THE BUREAU OF LAND AND WATER QUALITY, MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
2. THE CONTRACTOR SHALL ONLY DISTURB THE AREAS OF THE PROPOSED CONSTRUCTION AND GRADING. ANY DISTURBANCE OUTSIDE THESE LIMITS MUST BE APPROVED BY THE ENGINEER.
3. THE CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENTATION CONTROL MEASURES IN ACCORDANCE WITH THE EROSION CONTROL PLAN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EMPLOYING EROSION CONTROL METHODS BEYOND THE CONTROLS SHOWN ON THE PLANS IN ORDER TO MEET THE ABOVE-REFERENCED DEP EROSION CONTROL STANDARDS.
4. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SITE EXCAVATION OR RE-GRADING. ALL DISTURBED AREAS ON SITE NOT COVERED BY BUILDINGS OR DESIGNATED PARKING AREAS, DRIVEWAYS, OR SIDEWALKS SHALL BE STABILIZED WITH LOAM AND SEED OR OTHER METHODS AS REQUIRED/DESCRIBED IN THE MAINE DEP BMP STANDARDS.
5. PERMANENT SEEDING OR STABILIZATION SHALL BE PERFORMED IMMEDIATELY AFTER FINAL GRADING IS COMPLETED OR TEMPORARY MEASURES SHALL BE APPLIED SUCH AS MULCHING OR SEEDING UNTIL PERMANENT MEASURES ARE IN PLACE.
6. WITHIN 7 CALENDAR DAYS FOLLOWING THE COMPLETION OF ANY SOIL DISTURBANCE, AND PRIOR TO ANY STORM EVENT, MULCH MUST BE SPREAD ON ANY EXPOSED SOILS.
7. THE CONTRACTOR SHALL STABILIZE ANY SOIL STOCKPILES WHICH WILL REMAIN UNUSED FOR MORE THAN 7 DAYS, OR PRIOR TO A STORM EVENT.
8. ALL EROSION CONTROL DEVICES MUST BE CHECKED WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL TO MINIMIZE PONDING, DAMAGE, DETERIORATION OR UNDERMINING. ANY PROBLEMS SHALL BE REPAIRED IMMEDIATELY. TRAPPED SEDIMENT SHALL BE REMOVED WHEN IT HAS ACCUMULATED TO NO MORE THAN HALF THE ORIGINAL HEIGHT OF ANY BARRIER OR AS OTHERWISE SHOWN ON THE PLANS.
9. ALL TRAFFIC INTO AND OUT OF THE SITE SHALL BE OVER THE STABILIZED CONSTRUCTION EXIT.
10. LINEAR UTILITY CONSTRUCTION SHALL BE SEEDED AND MULCHED WITHIN 7 DAYS AFTER BACKFILL AND NO MORE THAN 500 FEET SHALL BE OPEN AT ANY ONE TIME. WHERE CONSISTENT WITH JOB SAFETY REQUIREMENTS, ALL EXCAVATED MATERIALS SHALL BE PLACED ON THE UPHILL SIDES OF ALL TRENCHES. ALL TEMPORARY EARTH BERMS SHALL BE SEEDED AND MULCHED WITH TEMPORARY VEGETATION WITHIN 7 DAYS AFTER GRADING.
11. SEDIMENT BARRIERS MUST BE MAINTAINED UNTIL DISTURBED AREAS ARE PERMANENTLY STABILIZED.
12. EROSION CONTROL DEVICES [CHECK DAM, EROSION CONTROL BLANKET, SEDIMENT BARRIER, STABILIZED CONSTRUCTION ENTRANCE] SHALL BE REMOVED WITHIN 30 DAYS OF FINAL STABILIZATION.
13. SEEDED AREAS SHALL BE FERTILIZED AND RESEED AS NECESSARY TO ENSURE VEGETATION IS ESTABLISHED.

THE WINTER CONSTRUCTION PERIOD IS FROM NOVEMBER 1 THROUGH APRIL 15. IF THE CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER, OR RIPRAP BY NOVEMBER 15 THEN THE SITE NEEDS TO BE PROTECTED WITH OVER-WINTER STABILIZATION. AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD. WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME. LITTLE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS DECEASED TO BE LIMITED TO THE MINIMUM REQUIRED FOR THE PROJECT. ALL EXPOSED SURFACE GRASS OR SOFTWOOD TREES SHALL BE PROTECTED WITH MULCHING. MULCHING SHALL BE INSTALLED IN ROWWAY AREAS OR OTHER AREAS OF FUTURE LOG AND SEED HAVE BEEN LOANED, SEEDED, AND MULCHED. HAY AND STRAW MULCH RATES SHALL BE A MINIMUM OF 150 LBS./SQ. YD. (3 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. THE CONTRACTOR MUST INSTALL ANY ADDED MEASURES WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE DEPENDING UPON THE ACTUAL SITE AND WEATHER CONDITIONS. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, IN ORDER TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION.

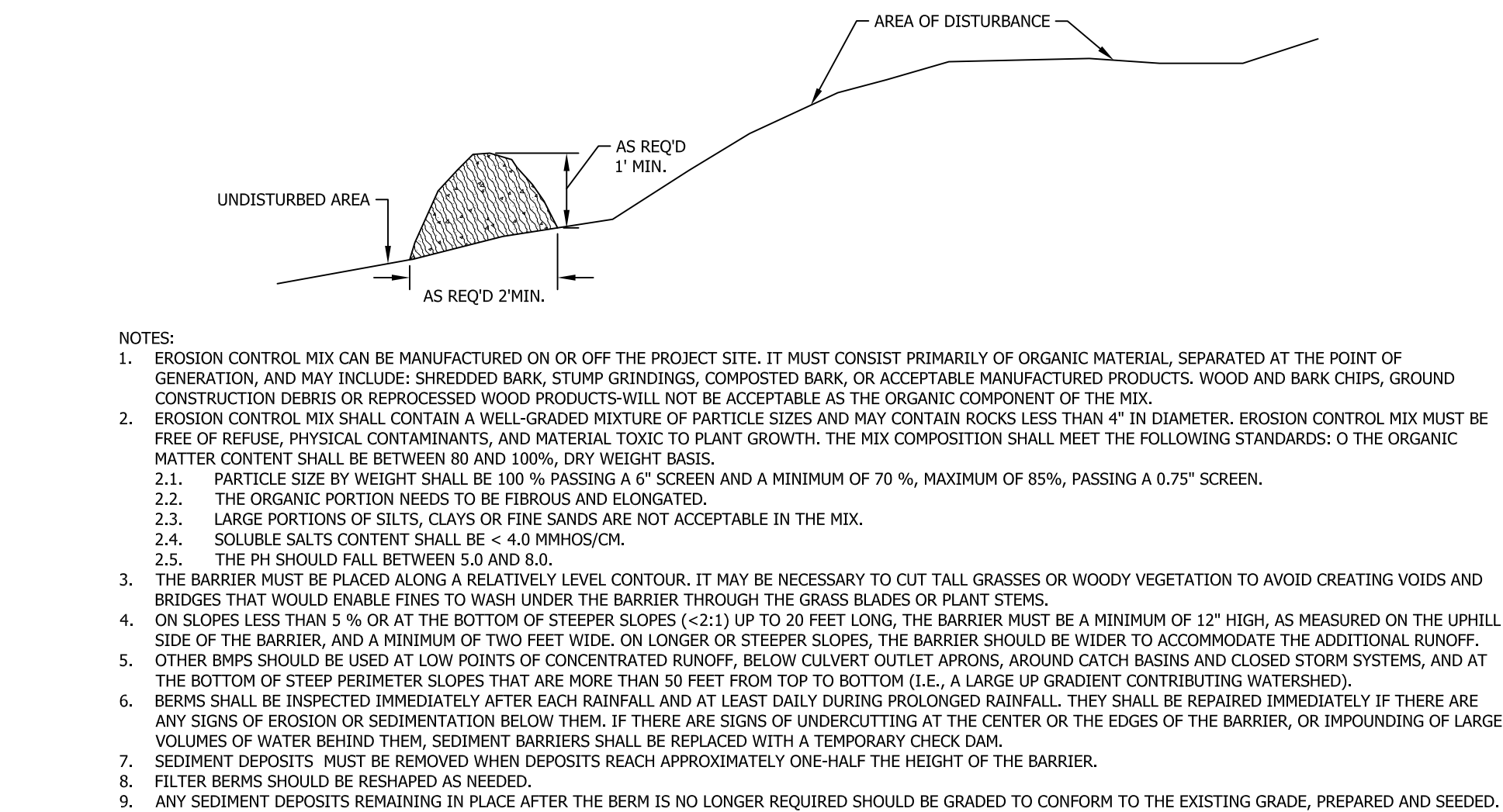
1. SOIL STOCKPILES STOCKPILES OF SOIL OR SUBSOIL WILL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR AT 150 LBS/1,000 S.F. (3 TONS PER ACRE) WITH A FOUR-INCH LAYER OF WOODSHAKE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.
2. NATURAL RESOURCES PROTECTING ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE MULCHED BY DECEMBER 1 AND ANCHORED WITH PLASTIC NETTING OR PROTECTED WITH EROSION CONTROL MATS. DURING WINTER CONSTRUCTION, A DOUBLE LINE OF SEDIMENT BARRIERS (I.E. SILT FENCE BACKED WITH HAY BALES OR EROSION CONTROL MIX) WILL BE PLACED BETWEEN ANY AREAS OF EROSION AND THE PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. EXISTING PROJECTS NOT STABILIZED BY DECEMBER 1 SHALL BE PROTECTED WITH THE SECOND LINE OF SEDIMENT BARRIER TO ENSURE FUNCTIONALITY DURING THE SPRING THAW AND RAINS.
3. SEDIMENT BARRIERS DURING FROZEN CONDITIONS, SEDIMENT BARRIERS SHALL CONSIST OF WOODSHAKE FILTER BERMS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES AND SEDIMENT SILT FENCES.
4. MULCHING ALL AREA SHALL BE CONSIDERED TO BE DENIED UNTIL AREAS OF FUTURE LOAN AND SEED HAVE BEEN LOADED, SEENCED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1,000 SQUARE FEET OR 2 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75 LBS./1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW WILL BE REMOVED DOWN TO A ONE-INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA WILL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN THE DATES OF SPRING THAW OR HAY AT A RATE OF 150 LB. PER 1,000 SQUARE FEET (2 TONS/ACRE) AND ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THOUGH THE MULCH. BETWEEN THE EXPRESSED SURFACES OF APRIL 15, ALL MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER LINE, MULCH NETTING, ASPHALT EMULSION CHALK, TRACK OR WOOD CELLULOSE FIBER, WHEN GROUND SURFACE IS NOT VISIBLE THOUGH THE MULCH. THEN COVER IS SUFFICIENT. AFTER NOVEMBER 1, MULCH AND ANCHORING SHALL BE APPLIED TO ALL AREAS OF EROSION.
5. MULCHING ON SLOPES AND DITCHES SLOPES SHALL NOT BE LEFT EXPOSED FOR AN EXTENDED TIME OF WASH SUSPENSION UNLESS FULLY MULCHED AND ANCHORED WITH REC AND NETTING OR WITH EROSION CONTROL BLANKETS. MULCHING SHALL BE APPLIED AT A RATE OF 230 LBS./1,000 S.F. ON SLOPES GREATER THAN 8%. MULCH NETTING SHALL BE USED TO ANCHOR MULCH ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%. EROSION CONTROL BLANKETS SHALL BE USED IN LIEU OF MULCH IN ALL DRAINAGE WAYS WITH SLOPES OF 8%. EROSION CONTROL MIX CAN BE USED TO SUBSTITUTE EROSION CONTROL BLANKETS ON ALL SLOPES EXCEPT DITCHES.
6. SEEDING BETWEEN THE DATES OF OCTOBER 15 AND APRIL 15, LOAN OR SEED WILL NOT BE REQUIRED, DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDING AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 15TH AND IF THE EXPOSED AREA HAS BEEN LOOSED, FINE GRADED WITH A UNIFORM SURFACE, THEN THE AREAS OF EROSION WILL BE TEMPORARILY SEEDING AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE SEEDING IS TO BE PLACED PRIOR TO THE PLACEMENT OF MULCH AND FABRIC NETTING, ANCHORED WITH STRAP CHALK, IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4" OF LOAN AND SEED AT AN APPLICATION RATE OF 5 LBS/1,000 S.F. ALL AREAS SEED DURING THE WINTER WILL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS SUFFICIENTLY VEGETATED (LESS THAN 75% CATCH) SHALL BE REVEGETATED BY REPLACING LOAN, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.
7. TRENCH DEWATERING AND TEMPORARY STREAM DIVERSION WARE FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSIONS WILL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING, ICE, AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE.
8. INSPECTION AND MONITORING MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION SEASON, AFTER EACH RAINFALL, SNOW STOP OR PERIOD OF THAWING AND RUNOFF. THE SITE CONTRACTOR SHALL BE VISUALLY INSPECTED FOR EROSION, COLLAPSE, OR SLIDING. FOLLOWING THE TEMPORARY AND FINAL SEEDING AND MULCHING, THE CONTRACTOR SHALL IN THE SPRING INSPECT AND REPAIR ANY DAMAGES AND/OR UNESTABLISHED SPOTS. ESTABLISHED VEGETATIVE COVER MEANS A MINIMUM OF 85 TO 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH.

1. STANDARD FOR THE TIMELY STABILIZATION OF DITCHES AND CHANNELS THE APPLICANT WILL CONSTRUCT AND STABILIZE ALL STONE-LINED DITCHES AND CHANNELS ON THE SITE BY NOVEMBER 15. THE APPLICANT WILL CONSTRUCT AND STABILIZE ALL GRASS-LINED DITCHES AND CHANNELS ON THE SITE BY SEPTEMBER 15. IF THE APPLICANT FAILS TO STABILIZE A DITCH OR CHANNEL TO BE USED IN THE SEPT/OCT RAINFALL PERIOD, THE APPLICANT WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE DITCH OR CHANNEL FOR LATE FALL AND WINTER. THE APPLICANT SHALL INSTALL A SOD LINING IN THE DITCH DITCH WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL, AND ANCHORING THE SOD WITH JUTE STRIPS TO PREVENT SLIDING DOWN THE SLOPE. IF THE APPLICANT DOES NOT HAVE ACCESS TO SOD, THEN THE APPLICANT SHALL PLACE A SIX-INCH LAYER OF WOODWASTE COMPOST ON THE DITCH DITCH BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE AND LINING THICKNESS NEEDED TO WITHSTAND THE ANTICIPATED FLOW VELOCITIES AND FLOOD DEPTS WITHIN THE DITCH. IF NECESSARY, THE APPLICANT WILL REGRADE THE DITCH PRIOR TO PLACING THE STONE LINING TO PREVENT THE STONE LINING FROM REDUCING THE DITCH'S CROSS-SECTIONAL AREA.

2. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES THE APPLICANT WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE APPLICANT WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE DEPARTMENT WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% ($10H+1V$) TO BE A SLOPE. IF THE APPLICANT FAILS TO STABILIZE A SLOPE BEFORE NOVEMBER 15, THEN THE APPLICANT WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER. THE APPLICANT SHALL COVER THE SOIL WITH TEMPORARY VEGETATION AND EROSION – BY OCTOBER 1 THE APPLICANT WILL SEED THE CONTROL MATS DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST 75% THROUGH THIS PERIOD OF THREE MONTHS OR MORE, THEN THE APPLICANT WILL COVER THE SLOPE WITH A LAYER OF WOODWASTE COMPOST. IF THE APPLICANT DOES NOT HAVE ACCESS TO ITEM III OF THIS CONDITION OR WITH STONE RIPRAP AS DESCRIBED IN ITEM IV OF THIS CONDITION, – THE APPLICANT WILL STABILIZE THE SLOPE WITH SOD DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT WILL NOT USE LATE-FALL/WINTER SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% ($3H+1V$). STABILIZE THE SLOPE WITH WOODWASTE COMPOST WILL PLACE A SIX-INCH LAYER OF WOODWASTE COMPOST ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE WOODWASTE COMPOST, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. THE APPLICANT WILL NOT USE WOODWASTE COMPOST TO STABILIZE A SLOPE THAT IS SUBJECT TO HOVERING GROUNDSWATER SEEPS ON THE SLOPE BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

3. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES BY SEPTEMBER 15 THE APPLICANT WILL SEED AND MULCH ALL DISTURBED SLOPS ON AREAS HAVING A SLOPE LESS THAN 15%. IF THE APPLICANT FAILS TO STABILIZE THESE SLOPES BY THIS DATE, THEN THE APPLICANT WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER. STABILIZE THE SLOPE WITH TEMPORARY VEGETATION AND EROSION – BY OCTOBER 1 THE APPLICANT WILL SEED THE CONTROL MATS DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET WITH HAY OR STRAW AT 75 TONS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST 75% THROUGH THIS PERIOD OF THREE MONTHS OR MORE AT LEAST 75% OF THE DISTURBED SLOPE BEFORE NOVEMBER 15, THEN THE APPLICANT WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM IV OF THIS CONDITION. STABILIZE THE SLOPE WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. STABILIZE THE SOIL WITH MULCH WILL MULCH THE DISTURBED SLOPE BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. AFTER MULCHING, THE APPLICANT WILL COVER THE MULCH WITH PLASTIC NETTING TO PREVENT THE MULCH FROM BEING BLOWN AWAY BY WIND.

SEEDING:	
1. USE PERMANENT SEED MIXES AND TATES BETWEEN 5/15 AND 9/30.	
2. USE TEMPORARY SEED MIXES FOR PERIODS LESS THAN 12 MONTHS. IF USING TEMPORARY SEED MIXES AND RATES BETWEEN 10/1 AND 3/14, RE-SEED WITH PERMANENT SEED MIX AFTER 5/15.	
PERMANENT SEED:	
MDOT 71703(a) METHOD NUMBER # 1 FOR GRASS AREAS AND METHOD #2 FOR MEADOW AREAS.	
TEMPORARY SEED:	
OATS	80.00 LBS/ACRE 4/01-5/14
ANNUAL RYEGRASS	40.00 LBS/ACRE
SUDANGRASS	40.00 LBS/ACRE 5/15-8/14
ANNUAL RYEGRASS	80.00 LBS/ACRE 5/15-9/14
WINTER RYE	112.00 LBS/ACRE 9/15-9/30
WINTER RYE (PROTECT WITH MULCH COVER)	112.00 LBS/ACRE 10/01-3/31
LIME AND FERTILIZER:	
LIMING AND FERTILIZER RATES WILL BE BASED ON FIELD SOIL TESTING OF ON-SITE TOPSOILS BY A CERTIFIED LABORATORY. SUBMIT TEST RESULTS TO THE ENGINEER.	
MULCH:	
STRAW OR HAY (ANCHORED)	
PROTECTED AREAS	70-90 LBS
STRAW OR HAY (ANCHORED)	
WINDY AREAS	185-275 LBS
SHREDDED OR CHOPPED	185-275 LBS
JUTE MESH	AS REQUIRED
MODERATE TO HIGH VELOCITY AREAS & STEEP SLOPES	
EXCELSIOR MAT	AS REQUIRED
MULCH ANCHORING:	
PEG AND TWINE	LIQUID ASPHALT
MULCH NETTING	WOOD CELLULOSE FIBER
ASPHALT EMULSION	CHEMICAL TACK



1 NOT TO SCALE

6 FOOT SPACING OF POSTS OR 10 FEET IF WIRE MESH REINFORCEMENT IS USED

2 MIN.

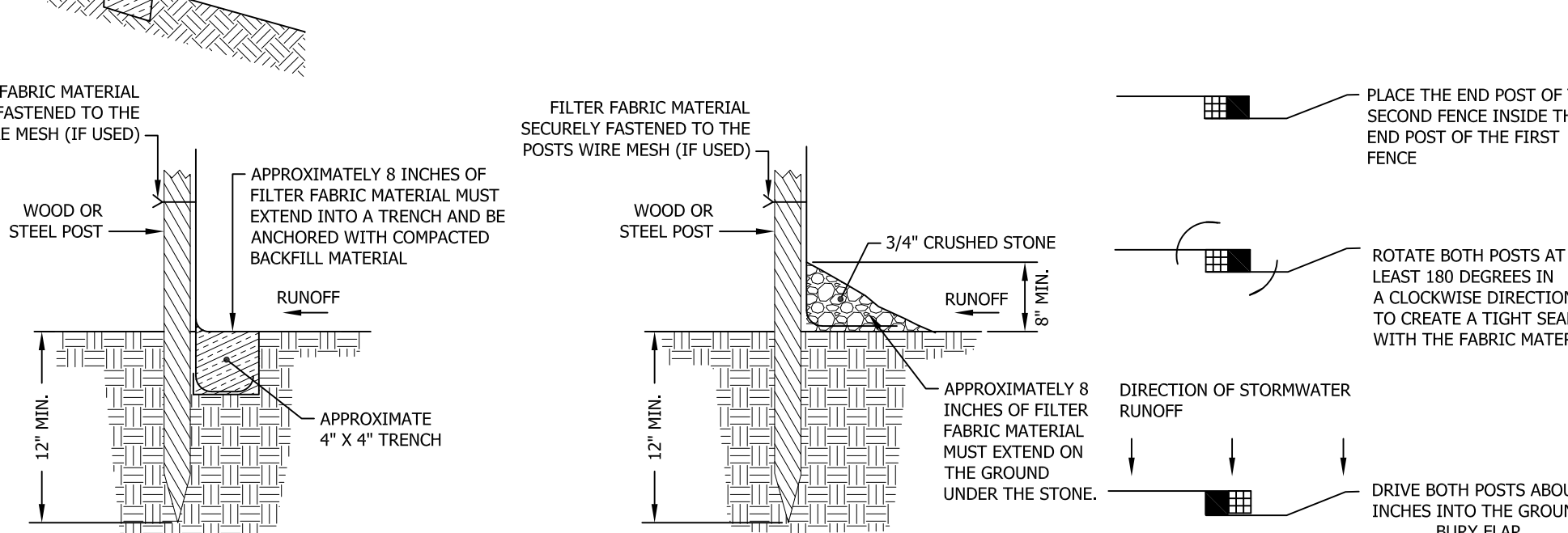
BACKFILLED TRENCH

FOR ADDITIONAL STRENGTH FILTER FABRIC MATERIAL CAN BE ATTACHED TO A 6-INCH (MAX) MESH WIRE SCREEN WHICH HAS BEEN FASTENED TO THE POSTS

FILTER FABRIC MATERIAL

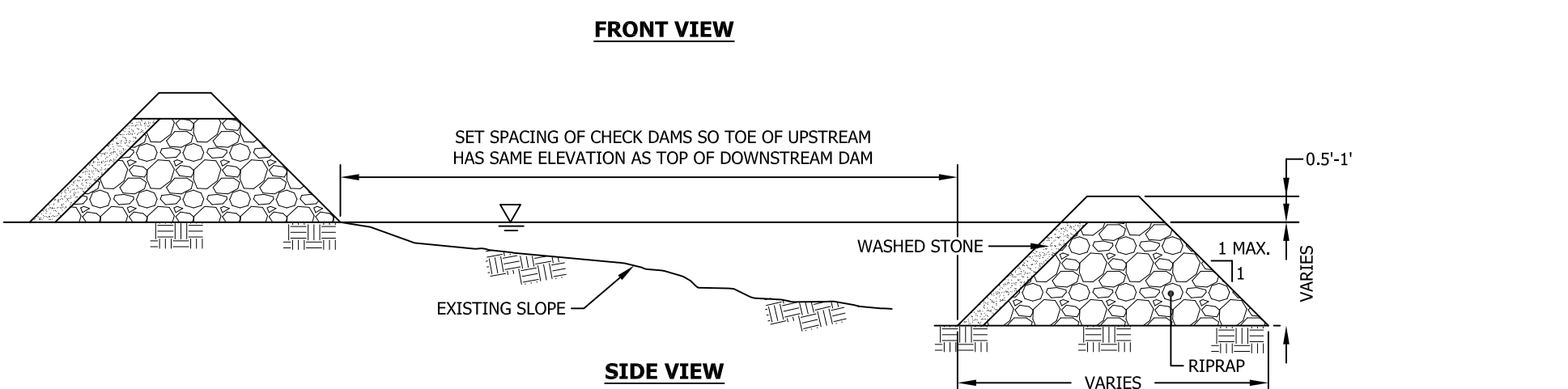
NOTES:

1. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. MAXIMUM SEDIMENT BUILD-UP: 9 INCHES.
2. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
3. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE EFFICIENCY. DO NOT PLACE SILT FENCE IN STREAMS OR IN CONCENTRATED FLOW CONDITIONS.



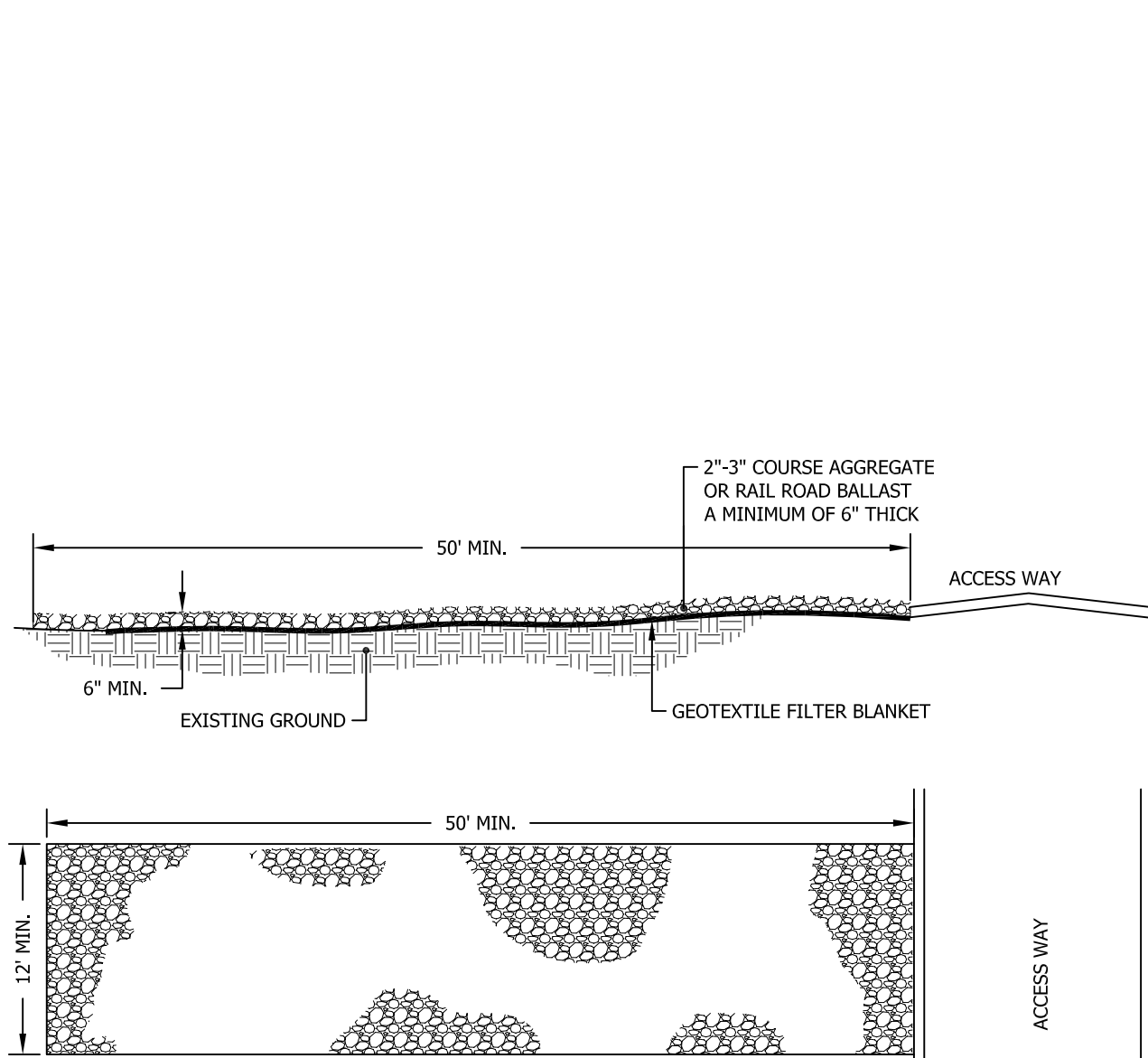
INSTALLATION ON LEDGE, FROZEN, OR HEAVEY ROOTED GROUND

The diagram illustrates a cross-section of a rip rap structure. It shows a central area of 'WASHED STONE' (represented by a stippled pattern) forming a rip rap apron. This apron is flanked by 'EXISTING SLOPES' (represented by a hatched pattern). A horizontal dimension line above the apron indicates its width 'VARIES' and its thickness is '0.5'-1''. The apron is 'KEYED' into the existing slopes, as indicated by the label 'KEYED RIP RAP' pointing to the interface. A vertical dimension line on the left indicates the depth of the apron, labeled 'VARIES'.



