



City of Biddeford Planning Board

May 21, 2025 at 6:00 PM
City Hall Council Chambers & Zoom

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Or call in by phone: +1 312 626 6799

Meeting ID: 979 5989 1587

Passcode: 079544

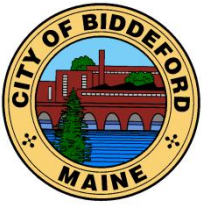
1. Pledge of Allegiance
2. Declaration of Quorum/Voting Members
3. Adjustment(s) to Agenda
4. Planner's Business
5. Consent Agenda
 - 5.a Approval of Meeting Minutes from 5-7-25
6. Unfinished Business
7. New Business
 - 7.a 2025.15 The Biddeford Planning Board will review a request for a Shoreland Zoning Permit for Karen Tarves. This proposal is to rebuild the existing structure to avoid damage from future storms. This proposal will make the non-conforming structure more conforming and the applicant would like to install a new septic system, making it code-compliant. The location of this project is 12 Fortunes Rocks Road, also known as Tax Map 63, Lot 42-1 in the CR zone.
 - 7.b 2025.09 The Biddeford Planning Board will review a request for Preliminary approval for the Subdivision & Site Plan. This proposal is that the applicant will construct (2), thirty (30) unit buildings with associated parking for residents. The buildings will utilize the existing development entrance and have their own primary access via Park View Court. New buildings will have associated parking and utility infrastructure. The location of this project is 1 Park View Court (641 Main St), also known as tax map 32, lot 1 in the R3 zone.
 - 7.c 2024.34 The Biddeford Planning Board will hold a Public Meeting and take comments to review a Shoreland & Site Plan Review Application for the University of New England. The proposed use is to build a marine research pier. The property is located

at 11 Hills Beach Road (Tax Map 52, Lot 4) in the IN Zone.

8. Other Business

9. Adjourn

The Board reserves the right to halt official business at 9:30 p.m. Items not heard at tonight's meeting shall be rescheduled to the next meeting of the Board. All materials pertaining to items on the agenda are available for public review at the Biddeford Planning Department, second floor, Biddeford City Hall during normal business hours.



CITY OF BIDDEFORD

Planning and Development Department

205 Main Street
P.O. Box 586
Biddeford, ME 04005
(207) 284-9115

Planning Board Meeting

Meeting Minutes

DRAFT

Date: May 7, 2025
Time: 6:00 PM
Location: Council Chambers & Zoom

1. Pledge of Allegiance 6:00 PM
2. Declaration of Quorum/Voting Members
Quorum Present: Alexa Plotkin, Chair, Larry Patoine, Sue Deschambault, Roch Angers, Matt Dubois, & Kayla Lewis (Alternate Member)
Staff Present: Adi Iriqat, & Nan Whitten
3. Adjustments to the Agenda-N/A
4. Planner's Business-N/A
5. Consent Agenda
5.A. Review for approval Meeting Minutes for April 2, 2025
MOTIONS: 6:01 PM
Motion- Anger-Motion to approve Consent Agenda
Second- Dubois
Vote-Unanimous
6. Unfinished Business-N/A
7. New Business
7.a 2025.17 Review of Greatest Practical Extent request for Lionsgate Properties, LLC. This proposal is to reconstruct 2 existing non-conforming structures that have been damaged/destroyed at 79-81 Fortunes Rocks Road (Tax Map 64, Lot 49-2 & 49-3) in the CR & LR Zones.
 - Iriqat introduced the project
 - Iriqat reminded the Board that they are only dealing with the greatest practical extent not the height of the structures
 - The Board will not be dealing with Unit 2, only Unit 1 which is 81 Fortunes Rocks Road Tax Map 64, Lot 49-2
 - Keith Richard from Archipelago represented the applicant
 - 81 Fortunes Rock Road was damaged in the January storms it was unstable therefore it had to be demolished.
 - The structure in question is non-conforming and less than 100' from the Highest Annual Tide (HAT) Line.
 - The applicant has obtained their DEP Dune permit for #81

- This is the last opportunity to rebuild as with the new FEMA maps this structure is now in the V zone.
- Due to the size and configuration of the lot, the applicants have limited options making the structure less non-conforming.
- There is no vegetation on the lot
- The septic system is between the structures so neither house can be moved sideways.
- The lot is 6500 sf created prior to zoning.
- The PBR for the seawall was approved and the repairs to the seawall have been completed.
- There is no slope on the lot, it has been graded evenly.

THERE WERE NO PUBLIC COMMENTS

- Patoine confirmed that they are just working on 81 Fortunes Rocks Road
- Deschambault confirmed that they are only working on lot 49-2 and asked if they will be reconstructing the other building. The answer is no; they will just be raising it higher to over damage by future storms.
- Lewis asked if there would still be a garage. With the reconstruction of the structure parking will be under the house.
- Deschambault asked if all conditions would still apply now that they are only working on 1 house instead of both. Yes all conditions still apply.
- Patoine confirmed that the applicant lives in Sudbury MA not ME as is stated in the report, correct.

MOTIONS 6:17 PM

Motion-Dubois Motion to Approve Case #2025.17 Greatest Practical Extent Determination for Lionsgate Properties, LLC (Tax Map 64, Lot 49-2) in the Coastal Residential Zoning District with Conditions of Approval as follows:

1. The razed building shall not be relocated closer to any of the existing property lines as noted on the approved plan
2. The Code Enforcement Officer shall review and approve conformance to Section 15 of the Shoreland Zoning Ordinance
3. Obtain all required permits from the Maine Department of Environmental Protection and the Biddeford Code Enforcement Office
4. This approval shall expire one year from the date below if a substantial start is not made in construction. If a substantial start (30% of project completion, i.e., framing and foundation) is made within one year of the date below, the applicant shall have one additional year to complete the project thereafter; this approval shall expire

Second-Angers

Vote-Unanimous

7.b. 2025.18 Review of the Greatest Practical Extent Request by Denis & E. Paula McNabb. The proposal is to reconstruct an existing non-conforming structure at 64-Mile Stretch Road (Tax Map 6, Lot 17-1) in the CR & LR Zones.

- Iriqat introduced the project, he told the Board that the applicant would like to demolish the existing building and rebuild it.

- Mike Morse from Archipelago represented the applicants
- He reiterated that it is located at 64 Mile Stretch Road Tax Map 61, Lot 17-1
- The applicant would like to relocate the structure to make it less non-conforming.
- The existing structure is 24.3' from the HAT Line and the plan is to relocate it 17' further from the HAT Line.
- The size of the lot, slope, erosion possibility, abutting structures, septic, and vegetation removal were taken into consideration.
- The size of the lot is less than 1,500 SF, due to the size of the lot, there is not a lot of room to move the structure.
- There is little slope to the lot to prohibit relocation.
- There is no soil erosion condition
- Abutting lots are all developed and would not deter relocation.
- The existing septic and proposed septic are both located landward.
- There will be no vegetation removal
- The owners plan to re-vegetate the lot.

THERE WERE NO PUBLIC COMMENTS

- Lewis confirmed the plan is to demo the house and deck and rebuilding in a less non-conforming way, was there storm damage? There was storm damage to the house and seawall. This is not the driver for this project it is to avoid damage by future storms; they are planning for the future. Lewis is wondering about the Comprehensive Plan versus the upcoming trend.
- Plotkin spoke on all the storm damage and rebuilding the homes to accommodate FEMA standards.
- Deschambault reiterated Plotkin's comments and added that she has never seen so much ocean destruction.
- Patoine wanted to reinforce that damage is not the only criteria for GPE applications.
- Angers asked how many cars fit on the lot. Two cars fit in the driveway, they are working with the CEO and DEP on pilings to get cars underneath.
- Patoine asked if the owners are responsible for putting the sand back after storms. It is not mandatory but can be done with a permit which needs to be done every time they want to move the sand.

MOTION: 6:40 PM

Motion-Patoine-Motion to Approve Case #2025.18 A Greatest Practical Extent Determination for Dennis McNabb and E. Paula McNabb (Tax Map 61, Lot 17-1) in the Coastal Residential Zoning District with the above-listed Conditions of Approval.

Second-Angers

Vote-Unanimous

7.c. 2025.09 Review of a Sketch Plan request by Bateman Partners to add 60 residential units to Forest Green Apartments. The property is located at Parkview Court (Tax Map 32, Lot 1) in the R-3 Zone.

- Iriqat introduced the project
- Nathan Bateman from Bateman Partners represented the applicant

- The previous owners never started Phase II due to Saco River Corridor Commission (SRCC)
 - It was clear that the area needs more affordable housing.
 - They received their SRCC approval a month ago.
 - This will be 60 more units
 - Andrew Carmen from Gorrill Palmer also represented the applicants
 - It is a 10-acre parcel in the R3 zone.
 - There are 5 4 units existing on the lot.
 - According to SRCC 62 units are allowed, they are adding 60 units in 1 building.
- THERE WERE NO PUBLIC COMMENTS**
- Due to this being a sketch plan, there will be no vote
 - The Board wanted to confirm exactly where the addition is going.
 - Dubois confirmed the lane was a fire lane and dumpster pad enclosure
 - Lewis mentioned that the report said additional wildlife monitoring is needed.
 - The monitoring has been done, there is little impact on the wetlands, and they are prepared to go to DEP. An updated report will be in the next submittal package.
 - Deschambault confirmed that all 60 units will be over 55 senior housing. All will be over 55; there is a strong demand for over 55 low to moderate income (LMI) housing.
 - Deschambault asked if the new structures will be constructed the same as the old housing. No, this will be a 3 story with an elevator with 2- and 3-bedroom units.
 - Lewis asked if there would be a new residence coordinator or the same one that the existing structure is using. There will be a separate new service coordinator for these units.
 - Angers confirmed these units will be handicapped accessible and asked if there would be handicap accessible units. Yes all units must adhere to Maine State Housing Authority (MSHA) standards.
 - Angers asked who owns the land that is an eyesore next to Rotary Park? The City
 - Patoine confirmed that the applicant's property is right behind the skate park
 - Deschambault asked about the timeline for the project. The applicants need Planning Board approval, and the 30-day appeal period must have expired, all must be done by August.
 - Dupuis asked if the new building will be stick-built, it depends on the contractor and affordability.
 - Dubois asked if they owned all the way to the Saco River, had you thought about connecting to the river walk? They do own all the way to the river, but it is very steep and unsafe. The SRCC wants it to stay wild.
 - Members of the Planning Board announce that they like the project.

7.d. 2025.03 Review of a Final Site Plan & Subdivision request for Reveler LLC. This is the proposed development of existing Pepperell Mill Building #30 into 11 residential units at 2 York Street (Tax Map 71, Lot 6-2).

- Matt Dubois recused himself therefore Kayla Lewis will be voting in his place.
- Iriqat reintroduced the project, he told the Board that the applicant has been actively working on addressing all Planning Board comments.
- The Staff Review Committee (SRC) supports the project.

- Mike Barton from Reveler is representing the application.
 - The engineer, Peter Heil, is on Zoom
 - The applicant worked with Southern Maine Planning and Development Commission (SMPDC) on the brownfields cleanup which is completed.
 - They are also working with the National Park Service (NPS) on historical accuracy in order to get historic tax credits for which they have been approved.
 - NPS had the applicant make adjustments to the ADA ramp and rail for historical accuracy.
 - Codes are working with the applicants on plan review
 - Zach Stevens from Acorn Engineering is also representing the applicant
 - There are 15 parking spaces for 11 residential units
 - There will be minimal disturbance on the site
 - They received a waiver for drainage at Preliminary
 - The architect is Ryan Senatore who is working with NPS to make everything historically accurate.
 - There are 3 original doors they will be recreating in the workshop.
 - They still need to get approval from the Historic Preservation Commission (HPC).
- THERE WERE NO PUBLIC COMMENTS**
- Patoine asked about the adjustments to the railing out-front. Barton explained the specifics of the adjustments.
 - Angers asked how snow removal will work? It will be a "haul off experience".
 - Angers asked who maintains the stairs on the side going down? Pepperell Hall, additional lighting has been added to the side and rear corners.
 - Angers is very concerned about people falling downstairs
 - Deschambault had brought up the lighting in the previous meeting and is happy they added the lighting. She asked about parking out-front, there will be parking in front.
 - Patoine wasn't people to know about the stairway.
 - Stormwater was waived at preliminary.

MOTIONS 7:29 PM

Motion-Angers- I motion to APPROVE Case # 2025.03 Final Subdivision and Site Plan Review for Reveler LLC - Proposed development of existing building into 11 residential units at 2 York Street (Tax Map 71, Lot 6-2) in the MSRD 3 Zone, with the recommended Findings of Fact (FOF) and Conditions of Approval (COA) as attached.

**Second-Patoine
Vote-Unanimous**

7.e. 2025.01 Review of a Preliminary/Final Site Plan Review Application for T & T Leasing LLC. The property is located at 3 Digital Drive (Tax Map 15, Lot 7-4) in the I-1 Zone. The applicant intends to construct a 7,500 SF facility to rent units for commercial activities.

- Iriqat refreshed the Board on the project
- He mentioned that the Thatcher Brook Impact Fee is due from the applicant
- Paul Gadbois represented the applicant
- Gadbois mentioned there are no changes with the plan

- They met with the Fire Chief, and the fire department is good with the plans
THERE WERE NO PUBLIC COMMENTS

- Patoine confirmed that this was a vote for both preliminary and final. Yes
MOTION 7:37 PM

Motion-Deschambault- Motion to Approve Case #2025.01 Preliminary and Final Site Plan Review for T&T Leasing, LLC, to construct a 7,500-sf building and parking for five mixed-use rental units on 3 Digital Drive (Tax Map 15, Lot 7-4) in the I-1 zone with the above-listed Conditions of Approval and waiver to Keep Existing Contours at 2' intervals.

Second-Angers

Vote-Unanimous

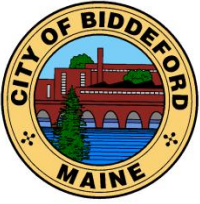
8. Other Business-N/A

9. Adjourn 7:40 PM

Planning Board Chair/Vice Chair

Date

These minutes are summary and are not intended to be verbatim. Archived meetings are viewable on the City's website: www.biddefordmaine.org.



CITY OF BIDDEFORD

Planning and Development Department

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Assistant City Planner
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adi.iriqat@biddefordmaine.org

PLANNING BOARD STAFF REPORT

TO: Chair Plotkin and Members of the Biddeford Planning Board

FROM: Adi Iriqat, Assistant City Planner

DATE: May 13, 2025

RE: 2025.15 Greatest Practical Extent Determination for Karen Tarves to reconstruct one non-conforming structure. The property is 12 Fortunes Rocks Road (Tax Map 63, Lot 42-1) in the Coastal Residential Zone.

MEETING DATE: May 21, 2025, at 6:00 PM

1) INTRODUCTION

The proposal involves demolishing and rebuilding the existing non-conforming structure in the same footprint. The structure will **have a** flood vent and a concrete slab foundation per flood zone AE requirements. The finished first floor elevation is set at **16.7 feet**, safely above the **proposed flood elevation of 13.0 feet**, with the existing grade at **6.9 feet**. The new septic system will also be replaced in the exact existing septic location.

2) PROJECT DATA/INFORMATION

1.	Applicant:	Karen Tarves 15280 Palmetto Lake Drive Miami, FL 33157
2.	Owner of Property:	Same as Applicant
3.	Agent:	N/A
4.	Engineer/ Surveyor:	John Bruckler P.O. Box 931 Biddeford, ME 04005
5.	Project Location:	12 Fortunes Rocks Road
6.	Project Tax Map & Lot:	Tax Map 63, Lot 42-1
7.	Lot Size:	.26 acres
8.	Base Zoning:	CR
9.	Overlay Zoning:	RP
10.	Existing Use:	Single Family Residents
11.	Proposed Use:	Remove & reconstruct non-conforming structure

2025.15 Greatest Practical Extent Determination for Karen Tarves to reconstruct one non-conforming structure. The property is 12 Fortunes Rocks Road (Tax Map 63, Lot 42-1) in the Coastal Residential Zone.