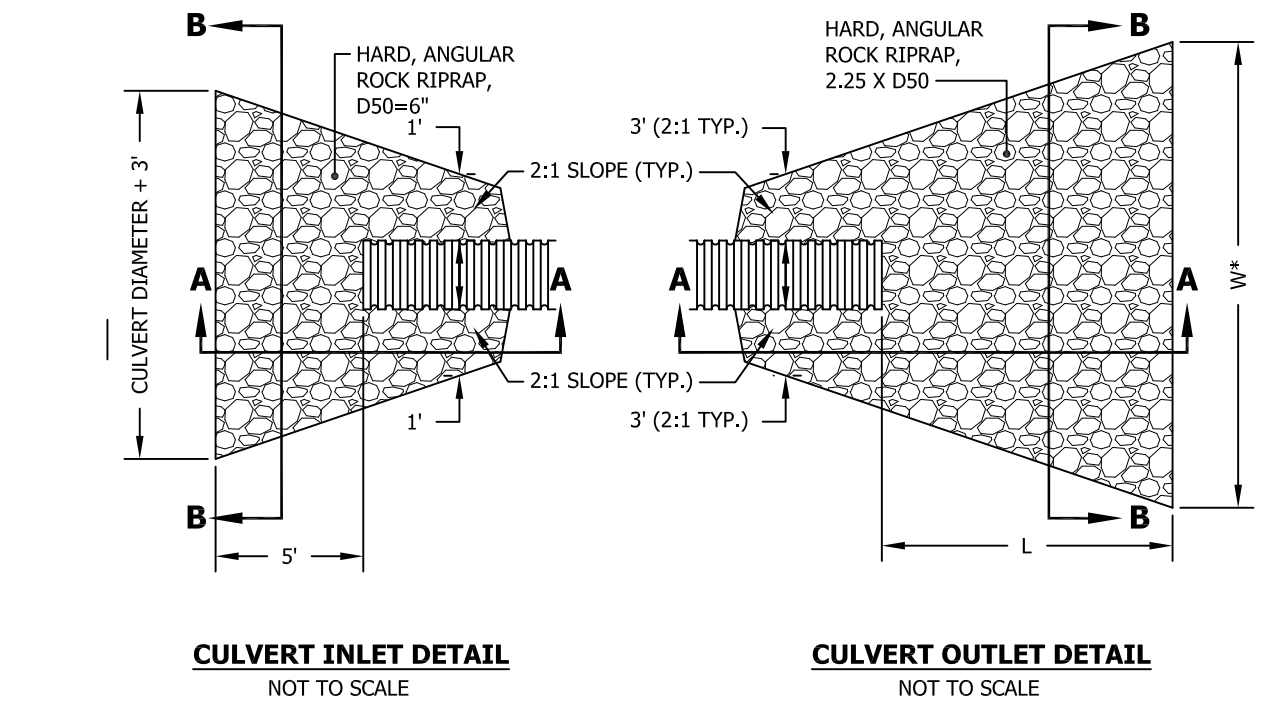
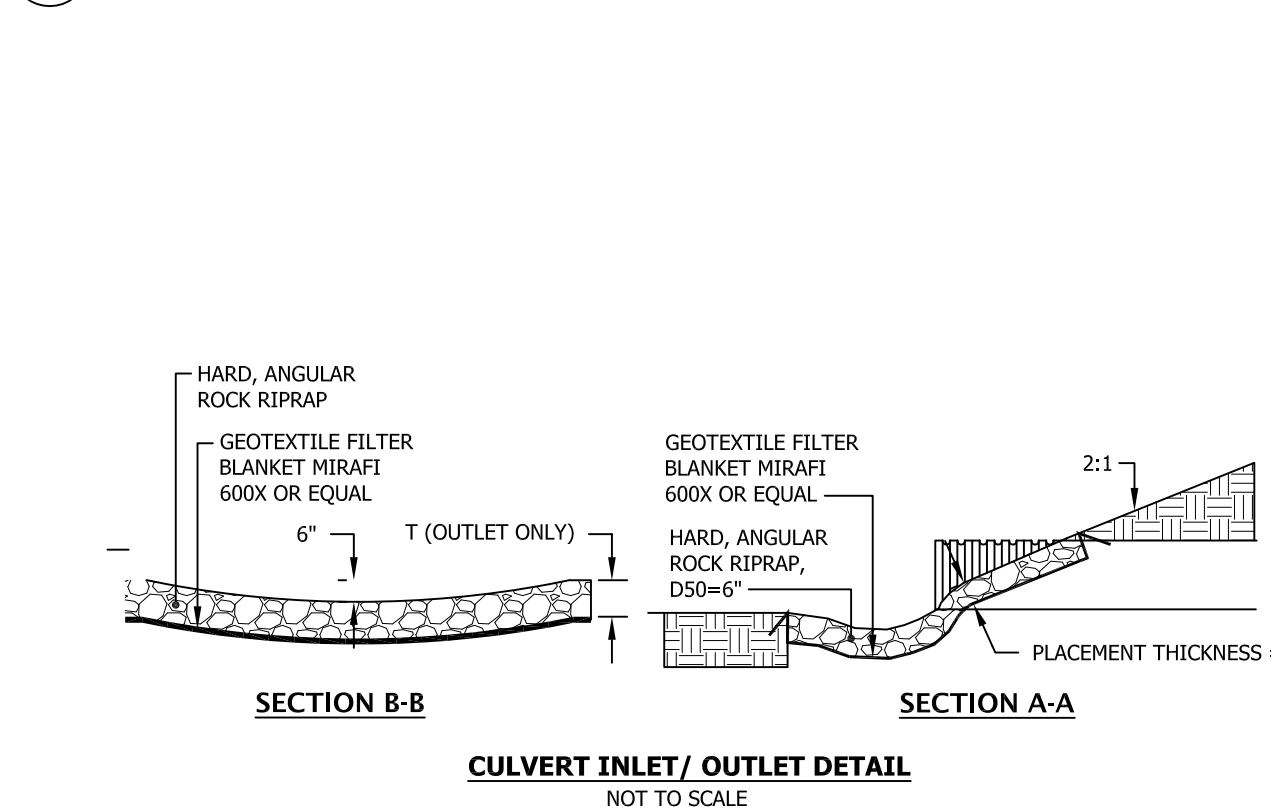
- NOTES:
1. STONE SHALL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
 2. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
 3. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
 4. ENSURE THAT CHANNEL APPEARANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.

NOT TO SCALE



- NOTES:
1. THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE LOCATED WHERE TRAFFIC WILL ENTER OR LEAVE THE CONSTRUCTION SITE ONTO A PUBLIC STREET.
 2. FILTER FABRIC OR COMPACTED CRUSHED RUNNER STONE SHALL BE USED AS A BASE FOR THE CONSTRUCTION ENTRANCE.
 3. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC STREETS OR EXISTING PAVEMENT. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS WARRANT AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
 4. ANY SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC STREETS MUST BE REMOVED IMMEDIATELY.
 5. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED IN ORDER TO TRAP AND STABILIZE ANY SEDIMENT THAT RUNS OFF OF THE CONSTRUCTION ENTRANCE.
 6. WHEN APPROPRIATE, WHEELS MUST BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTERING A PUBLIC STREET.
 7. WHEN WASHING IS REQUIRED, IT SHALL BE DONE IN AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
- STABILIZED CONSTRUCTION ENTRANCE DETAILS**

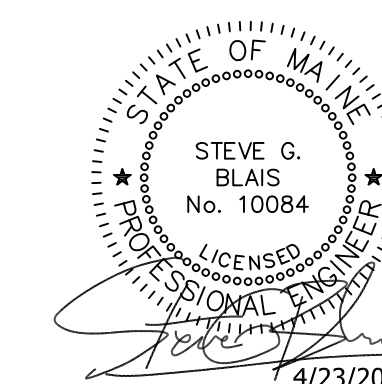
4 NOT TO SCALE



CULVERT DIAMETER	L	W	D 50	T
12"	8'	9' *	4"	9"
15"	10'	11' *	4"	9"
18"	10'	12' *	4"	9"
30"	30'	38' *	10"	23"

* NOTE:
IN DEFINED CHANNELS, APRON SHALL EXTEND FULL
WIDTH OF BOTTOM AND ONE FOOT ABOVE MAX.
TAILWATER OR UP TO BANK FULL, WHICHEVER IS LESS

(J) NOT TO SCALE



REV.	DESCRIPTION	DATE
1.	REVISED PER CITY COMMENTS	1/27/20
2.	REVISED PER CITY COMMENTS	4/23/20

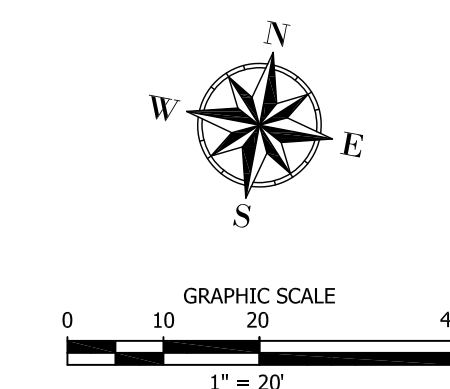
GRADING & DRAINAGE PLAN

GRADIENT
77 LAMBERT
77 LAMBERT STREET
PORTLAND, ME 04103

DRAWINGS PREPARED FOR:
75-81 LAMBERT, LLC
1035 OCEAN AVENUE
PORTLAND, ME 04103

DRAWING:

PROJECT:



PROJECT #: 19120

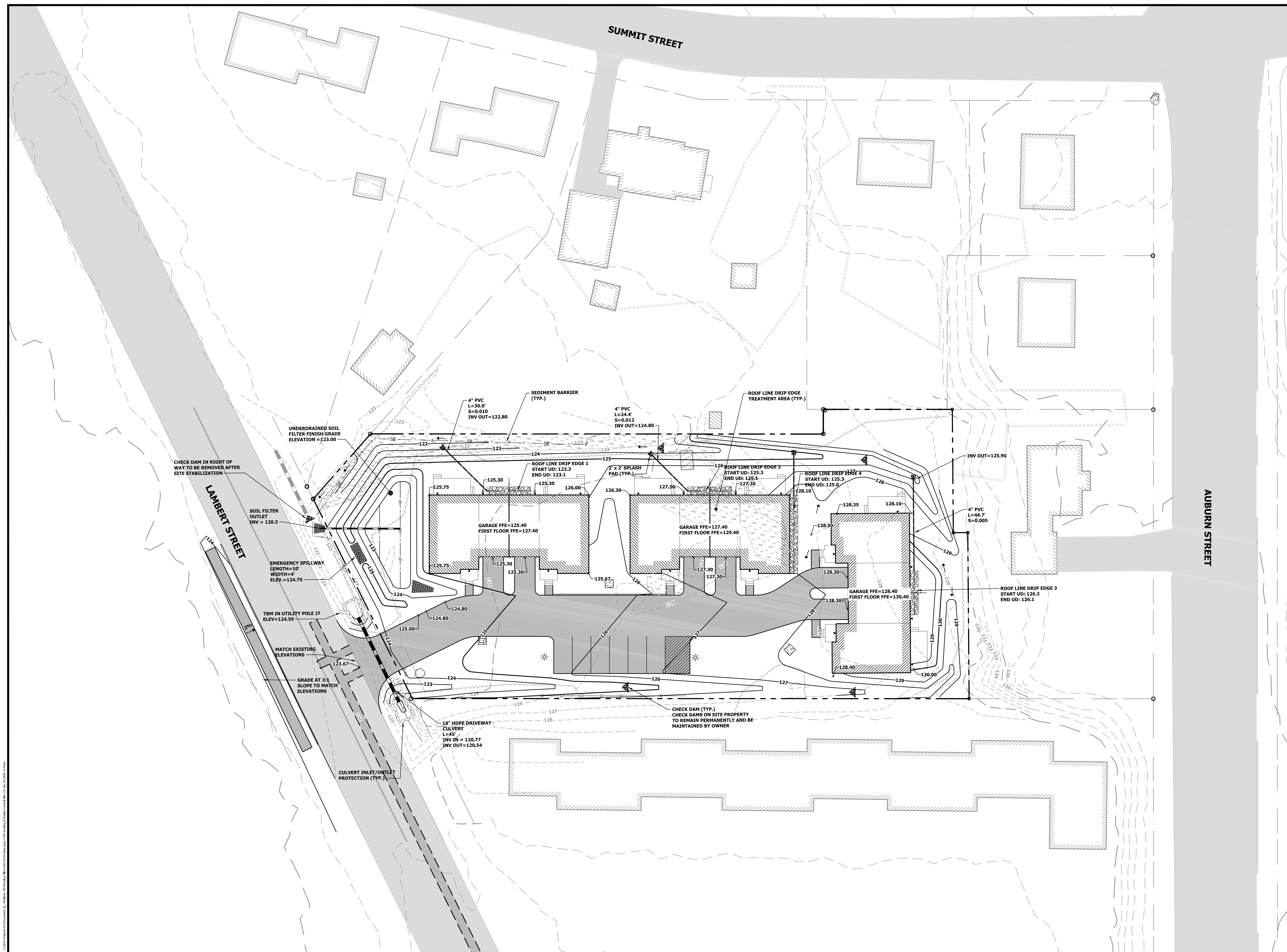
DESIGNED BY: MKT
DRAWN BY: MKT
CHECKED BY: SGB

ISSUED DATE: 10/15/19
ISSUED FOR: CITY REVIEW

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C-103

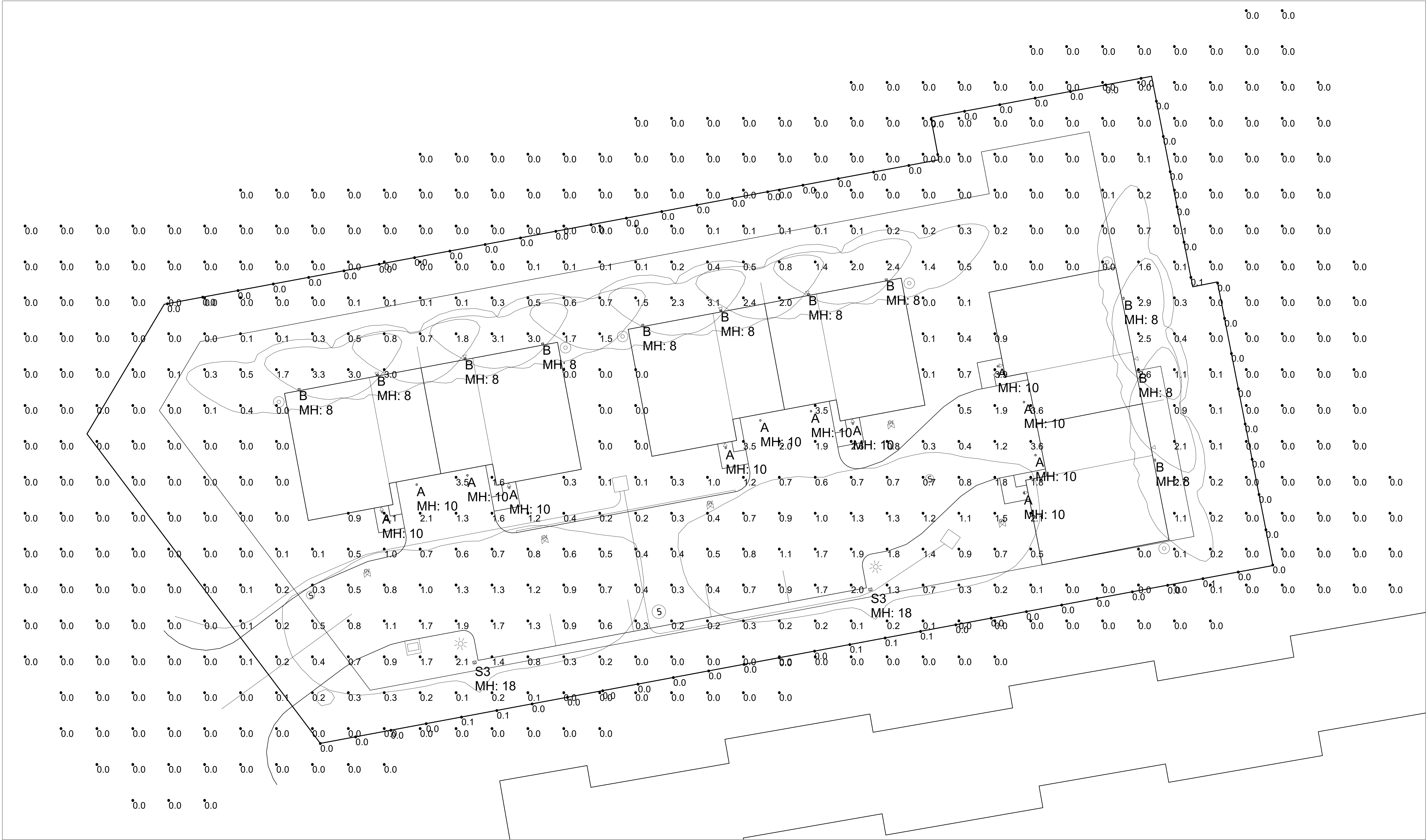
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Calculation Summary					
Label	Avg	Max	Min	Avg/Min	Max/Min
PL	0.01	0.1	0.0	N.A.	N.A.
SITE	0.33	4.1	0.0	N.A.	N.A.