12.	Approvals Required:	Greatest Practical Extent
13.	Uses in the Vicinity:	Single Family Residential
14.	Number of Lots in Subdivision:	N/A
15.	Minimum Lot Size Required: Provided: Proposed:	20,000 sf 11,325 sq.ft ± N/A
16.	Frontage Required: Existing: Proposed:	150' 50'± N/A
17.	Front Setback Required: Existing: Proposed:	40' 10'±
18.	Side Setback Required: Existing: Proposed:	25' 9'± 10'±
19.	Rear Setback Required: Existing: Proposed:	25' N/A
20.	Height Requirements: Provided: Proposed:	25 feet or existing 17.6' 24.10
21.	Water Supply:	Public Water
22.	Sewage Disposal:	Private Sewer
23.	Solid Waste Disposal:	Public Trash
24.	Fire Protection:	City of Biddeford
25.	Floodplain Status:	N/A
26.	Wetland/Surface Water Impacts:	N/A
27.	Soil Study Provided:	N/A
28.	Parking Spaces Required:	N/A
29.	Parking Spaces Provided (total):	N/A
30.	Ownership of Road:	Fortunes Rocks is a Public Road
31.	Impervious Surface Area:	N/A
32.	Total Disturbed Area:	<1000
33.	Waivers Needed:	N/A
34.	Waivers Granted:	N/A
35.	Variances Needed for Approval:	None
36.	Other Permits Obtained:	N/A
37.	Other Non-City Permits Required:	N/A
38.	Fees Paid:	Yes
39.	Planning Board Review History:	May 21, 2025

2025.15 Greatest Practical Extent Determination for Karen Tarves to reconstruct one non-conforming structure. The property is 12 Fortunes Rocks Road (Tax Map 63, Lot 42-1) in the Coastal Residential Zone.

3) Existing Conditions

The property is currently improved with a single-family home with an attached deck, shed, and a driveway on 0.26 acres. The home is 70.7 feet from the marsh (high-water line), with the deck approximately 50 feet away. As a result, the structure is classified as non-conforming under the City Code.

4) Proposed Project

Scope of Work at 12 Fortunes Rocks Road

- **Demolition**
 - Remove the existing non-conforming residential structure, including attached deck and related features with a two-story structure.
- **Structure Relocation & Reconstruction**
 - Reconstruct the dwelling in the same footprint on the same parcel.
 - The new structure will be approximately 70.7 feet from the High-Water Line (HWL).
- **Location of Other Structures**
 - The existing cottage will be demolished entirely.
 - The new structure will be constructed within the existing footprint, with a one-foot shift to the southwest to meet setback requirements.
- **Septic System Replacement**
 - The existing **septic system will be removed and replaced** with a new, code-compliant system.
 - The **limited lot size** restricts alternative placement options.
 - The replacement system will be installed **in the same general area** as the current one, based on evaluation by soil engineer **Matt Logan**
- **Vegetation & Landscaping**
 - Minimal vegetation will be removed: **two lilac bushes, a hydrangea, and a dappled willow.**
 - These plants will be **relocated to the property perimeter.**
 - No new green space will be disturbed; any temporary impact from the septic work will be **restored and reseeded.**
- **Regulatory Compliance**
 - Project seeks **Planning Board approval** for determination that the relocation meets the "**greatest practical extent**" standard for shoreline setback per Article XIV, Section 12(C)(4) of the City Code.
 - Project design and site were evaluated against six criteria, including lot size, slope, erosion risk, adjacent structures, septic placement, and vegetation removal.
- **Relocation Criteria (Code Section 12(C)(3)):**
 1. **Lot size:** Limited buildable area due to multiple setbacks.
 2. **Land slope:** Not prohibitive to relocation.
 3. **Soil erosion:** No significant erosion risk identified.
 4. **Nearby structures:** No impact from adjacent buildings.
 5. **Septic system:** Existing system to be replaced; space reserved for new system.

2025.15 Greatest Practical Extent Determination for Karen Tarves to reconstruct one non-conforming structure. The property is 12 Fortunes Rocks Road (Tax Map 63, Lot 42-1) in the Coastal Residential Zone.

6. **Vegetation:** No significant removal required; area to be replanted per code.

STAFF REVIEW

Waivers: N/A

Staff Recommendation

If the applicant has addressed the outstanding items to the satisfaction of the Planning Board and the Planning Board approves the project, Staff recommends doing so with the following Conditions of Approval:

- 1. The razed building shall not be relocated closer to any of the existing property lines as noted on the approved plan
- 2. The Code Enforcement Officer shall review and approve conformance to Section 15 of the Shoreland Zoning Ordinance
- 3. Obtain all required permits from the Maine Department of Environmental Protection and the Biddeford Code Enforcement Office
- 4. This approval shall expire one year from the date below if a substantial start is not made in construction. **If a substantial start (30% of project completion, i.e., framing and foundation)** is made within one year of the date below, the applicant shall have one additional year to complete the project thereafter; this approval shall expire.

SAMPLE MOTIONS

- A. **Motion to Approve** Case #2025.15 A Greatest Practical Extent Determination for Karen Tarves (Tax Map 63, Lot 42-1) in the Coastal Residential Zoning District with the above-listed Conditions of Approval.
- B. **Motion to Table** Case #2025.15 A Greatest Practical Extent Determination for Karen Tarves (Tax Map 63, Lot 42-1) in the Coastal Residential Zoning District, for the following reasons:
 - 1) _____
 - 2) _____
 - 3) _____
- C. **Motion to Deny** #2025.15 A Greatest Practical Extent Determination for Karen Tarves (Tax Map 63, Lot 42-1) in the Coastal Residential Zoning District, for the following reasons:
 - 1) _____
 - 2) _____
 - 3) _____

**Subject: Request for Demolition and Construction Approval at 12 Fortunes Rocks Rd,
Biddeford, ME 04005**

My name is Karen Tarve, and I own the property at 12 Fortunes Rocks Road, Biddeford, ME 04005. The legal description of the property is 25 Crescent Beach Plan/Land/Ca RRI 11 23, and it is identified on the Biddeford Tax Map as Map 63, Lot 42-1. The GPS coordinates are 43.43593, -70.370884. The lot is a level, open parcel with no slope and a total area of 0.26 acres (11,325 square feet). The property is located within Flood Zone AE EL 13.

I am requesting permission to:

- Completely demolish the existing cottage and septic system,
- Construct a new structure, and
- Install a new septic system designed to accommodate three bedrooms.\

The new structure will not exceed the footprint of the original building, except for a one-foot shift to the southwest to comply with the required 10-foot setback from the adjacent property at 10 Fortunes Rocks Road.

The only variance being requested is for the replacement septic system. I am seeking approval to place a new, code-compliant system in the same general area as the current one. According to Matt Logan, soil test engineer, the size of the lot limits all alternative placement options. Petit Excavating will install the system and implement all necessary soil erosion control measures as part of their scope of work.

Vegetation removal will be minimal and limited to two lilac bushes, a hydrangea, and a dappled willow. These will be relocated to the property perimeter.

No additional green space will be disturbed, and no new driveway is proposed. Any green space affected during the septic system installation will be restored and reseeded.

Contact Information:

Phone: (305) 900-7020

Email: ktarves@bellsouth.net

Billing Address:

15280 Palmetto Lake Drive

Miami, FL 33157

Thank you for your time and consideration.

Sincerely,
Karen Tarve



City of Biddeford – Planning Department

Planning Board Application

P.O. Box 586, 205 Main Street Biddeford, Maine 04005

207-284-9115

Type of Application:☒ Shoreland Zoning Permit☐ Site Plan Review☐ Extraction☐ Conditional Use Permit☐ Subdivision☐ Private Way☐ Other: tear down and reconstruct in shoreland zone with flood vents**Applicant Information:**Name: Karen TarvesMailing Address: 15280 PALMETTO LAKE DRIVE MIAMI, FL 33157Telephone: 305 900 7020Email: Ktarves @ bell south. net

What is your legal interest in the property?

☒ Owner☐ Potential Buyer with Contract☐ Lease/Rental Agreement**Owner's Information:**Name: Karen TarvesMailing Address: 15280 PALMETTO LAKE DRIVE MIAMI, FL 33157Telephone: 305 900 7020Email: Ktarves @ bell south. net**Agent's Information:**Name: N/A

Mailing Address: _____

Telephone: _____

Email: _____

Engineer/Surveyor's Information:Name: John BrucklerMailing Address: P.O. Box 931 Biddeford, Me. 04005Telephone: 207 324 6886Email: John Bruckler @ metrocast. net**Project Location and Lot Information:**Street Address: 12 Fortunes Rocks Rd Biddeford Me 04005Tax Map: 63Lot: 42-1Current Zoning: CR

Shoreland Zoning: _____

Size of Lot: _____ () acres () s.f.

Lot Frontage: _____

Existing Use of Property: Single family residence**Property currently serviced by:**☒ City Road☐ Public Sewer☒ Public Water☒ Public Trash☐ Private Road☒ Septic System☐ Private Well☐ Private Hauler**Slope Conditions in Area of Construction (if applicable):**☒ Flat (0-3% slope)☐ Rolling (3-8% slope)☐ Hilly (8-15% slope)☐ Steep (15%+ Slope)Are there any wetlands or waterbodies on the site? ☒ (Yes) ☐ (No) if yes attach informationIs the project within the 100-year floodplain? ☒ (Yes) ☐ (No) if yes attach informationDo you plan to bring fill onto the lot? ☐ (Yes) ☒ (No) If yes attach information

Description of proposed use of property:

Project/Proposed Use:

single family residential

Property to be Serviced by:

☒ City Road ☐ Public Sewer ☒ Public Water ☒ Public Trash
☐ Private Road ☒ Septic System ☐ Private Well ☐ Private Hauler

Limits of Disturbance: < 1000 () acres ☒ s.f.

Net change in impervious cover: 0 () acres () s.f.

Is this project part of a larger project? ☐ (Yes) ☒ (No)

Is the project proposing a new Private or Public Road? ☐ (Yes, Private) ☐ (Yes, Public) ☒ (No)

Is this project within the Urbanized Area/MS4 (see City Drainage Map) ☐ (Yes) ☒ (No)

Is the project proposing any Stormwater facilities/BMPs? ☐ (Yes) ☒ (No)

Will a Traffic Movement Permit (TMP) be required?: ☐ (Yes) ☒ (No)

If in a Shoreland Zone:

Percent of residential lot coverage (Max 20%): 13%, replace existing footprint

Percent of structure expansion (Max 30%): 0

If Subdivision Review, number of lots proposed: n/a

If a Private Way is proposed, number of lots served: n/a

If Site Plan Review, you must provide the following information:

Total new square feet footprint of structure: 0

Total new square feet paving/parking: 0

Waiver Requests (attach details):

1. 0
2. _____
3. _____
4. _____
5. _____

Required Submittal Attachments:

A. Letters of Approval

- ☐ Fire Department – Contact Chief or Deputy Chief – 282-9986
- ☐ Ability to Serve for Water Service – Maine Water – 282-1543
- ☐ Ability to Serve for Sewer Service – Engineering Department – Tom Milligan 284-9118
- ☐ Police Department – e-911 Road Name Designation – Contact Joanne Fisk 282-5127

B. Letter to Planning Board describing project, Waiver requests, proposed improvements, addressing permit requirements, etc.

C. Photographs of Site.

D. Architectural renderings/drawings of proposed buildings, as required. Per John Perron

E. Engineering Plans, as required. n/a

F. Stormwater Management Report, as required. n/a

Fees (Due at time of Submission):

- \$75 Nonrefundable Administration Fee is required for every application.
- Refer to "Attachment A Fees and Charges" of the Land Development Regulations for more information. Consult with Planning Staff if you have questions.

replacing
existing
structure

Required Signatures:

By signing this application, as the foresaid applicant or authorized agent:

- I certify that I have read and completely understand the application;
- I certify that the information contained in this application and its attachments are true and correct;
- I understand that all information provided on this form and all other documents submitted as part of my proposal is a matter of public record;
- I understand that copies of this information may be supplied upon request to an interested party.
- I understand that additional funds may be required through the course of the review for special studies, legal review costs, and/or engineering review.
- I understand that by submitting an application I am not guaranteed a place on any particular agenda. I further understand that the City Planner will place me on an agenda for review when the application is deemed substantially complete.

Will the proposed project cause 1 acre or more of site disturbance?: (Yes) X (No)

- If Yes, applicant is responsible for any required Maine Construction General Permits and shall comply with the requirements of DEP Chapter 500 Stormwater Regulations, as they apply.

Signature of Applicant: Karen Tarver

Date March 13, 2025

Signature of Property Owner: Karen Tarver

Date March 13, 2025

DIGITAL SUBMITTAL REQUIREMENTS FOR ALL SUBMITTALS:

- A) PDF OF SIGNED APPLICATION
- B) PDFs OF ALL DRAWING SETS AND OTHER REQUIRED SUBMITTAL ATTACHMENTS NOTED ABOVE

HARD-COPY SUBMITTAL REQUIREMENTS FOR PLANNING BOARD APPLICATIONS:

- A) SEVEN (7) FULL-SIZE PAPER COPIES OF DRAWING SETS

DIGITAL SUBMITTAL REQUIREMENTS FOR FINAL APPROVAL:

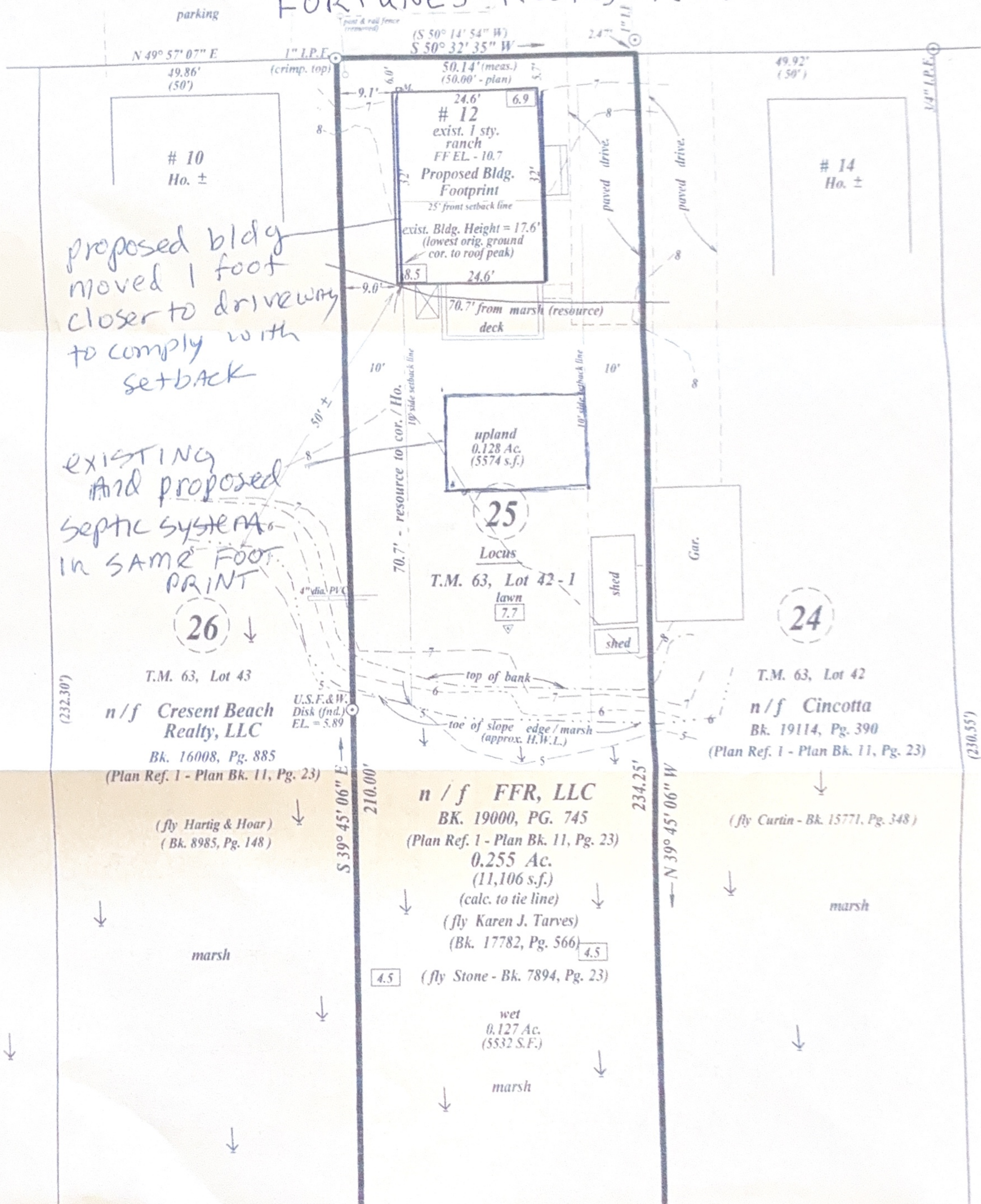
- A) INDIVIDUALLY NAMED PDFs OF EACH DRAWING (NOT A COMBINED PDF SET)
 - Individual Drawing PDF Naming Format: 'PROJECT/SHEETSET NAME_INDIVIDUAL DRAWING NAME.pdf'
- B) PDF COPIES OF ALL PERMIT APPROVALS, APPLICATIONS, REPORTS, NARRATIVES, LETTERS, ETC.
- C) FINAL CAD REFERENCE FILES IN DWG FORMAT (SURVEY & PROPOSED DESIGN LINEWORK)
 - All drawings & CAD reference files must be to-scale and within the following coordinate systems:
 - MAINE STATE PLANE WEST NAD83 (Horizontal Datum) & NAVD88 (Vertical Datum)

HARD-COPY SUBMITTAL REQUIREMENTS FOR FINAL APPROVAL:

- A) THREE (3) FULL-SIZE PAPER COPIES OF INDIVIDUAL DRAWINGS REQUIRING BOARD SIGNATURE
- B) ONE (1) FULL-SIZE PAPER COPY OF ENTIRE DRAWING SET FOR ENGINEERING RECORDS

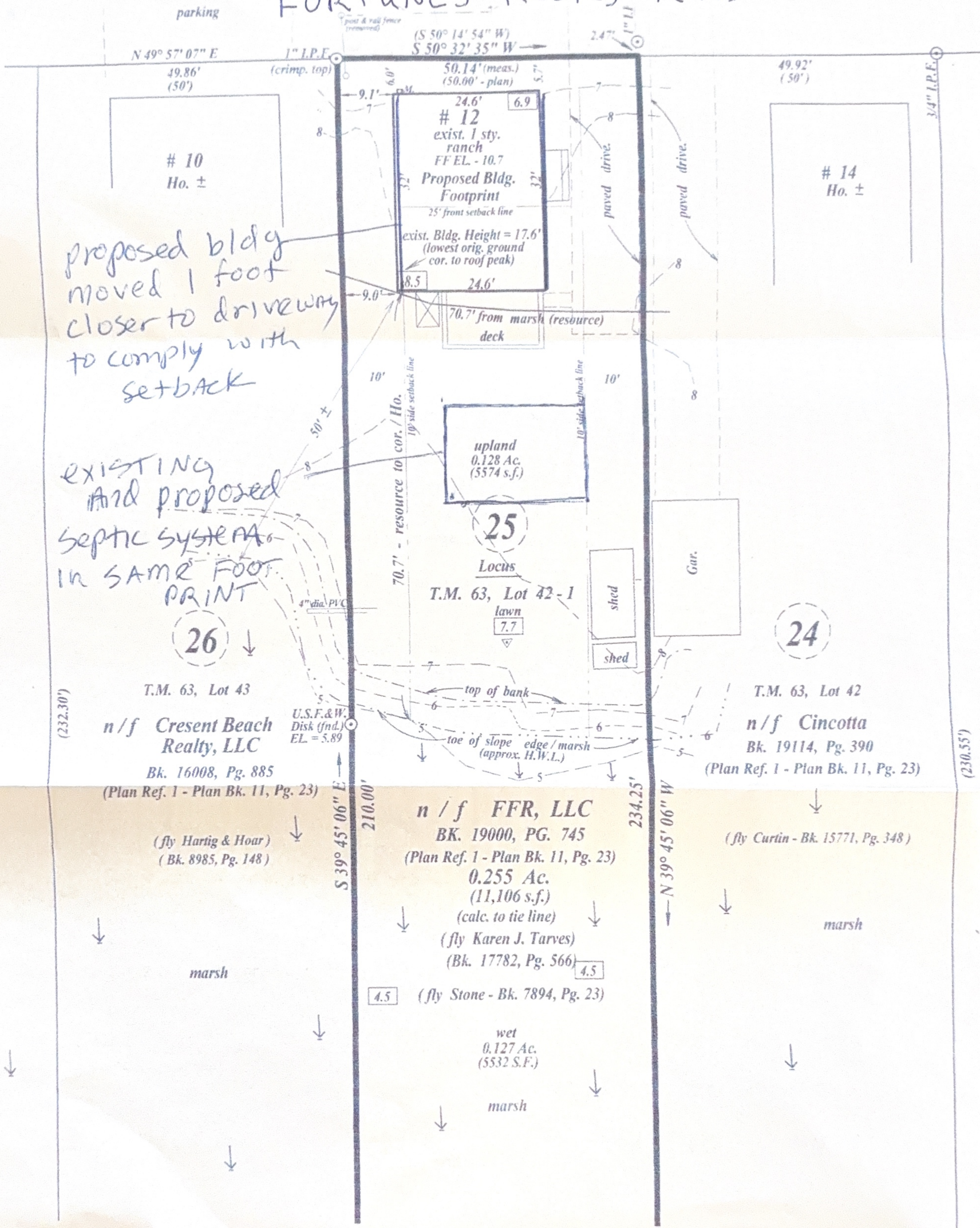
PLEASE CONFIRM WITH PLANNING STAFF FOR CLARIFICATION

FORTUNES ROCKS ROAD



SITE PLAN.

FORTUNES ROCKS ROAD



proposed bldg moved 1 foot closer to driveway to comply with setback

EXISTING AND PROPOSED SEPTIC SYSTEM IN SAME FOOTPRINT

After recording return to:
Karen J. Tarves
15280 Palmetto Lake Drive
Miami, FL 33157

DEBRA L. ANDERSON, REGISTER OF DEEDS



Bk 17782 PG 566
Instr # 2018034445
08/20/2018 01:02:14 PM
Pages 2 YORK CO

Space Above This Line For Recording Data

WARRANTY DEED

KNOW ALL PERSONS BY THESE PRESENTS, that **JEFFREY A. STONE** and **DEBRA-ANN STONE** of Biddeford, Maine, FOR CONSIDERATION PAID, hereby grant to **KAREN J. TARVES**, of Miami, Florida with WARRANTY COVENANTS, a lot or [parcel of land with the building and improvements thereon, situated in Biddeford, Maine, being more particularly described as follows:

SEE EXHIBIT A ATTACHED HERETO AND
INCORPORATED HEREIN BY REFERENCE

IN WITNESS WHEREOF, **Jeffrey A. Stone** and **Debra-Ann Stone** have hereunder set their hand and seal as of this 15th day of August, 2018.

WITNESS

Jeffrey A. Stone
Jeffrey A. Stone

WITNESS

Debra-Ann Stone by Jeffrey A. Stone
Debra-Ann Stone

by Jeffrey A. Stone, Attorney in Fact

Attorney in Fact

STATE OF MAINE
York County, ss.

August 15
~~June 12~~, 2018

SEAL

Personally appeared the above-named **Jeffrey A. Stone** and **Debra-Ann Stone** and acknowledged the foregoing instrument to be their free act and deed.

Before me,

Marysue Fogarty Emhiser
Alan E. Shepard, Attorney at Law

Marysue Fogarty Emhiser,
Notary Public

Commission expires: 8.14.22

2p7 Shepard + Read
93 Main St.
Kennebunk ME 04043

Maine R.E. Transfer Tax Paid

Exhibit A
Warranty Deed

JEFFREY A. STONE and DEBRA-ANN STONE
To

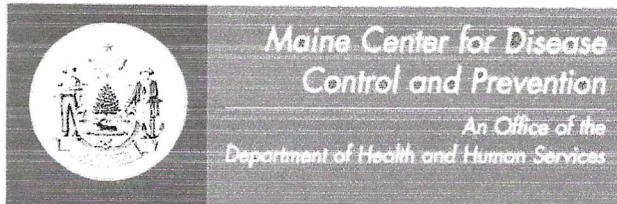
KAREN J. TARVES

12 Fortunes Rocks Road, Biddeford, Maine

A certain lot or parcel of land, with the buildings thereon, situated in Biddeford in the County of York and State of Maine, and being located on the Northwestern side of the road running from Biddeford Pool to Fortunes Rocks and being lot No. 25 according to a plan entitled "Crescent Beach Plan of Land of Carrie M. Jones" drawn by Libby & Dow, C. E. dated July 5, 1929, and recorded in the York County Registry of Deeds in Plan Book 11, Page 23. Said lot is bounded Southeasterly Fifty (50) feet by the road to Fortunes Rocks, Northeasterly Two Hundred Ten (210) feet, more or less, by Lot No. 26 on said plan, Northwesternly by a creek shown on said plan and Southwesterly Two Hundred Thirty-Four and 25/100 (234.25) feet, more or less, by Lot. No. 24 on said plan.

Together with a right of way for the benefit of the within Grantor, her heirs and assigns, as the owner of Lot 25 as shown on said plan. Said right of way to be Twelve (12) feet wide in each and every part and to extend from the Fortunes Rocks Road Southeasterly the entire length of Lots numbered 8 and 9 on said plan and the centerline thereof to be the line dividing said lots numbered 8 and 9.

Being the same premises conveyed to **Jeffrey A. Stone** and **Debra-Ann Stone**, by Warranty Deed dated June 28, 1996 and recorded in the York County Registry of Deeds in Book 7894, Page 23.



Department of Health and Human Services
Maine Center for Disease Control and Prevention
286 Water Street
11 State House Station
Augusta, Maine 04333-0011
Tel: (207) 287-5672
Fax: (207) 287-4172; TTY: 1-800-606-0215

SUBSURFACE WASTEWATER DISPOSAL SYSTEM VARIANCE REQUEST

This form must accompany an application (HHE-200 Form) for any subsurface wastewater disposal system which requires a variance to provisions of the Subsurface Wastewater Disposal Rules. The Local Plumbing Inspector must not issue a permit for the installation of a subsurface wastewater disposal system requiring a variance from the Department of Health and Human Services until approval has been received from the Department.

GENERAL INFORMATION

Town of Biddeford

Property Owner's Name: 12 FRR, LLC Tel. No.: (305) 900-7020

System's Location: 12 Fortunes Rocks Road

Property Owner's Address: c/o Karen Tarves: 12 Fortunes Rocks Road, Biddeford, ME Zip Code 04005

e-mail address: ktarves@bellatlantic.net

The subsurface wastewater disposal system design for the subject property requires a ☒ replacement system variance ☐ first time system variance to the Subsurface Wastewater Disposal Rules. This variance requires ☒ local approval ☐ local and state approval.

SPECIFIC VARIANCE REQUESTED (To be filled in by Site Evaluator. Use additional sheets if needed.)

SECTION OF RULE

1. See Sheet Attached
2. _____
3. _____

9

SITE EVALUATOR

When a property is found to be unsuitable for subsurface wastewater disposal by a licensed Site Evaluator, the Evaluator shall so inform the property owner. If the property owner, after exploring all other alternatives, wishes to request a variance to the Rules, and the Evaluator in his professional opinion feels the variance request is justified and the site limitations can be overcome, he shall document the soil and site conditions on the Application. The Evaluator shall list the specific variances necessary plus describe below the proposed system design and function. The Evaluator shall further describe how the specific site limitations are to be overcome, and provide any other support documentation as required prior to consideration by the Department. Attach a separate sheet if necessary.

I, Matthew Logan, S.E., certify that a variance to the Rules is necessary since a system cannot be installed which will completely satisfy all the Rule requirements. In my judgment, the proposed system design on the attached Application is the best alternative available; enhances the potential of the site for subsurface wastewater disposal; and that the system should function properly.

Matthew Logan
SIGNATURE OF SITE EVALUATOR

6-24-2024
DATE

PROPERTY OWNER

I, _____, am the ☐ owner ☐ agent for the owner of the subject property. I understand that the installation on the Application is not in total compliance with the Rules. Should the proposed system malfunction, I release all concerned provided they have performed their duties in a reasonable and proper manner, and I will promptly notify the Local Plumbing Inspector and make any corrections required by the Rules. By signing the variance request form, I acknowledge permission for representatives of the Department to enter onto the property to perform such duties as may be necessary to evaluate the variance request.

☐ SIGNATURE OF OWNER
☐ AGENT FOR THE OWNER

DATE

LOCAL PLUMBING INSPECTOR - Approval at local level

The local plumbing inspector shall review all variance requests prior to rendering a decision.

I, _____, the undersigned, have visited the above property and find that the variance request submitted by the applicant does not conform with certain provisions of the wastewater disposal rules. The variance request submitted by the applicant is the best alternative for a subsurface wastewater disposal system on this property. The proposed system (☐ does ☐ does not) conflict with any provisions controlling subsurface wastewater disposal in the shoreland zone. Therefore, I (☐ do ☐ do not) approve the requested variance. I (☐ will ☐ will not) issue a permit for the system's installation as proposed by the application.

LPI Signature

Date

LOCAL PLUMBING INSPECTOR - Referral to the Department

The local plumbing inspector shall review all variance requests prior to forwarding to the Division of Environmental Health.

I, _____, the undersigned, have visited the above property and find that the variance request submitted by the applicant does not conform with certain provisions of the wastewater disposal rules. The variance request submitted by the applicant is the best alternative for a subsurface wastewater disposal system on this property. The proposed system (☐ does ☐ does not) conflict with any provisions controlling subsurface wastewater disposal in the shoreland zone. Therefore, I (☐ do ☐ do not) recommend the issuance of a permit for the system's installation as proposed by the application.

LPI Signature

Date

FOR USE BY THE DEPARTMENT ONLY

The Department has reviewed the variance(s) and (☐ does ☐ does not) give its approval. Any additional requirements, recommendations, or reasons for the Variance denial, are given in the attached letter.

SIGNATURE OF THE DEPARTMENT

DATE

- Notes: 1. Variances for soil conditions may be approved at the local level as long as the total point assessment is at least the minimum allowed. (See Section 7.B.4 of the Subsurface Wastewater Disposal Rules for Municipal Review.)
2. Variances for other than soil conditions or soil conditions beyond the limit of the LPI's authority are to be submitted to the Department for review. (See Section 7.B.3 for Department Review.) The LPI's signature is required on these variance requests prior to sending them to the Department.