Luminaire Schedule (note fixture catalogue numbers are not complete)					
Type	Qty	Lum. Lumens	LLF	Lum. Watts	Description
A	12	1032	0.900	16.37	LBSLEDA10L30K9_WH
B	11	884	0.900	12.9	LNC-5LU-3K-2
S3	2	3758	0.900	54.88	VP-S-24L-55-3K7-3-BC

- NOTES:
- 1) EXACT MOUNTING DETAILS TO BE DETERMINED AT JOBSITE BY OTHERS.
 - 2) CALCULATIONS MAY or MAY NOT SHOW THE EFFECT OF SHADOWING CAUSED BY BUILDINGS AND OBJECTS WITHIN THE CALCULATED SPACE OR IN THE SITE AREA.
 - 3) READINGS SHOWN ARE INITIAL HORIZONTAL FOOTCANDLES ON A FLAT SITE WITHOUT REFLECTIONS OR OBSTRUCTIONS UNLESS OTHERWISE INDICATED.
 - 4) THIS CALCULATION IS BASED ON LIMITED INFORMATION SUPPLIED BY OTHERS TO SWANEY LIGHTING ASSOCIATES AND STANDARD ASSUMPTIONS OF THE SPACE AND/OR SITE.
 - 5) CONFORMANCE TO CODES AND OTHER LOCAL REQUIREMENTS AS DETERMINED BY THE AHJ ARE THE RESPONSIBILITY OF THE OWNER AND/OR THE OWNER'S REPRESENTATIVE.
 - 6) THIS LAYOUT DRAWING MUST BE COORDINATED WITH THE SITE LOCATION FOR CORRECT FIXTURE ORIENTATION.
 - 7) DOCUMENTS PRINTED OR PLOTTED FROM ELECTRONIC FILES MAY APPEAR AT OTHER THAN THE DESIRED OR ASSUMED GRAPHIC SCALES. IT IS THE RESPONSIBILITY OF THE RECIPIENT TO VERIFY THAT THE PRINTED OR PLOTTED-TO-SCALE DRAWING IS PRINTED TO SCALE.



PLAN VIEW

GENERATED FOR:
**BLAIS CIVIL
ENGINEERS**

SCALE: NOT TO SCALE

DATE: 10/3/2019

Page 1 of 1

TITLE

**LAMBERT STREET DEVELOPMENT
PORTLAND, ME
SITE LIGHTING LAYOUT**

NOTICE: THIS DRAWING IS THE EXCLUSIVE PROPERTY OF SWANEY LIGHTING ASSOCIATES. IT IS NOT TO BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN PERMISSION OF SWANEY LIGHTING ASSOCIATES. THIS DRAWING IS TO BE USED FOR NO PURPOSE OTHER THAN AS DETAILED INFORMATION CONCERNING THE OPERATION OF UNITS INDICATED. THIS DRAWING IS TO BE USED AS A GUIDE ONLY AND IS NOT A SUBSTITUTE FOR A PROFESSIONAL ENGINEER'S DESIGN. ANY VARIATION IN THE PERFORMANCE OF THE UNITS FROM THE PERFORMANCE SHOWN IN THIS FILE IS NOT THE RESPONSIBILITY OF THE MANUFACTURER. IT IS THE RESPONSIBILITY OF THE RECIPIENT TO VERIFY THAT THE PRINTED OR PLOTTED-TO-SCALE DRAWING IS PRINTED TO SCALE.

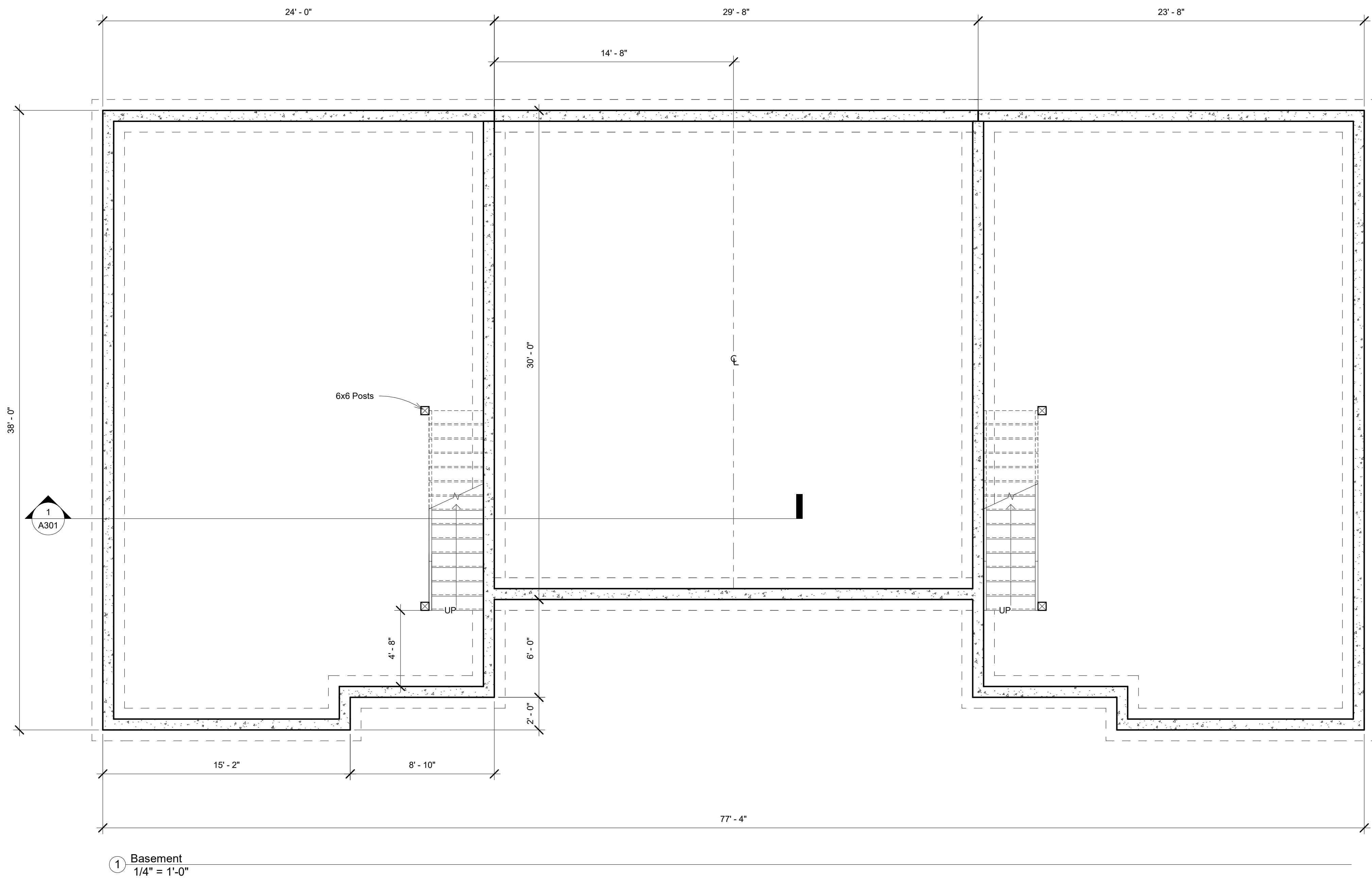
SWANEY LIGHTING ASSOCIATES, INC.

NOTICE: THE INTENT OF THIS LAYOUT IS TO SUGGEST THE BEST UTILIZATION OF THE FIXTURES. THE MANUFACTURER'S LUMEN OUTPUT AND FOOTCANDLE PERFORMANCE SHOWN IN THIS FILE IS NOT THE RESPONSIBILITY OF THE MANUFACTURER. IT IS THE RESPONSIBILITY OF THE RECIPIENT TO VERIFY THAT THE PRINTED OR PLOTTED-TO-SCALE DRAWING IS PRINTED TO SCALE.

DATE: 10-3-19

AGI

GENERATED BY SWANEY LIGHTING, SCARBOROUGH ME - 207-883-7100 - swaneylighting.com



1 Basement
1/4" = 1'-0"

TDArchitect

828.231.2399
tdarchitect907.com
92 Pitt Street, #1, Portland, ME 04103

Project Name:
Duplex Condo

Project Address: Lambert Street, Portland, ME 04103

These drawings were prepared for:
Review



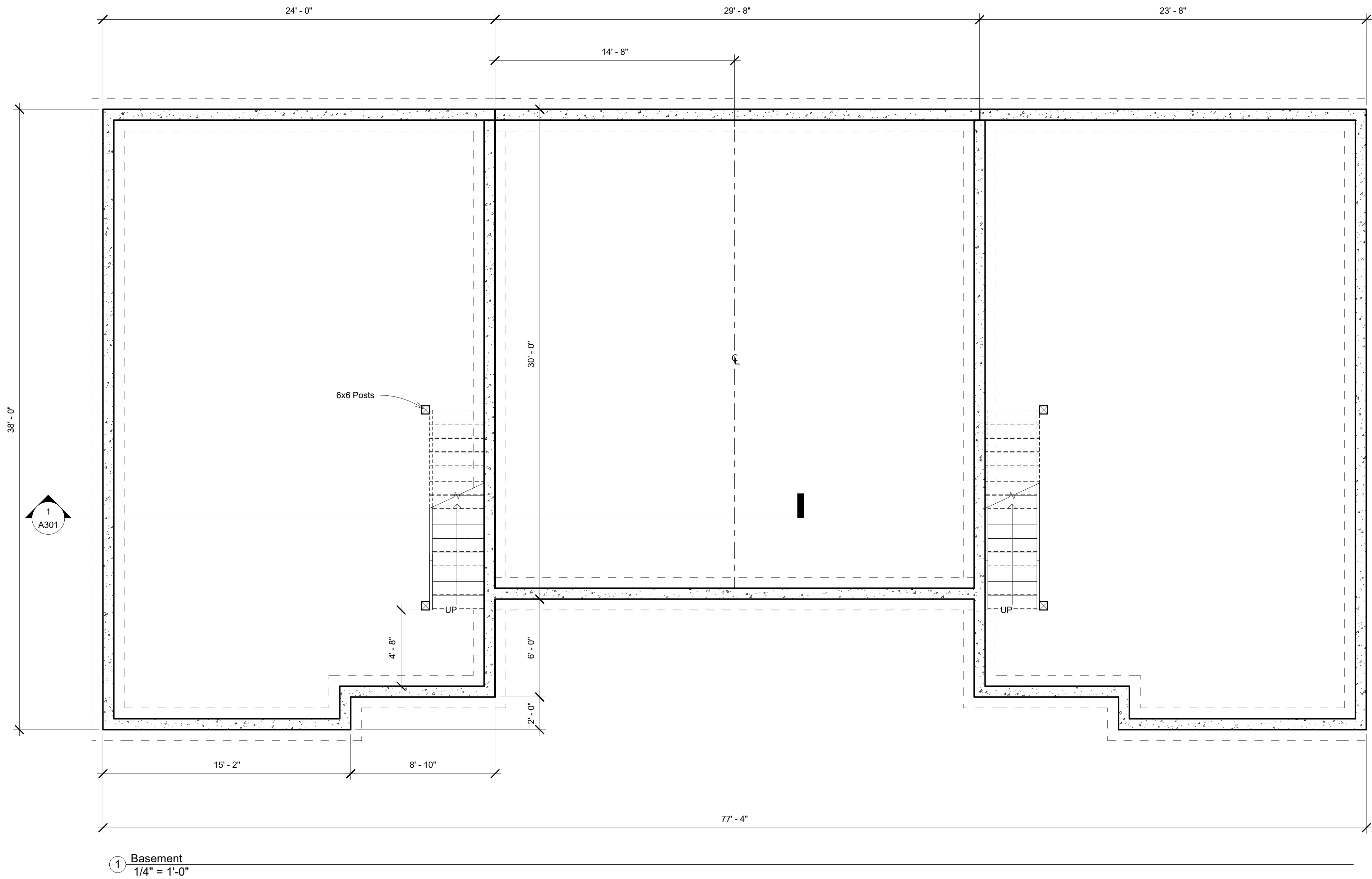
**Nelson Property
Services**

Floor Plans

Project number	2019-04
Date	10.10.19
Drawn by	MTD
Checked by	

A101

Scale 1/4" = 1'-0"



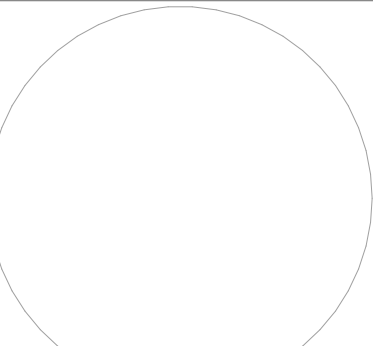
TDArchitect

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tdarchitect907.com
92 Pitt Street, #1, Portland, ME 04103