**SOIL, SITE AND ENGINEERING FACTORS FOR FIRST TIME SYSTEM VARIANCE ASSESSMENT
WITH LIMITING SOIL DRAINAGE CONDITIONS (SEE TABLES 7C THROUGH 7M).**

	CHARACTERISTIC	POINT ASSESSMENT
Soil Profile		
Depth to Groundwater/Restrictive Layer		
Terrain		
Size of Property		
Waterbody Setback		
Water Supply		
Type of Development		
Disposal Area Adjustment		
Vertical Separation Distance		
Additional Treatment		
TOTAL POINT ASSESSMENT:		

Minimum Points (Check One): ☐ Outside Shoreland Zone-50 ☐ Inside Shoreland Zone-65 ☐ Subdivision-65

DISPOSAL SYSTEM VARIANCE REQUEST ATTACHMENT**Table 9A****Setback Distances for Replacement System, Limits of LPI Authority**

VARIANCE CATEGORY	LIMIT OF LPI'S APPROVAL AUTHORITY						VARIANCE REQUESTED TO:	
SOILS								
Soil Profile	Ground Water Table						inches	
Soil Condition	Restrictive Layer						inches	
from HHE-200	Bedrock						inches	
Site Features vs. disposal system components of various sizes	Disposal Fields (total design flow)			Septic Tanks and Holding Tanks (total design flow)			Disposal Fields	Septic Tanks
	Less than 1000 gpd	1000 to 2000 gpd	Over 2000 gpd	Less than 1000 gpd	1000 to 2000 gpd	Over 2000 gpd	To	To
Wells with water usage of 2000 or more gpd or public water supply wells	300 ft	300 ft	300 ft	150 ft	150 ft	150 ft		
Potable Supply Well	100 down to 60 ft	200 down to 100 ft	300 down to 150 ft	50 down to 25 ft [a]	100 down to 50 ft [a]	100 down to 50 ft		
Water supply line	10 ft	20 ft	25 ft	10 ft	10 ft	10 ft		
Water course, major [c]	100 down to 50 ft	200 down to 120 ft	300 down to 180 ft	100 down to 25 ft [a]	100 down to 50 ft	100 down to 50 ft		
Water course, minor [c]	50 down to 25 ft	100 down to 50 ft	150 down to 75 ft	50 down to 25 ft	50 down to 25 ft	50 down to 25 ft		
Drainage ditches	25 down to 12 ft	50 down to 25 ft	75 down to 35 ft	25 down to 12 ft	25 down to 12 ft	25 down to 12 ft		
Slopes greater than 3:1	10 ft	18 ft	25 ft	N/A	N/A	N/A		
No full basement [e.g. slab, columns, posts]	15 down to 7 ft	30 down to 15 ft	40 down to 20 ft	8 down to 5 ft	14 down to 7 ft	20 down to 10 ft	10'	
Full basement [below grade foundation, frost wall]	20 down to 10 ft	30 down to 15 ft	40 down to 20 ft	8 down to 5 ft	14 down to 7 ft	20 down to 10 ft		
Property lines	10 down to 5 ft [b]	18 down to 9 ft [b]	20 down to 10 ft [b]	10 down to 4 ft [b]	15 down to 7 ft [b]	20 down to 10 ft [b]		4'±
Burial sites or graveyards boundaries, measured from the down toe of the fill extension	25 ft	25 ft	25 ft	25 ft	25 ft	25 ft		
Stormwater infiltration systems	100 down to 60 feet	200 down to 120 feet	300 down to 180 feet	100 down to 50 feet	100 down to 50 feet	100 down to 50 feet		
Wetponds, retention ponds, and detention basins (excavated below grade); Soil filters underdrained swales, underdrained outlets, and similar structures	50 down to 25 feet [d]	100 down to 50 feet [d]	150 down to 75 feet [d]	50 down to 25 feet [d]	50 down to 25 feet [d]	50 down to 25 feet [d]		
Stormwater detention basins (basin bottom at, or above, predevelopment grade)	25 down to 12 feet	50 down to 25 feet [d]	75 down to 35 feet [d]	25 down to 12 feet	25 down to 12 feet	25 down to 12 feet		
OTHER								
1. 3:1 sloped fill extension, as needed								
2.								
3.								

Notes:

[a] This distance may be reduced to 25 feet, if the septic or holding tank is tested in the LPI's presence and shown to be watertight pursuant to water tightness standards found in Section 7(H)(8) or of monolithic construction.

[b] Additional setbacks may be needed to prevent fill material extensions from encroaching onto abutting property.

[c] All ground disturbance or clearing of woody vegetation necessary for the installation of a subsurface wastewater disposal system that occurs within 100 feet of the normal high water mark of a major or minor water body/course must comply with these Rules pertaining to work adjacent to or within wetlands and water bodies (for more details, see Section 12).

[d] The reduced setback distance may be further reduced down to 12 feet if the stormwater structure has an impervious liner and the fill extensions do not encroach onto the stormwater structure.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. of Environmental Health, 41 SHS
(207) 287-2070 FAX (207) 287-4172

PROPERTY LOCATION		>>CAUTION: LPI APPROVAL REQUIRED<<	
City, Town, or Plantation	BIDDEFORD	Town/City _____	Permit # _____
Street or Road	12 FORTUNES ROCKS ROAD	Date Permit Issued ____/____/____	Fee \$ _____ Double Fee Charged []
Subdivision, Lot #		L.P.I.# _____	
OWNER/APPLICANT INFORMATION		Local Plumbing Inspector Signature _____	
Name (last, first, MI) 12 FRR LLC	☒ Owner ☐ Applicant	Fee \$ _____ State Fee _____	Fee \$ _____ Locally Adopted Fee _____
Mailing Address of Owner KAREN TARVES 12 FORTUNES ROCKS ROAD BIDDEFORD, ME 04005		Copy: [] Owner [] Town [] State	
Daytime Tel. #	(305) 900-7020 K TARVES@BELLSOUTH.NET	The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.	
		Municipal Tax Map # 63 Lot # 42-1	
OWNER OR APPLICANT STATEMENT		CAUTION: INSPECTION REQUIRED	
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a permit.		I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.	
_____ Signature of Owner/Applicant		_____ Local Plumbing Inspector Signature	
_____ Date		_____ (1st) Date Approved	
		_____ (2nd) Date Approved	

PERMIT INFORMATION

TYPE OF APPLICATION ☐ 1. First Time System ☒ 2. Replacement System Type Replaced: UNKNOWN Year Installed: UNKNOWN ☒ 3. Expanded System ☒ a. <25% Expansion ☐ b. >25% Expansion ☐ 4. Experimental System ☐ 5. Seasonal Conversion	THIS APPLICATION REQUIRES ☐ 1. No Rule Variance ☐ 2. First Time System Variance ☐ a. Local Plumbing Inspector Approval ☐ b. State & Local Plumbing Inspector Approval ☒ 3. Replacement System Variance ☒ a. Local Plumbing Inspector Approval ☐ b. State & Local Plumbing Inspector Approval ☐ 4. Minimum Lot Size Variance ☐ 5. Seasonal Conversion Permit	DISPOSAL SYSTEM COMPONENTS ☒ 1. Complete Non-Engineered System ☐ 2. Primitive System (graywater & alt toilet) ☐ 3. Alternative Toilet, specify: _____ ☐ 4. Non-Engineered Treatment Tank (only) ☐ 5. Holding Tank, _____ gallons ☐ 6. Non-Engineered Disposal Field (only) ☐ 7. Separated Laundry System ☐ 8. Complete Engineered System (2000gpd+) ☐ 9. Engineered Treatment Tank (only) ☐ 10. Engineered Disposal Field (only) ☐ 11. Pre-treatment, specify: _____ ☐ 12. Miscellaneous components
SIZE OF PROPERTY 0.26 ☐ SQ. FT. ☒ ACRES	DISPOSAL SYSTEM TO SERVE ☒ 1. Single Family Dwelling Unit, No. of Bedrooms: 3 ☐ 2. Multiple Family Dwelling, No of Units: _____ ☐ 3. Other: _____ (specify) Current Use ☐ Seasonal ☒ Year Round ☐ Undeveloped	TYPE OF WATER SUPPLY ☐ 1. Drilled Well ☐ 2. Dug Well ☐ 3. Private ☒ 4. Public ☐ 5. Other: _____
SHORELAND ZONING ☐ Yes ☒ No		

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

MONOLITHIC TREATMENT TANK (DUAL COMPARTMENT RECOMMENDED) ☒ 1. Concrete ☒ a. Regular ☐ b. Low Profile ☐ 2. Plastic ☐ 3. Other: _____ CAPACITY: 1000 GAL. SEE NOTE ON PAGE 3	DISPOSAL FIELD TYPE & SIZE ☐ 1. Stone Bed ☐ 2. Stone Trench ☒ 3. Proprietary Device ☐ a. Cluster array ☒ c. Linear ☒ b. Regular ☐ d. H-20 loaded ☐ 4. Other: _____ SIZE: 1152 sq. ft. ☐ lin. ft. 24 ELJEN GSF UNITS	GARBAGE DISPOSAL UNIT ☒ 1. No ☐ 2. Yes ☐ 3. Maybe If Yes or Maybe, specify one below: ☐ a. Multi-compartment tank (RECOMMENDED) ☐ b. _____ tanks in series ☐ c. Increase in tank capacity ☒ d. Filter on tank outlet ZABEL OR EQUIV (REQUIRED)	DESIGN FLOW 270 gallons per day BASED ON: ☒ 1. Table 4A (dwelling unit(s)) ☐ 2. Table 4C (other facilities) SHOW CALCULATIONS for other facilities EXISTING 2 BEDROOMS POTENTIAL EXPANSION TO 3 BEDROOMS AT 90 GALLONS PER DAY EACH ☐ 3. Section 4G (meter readings) ATTACH WATER-METER DATA
SOIL DATA & DESIGN CLASS PROFILE CONDITION 12 / C at Observation Hole # TP 1 Depth 32 " of Most Limiting Soil Factor	DISPOSAL FIELD SIZING ☐ 1. Medium - 2.6 sq.ft./gpd ☒ 2. Medium-Large - 3.3 sq.ft./gpd ☐ 3. Large - 4.1 sq.ft./gpd ☐ 4. Extra-Large - 5.0 sq.ft./gpd	EFFLUENT/EJECTOR PUMP ☐ 1. Not required ☒ 2. May be required ☐ 3. Required Specify only for engineered systems: SEE NOTE ON PAGE 3 DOSE: _____ gallons	LATITUDE AND LONGITUDE at center of disposal area Lat. N43 d 26 m 9.12 s Lon. W70 d 22 m 14.82 s If g.p.s., state margin of error

SITE EVALUATOR STATEMENT

I certify that on **6/11/24** (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the Subsurface Wastewater Disposal Rules (10-144A CMR 241).

 Site Evaluator Signature	324 SE #	6-24-2024 Date
MATTHEW LOGAN Site Evaluator Name Printed	(207) 756-9118 Telephone Number	MATTLOGAN.MLE@GMAIL.COM E-mail Address

M.L. Environmental, LLC - P.O. Box 167, Bar Mills, Maine 04004 - (207) 756-9118
 Note: Changes to or deviations from the design should be confirmed with the Site Evaluator

Page 1 of 3
HHE-200 Rev. 11/2013

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health and Human Services
Division of Environmental Health
(207) 287-2070 FAX (207) 287-4172

Town, City, Plantation
BIDDEFORD

Street, Road, Subdivision
12 FORTUNES ROCKS ROAD

Owner's Name
12 FRR LLC

**NOTE: INSTALL RISERS AND COVERS
OVER SEPTIC TANKS ACCESS PORTS
PER CODE (ASSURE WATER TIGHTNESS)**

SUBSURFACE WASTEWATER DISPOSAL PLAN

SCALE 1" = 20 FT.

**NEW 1000 GALLON CONCRETE
MONOLITHIC SEPTIC TANK LOCATE
WHERE FEASIBLE, 8' MIN.
FROM BUILDING STRUCTURE
4' MIN. FROM PROPERTY LINE
SET AT HIGH ENOUGH ELEVATION
TO ASSURE GRAVITY FLOW
(RAISE PLUMBING IF NECESSARY)
OR PROVIDE PUMP STATION**

**IF PUMPING USE
1 1/2" TO 2" DIA.
EFFLUENT LINE BURIED
BELOW FROST OR INSULATE
TO PROTECT FROM FREEZING
OR IF GRAVITY FLOW USE
4" DIA. SDR35 SOLID PVC
(ASSURE WATERTIGHTNESS)**

**DISTRIBUTION
BOX (BOTTOM
FEED IF PUMPING)
INSULATE PER CODE**

**APPROX. EXISTING
SUMP PUMP DRAIN
(TO BE REMOVED)**

**TIDAL
WETLAND**

BULKHEAD

**SEPTIC TANK
OUTLET FILTER
(REQUIRED)**

**PUMP STATION
(IF NEEDED)**

**EXISTING
DWELLING
(TO BE REPLACED
IN SAME FOOTPRINT)**

DRIVEWAY

DECK

42"

20'

20'

20'

20'

20'

20'

20'

20'

20'

20'

20'

20'

20'

20'

20'

20'

20'

20'

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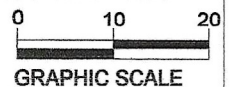
20'

**APPROX.
PROPERTY
LINE**

**PROPOSED DISPOSAL AREA
(4 ROWS OF 6 ELJEN
GSF UNITS EACH)**

**NOTE: THOROUGHLY SCARIFY UNDER
ENTIRE DISPOSAL FIELD, SHOULDER
AREA, & FILL EXTENSION AREA PRIOR
TO FILL PLACEMENT, THEN BLEND FIRST
6" LIFT OF FILL INTO EXISTING SOIL
SURFACE TO PROMOTE MIXING**

**PROVIDE TEMPORARY EROSION AND
SEDIMENT CONTROL PER MAINE DEP
BEST MANAGEMENT PRACTICES**



FILL REQUIREMENTS

Depth of Fill (Upslope) $\approx 13" - 15"$
Depth of Fill (Downslope) $\approx 15"$
DEPTHS AT CROSS-SECTION (shown below)

CONSTRUCTION ELEVATIONS

Finished Grade Elevation
Top of Distribution Pipe or Proprietary Device
Bottom of Disposal Area

**SEE
DETAIL
BELOW**

ELEVATION REFERENCE POINT

Location & Description **BOTTOM OF WHITE
WINDOW CASING ON DWELLING #14**
Reference Elevation is: 0.0' or 41" ABOVE GRADE

SCALE:
VERTICAL: 1" = 5 FT
HORIZONTAL: 1" = 10 FT

DISPOSAL AREA CROSS SECTION

$\pm 4' - 5'$ 5' 15' 5' $\pm 5'$
FILL EXT. SHOULDER SHOULDER FILL EXT.

4" DIA. PERFORATED PIPE

ELJEN GSF UNIT

EXISTING GRADE

CROWN AT 3%

GRAVELLY COARSE SAND

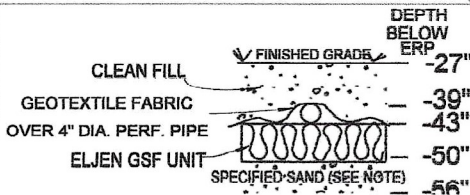
**CAP TOE OF FILL
WITH SANDY LOAM
MATERIAL TO PREVENT
WASTEWATER BREAKOUT**

EXISTING GRADE

SCARIFY (SEE NOTE ABOVE)

**NOTE: SPECIFIED SAND: ASTM SPECS,
WITH LESS THAN 10% PASSING A #100 SIEVE
AND LESS THAN 5% PASSING A #200 SIEVE
(THE SAND 6" UNDER, BETWEEN ROWS AND
1' AROUND THE PERIMETER OF THE GSF UNITS)**

**REMOVE ALL PORTIONS OF EXISTING
DISPOSAL AREA ENCOUNTERED TO A MINIMUM
DEPTH OF 2' UNDERNEATH AND 5'
ALONGSIDE DISPOSAL AREA AND REPLACE
WITH CLEAN GRAVELLY COARSE SAND FILL**



Math Lyn
Site Evaluator Signature

324
SE *

6-24-2024
Date

Page 3 of 3
HHE-200 Rev. 02/11

M.L. Environmental, LLC - P.O. Box 167, Bar Mills, Maine 04004 - (207) 756-9118

BIDDEFORD

12 FORTUNES ROCKS ROAD

12 FRR LLC

TOWN

LOCATION

APPLICANT'S NAME

1) The Plumbing and Subsurface Wastewater Disposal Rules adopted by the State of Maine, Division of Health and Human Services pursuant to 22 M.R.S.A. § 42 (the "Rules") are incorporated herein by reference and made a part of this application and shall be consulted by the owner/applicant, the system installer and/or building contractor for further construction details and material specifications. The system Installer should contact ML Environmental, L.L.C. at 756-9118, if there are any questions concerning materials, procedures or designs. The system installer and/or building contractor installing the system shall be solely responsible for compliance with the Rules and with all state and municipal laws and ordinances pertaining to the permitting, inspection and construction of subsurface wastewater disposal systems.