Project Name:
Duplex Condo

Project Address: Lambert Street, Portland, ME 04103

These drawings were prepared for:
Review



M.T. Dickerson, AIA

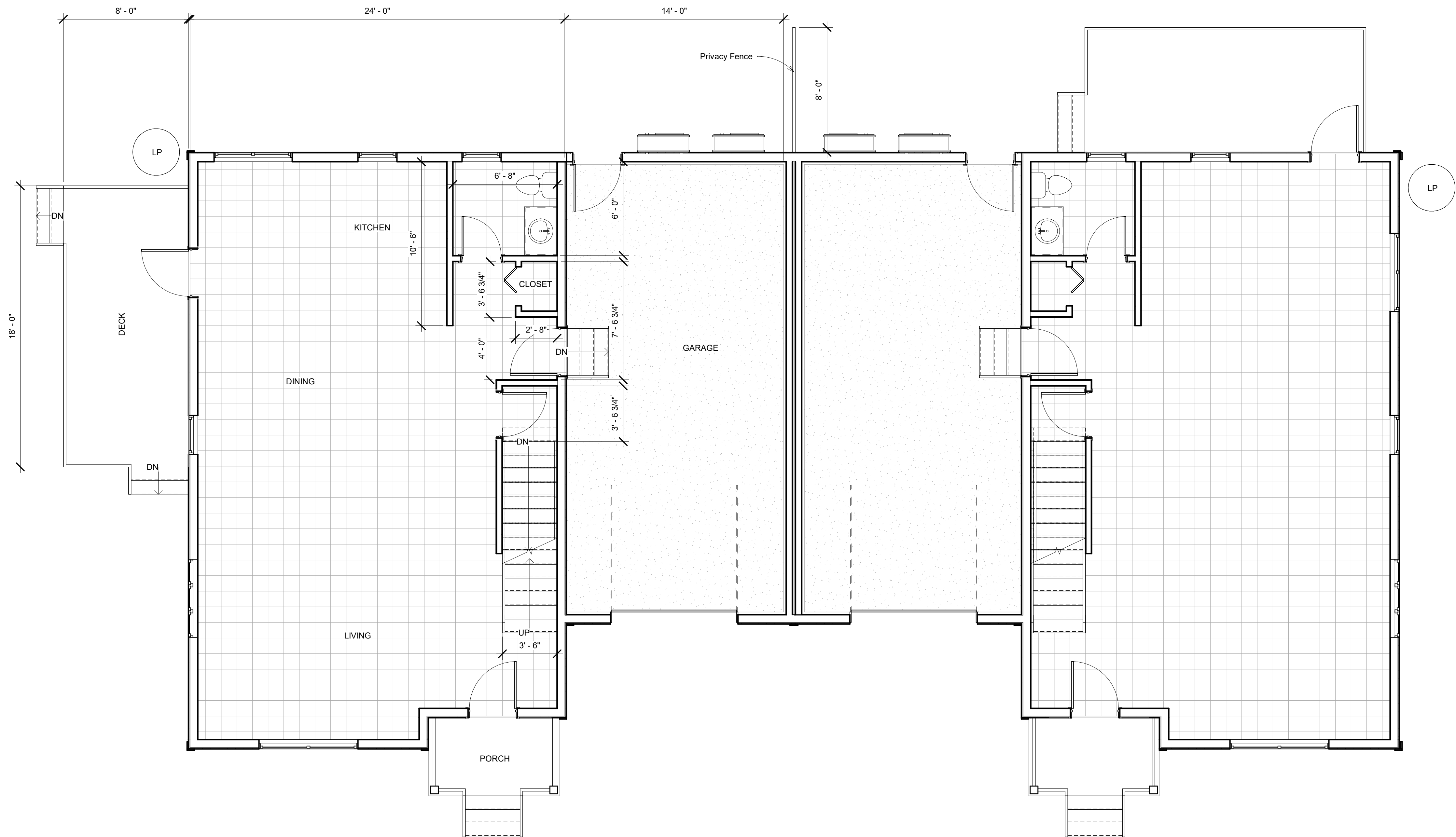
**Nelson Property
Services**

Floor Plans

Project number	2019-04
Date	10.09.19
Drawn by	MTD
Checked by	

A101

Scale	1/4" = 1'-0"
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1 1st Floor
1/4" = 1'-0"

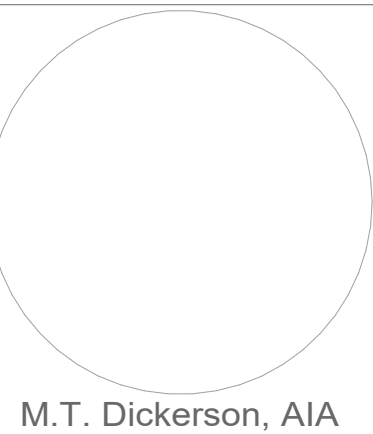
TDArchitect

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tdarchitect907.com
92 Pitt Street, #1, Portland, ME 04103

Project Name:
Duplex Condo

Project Address: Lambert Street, Portland, ME 04103

These drawings were prepared for:
Review



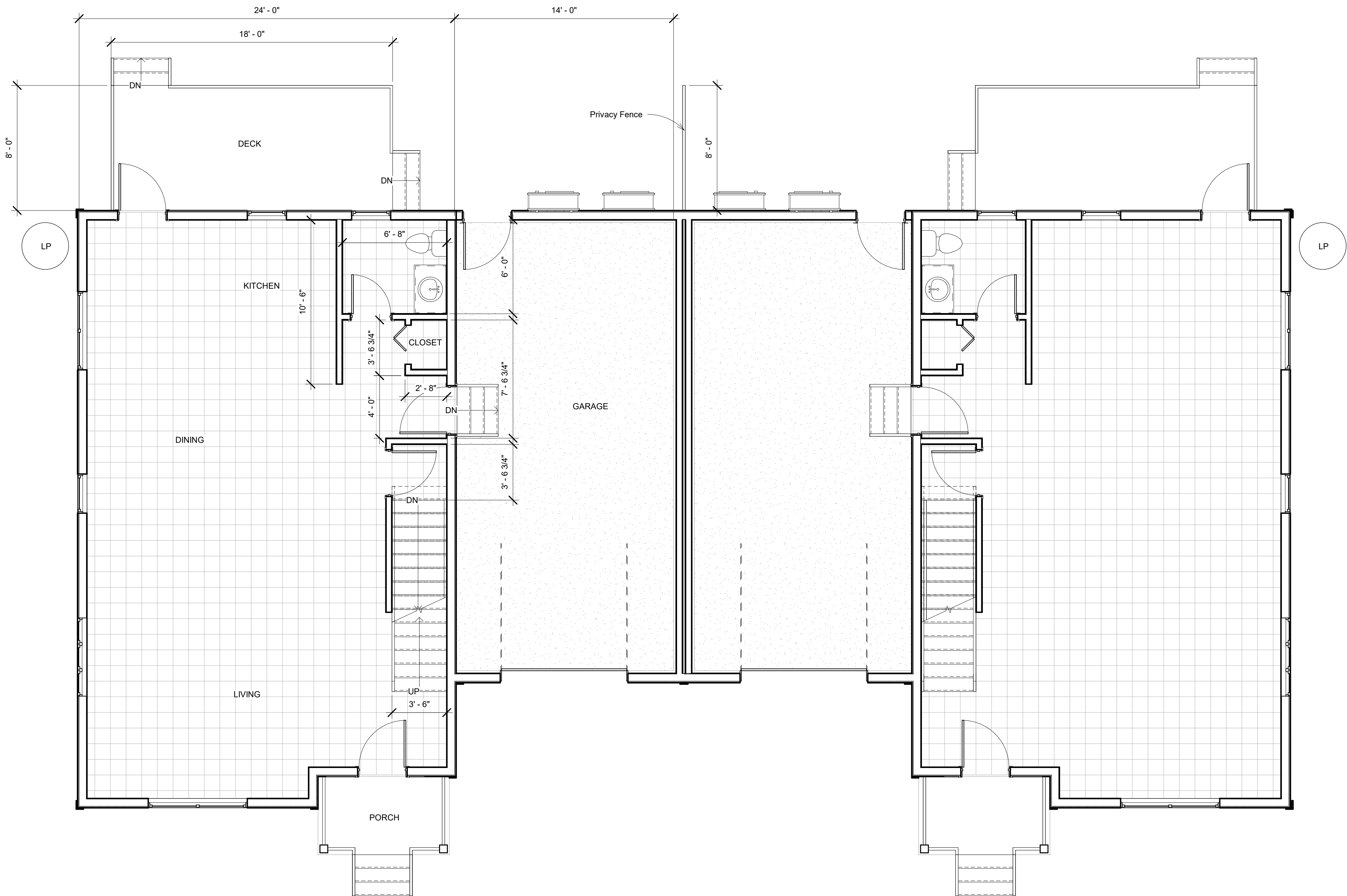
**Nelson Property
Services**

Floor Plans

Project number	2019-04
Date	10.10.19
Drawn by	MTD
Checked by	

A102

Scale	1/4" = 1'-0"
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1 1st Floor
1/4" = 1'-0"

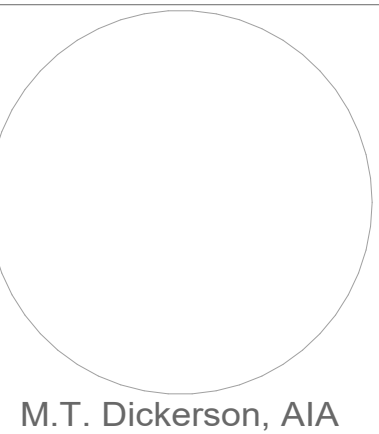
TDArchitect

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tdarchitect907.com
92 Pitt Street, #1, Portland, ME 04103

Project Name:
Duplex Condo

Project Address: Lambert Street, Portland, ME 04103

These drawings were prepared for:
Review



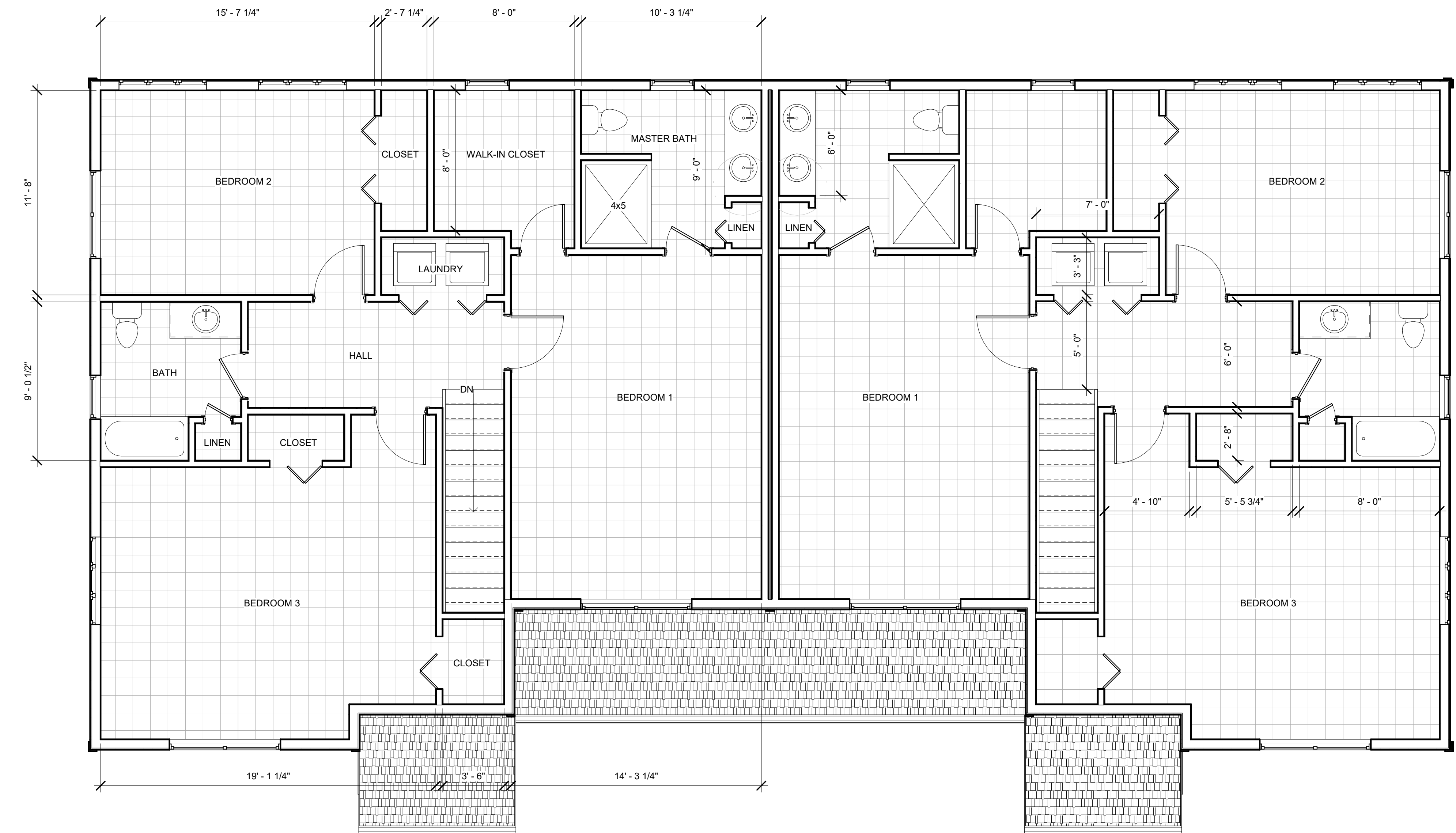
**Nelson Property
Services**

Floor Plans

Project number	2019-04
Date	10.09.19
Drawn by	MTD
Checked by	

A102

Scale	1/4" = 1'-0"
-------	--------------



① 2nd Floor
1/4" = 1'-0"

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Project Name:
Duplex Condo

Project Address: Lambert Street, Portland, ME 04103

These drawings were prepared for:
Review

M.T. Dickerson, AIA

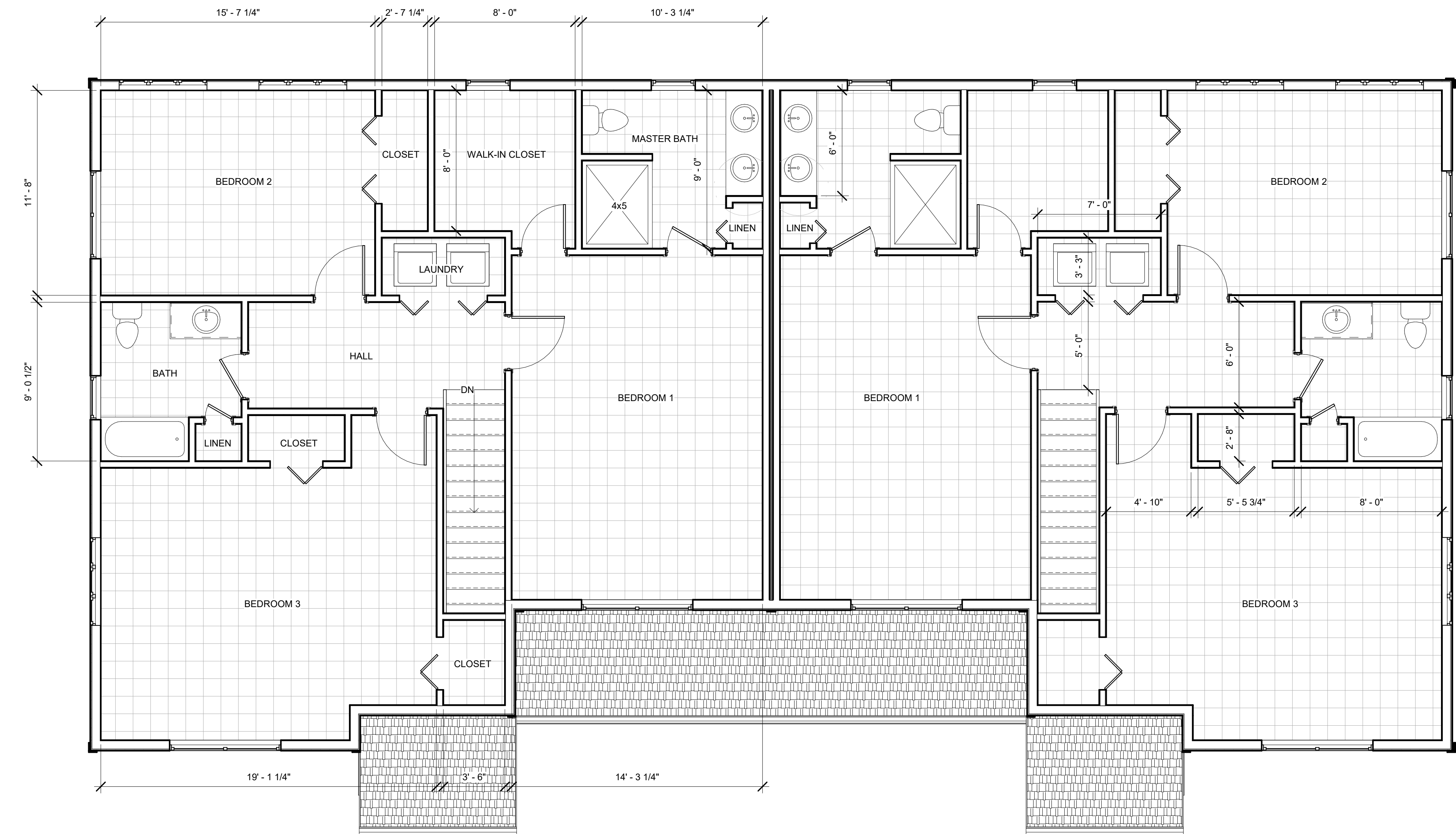
**Nelson Property
Services**

Floor Plans

Project number 2019-04
Date 10.10.19
Drawn by MTD
Checked by

A103

Scale 1/4" = 1'-0"



① 2nd Floor
1/4" = 1'-0"

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92 Pitt Street, #1, Portland, ME 04103

Project Name:
Duplex Condo

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These drawings were prepared for:
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**Nelson Property
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Floor Plans

Project number 2019-04
Date 10.09.19
Drawn by MTD
Checked by

A103

Scale 1/4" = 1'-0"



② North Elevation
1/4" = 1'-0"



① West Elevation
1/4" = 1'-0"

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Project Name:
Duplex Condo

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These drawings were prepared for:
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**Nelson Property
Services**

Exterior Elevations

Project number	2019-04
Date	10.10.19
Drawn by	MTD
Checked by	

A201

Scale	1/4" = 1'-0"
-------	--------------



② West
1/4" = 1'-0"



① South
1/4" = 1'-0"

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92 Pitt Street, #1, Portland, ME 04103

Project Name:
Duplex Condo

Project Address: Lambert Street, Portland, ME 04103

These drawings were prepared for:
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M.T. Dickerson, AIA

**Nelson Property
Services**

Exterior Elevations

Project number	2019-04
Date	10.09.19
Drawn by	MTD
Checked by	

A201

Scale	1/4" = 1'-0"
-------	--------------



② South Elevation
1/4" = 1'-0"



① East Elevation
1/4" = 1'-0"

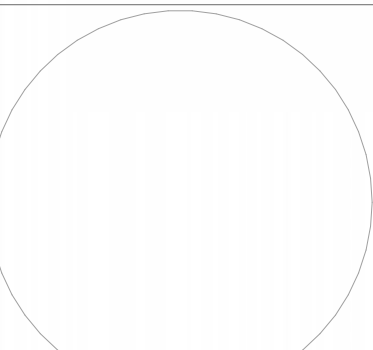
TDArchitect

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tdarchitect907.com
92 Pitt Street, #1, Portland, ME 04103

Project Name:
Duplex Condo

Project Address: Lambert Street, Portland, ME 04103

These drawings were prepared for:
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M.T. Dickerson, AIA

**Nelson Property
Services**

Exterior Elevations

Project number 2019-04
Date 10.10.19
Drawn by MTD
Checked by

A202

Scale 1/4" = 1'-0"



② East
1/4" = 1'-0"



① North
1/4" = 1'-0"

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92 Pitt Street, #1, Portland, ME 04103

Project Name:
Duplex Condo

Project Address: Lambert Street, Portland, ME 04103

These drawings were prepared for:
Review



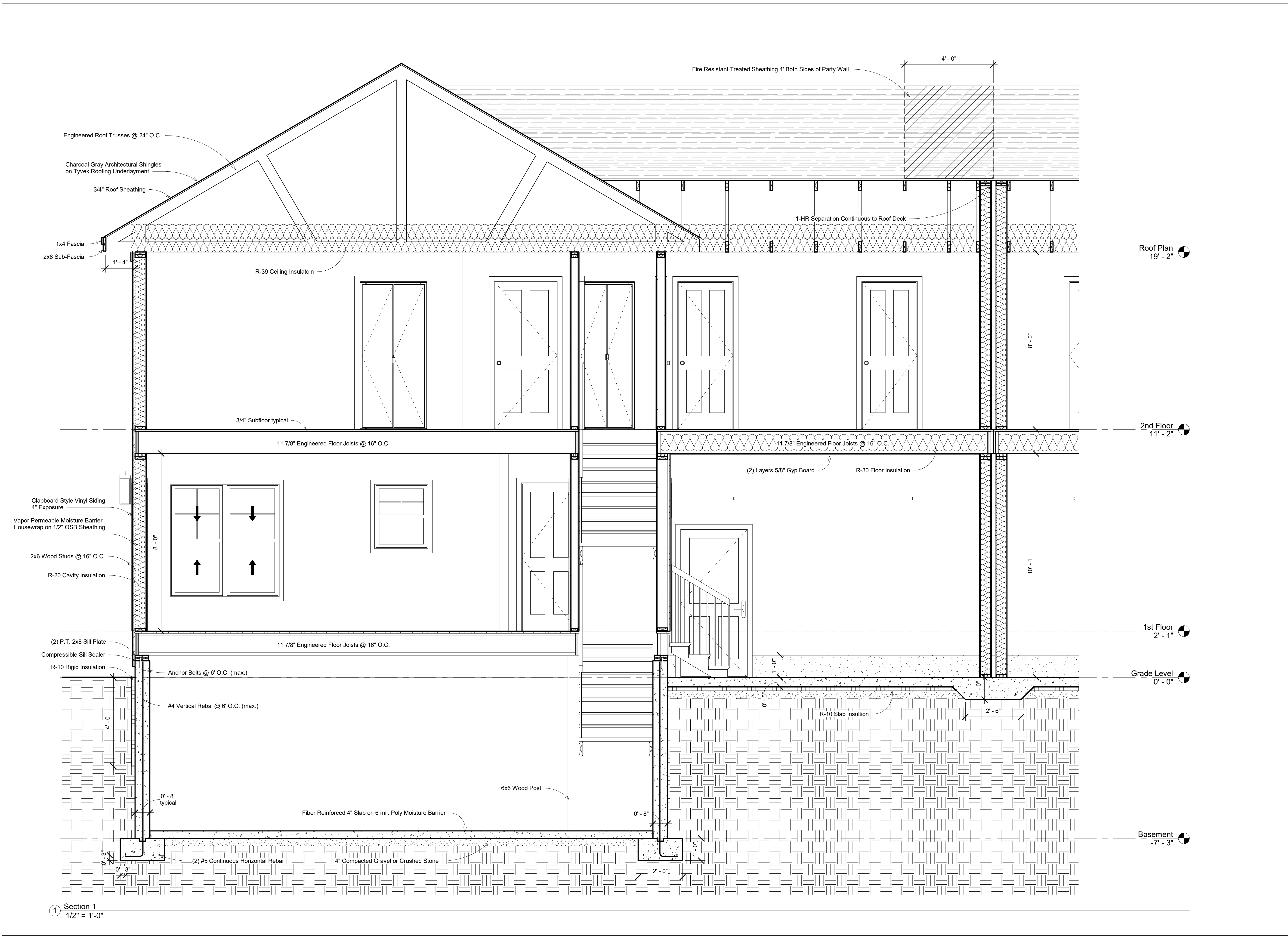
**Nelson Property
Services**

Exterior Elevations

Project number	2019-04
Date	10.09.19
Drawn by	MTD
Checked by	

A202

Scale	1/4" = 1'-0"
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92 Pitt Street, #1, Portland, ME 04103

Project Name:
Duplex Condo

Project Address: Lambert Street, Portland, ME 04103

These drawings were prepared for:
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M.T. Dickerson, AIA

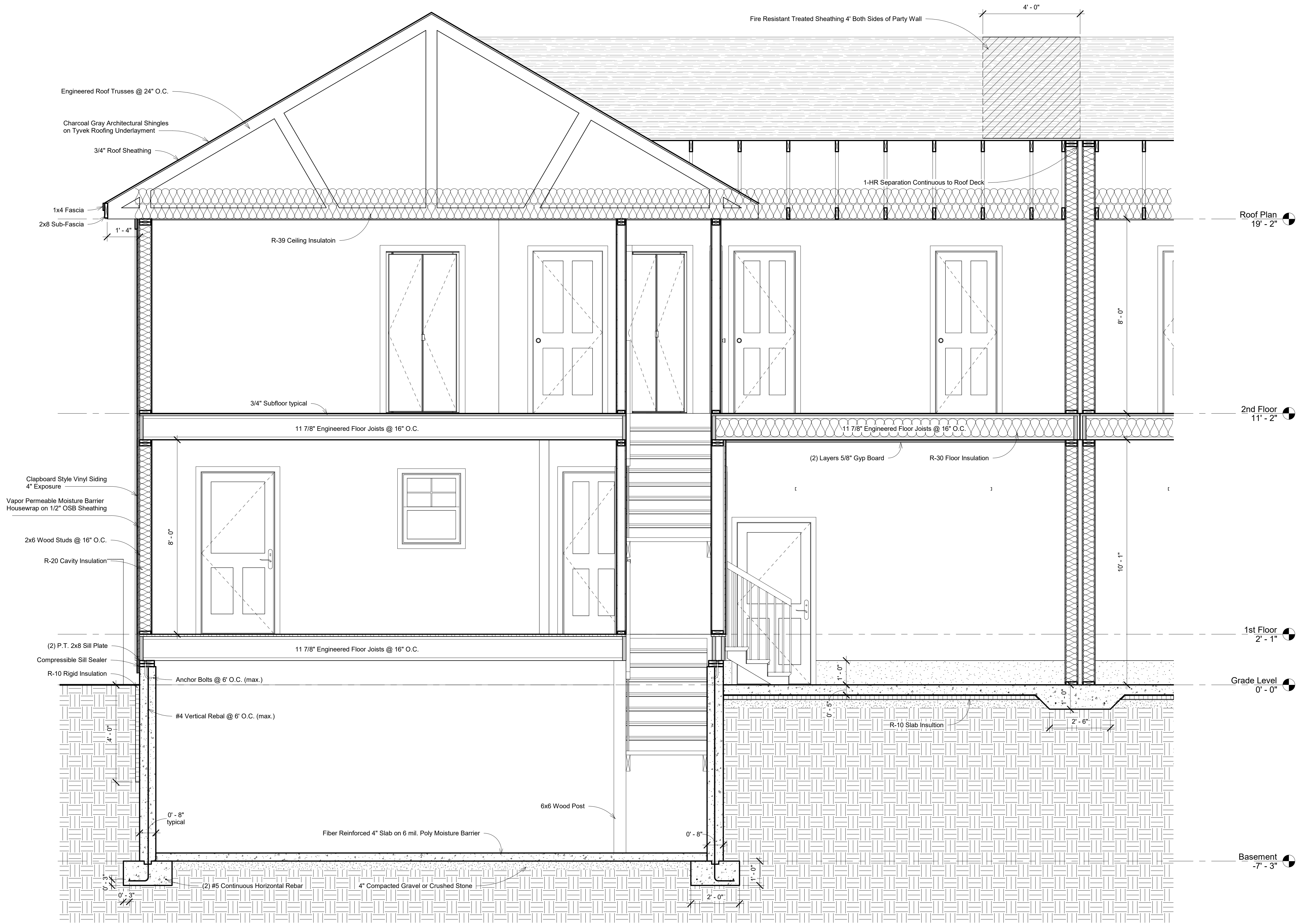
**Nelson Property
Services**

Building Section

Project number 2019-04
Date 10.10.19
Drawn by MTD
Checked by

A301

Scale 1/2" = 1'-0"



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92 Pitt Street, #1, Portland, ME 04103

Project Name:
Duplex Condo

Project Address: Lambert Street, Portland, ME 04103

These drawings were prepared for:
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M.T. Dickerson, AIA

Nelson Property
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Building Section

Project number	2019-04
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Date	10.09.19
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Drawn by	MTD
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Checked by	
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A301

Scale	1/2" = 1'-0"
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10/9/2019 10:53:20 PM