2) This application is intended to represent facts pertinent to the Rules only. It shall be the responsibility of the owner/applicant, system Installer and/or building contractor to determine compliance with and to obtain permits under all applicable local, state and/or federal laws and regulations (including, without limitation, Natural Resources Protection Act, wetland regulations, zoning ordinances, subdivision regulations, Site Location of Development Act and Minimum Lot Size law) before installing this system or considering the property on which the system is to be installed a "buildable" lot. It is recommended that a wetland scientist be consulted regarding wetland regulations. Prior to the commencement of construction/installation, the local plumbing inspector or Code Enforcement Officer shall inform the owner/applicant and M.L. Environmental, L.L.C. of any local ordinances which are more restrictive than the Rules in order that the design may be amended. All designs are subject to review by local, state and/or federal authorities. M.L. Environmental, L.L.C.'s liability shall be limited to revisions required by regulatory agencies pursuant to laws or regulations in effect at the time of preparation of this application.

3) All information shown on this application relating to property lines, well locations, subsurface structures and underground facilities (such as utility lines, drains, septic systems, water lines, etc.) are based upon information provided by the owner/applicant and has been relied upon by M.L. Environmental, L.L.C. in preparing this application. The owner/applicant shall review this application prior to the start of construction and confirm this information. Well locations on abutting properties but not readily visible above grade should be confirmed by the owner/applicant prior to system installation to assure minimum setbacks.

4) Installation of a garbage (grinder) disposal is not recommended. If one is installed, an additional 1000 gallon septic tank or a septic tank filter shall be connected in series to the proposed septic tank. Risers and covers should be installed over the septic tank outlet per the "Rules" to allow for easy maintenance of filter.

5) The septic tank should be pumped within two years of installation and subsequently as recommended by the pump service, but in no event should the septic tank be pumped less often than every three years.

The system user shall avoid introducing kitchen grease or fats into this system. Chemicals such as septic tank cleaners and/or chlorine or water treatment backwash and controlled or hazardous substances shall not be disposed of in this system. Additives such as yeast or enzymes are discouraged, since they have not been proven to extend system life.

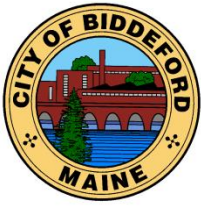
6) All septic tanks, pump stations and additional treatment tanks shall be installed to prevent ground water and surface water infiltration. Risers and covers should be properly installed to provide access while preventing surface water intrusion to finished ground surface. One 18" dia (min.) riser and cover is required over the septic tank.

Vehicular traffic over disposal system is prohibited unless specifically designed with H-20 rated components.

BIDDEFORD	12 FORTUNES ROCKS ROAD	12 FRR LLC
TOWN	LOCATION	APPLICANT'S NAME

- 7) The actual waste water flow or number of bedrooms shall not exceed the design criteria indicated on this application without a re-evaluation of the system as proposed
- 8) The general minimum setbacks between a well (public or private) and septic system serving a single family residence is 100-300 feet, unless the local municipality has a more stringent requirement. A well installed by an abutter within the minimum setback distances prior to the issuance of a permit for the proposed disposal system may void this design.
- 9) When a gravity system is proposed: BEFORE CONSTRUCTION/INSTALLATION BEGINS, the system installer or building contractor shall review the elevations of all points given in this application and the elevation of the existing and/or proposed building drain and septic tank inverts for compatibility to minimum pitch requirements. In gravity systems, the invert of the septic tank(s) outlet(s) should be at least 4 inches above the invert of the distribution box outlet at the disposal area.
- 10) When an effluent pump is required: Pump stations should be sized per manufacturer's specifications to meet lift requirements and friction loss. Provisions shall be made to make certain that surface and ground water does not enter the septic tank or pump station, by sealing/grouting all seams and connections, and by placement of a riser and 18" dia. (min.) cover at or above grade.
An alarm device warning of a pump failure shall be installed. Also, when pumping is required of a chamber system, install a 'T' connection in the distribution box and place 3 inches of stone or a splash plate in the first chamber. Insulate gravity pipes, pump lines and the distribution box as necessary to prevent freezing.
- 11) On all systems, remove the vegetation, organic duff and old fill material from under the disposal area and any fill extension. Additional fill beyond indicated on plan may be necessary to replace organic matter. On sites where the proposed system is to be installed in natural soil, scarify the bottom and sides of the excavated disposal area with a rake. Do not use wheeled equipment on the scarified soil surface. For systems installed in fill, scarify the native soil by roto-tilling or scarifying with teeth of backhoe to a depth of at least 8 inches over the entire disposal and fill extension area to prevent glazing and to promote fill bonding. Place fill in loose layers no deeper than 8 inches and compact before placing more fill (this ensures that voids and loose pockets are eliminated to minimize the chance of leakage or differential settling). Do not use wheeled equipment on the scarified soil area until after 12 inches of fill is in place. Keep equipment off proprietary devices. Divert the surface water away from the disposal area by ditching or shallow landscape swales.
- 12) Unless noted otherwise, fill shall be gravelly coarse sand, which contains no more than 5% fines (silt and clay). Crushed stone shall be clean and free of any rock dust from the crushing process.
- 13) Do not install systems on loamy, silty, or clayey soils during wet periods since soil smearing/glazing may seal off the soil interface.
- 14) Seed all filled and disturbed surfaces with perennial grass seed, with 4" min. soil or soil amendment mix suitable for growing, then mulch with hay or equivalent material to prevent erosion. Alternatively, bark or permanent landscape mulch may be used to cover system. Woody trees or shrubs are not permitted on the disposal area or fill extensions.
- 15) If an advanced wastewater treatment unit is part of the design, the system shall be operated and maintained per manufacturer's specifications.

M.L. ENVIRONMENTAL LLC
 LICENSED SITE EVALUATOR
 P.O. BOX 167, BAR MILLS, MAINE 04004
 (207) 756-9118



CITY OF BIDDEFORD

Planning and Development Department

David C.M. Galbraith
Deputy Director/City Planner
205 Main Street
P.O. Box 586
Biddeford, ME 04005
(207) 284-9115

David.Galbraith@biddefordmaine.org

PLANNING BOARD STAFF REPORT

TO: Chair Plotkin and Members of the Biddeford Planning Board

FROM: David C.M. Galbraith, City Planner & Deputy Director of the Planning & Development Dept.

DATE: May 14, 2025

RE: **2025.09 Preliminary Plan and Subdivision Review for Bateman Partners, LLC for two (2) new buildings containing 60-unit low/moderate income (LMI) apartments within the Forest Green Apartments located at 641 Main Street (Map 32, Lot 1) in the Mixed Residential (R3) Zoning District and within the Shoreland Overlay District.**

MEETING DATE: April 2, 2025, 6:00 PM

1. INTRODUCTION

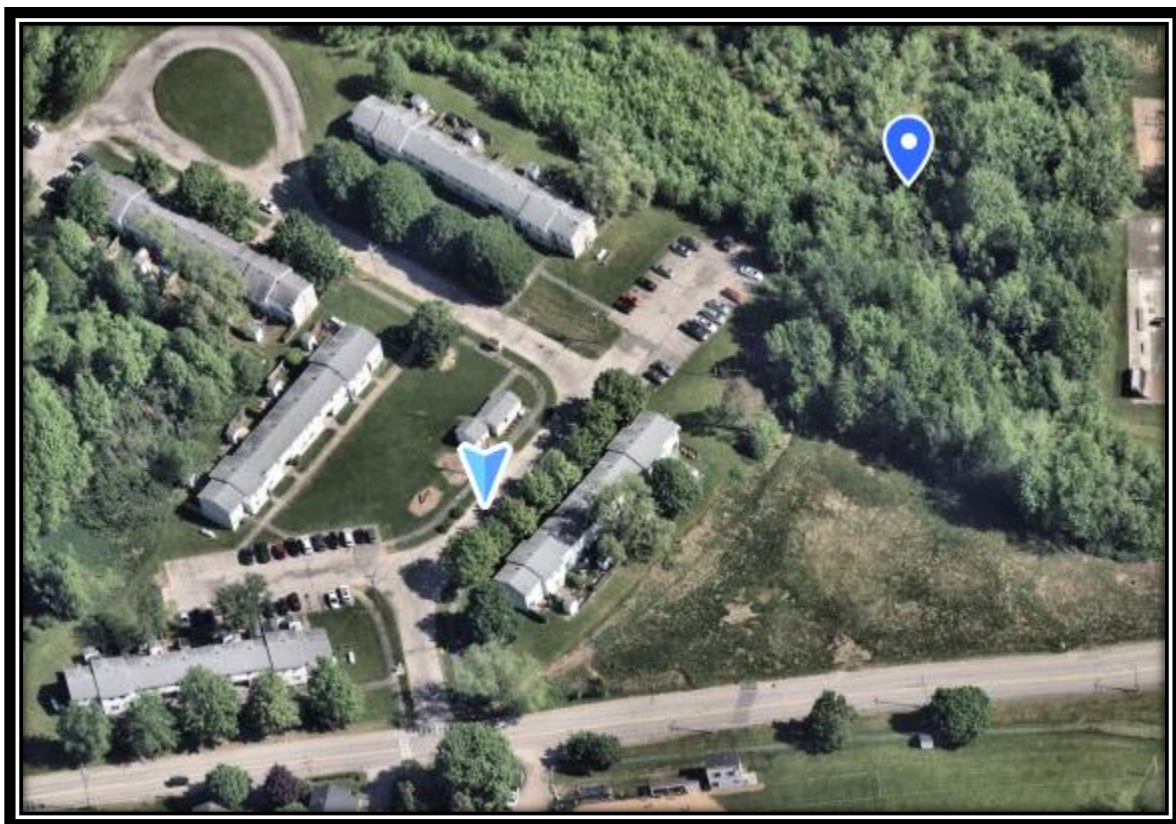
This "Preliminary Plan" application is being presented by Doug Renolds, P.E. and Project Manager for Gorrill Palmer Engineers, and Agent for Bateman Partners, LLC., referred to as "Applicant or Applicants". This application was last reviewed by the Planning Board as a Sketch Plan on May 7, 2025. The application is seeking to develop two (2) new apartment block buildings, connected with a shared entrance, each with 30 new, senior housing low/moderate income apartments for a total of 60 new apartments. This project requires Site and Subdivision Plan review and approval.



Forest Green Apartments – Existing Conditions

RE: 2025.09 Preliminary Plan and Subdivision Review for Bateman Partners, LLC for two (2) new buildings containing 60-unit low/moderate income (LMI) apartments within the Forest Green Apartments located at 641 Main Street (Map 32, Lot 1) in the Mixed Residential (R3) Zoning District and within the Shoreland Overlay District.

MEETING DATE: May 21, 2025, at 6:00 PM



Project Location marker top right corner of above image

The project scope is outlined within the development application and states (shown in *italics*):

The unit breakdown will incorporate forty-two (42) two-bedroom units and eighteen (18) one-bedrooms. The buildings have a footprint of approximately 9,800 SF each, connected by an 800 SF shared entry that will contain an elevator for accessibility to the upper floors of both buildings. The applicant received a districting change from the Saco River Corridor Commission (SRCC) changing from the Limited Residential to the General Development district for areas outside of the 250' Saco River buffer. The site is identified as a portion of Lot 1 on the Biddeford Tax Map 32. The property is bounded to the north by the Saco River, and to the south with direct frontage along Main Street. This property was originally developed in 1975, with 5 residential buildings consisting of 40 units with associated parking and access ways. Park View Court is a public road which runs through the center of the site and provides access to the existing apartment buildings. The buildings will utilize the existing development entrance and have their own primary access via Park View Court. The existing development footprint is currently approximately 6 acres and will be increased to approximately 7.5 acres. The amount of impervious area onsite would increase by approximately 38,100 square feet (0.87 acres).

RE: 2025.09 Preliminary Plan and Subdivision Review for Bateman Partners, LLC for two (2) new buildings containing 60-unit low/moderate income (LMI) apartments within the Forest Green Apartments located at 641 Main Street (Map 32, Lot 1) in the Mixed Residential (R3) Zoning District and within the Shoreland Overlay District.

MEETING DATE: May 21, 2025, at 6:00 PM



Forest Green Apartments – Front Building Elevation – Partial



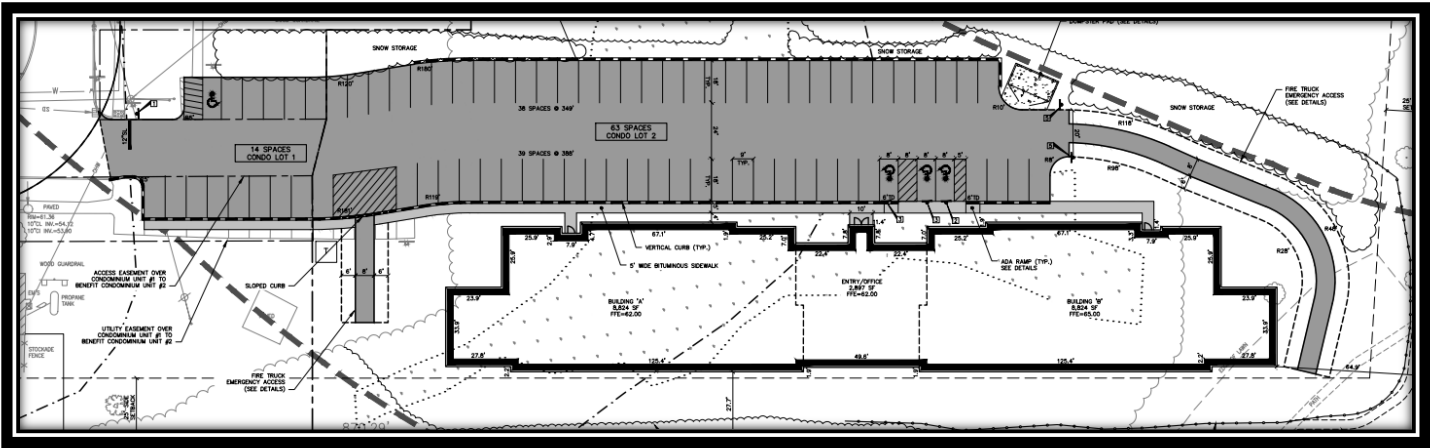
Forest Green Apartments – Front Building Elevation – Full



Forest Green Apartments – First Floor Plan

RE: 2025.09 Preliminary Plan and Subdivision Review for Bateman Partners, LLC for two (2) new buildings containing 60-unit low/moderate income (LMI) apartments within the Forest Green Apartments located at 641 Main Street (Map 32, Lot 1) in the Mixed Residential (R3) Zoning District and within the Shoreland Overlay District.

MEETING DATE: May 21, 2025, at 6:00 PM



2 Proposed Buildings with 60-units (total) of LMI senior housing and associated parking

The application narrative continued stating:

The proposed development requires a parking ratio of 1 space per unit if designed exclusively for, and occupancy is restricted to affordable housing. The Applicant is proposing 63 parking spaces to support the new LMI apartment building, which complies with the City of Biddeford’s off-street parking requirements. Within the new parking lot, 14 spaces will be dedicated to the existing development for a total of 77 new parking spaces. Traffic generated by the proposed development is not anticipated to adversely impact the surrounding roadway network given the residential nature of the project. A traffic Evaluation is included in Attachment 4 which includes an analysis of the trip generation, access conditions, and safety. The proposed development is anticipated to be served by public water, sewer, and three-phase power which is available onsite. The site is anticipated to be served by a private solid waste hauler who has not been determined at this time.

The Forest Green Apartments are located off Main Street via Park View Court, which will be the internal connection to the proposed development.

2. PROJECT DATA/INFORMATION

1.		Applicant:	Bateman Partners, LLC 470 Fore Street, Suite 400 Portland, Maine 04101
2.		Owner of Property:	Forest Green Associates LP 470 Fore Street, Suite 400 Portland, Maine 04101
3.		Agent:	Doug Renolds, P.E. Gorrill Palmer Consulting Engineers 300 Southborough Drive, Suite 200 South Portland, Maine 04106

RE: 2025.09 Preliminary Plan and Subdivision Review for Bateman Partners, LLC for two (2) new buildings containing 60-unit low/moderate income (LMI) apartments within the Forest Green Apartments located at 641 Main Street (Map 32, Lot 1) in the Mixed Residential (R3) Zoning District and within the Shoreland Overlay District.

MEETING DATE: May 21, 2025, at 6:00 PM

4.		Surveyor:	Doug Renolds, P.E. Gorrill Palmer Consulting Engineers 300 Southborough Drive, Suite 200 South Portland, Maine 04106
5.		Project Location:	641 Main Street, Biddeford, ME
6.		Project Tax Map #/Lot #:	Tax Map 32, Lot 1
7.		Lot Size:	10.15-acres
8.		Base Zoning:	Mixed Residential (R3)
9.		Overlay Zoning:	Shoreland Overlay District – General Development
10.		Existing Use:	Residential development with 5 existing buildings totaling 40 units with associated parking, accessways, and utility infrastructure.
11.		Proposed Use:	60-unit, senior LMI housing
12.		Approvals Required:	Subdivision/Site Plan
13.		Uses in the Vicinity:	Mixed Use / Residential / Rotary Park
14.		Waivers Needed:	a. None
15.		Waivers Granted:	a. None
16.		Other Non-City Permits Required:	a. See below section # 3
17.		A: Fees Paid:	Sketch Plan Fees Paid
18.		Planning Board Review History: Sketch Plan- May 7, 2025	

3. REVIEW PROCESS

Per City Ordinance, this application is subject to Site Plan Review (City of Biddeford, Code of Ordinances, Part III - Land Development Regulations, Article XI – Site Plan Review). The review process for this project involves Sketch Plan review, followed by Preliminary Plan Review, and ultimately Final Plan review / approval. It is also anticipated that the project will also require the following:

Reviewing Authority	Required Approval
Town of Biddeford	Site Plan Review Permit
Town of Biddeford	Subdivision Amendment Permit
Saco River Corridor Commission	Saco River Corridor Commission Permit Application
MaineDEP	Natural Resource Protection Act Permit Tier II
MaineDEP	Stormwater Law Permit-By-Rule

4. GENERAL REVIEW COMMENTS:

- **APPLICATION COMPLETENESS:** This application is for site plan sketch plan review, so the purpose of this memorandum introduces the project/s to the Board, with the desire to identify items the Board believes are important and necessary for the continued review of this plan / project.
- **ZONING:** The subject property is zoned Mixed Residential (R-3) and multi-family dwellings are a permitted use within the district. The property is also located within the Shoreland Overlay District. It

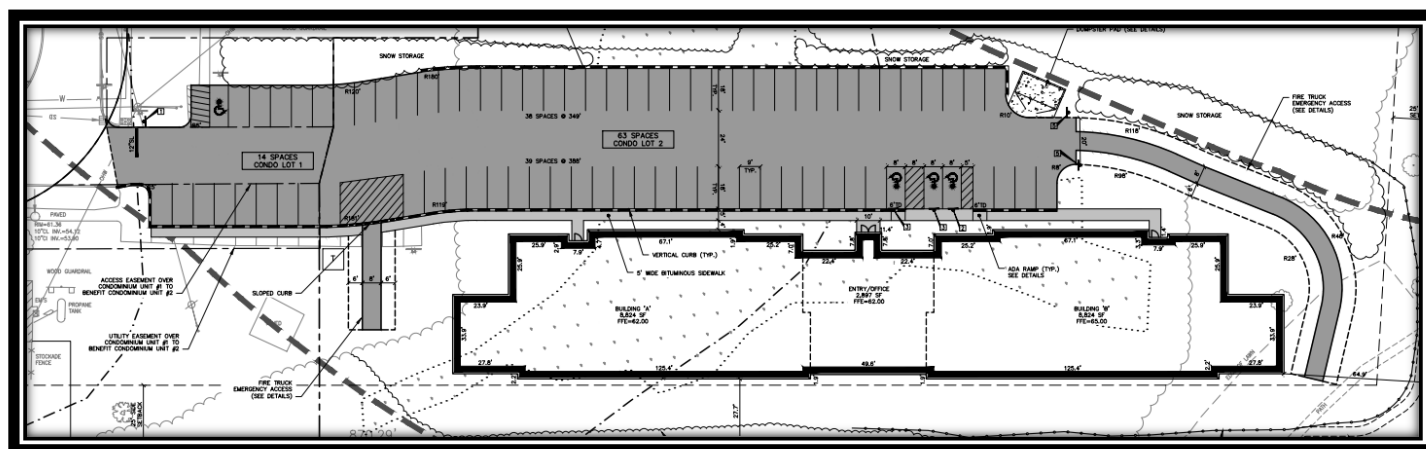
MEETING DATE: May 21, 2025, at 6:00 PM

- **REVIEW STANDARDS:**

- **WAIVERS:** No waiver requests are being sought, currently.

- 1) The primary design element that needs resolution is the sewer capacity issue. The proposed sewer line would ultimately connect to the existing sewer pump station located approximately 1,500 feet from the proposal to the pump station. The pump station is currently near or at capacity and pump station upgrades will be required to accept the effluent from the proposed development. The upgrades required are expected to cost approximately \$1,000,000. The City does not currently have funds appropriated for the required system upgrades. This project can not advance to Final Plan Review until either the Applicant covers the upgrade costs, or Council approves appropriate funding allocation, or a combination of the two.

Since the Sketch Plan Review the Applicant has met with the Fire Department and have revised their plans to provide emergency access on three sides of the building, as shown below.



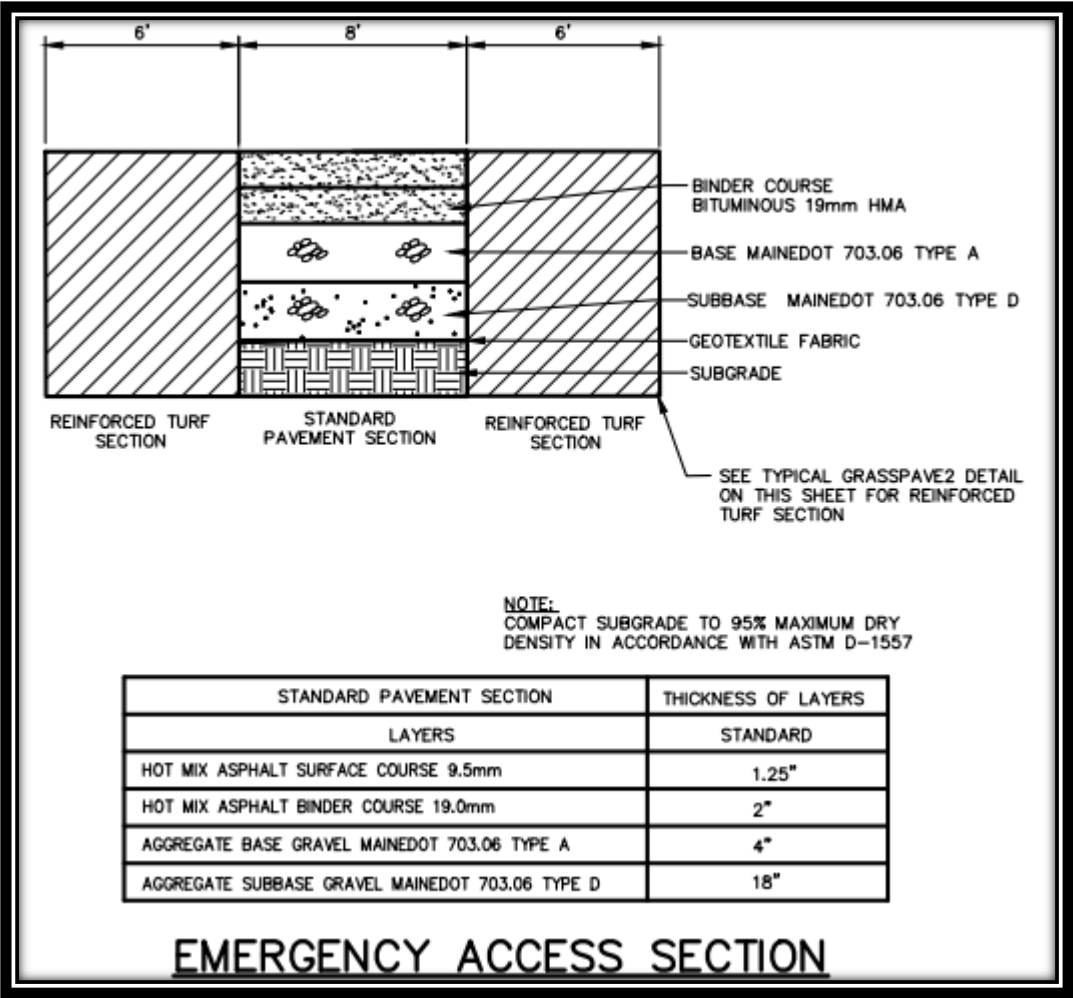
The above plan shows the locations of the two (2) fire access lanes, one located on each side of the building. Although the locations of the proposed fire access lanes are acceptable to the Fire Department, the

RE: 2025.09 Preliminary Plan and Subdivision Review for Bateman Partners, LLC for two (2) new buildings containing 60-unit low/moderate income (LMI) apartments within the Forest Green Apartments located at 641 Main Street (Map 32, Lot 1) in the Mixed Residential (R3) Zoning District and within the Shoreland Overlay District.

MEETING DATE: May 21, 2025, at 6:00 PM

pavement with is dimensioned at eight (8') feet in width. Fire lanes are required to meet the following standards:

- A. Fire lanes shall be a minimum of twenty (20') feet in width and constructed to support the weight of the City's heaviest apparatus. This modification shall be reflected on revised site plans and fire access cross section shall be revised with the Final Application submittal.



Emergency Access Cross Section – To be reviewed and approved by BFD

- B. The emergency access isles at the sides of the building/s shall project a minimum of fifteen (15') beyond the rear of the building for adequate fire coverage.
- 3) The Fire Department will require the building's fire connections and sprinkler room/s shall be located / accessed on the front of the building/s for easy emergency access.

RE: 2025.09 Preliminary Plan and Subdivision Review for Bateman Partners, LLC for two (2) new buildings containing 60-unit low/moderate income (LMI) apartments within the Forest Green Apartments located at 641 Main Street (Map 32, Lot 1) in the Mixed Residential (R3) Zoning District and within the Shoreland Overlay District.

MEETING DATE: May 21, 2025, at 6:00 PM

- 4) A fully dimensioned landscape plan shall be submitted with the Preliminary Site Plan application. The plan shall include all proposed plants, which shall be native Maine species, including installation sizes.
- 5) All decks, balconies and patios shall be shown on site and landscape plans, and building elevations.
- 6) Existing and proposed contour lines shall be shown on Preliminary application plans.

6. STAFF RECOMMENDATION

Staff are supportive of the proposed project and granting the Preliminary Site and Subdivision Plan Approval. However, the sewer capacity issues need to be resolved, and a “Ability to Serve” letter shall be provided to the Planning Department / Planning Board prior to Final Plan Review.

Planning Board Sample Motions:

A. Motion to Approve: I motion to APPROVE Case # 2025.09 a Preliminary Plan Review for Bateman Partners, LLC for two (2) new buildings containing 60-unit low/moderate income (LMI) apartments within the Forest Green Apartments located at 641 Main Street (Map 32, Lot 1) in the Mixed Residential (R3) Zoning District and within the Shoreland Overlay District.

B. Motion to Deny I motion to DENY Case # 2025.09 a Preliminary Plan Review for Bateman Partners LLC. for two (2) new buildings containing 60-unit low/moderate income (LMI) apartments within the Forest Green Apartments located at 641 Main Street (Map 32, Lot 1) in the Mixed Residential (R3) Zoning District and within the Shoreland Overlay District, for the following reasons:

- 1) _____.
- 2) _____.
- 3) _____.

C. Motion to Table: I motion to TABLE Case # 2025.09 a Preliminary Plan Review for Bateman Partners, LLC for two (2) new buildings containing 60-unit low/moderate income (LMI) apartments within the Forest Green Apartments located at 641 Main Street (Map 32, Lot 1) in the Mixed Residential (R3) Zoning District and within the Shoreland Overlay District, for the following reasons:

- 1) _____.
- 2) _____.
- 3) _____.

Date: **5/20/2025**

Project No.: **22061H**

To: **David Galbraith, City Planner**
Adi Iriqat, Assistant Planner

From: **Christine Rinehart, PE**
Nate Edwards, PE

Subject: **2025.09 Bateman Partners, LLC, Forest Green Expansion – Preliminary Site Plan and Subdivision Review**

As requested by the City of Biddeford, Wright-Pierce has reviewed the Preliminary Site Plan and Subdivision Application for the Forest Green development proposed by Bateman Partners, LLC. The proposed development is located at 1 Park View Court in Biddeford, Maine (Map 32, Lot 1) and is located in the General Development District. The proposed development project includes the construction of two condominiums with a total of 60 dwelling units. The project also includes extension of public sewer and water.

Documents Reviewed by Wright-Pierce

- Application Package for Site Plan and Preliminary Subdivision Review, 1 Park View Court, City of Biddeford, Maine, prepared by Gorrill Palmer for Bateman Partners, LLC, dated May 12, 2025.
- Forest Green Apartment Expansion Park View Court Plans, Biddeford, Maine, prepared by Gorrill Palmer, dated 5/12/2025 (13 pages).

Review Comments

Applicant should provide written responses to review comments recommending clarification or further information to be provided by the Applicant.

City Coordination Items

1. **Coordination items for the City are indicated within the Review Comments in red font.**

Checklist

See comments on attached Site Plan & Subdivision Application Drawing Checklist. Comments in the checklist have not been included in the review comments below.

General

1. Submit NRPA and Stormwater Law PBR permits when available.
2. The Applicant should provide additional clarification regarding Maine DEP Site Law permitting. The Applicant states that there is an existing Site Law permit for the site but also states the project is exempt from general and flooding standards and that permitting is not needed with the Maine DEP, since the City has capacity to review projects subject to Site Law. It is not clear why the project would be exempt from the general or flooding standards or additional permitting. If the site already has met its impervious area threshold requiring a Site Law permit, any additional development would require a Site Law amendment and stormwater treatment/detention. Applicant should coordinate with the City because they only have site capacity, which

includes certain types of submissions, and does not include stormwater capacity. Additionally, if an amendment is required, all the same materials that would be submitted to the DEP will need to be submitted and reviewed as part of this review.