LEGEND

1D

1P

Ⓟ

→

PROPOSED SUBCATCHMENT LABEL

PROPOSED POND LABEL

TIME OF CONCENTRATION (TC) PATH

POINT OF ANALYSIS

DIRECTION OF FLOW

SUBCATCHMENT BOUNDARY LINE

EXISTING MINOR CONTOUR

EXISTING MAJOR CONTOUR

EXISTING WETLANDS

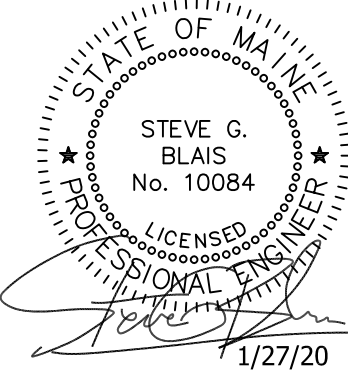
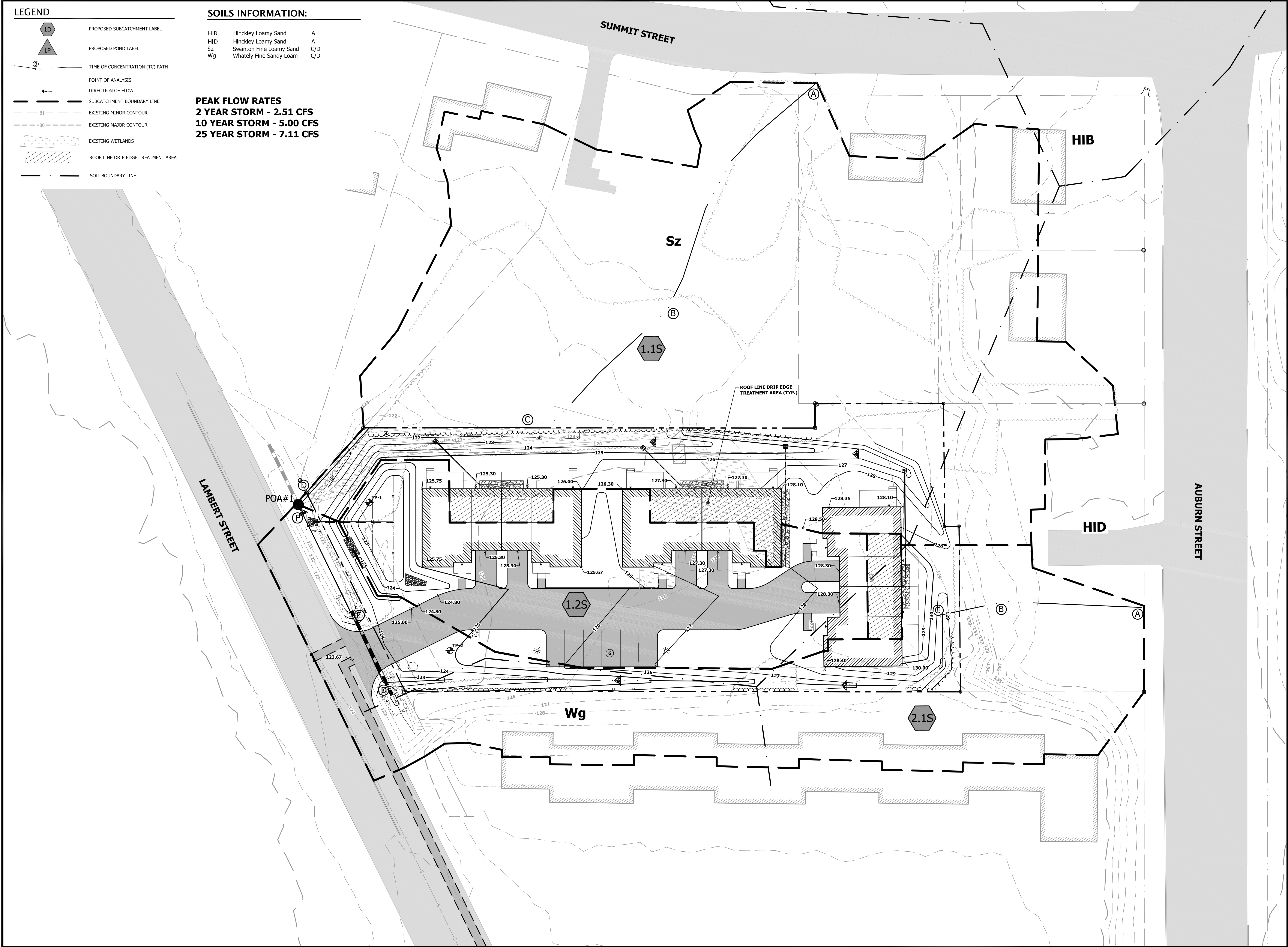
ROOF LINE DRIP EDGE TREATMENT AREA

SOIL BOUNDARY LINE

SOILS INFORMATION:

HIB	Hinckley Loamy Sand	A
HID	Hinckley Loamy Sand	A
Sz	Swanton Fine Loamy Sand	C/D
Wg	Whately Fine Sandy Loam	C/D

PEAK FLOW RATES
2 YEAR STORM - 2.51 CFS
10 YEAR STORM - 5.00 CFS
25 YEAR STORM - 7.11 CFS

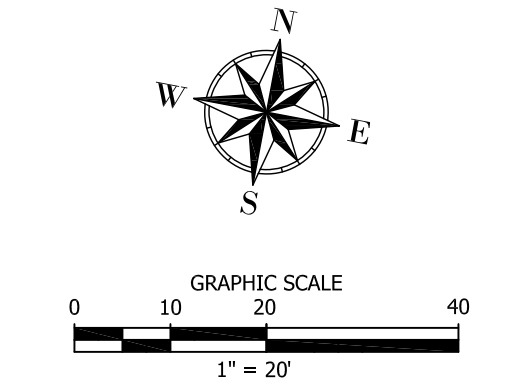


1. REVISED PER CITY COMMENTS 1/27/20

POST DEVELOPMENT DRAINAGE PLAN
77 LAMBERT CONDO DEVELOPMENT

77 LAMBERT STREET
PORTLAND, ME 04103
DRAWINGS PREPARED FOR:
75-81 LAMBERT, LLC
1035 OCEAN AVENUE
PORTLAND, ME 04103

DRAWING:
PROJECT:



PROJECT #: 19120
DESIGNED BY: MKT
DRAWN BY: MKT
CHECKED BY: SGB

ISSUED DATE: 10/15/19
ISSUED FOR: CITY REVIEW
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D-101

GENERAL NOTES:

- OWNER/DEVELOPER: 75-81 LAMBERT LLC, PORTLAND, MAINE.
- ALL WORK SHALL BE IN CONFORMANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS INCLUDING ALL SAFETY REGULATIONS (OSHA, ETC.). ANY CONFLICTS BETWEEN THE REGULATIONS AND THESE NOTES SHALL BE REPORTED TO BLAIS CIVIL ENGINEERS, IN PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION.
- ALL WORK WITHIN CITY OF PORTLAND RIGHT-OF-WAYS SHALL CONFORM TO THEIR STANDARDS AND SPECIFICATIONS. THE ENGINEER AND/OR CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS.
- THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS SHOWN ON THE DRAWINGS. IF ANY DISCREPANCIES ARE FOUND, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
- THESE PLANS MAKE NO REPRESENTATION AS TO SURFSURFACE CONDITIONS OR THE PRESENCE OF SUBSURFACE WATER OR THE NEED FOR SURFSURFACE DRAINAGE FACILITIES.
- PROPERTY MARKERS AND STREET LINE MONUMENTS SHALL BE PROPERLY PROTECTED AND SHALL NOT BE DISTURBED. IF DISTURBED, THEY SHALL BE REPLACED BY A LICENSED SURVEYOR AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR IS RESPONSIBLE FOR ACQUIRING ANY PERMISSIONS OR EASEMENTS REQUIRED TO PERFORM WORK ON OFF-SITE PROPERTY.
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL AND ANY MEANS, METHODS AND TECHNIQUES EMPLOYED TO PERFORM THE WORK SHOWN ON THE PLANS.
- EXISTING VEGETATION SHALL BE PROTECTED IN ALL AREAS EXCEPT WHERE SHOWN ON THE PLANS. PRIOR TO THE CONSTRUCTION FENCING OR OTHER MEASURES TO BE INSTALLED TO PROTECT REMAINING VEGETATION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING AND MARKING ANY TREES TO BE REMOVED OR PRESERVED WITHIN THE DRIP-LINE OF TREES TO BE PRESERVED. NO VEHICLES MAY DRIVE OR PARK IN THE DRIP-LINE OF TREES TO BE PRESERVED.
- NO GRAVEL OR TOPSOIL SHALL BE REMOVED FROM THE SITE UNLESS APPROVED IN WRITING BY THE OWNER'S REPRESENTATIVE.
- THE CONTRACTOR SHALL PREPARE AN AS-BUILT PLAN SURVEY SHOWING LOCATIONS OF ALL SURFACE FEATURES AND SUBSURFACE UTILITY SYSTEMS INCLUDING LOCATION, SIZE AND INVERTS.
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY.
- ALL WORK TO BE PERFORMED IN CONFORMANCE WITH GEOTECHNICAL REPORT PREPARED BY SUMMITT GEOENGINEERING SERVICES.
- THE SITE SHALL BE DEVELOPED AND MAINTAINED AS DEPICTED ON THE PLANS. APPROVAL BY THE CITY OF PORTLAND SHALL BE REQUIRED FOR ANY ALTERATION OR DEVIATION FROM THE APPROVED PLAN.
- PRIOR TO CONSTRUCTION, A PRE-CONSTRUCTION MEETING SHALL BE HELD AT THE PROJECT SITE WITH THE CONTRACTOR, ENGINEER, AND CITY REPRESENTATIVES TO REVIEW THE CONSTRUCTION SCHEDULE, SCOPE OF WORK, AND INSPECTION REQUIREMENTS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC FLOW DURING THE CONSTRUCTION.
- THE CONTRACTOR SHALL SUBMIT A DETAILED CONSTRUCTION SEQUENCING PLAN FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
- TRAFFIC CONTROL DEVICES SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR.
- CONTRACTOR SHALL PROVIDE QUALIFIED PERSONNEL ON SITE CAPABLE OF PROVIDING HORIZONTAL AND VERTICAL CONTROL.
- WORKING HOURS SHALL COMPLY WITH THE REQUIREMENTS OF THE CITY OF PORTLAND.
- CONTRACTOR SHALL PROVIDE PROOT CERTIFIED AND EQUIPPED FLAGGERS TO REGULATE TRAFFIC WHEN OPERATIONS ENCROACH ON PUBLIC TRAFFIC LANE.

UTILITY NOTES:

- THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING UTILITIES, AS SHOWN HEREON, ARE APPROXIMATE ONLY. NO GUARANTEE IS MADE AS TO THE ACCURACY OF THE HORIZONTAL AND VERTICAL LOCATIONS OF ANY EXISTING UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, TYPE, SIZE, AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. TEST PITS MAY BE NECESSARY TO PHYSICALLY LOCATE THESE UNDERGROUND UTILITIES. ANY DISCREPANCIES IN THE INFORMATION SHOWN HEREON SHALL BE REPORTED TO BLAIS CIVIL ENGINEERS, IN PRIOR TO COMMENCING CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING "DIG SAFE" AND LOCAL UTILITY COMPANIES AT LEAST THREE (3) BUSINESS DAYS, BUT NOT MORE THAN 30 CALENDAR DAYS, PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION, IN ACCORDANCE WITH MAINE STATE LAW. THE "DIG SAFE" TELEPHONE NUMBER IS 1-888-274-7233.
- THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL DAMAGES TO UNDERGROUND UTILITIES AS A RESULT OF THE CONTRACTOR'S OPERATIONS. ALL REPAIRS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL UTILITY CONNECTION / EXTENSION PERMITS, STREET OPENING PERMITS, AND DOT RIGHT-OF-WAY PERMITS REQUIRED BY LOCAL, STATE, AND FEDERAL AUTHORITIES WITH JURISDICTION.
- THE CONTRACTOR SHALL ABANDON FOR TEMPORARY UTILITY CONNECTIONS THAT MAY BE REQUIRED DURING CONSTRUCTION.
- ALL EXISTING SEWER WORK INCLUDING SECTIONS TO REMAIN REMAIN SHALL BE IN ACCORDANCE WITH CITY OF PORTLAND STANDARDS AND SPECIFICATIONS AND SHALL BE APPROVED BY THE CITY. STOP DRAWINGS SUBMITTALS OF ALL MATERIALS USED SHALL BE SUBMITTED TO THE CITY FOR APPROVAL PRIOR TO ORDERING MATERIALS.
- THE WATERLINE CONNECTION IS TO BE INSPECTED BY THE PORTLAND WATER DISTRICT.
- THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS AND SHALL BE RESPONSIBLE FOR PAYING ANY FEES FOR ANY ALTERATION OR ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM AND ANY OTHER PRIVATE OR PUBLIC UTILITIES.
- RISE ELEVATIONS OF PROPOSED SANITARY SEWER MANHOLES AND ASSOCIATED STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH AND CONSISTENT WITH THE GRADING PLANS. ADJUST ALL OTHER RISE ELEVATIONS OF MANHOLES, WATER GATES, GAS GATES, AND OTHER UTILITIES TO FINISHED GRADE WITHIN THE LIMITS OF WORK.
- THE LOCATION, SIZE, DEPTH AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRIC, AND CABLE ETC.).
- THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION, SIZE, INVERTS AND TYPES OF EXISTING PIPES AT ALL PROPOSED POINT OF CONNECTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND INSURANCE COVERAGE PRIOR TO THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE. IF THE EXISTING UTILITY IS NO LONGER REQUIRED, THE CONTRACTOR SHALL REMOVE THE PIPE/CONDUIT WITHIN THOSE LIMITS OF EXCAVATION, AND PLUG THE REMAINING PIPE/CONDUIT AT NO COST TO THE OWNER.
- CONTRACTOR SHALL BE REQUIRED TO CLEAN ALL PROPOSED STORM DRAIN AND SANITARY PIPES AND STRUCTURES PRIOR TO ACCEPTANCE BY THE OWNER.

GRADING NOTES:

- THE CONTRACTOR SHALL REVIEW THE PROPOSED GRADES FOR CONSTRUCTABILITY PRIOR TO COMMENCING WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
- THE CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS, WALKWAYS, DRIVEWAYS, AND PARKING AREAS WITH NO FLOODING. PROPOSED GRADES SHALL WATCH EXISTING GRADES SMOOTHLY AND CONTINUOUSLY.

EXISTING



LEGEND

EXISTING	PROPOSED
PROPERTY LINE	PROPERTY LINE
BUILDING SETBACK	BUILDING SETBACK
WETLANDS	WETLANDS
MINOR CONTOUR	MINOR CONTOUR
MAJOR CONTOUR	MAJOR CONTOUR
MINOR 2' GIS CONTOUR	MINOR 2' GIS CONTOUR
MAJOR 2' GIS CONTOUR	MAJOR 2' GIS CONTOUR
TREE LINE	TREE LINE
WATERLINE	WATERLINE
SEWER PIPE	SEWER PIPE
STORM DRAIN PIPE	STORM DRAIN PIPE
UNDERGROUND ELECTRIC, TELEPHONE AND CABLE	UNDERGROUND ELECTRIC, TELEPHONE AND CABLE
FOUNDATION DRAIN	FOUNDATION DRAIN
CURB	CURB
SEDIMENT BARRIER	SEDIMENT BARRIER
PAVEMENT	PAVEMENT
CONCRETE	CONCRETE
PIPE/RP	PIPE/RP
SEWER MANHOLE	SEWER MANHOLE
TELEPHONE POLE	TELEPHONE POLE
SIGN	SIGN
SPOT GRADES	SPOT GRADES
WATER SHUT OFF/GATE VALVE	WATER SHUT OFF/GATE VALVE
PARKING SPACE COUNT	PARKING SPACE COUNT
LIGHT POLE/ FIXTURES	LIGHT POLE/ FIXTURES
TEST PIT LOCATION	TEST PIT LOCATION

GENERAL NOTES & LEGEND

77 LAMBERT CONDO DEVELOPMENT

77 LAMBERT STREET
PORTLAND, ME 04103

DRAWINGS PREPARED FOR:
75-81 LAMBERT, LLC
1035 OCEAN AVENUE
PORTLAND, ME 04103

DRAWING: PROJECT:

PROJECT: 19120

DESIGNED BY: MKT
DRAWN BY: MKT
CHECKED BY: SCB

ISSUED DATE: 10/15/19
ISSUED FOR: CITY REVIEW

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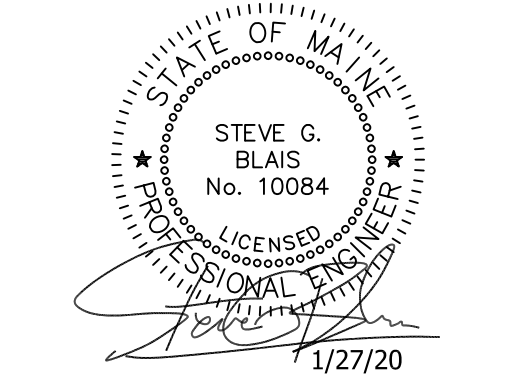
27 CORHAM ROAD SUITE 207
SCARBOROUGH, ME 04074
T: (207) 730-7200
W: WWW.BLAISC.COM

STEVE G. BLAIS
No. 10084
10/15/19

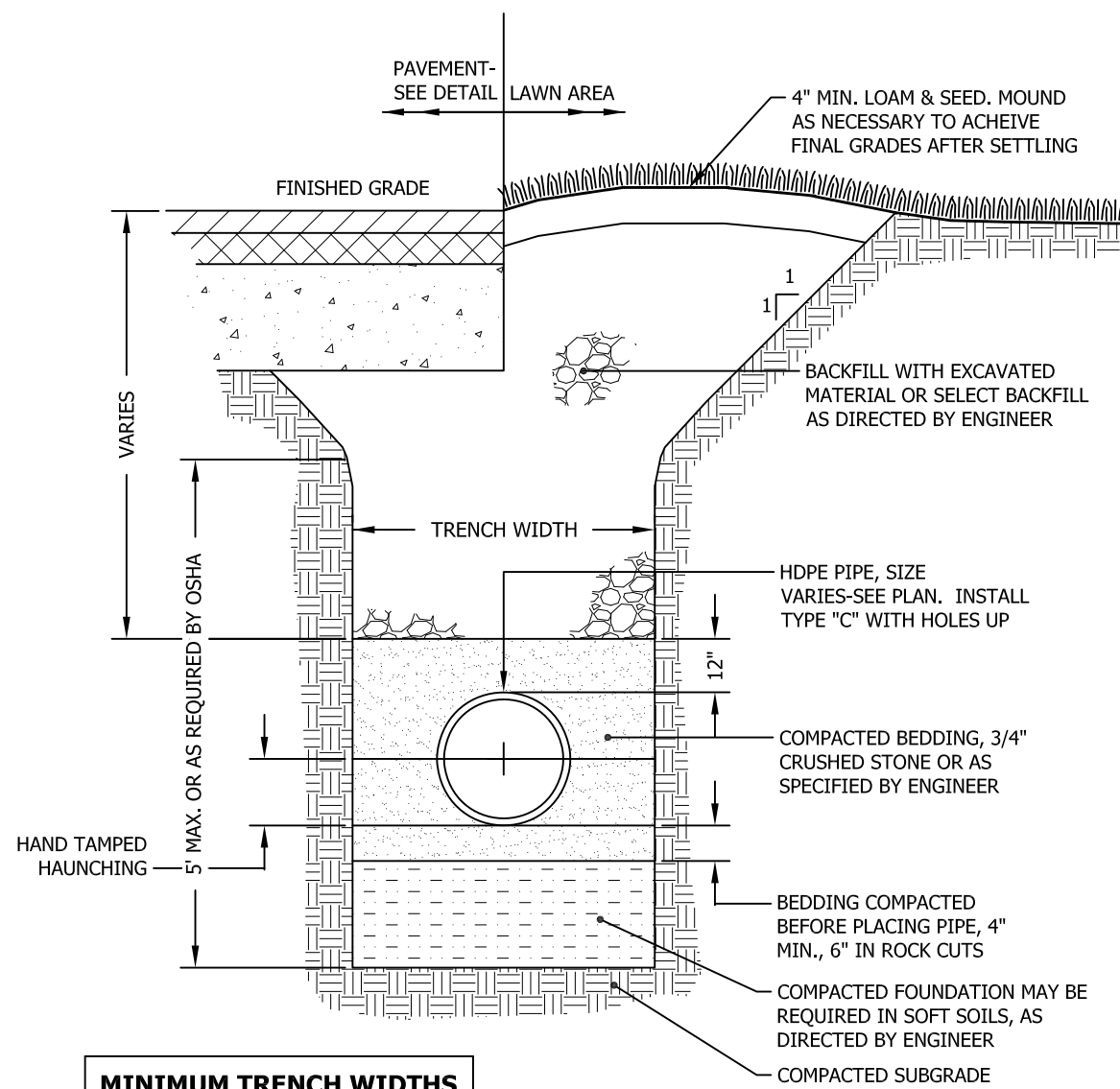
Blais
civil engineers



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1. SHEET ADDED PER CITY COMMENTS 1/27/20

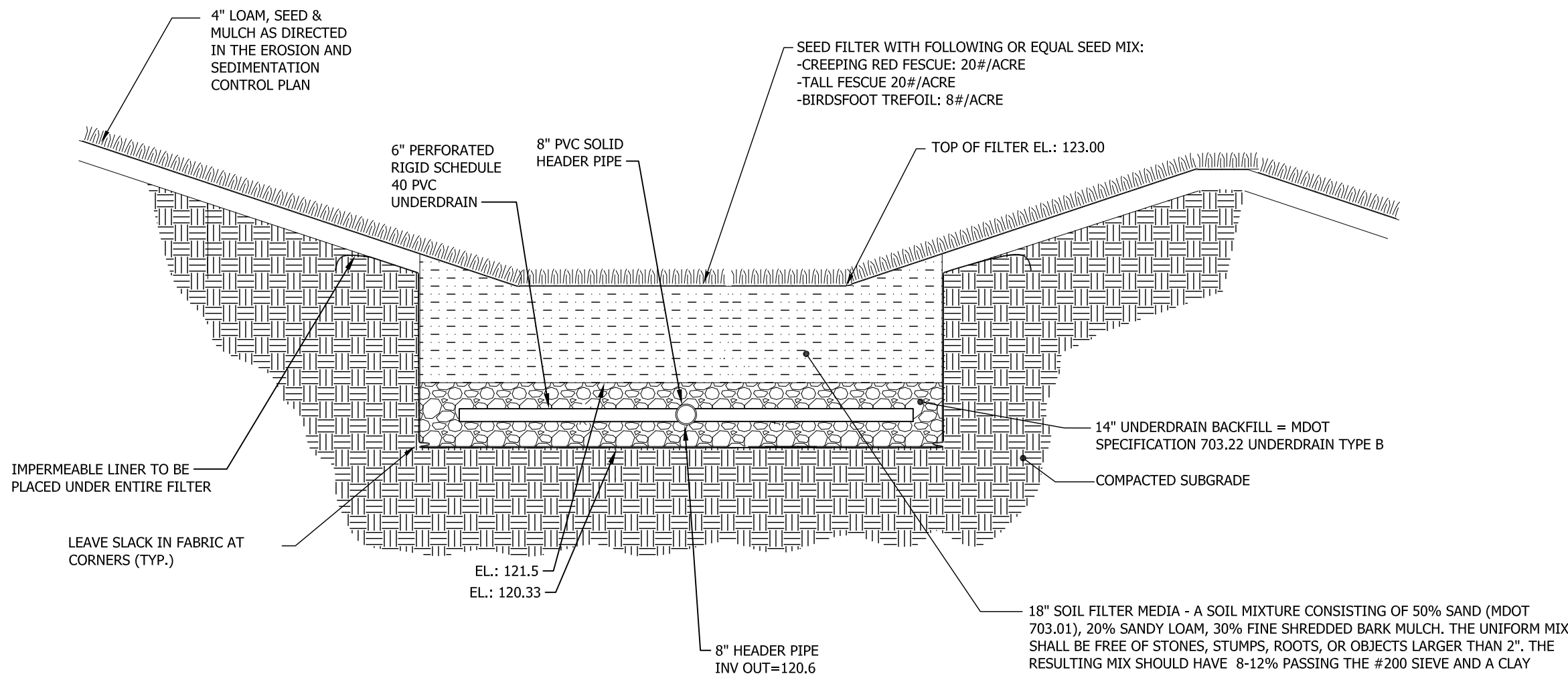


MINIMUM TRENCH WIDTHS		
PIPE DIA.	PIPE O.D.	TRENCH WIDTH
12"	14.45"	31"
15"	17.65"	34"
18"	21.10"	39"
24"	28.30"	48"

- NOTES:
- WHERE TRENCHES PENETRATE EMBANKMENTS OR OTHER SUCH SPECIAL SECTIONS, BACKFILL SHALL CONFORM TO THE THEIR REQUIREMENTS.
 - INSTALL WATER STOPS EVERY 100' OR AS NECESSARY TO PREVENT FINES FROM MIGRATING.
 - TRENCH WIDTH SHALL BE WIDE ENOUGH TO ACCOMMODATE COMPACTION EQUIPMENT.

1 HDPE PIPE TRENCH

NOT TO SCALE

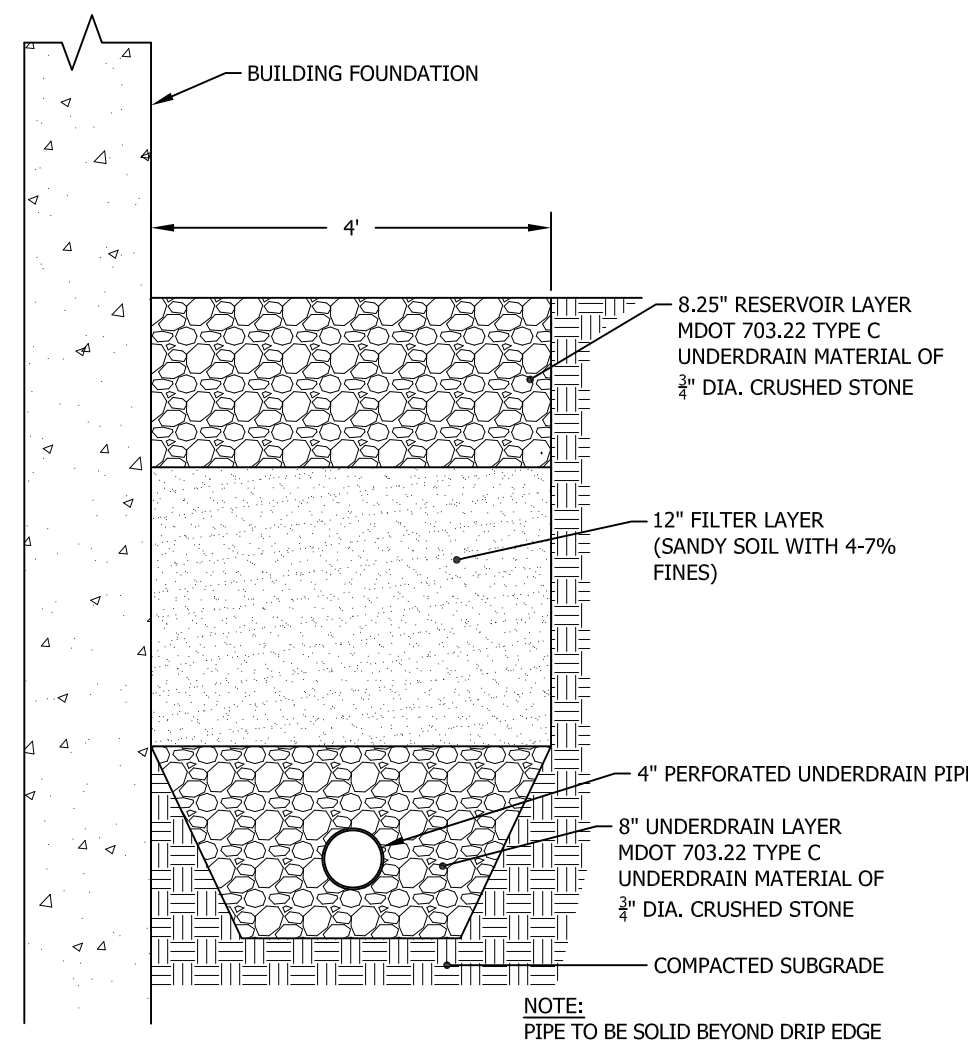


UNDERDRAINED SOIL FILTER NOTES:

- SOIL FILTER SHALL BE FULLY STABILIZED WITH PERMANENT VEGETATION PRIOR TO DIRECTING ANY STORMWATER TO THEM.
- ANY AREAS DRAINING TO THE SOIL FILTERS SHALL BE DIRECTED AWAY FROM THE SOIL FILTERS UNTIL THEY ARE PERMANENTLY STABILIZED.

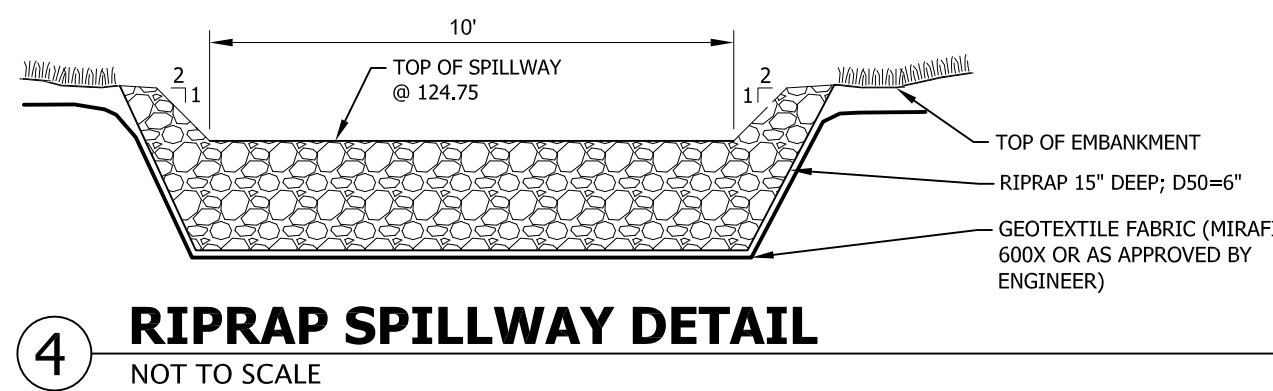
3 UNDERDRAINED SOIL FILTER

NOT TO SCALE



2 ROOFLINE DRIP EDGE

NOT TO SCALE



4 RIPRAP SPILLWAY DETAIL

NOT TO SCALE

SITE DETAILS II

77 LAMBERT CONDO DEVELOPMENT

77 LAMBERT STREET
PORTLAND, ME 04103

DRAWINGS PREPARED FOR:
75-81 LAMBERT, LLC
1035 OCEAN AVENUE
PORTLAND, ME 04103

DRAWING:

PROJECT:

PROJECT #: 19120

DESIGNED BY: MKT
DRAWN BY: MKT
CHECKED BY: SGB

ISSUED DATE: 10/15/19
ISSUED FOR: CITY REVIEW
THIS DOCUMENT IS ISSUED FOR REVIEW PURPOSES ONLY AND NOT FOR CONSTRUCTION.

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