Chapter 62 – Streets, Sidewalks, and Other Public Places

1. Section 62-87: Monumentation is required for streets proposed for public acceptance and intersection with easements. Park View Court is a public road; however, monuments at the Park View Court right-of-way, proposed condo lot line, and easement intersection with the right-of-way could not be located on the plans.

Chapter 66 – Subdivisions

No comment

Land Development Regulations, Article VI Performance Standards

Section 47 Multifamily Developments

2. Article VI, Section 47, Paragraph B.1.a of the Land Development Regulations (LDR) requires a letter from the Maine Water Company indicating an adequate water supply can be provided to the development at an adequate pressure for firefighting purposes. The Applicant has submitted an ability to serve letter, but it states that fire service demand was unknown and that a hydrant flow test is required. Additional coordination is required.
3. Article VI, Section 47, Paragraph B.1.e of the LDR requires a letter from the Biddeford Public Works, Sewer Division, indicating that sewer service is available and the sewage from the development can be adequately treated. **An ability to serve letter has not been submitted and the City has indicated there are downstream capacity concerns.**
4. Article VI, Section 47, Paragraph B.1.g of the LDR requires a common mailbox system and location approved by the local postmaster. Please clarify how mail is being delivered/stored.
5. Article VI, Section 47, Paragraph D.3 states all developments containing 15 or more dwelling units may be required by the Board to have more than one street access (for emergency and safety purposes). No more than two accesses shall be allowed on any single street or roadway. One access from Park View Court is proposed. **City to determine if the single entrance/exit is acceptable.**

Section 59 Signs

1. The sign legend on Sheet C101 does not include sign #5, which is shown on the plans.
2. “No parking” signs are provided at fire lane on north side of building but not on south side. Consider adding signage to both locations.

Section 70 Wildlife Preservation

1. Subsection A states that any project involving parcels of land of greater than five acres, or any portion of a larger parcel greater than five acres, shall be required to conduct a wildlife study by a certified wildlife biologist. This provision may be waived, if a letter from the Maine Department of Inland Fisheries and Wildlife (MDIFW) indicates there are no significant habitat areas involved in the project area or abutting adjacent land. The applicant should request a waiver of this requirement if they do not intend to consult with a wildlife biologist, referencing supporting documentation from MDIFW.

Land Development Regulations, Article XI Site Plan Review, Section 5 Site Design and Development Criteria

Drainage

1. Label the level lip spreader on the Grading and Drainage Plan.
2. While we agree that the stormwater analysis shows that the peak runoff rate mitigation requirement is met, the analysis should also show that the proposed drainage system is designed to properly convey runoff from the 25-year, 24-hour storm. The proposed structures are not included in the analysis.
3. Provide additional information on the detail for proposed catch basins as it is not clear how the pipe arch will be maintained at 90-degree bends within an open bottom structure.

Utilities

1. Since the project connects to public water and sewer, the applicant needs to provide letters from the environmental specialist of the City of Biddeford for sewer, and water company shall confirm details of connection and/or concerns, as required by Article XI.II, Section 5, Paragraph B.2.e of the LDR. An ability to serve determination from Maine Water was provided. Applicant to submit additional information when available.
2. The Applicant noted the static pressure of the proposed tap line in the narrative, and noted they will continue to work with Maine Water to ensure pressure requirements are met; however, the following items could not be located and should be specified in application narrative and on the plan, as required by Article XI.II, Section 5, Paragraph B.2.e of the LDR: Rated normal capacity and gallons per minute at prime use time, rated maximum capacity and gallons per minute at prime use time, and residual pressure of proposed tap line.
3. There is a typo in the slope of the sewer main from Building A to SMH1 and from SMH1 to the Exist. SMH. It appears the slope is intended to be 0.0050.

Parking

1. Applicant indicates lighting is anticipated to be through building mounted fixtures. A photometric plan should be provided.
2. Snow storage is shown on the westerly side of the parking lot. This does not seem realistic since that side of the parking lot has vertical curb. How will snow removal be managed?
3. Proposed pavement joint at south entrance includes two spot grades that match existing; however, the center of the drive includes a spot grade that suggests it does not match existing grade. Does the proposed limit of work need to be extended?

Structural Layout and Design

1. Fire protection
 - a. Submit correspondence with the Fire Department showing that they approve of the design.
 - b. A sprinkler design and plans for a fire alarm system will need to be submitted to the Fire Department for final approval. The City has noted that the sprinkler room should be in the front corner of the building.
 - c. Show the Knox box on the plan at a location approved by the Fire Department.
 - d. Turning diagrams were provided. Emergency vehicles would need to back in or out to access the northerly end of the building, which appears difficult, especially with the slope directly adjacent to the fire truck emergency access. Please coordinate with the Fire Department. They have indicated concerns about there not being enough access to the building.

2. Open space – Article XI.II, Section 5, Paragraphs B.4.j.1 of the LDR states, “In new residential developments: Open space shall be provided in the ratio of 1,000 square feet for each dwelling unit. This open space shall be identified as either a "green space" or as "recreational space."” It appears from the narrative that the open space requirement is met, however the open space extents and area should also be noted on the plans.
3. External lighting – See comment 1 in Parking section above.
4. Signs - See Section 59 Signs comment.

May 12, 2025

Mr. David Galbraith, City Planner

City of Biddeford
205 Main Street
Biddeford, ME 04005

Subject: Forest Green Expansion
Preliminary Site Plan & Subdivision Application
Applicant: Bateman Partners, LLC

Dear Mr. Galbraith:

On behalf of **Bateman Partners, LLC**, Gorrill Palmer is pleased to make this preliminary application submission for their proposed expansion of the Forest Green development located at 1 Park View Court, Biddeford, Gorrill Palmer has been retained and authorized by the Applicant to perform all work necessary to submit this application. As required by the City of Biddeford's Land Use Ordinance, we have included site specific information below for review by the Planning Board. The applicant has coordinated with City Staff to determine the fees associated with this project as listed below:

- Sketch Plan - \$12,180.20 (Paid)
- Preliminary Site Plan - \$6,375.00 (to be delivered)
- Final Site Plan - \$825.00 (to be paid with Final Application Submission)

PROJECT DESCRIPTION

Bateman Partners, LLC is proposing to construct a new low/moderate income (LMI) apartment building for senior residents. The building would include a total of 60 total units and would be located within a portion of a property that is currently part of the Forest Green Apartments at 1 Park View Court. The applicant is not proposing any expansions to the existing buildings and associated infrastructure. The project will consist of one 60-unit building with associated parking for residents. The unit breakdown is anticipated to include forty-two (42) two-bedroom units and eighteen (18) one-bedrooms. The building has a footprint of approximately 20,545 SF. The applicant received a districting change from the Saco River Corridor Commission (SRCC) changing from the Limited Residential to the General Development district for areas outside of the 250' Saco River buffer.

The site is identified as a portion of Lot 1 on the Biddeford Tax Map 32. The property is bounded to the north by the Saco River, and to the south with direct frontage along Main Street. This property was originally developed in 1975, with 5 residential buildings consisting of 40 units with associated parking and access ways. Park View Court is a public road which runs through the center of the site and provides access to the existing apartment buildings. The building will utilize the existing development entrance and have its own primary access via Park View Court. The existing development footprint is currently approximately 6.0 acres and will be increased to approximately 7.8 acres. The amount of impervious area onsite would increase by approximately 42,500 square feet (0.98 acres).



PROPOSED IMPROVEMENTS

The development is to be accessed via Park View Court off Main Street. The accessway will include associated parking, sidewalk, and two 20 foot wide fire lanes to provide fire truck access to the building. The sidewalk leading up to the building from the parking lot will be in compliance with ADA standards. The proposed development requires a parking ratio of 1 space per unit if designed exclusively for, and occupancy is restricted to affordable housing. The Applicant is proposing 63 parking spaces to support the new LMI apartment building, which complies with the City of Biddeford's off-street parking requirements. Within the new parking lot, 14 spaces will be dedicated to the existing development for a total of 77 new parking spaces.

Given the residential nature of the project, traffic generated by the proposed development is not anticipated to adversely impact the surrounding roadway network. A traffic Evaluation is included in Attachment 7 which includes an analysis of the trip generation, access conditions, and safety.

The proposed development is anticipated to be served by public water, sewer, and three-phase power which is available onsite. The site will also be served by a private solid waste hauler for refuse collection.

ANTICIPATED WAIVERS

No waivers are being requested at this time.

ANTICIPATED PERMITS

The following table summarizes the approvals relating to site permitting that are anticipated to be required prior to the start of construction. Applications for these permits would be submitted if the redistricting petition is approved by the commission.

Reviewing Authority	Required Approval
Town of Biddeford	Site Plan Review Permit
Town of Biddeford	Subdivision Amendment Permit
Saco River Corridor Commission	Saco River Corridor Commission Permit Application
MaineDEP	Natural Resource Protection Act Permit Tier II
MaineDEP	Stormwater Law Permit-By-Rule

The proposed development received redistricting approval from the SRCC on February 26, 2025, the applicant has submitted a Site Plan Permit Application to the SRCC for the proposed development.

As currently designed, the proposed development would impact approximately 22,160 SF of wetland area. As such, a Natural Resource Protection Act Tier II Permit Application will be submitted to the MaineDEP for wetland impacts between 15,000 SF to 43,560 SF.

A Site Location of Development Act Permit was obtained from the MaineDEP for the original development in 1974. Based on discussions with the MaineDEP, all conditions of this permit have been satisfied and since the City of Biddeford has the capacity to review projects subject to Site Law, no additional Site Law permitting with the MaineDEP is required. However, the project will require a Stormwater Law Permit-By-Rule from the MaineDEP for the disturbance of over 1 acre of land area.

STORMWATER

Since the project disturbs over 1 acre of land area but creates less than 1 acre of new impervious area, the project will be required to obtain a MaineDEP Stormwater Law Permit-By-Rule. Based on the new impervious/developed areas anticipated for the project, the only MaineDEP Chapter 500 standards that apply to this project would be the Basic Standards for Erosion and Sedimentation Control. The proposed development would not be required to meet the general standard (treatment) or flooding standard (peak flows) in accordance with MaineDEP requirements.

However, the proposed development is required to ensure that the rate of stormwater runoff does not exceed pre-development rates for the 25-year 24-hour storm to meet the requirements of the City of Biddeford. Runoff from the site is ultimately tributary to the Saco River which has a watershed area that spans throughout multiple states. Through inspection of the portion of the watershed between the Skelton Dam in Buxton to the project site, it will be demonstrated that the Flooding Standard is met by the development's proximity to the Saco River and the vastness of the upstream watershed (almost 25,000 acres with a Time of Concentration of about 17.7 hours). The increase in impervious area for the development is insignificant compared to the overall watershed and will reach the Saco River well before the peak of the overall watershed and therefore will not lead to increases in peak discharge above the predevelopment levels.

The proposed development will also be utilizing a level lip spreader to improve the distribution of flows onsite and prevent erosion in accordance with MaineDEP requirements.

DIMENSIONAL REQUIREMENTS

The Zoning Ordinance, Section 3.6.1.2.(3).(d) indicates that residential uses are permitted within the Mixed Residential (R3) Zone and General Development 1 (GD1) Overlay Zone. The Space and Bulk Table is provided below, which demonstrates the continued compliance of the project plans to meet the ordinance.

Table 1 – Space and Bulk Regulation – Mixed Residential (R3)		
Space and Bulk Regulation	Required	Provided
Minimum Lot Size	15,000 S.F. 1 st 2 units, then 6,000 S.F. / unit	10.15 Acres
Minimum Lot Frontage	150'	377'
Minimum Yards:		
Front	40'	>40'
Side	25'	>25'
Rear	25'	>25'
Maximum Building Height	3 Stories/ 35'	3 Stories

NET RESIDENTIAL CALCULATIONS

The Zoning Ordinance, Article VI, Section 44 indicates the factors that shall be used for determining the net developable area of a parcel as well as the resulting number of residential lots and/ or units that can be created. The Net Residential Calculations Table is provided below, which demonstrates the maximum number of future units allowable for the proposed parcel.

Table 1 – Net Residential Calculations			
	Existing	Proposed	
	LR District	LR District	General Development (R3)
Total Acreage	10.15 AC.	4.22 AC.	5.93 AC.
Less Unusable Land (Per Section 44 of Town Zoning Ordinance):	-	-	-
Lack of Access	0 AC.	0 AC.	0 AC.
Floodway (Within 100 YR Flood Boundary)	0.39 AC.	0.39 AC.	0 AC.
*Wetland Area	0.74 AC.	0.14 AC.	0.60 AC.
Sustained Slopes Greater than 25%	0 AC.	0 AC.	0 AC.
Right of Way	0 AC.	0 AC.	0 AC.
Stormwater Facilities	0 AC.	0 AC.	0 AC.
Unusable Land Subtotal	1.13 AC.	0.53 AC.	0.60 AC.
Subtotal Net Residential Acreage	9.02 AC.	3.69 AC.	5.33 AC.
Less 15,000 S.F. for First 2 Units	N/A	N/A	-0.35 AC.
Remaining Net Residential Acreage	9.02 AC.	3.69 AC.	4.98 AC.
Net Residential Density Factor	40,000 S.F./UNIT	40,000 S.F./UNIT	6,000 S.F./UNIT
# of Dwelling Units	9 UNITS	3 UNITS	36.1 UNITS
First 2 Units	N/A	N/A	2 UNITS
Max. Units in R-3 Zone	N/A	N/A	38.1 UNITS
** Density Bonus (Affordable Housing)	N/A	N/A	2.5X
Max. # of Units w/ Bonus	N/A	N/A	95.3 UNITS
Less Current Units	-40 UNITS	-7 UNITS	-33 UNITS
*** Max. # of Future Units	0 UNITS	0 UNITS	62.3 UNITS
*Wetland areas based on a wetland survey conducted by Flycatcher, LLC on October 22, 2024. The survey area does not include the entire area within the 250' river buffer (LR District) as no development is planned in this area at this time. **Refer to note B(3) of the Biddeford Land Use Code, Article V, Table B (Attachment 2) "Vacant land development for lots located within the R-3 zoning district, utilizing the density bonus standards within section B for low-/moderate income (LMI) housing developments may increase base density by up to a multiple of 2.5 times the particular zoning district where the lot is located." ***The development does not conform to the current zoning ordinances for lot area per dwelling unit as such. The units located in the limited residential district have been grandfathered. No expansions are proposed within the limited residential district.			

SITE PLAN REVIEW REQUIREMENTS

In accordance with § XI of the City of Biddeford's Land Development Regulations the following information is provided.

Site Design Criteria § XI-II.-5B

1. Drainage

- a. The rate of post-development runoff shall not exceed that of predevelopment. Details of catch basins, drainage pipes and retention/detention ponds shall be provided as needed with the application. All detail sheets shall bear the seal and signature of a professional engineer, licensed in the State of Maine.*

As discussed earlier, runoff from the site will not lead to increases in peak discharge above the predevelopment levels, further information is included in the Stormwater Memorandum included in Attachment 5. Detail sheets included in the project plans bear the seal and signature of a professional engineer, licensed in the State of Maine.

- b. A written engineering report describing the impacted watershed area, projected runoff, and any projected downstream impact shall be required.*

A stormwater engineering report is included in the Stormwater Memorandum included in Attachment 5.

- c. Drainage easements shall be established for any concentrated off-site drainage. Such easement shall state who has the responsibility to maintain the easement. Easement documents shall be reviewed, at applicant expense, by the Director of Public Works, City Engineer, and the City Solicitor, as to exactness of content. Plans shall include the location of easements.*

No new drainage easements are proposed as part of this effort.

- d. Where it is determined by the City Engineer or consultant hired by the Board, that the additional runoff incident to the development of the projected site will overload an existing downstream drainage facility, the Board may require the provision of water-retarding facilities or other improvements to alleviate said problem.*

Runoff from the proposed development is tributary to the Saco River and will not enter the municipal system.

- e. Development in specific areas of concern shall provide detailed information and address specific issues in relation to drainage:*
 - 1. Parcels situated within the federally designated flood hazard zone, as per Flood Hazard Boundary Map H01-18, dated May, 1984, as amended, shall comply with all applicable federal regulations relating thereto.*
 - 2. One-hundred-year flood elevation line shall be included where applicable.*

3. *No slope shall be created which results in a slope of more than two feet horizontal to one foot vertical unless proper retaining walls are proposed.*

The project is not located within a 100-year floodplain. A FEMA FIRMette map is attached to this application in Attachment 3 of this submission. Locations of the floodplains are depicted on plans.

- f. *Drainage improvements shall be scheduled to be constructed as part of the first portion of any project where drainage improvements are proposed.*

This requirement is understood by the Applicant. Please see Erosion & Sedimentation Control report in Attachment 6 of this submission, which includes erosion control measures and implementation schedule.

- g. *Special bonding of 1 1/2 times the anticipated cost of said improvements shall be incorporated by the developer to insure that improvements are placed and that they function as planned. No portion of this special bond may be released until the project, or that portion of the project for which the drainage improvement is proposed has been constructed, and until so released by the Planning Board, with the recommendation from the Director of Public Works and the City Engineer.*

The Applicant acknowledges the above standard.

2. Utilities

- a. *All utilities, including electric, gas, water/sewer, shall be shown on the plat, and separate detail sheets as needed.*

The existing nearby utilities, proposed utility services, and details are shown on the project plans included with this submission.

- b. *Accessways, storage, and parking areas shall be graded and improved with pavements, curbs, gutters, sidewalks, storm drainage facilities, outdoor lighting, etc.*

Materials for accessways and parking areas, as well as site improvements are depicted on the plan set included with this submission. The proposed accessway will be constructed of bituminous pavement and will include curbing along the proposed sidewalk.

- c. *All accessways/drives and service ways shall be of sufficient width and configuration to accommodate the prospective traffic and to afford satisfactory access to police, firefighting and other such services.*

The proposed driveway and parking drive aisles are 24' wide which satisfies the requirement for travel lane width depicted in Table A – Minimum Construction Standards of Chapter 62 in the City of Biddeford Code of Ordinances. A fire truck turning plan is included in Attachment 8 of this submission.

- d. *Any proposal within 200 feet of a public water or sewer line(s) must connect to system(s). Applicant must supply copies of letters from the environmental specialist of the City of Biddeford for sewer, and water company shall confirm details of connection and/or concerns.*

The proposed project will utilize the public water and sewer services which are located at the project frontage. The applicant has been working closely with the Public Works and Engineering departments and the Wastewater Superintendent to ensure the sanitary system has been adequately designed prior to construction. The applicant understands the impact fees and has agreed to pay these fees prior to construction. Maine Water Company has indicated their ability to serve the proposed development as evidenced by the attached ability to serve letter (see Attachment 4).

- e. *Whether or not a municipal water system is proposed, the following items must be specified in application narrative and on plat:*
1. *Rated normal capacity and gallons per minute at prime use time.*
 2. *Rated maximum capacity and gallons per minute at prime use time.*
 3. *Residual pressure of proposed tap line.*

Maine Water Company has indicated their ability to serve the proposed development as evidenced by the attached ability to serve letter (see Attachment 4). The static pressure of the proposed tap line is expected to be approximately 55 psi per the Ability to Serve Letter provided for this project. The Applicant will continue to work with Maine Water Company to ensure pressure requirements are met.

- f. *Where nondomestic sanitary discharge (any discharge into the public sewer system containing other than normal household wastes) is anticipated, such effluent shall be identified and comply with any and all federal, state, and local laws, ordinances, rules, and regulations. Where any such laws, ordinances, rules and regulations may overlap or may be inconsistent, the more stringent shall apply.*

The applicant has been working closely with the Public Works and Engineering departments and the Wastewater Superintendent to ensure the system has been adequately designed prior to construction.

- g. *Where public sanitary service is available, or where developers must extend such service, applicants must apply for and receive a discharge permit from the City Council of the City of Biddeford prior to approval by the Planning Board.*

The Applicant is proposing a sewer extension from the main located within Parkview Court. The Applicant will continue to coordinate with the City of Biddeford Wastewater Division as required.

- h. *Where practicable, all electrical and telephone utilities shall be placed underground.*

All electrical and telephone/communications/fiber services will extend to the proposed building underground. Existing utility poles are present within the site, and underground connections from an existing pole to a pad mount transformer located near the building as shown on the utility plan (Sheet C103).

3. Parking

- a. A parking plan shall delineate the number of parking and delivery or loading spaces and the physical arrangement. Details of parking plan shall conform to the provisions of the off-street parking section of Article VI of this Zoning Ordinance.*

The proposed parking spaces are shown on the project plans and comply with the typical parking stall and ADA parking stall dimensions. The proposed development requires a parking ratio of 1 space per unit since it is designed exclusively for, and occupancy is restricted to low income/ affordable housing. The ordinance was confirmed by the City of Biddeford during an initial meeting. Additionally, the Applicant recognizes the City of Biddeford standard requiring multifamily project to incorporate an additional 5% of parking spaces for visitor spaces. The Applicant currently is proposing a total of 77 spaces between the existing and proposed development meeting the City of Biddeford off-street parking standards.

- b. No on-street parking, delivery or loading is permitted, except where specifically allowed by the Planning Board.*

No on-street parking is proposed as part of this project.

- c. Whenever a use existing on the effective date of these regulations is changed thereafter to a new use, parking facilities and access shall be provided as required herein for such new uses.*

The project will create new parking spaces applicable to the proposed residential uses.

- d. In the case of multifamily projects the number of required parking spaces should be increased 5% to allow for visitor parking.*

The Applicant has incorporated the additional 5% of required parking spaces for visitor parking on the Site Plan on Sheet C101 included with this submission.

- e. Parking lots shall be landscaped and/or screened to provide for a pleasing visual effect and blending in with the surrounding area.*

A landscaping plan is included in the plan set on sheet L100. The landscaping plan has been designed in accordance with Section 43 of the City of Biddeford's performance standards to provide a pleasing visual effect and blending in with the surrounding area. The existing wooded area surrounding the parking area will be protected to the greatest extent practicable to provide screening for the surrounding properties.

- f. Lots shall be illuminated for security purposes. The lighting shall be designed in such a way that off-site glare is minimized.*

Lighting for the proposed development is anticipated to be through the use of building mounted fixtures. These fixtures will be dark sky compliant shielded fixtures and designed in accordance with local requirements. Additional details can be provided upon request.

- g. Adequate space shall be allowed for the accumulation of snow during the winter plowing months.*

Snow storage areas are shown on the Site and Utility Plan on Sheet C101 of the attached plan set.

4. Structural Layout and Design

- a. Design of buildings.*

- 1. Buildings shall be designed to blend harmoniously with the surrounding structures in the neighborhood. New structures should be designed so as to complement the style of the abutting older structures. A photograph, architectural rendering or other representation of the proposed structure must accompany the application for site review.*

Elevations/renderings of the proposed structure will be provided under a separate cover prior to the final application submission.

- 2. In the I-3 Zone structures shall have a facade sheath in brick or other masonry finish. Other facade finishes may be used when it can be clearly shown to the board that such facing material will advance the City's intent to make the I-3 area a more attractive gateway to the City.*

The site is not located within the I-3 Zone, therefore this section does not apply.

- b. Setbacks. Proposed structures shall be set back from roadways, in conformance with requirements for the particular zone; and shall be set in such a way as to blend in harmoniously with buildings on abutting properties, and to allow for adequate landscaping of the front yard.*

The proposed development is in conformance with a 40' front and 25' side/rear setback which blends in with the surrounding neighborhood. This allows for sufficient landscaping in the front yard and perimeter areas. These setbacks are shown on the project plans.

- c. Fire protection.*

- 1. All proposed structures and additions to existing buildings must be designed to meet existing fire protection standards.*

Both structures will be designed per the latest local and state fire protection requirements.

- 2. Fire hydrants and fire escapes must be clearly presented on plats.*

The building will be designed with multiple entrance/exit points around the building to meet the applicable local requirements. A fire hydrant currently exists approximately 290' west of the building as depicted on the plans.

- 3. Clear ways around buildings must be maintained to provide for 360° access to structures.*

The Applicant has been coordinating with the fire department who has conceptually approved the layout

of the proposed fire truck access shown on the project plans in accordance with the above requirement.

4. *Areas in front of structures must be kept clear of parking spaces to allow for emergency access.*

Sufficient clear space is provided in front of structures to provide emergency vehicle access. Turning movement figures can be found in Attachment 8 of this submission.

5. *Buildings should be designed with internal sprinkler systems. This is particularly the case in terms of multifamily and industrial/warehousing structures, and structures that will be located in areas that are far or difficult to reach from fire stations.*

The proposed building will be constructed with a sprinkler system as required by code.

6. *In residential developments of 24 units or more, or buildings of 5,000 square feet or more, a central alarm system to the central fire station shall be installed, unless a negative recommendation, in writing, is received from the Fire Marshal.*

The Applicant will coordinate with the Fire Department to confirm the applicability of a central alarm system.

7. *In residential developments of 24 dwelling units or more, or office buildings with more than two separate establishments or places of business, a "knock box" shall be provided and indicated on plat. This box shall be in accordance with the specifications and standards as prescribed by the Fire Department of the City of Biddeford.*

A knock box will be provided for the proposed building, the applicant will coordinate with the Fire Department to determine the location of the knock box.

8. *Whenever gas, either natural or propane or other type, is proposed to be used on-site, a separate external shutoff valve shall be provided for each building on the site. The valve location shall be indicated on the plat and approved in writing by the fire chief/fire marshal.*

The applicant is not proposing the use of natural gas or propane for the proposed development, therefore this section does not apply.

d. *Landscaping.*

1. *All sites must be landscaped with vegetation that will act to:*
 - (a) *Reduce the impact of lighting, vehicular and structural, on abutting properties;*
 - (b) *Reduce the impact of proposed structures on the privacy of abutters;*
 - (c) *Make the site more attractive to the average viewer.*

The planting plan provides sufficient screening for the parking area and to abutting properties. Perimeter tree plantings will address the scale of the building and soften the view from the public way. A landscaping plan is included in the plan set on Sheet L100.

2. *Landscaping measures will be indicated on the plat by drawings and narrative note. The use of trees and shrubs for fencing and shading is strongly encouraged. Care must be taken to ensure that tree, etc., are placed in such a fashion that in time they will cause minimum impact on abutting properties and public roadways and travelways, particularly as they grow.*

The proposed detailed landscaping plan includes the installation of trees to enhance the site while minimizing impacts to abutting properties, public roadways, and travel ways.

3. *Whenever possible existing vegetation shall be preserved and incorporated into the landscaping scheme of the project.*

Where possible, existing vegetation will be preserved and is incorporated into the landscaping scheme of the project. The proposed trees are intended to screen the proposed development from abutting properties to the east.

4. *Each proposal will include a detailed landscaping plan. This plan will include the location, type and size of existing mature trees (those trees over eight inches in diameter).*

A thoughtful planting approach has been taken to offsetting visual impacts of the new structures which are included on Sheet L100 of the plan set included with this submission.

5. *Particular attention should be paid to offsetting the visual impact of new structures in areas where there may be a stark contrast with the existing design trend of the neighborhood.*

The buffer/screening areas including the front yard area and around the perimeter of the parking area have been planted to provide sufficient screening. This is shown on the Sheet L100 provided in the plan included with this submission.

e. Service, storage and utility areas.

1. *All service, storage, and utility areas shall be designed to the side or rear yard of a proposed or existing building or structure, and such areas shall be appropriately screened/buffered by walls, fences, earth berms, or vegetation.*

The project accessway will contain underground utilities. A pad mount transformer is located to the side of the proposed building. These utilities will be screened as much as possible while allowing sufficient access for servicing/use. Water and electrical meters will be located interior to the building and not visible from the outside.

2. *Proposed utility elements shall be adequately screened; and, if producing sound, baffled upon Planning Board request.*

See response above. Additionally, given the nature of the proposed development, the project is not anticipated to generate a significant amount of noise.

3. *Trash receptacles, dumpsters, storage sheds, etc., shall be shown on plat.*

A dumpster pad is included on Sheet C101 – Site Plan, and a detail of the dumpster pad and enclosure can be found on Sheet C401 – Site Details of the project plans.

f. Paving, parking, and storage areas.

1. *No paving, parking, or storage shall be permitted within the required setback of any side or rear property line;*

No paving, parking, or storage is proposed within the required setback of any side or property line.

2. *No paving, parking, or storage (except for entrances/exits) shall be permitted within 25 feet of any front property line. These unpaved nonparking or nonstorage areas shall be maintained as landscaped areas or open spaces.*

No paving, parking, or structure is located within 25 feet of the front property line. See Sheet C101 of the project plans for additional information.

g. Handicapped accessibility.

1. *Pedestrian walkways, entrances and exits designed for use by the handicapped shall be provided as required by any and all federal, state, or local laws, ordinances, rules and regulations or as requested by the Planning Board.*

The project includes 3 accessible parking spaces for the proposed building. Sufficient access is provided from the parking areas into the main entrance of the building along the designated ADA route.

2. *Handicapped parking spaces and accessways shall be indicated on plat whenever they are to be employed.*

The accessible parking spaces discussed above are shown on the project plans and Site Plan on Sheet C101 included with this submission.

h. Loading facilities.

1. *Loading facilities for new structures shall be designed to the rear or side of any and all proposed or existing building or structure.*

Not applicable as no loading facilities are proposed for the residential building.

2. *Loading facilities shall be designed in accordance with the applicable federal, state, or local laws, ordinances, codes, rules and regulations and shall be off-street or accessible via a public street.*

Not applicable.

i. Parking, loading, and protective buffers.

- 1. All parking, loading and protective buffers shall be situated on the same tract or parcel of land as the primary use building or structure.*

All parking is located on the same parcel of land as the proposed primary structures. There are no loading areas or protective buffers proposed for the project.

- 2. The maximum nonvegetated area of the land area being developed and reviewed shall be 75%.*

The proposed nonvegetated area is approximately 23% of the total lot area.

- 3. Any parking or paving, including all access ways, egress ways, entrances and exits on streets for both pedestrian and vehicular use, shall not cover or occupy more than 30% of the land area being developed and reviewed and shall be included with the maximum nonvegetated area.*

The proposed parking/pavement area for the project total is 12% of the total lot area.

- 4. In all applications, a minimum of 25% of the land area being developed and reviewed shall remain in its natural state or shall be maintained as an appropriately landscaped area.*

The existing land area not to be disturbed is 35% of the total lot area.

- 5. All buildings or structures shall be sited in conformance with established setbacks of the particular zone. No building or structure may be built within the required side yard setback. The Planning Board may require greater setbacks in areas such as turnpikes, water bodies, railroads, etc.*

The proposed building is located outside the applicable setbacks of the Residential 3 (R3) Zone as depicted on the plans.

- 6. All buffered or screened areas shall be densely planted with shrubs or trees which are respectively at least two or three feet high at the time of planting and are of a type which may be expected to form a year-round dense screen of at least five feet high within three years, provided that such screening shall not obstruct the view of oncoming traffic when entering or exiting the site. An additional cash bond to cover the cost of replacement of these plantings may be required. The term of the bond shall be equal to three years from the time of planting. At the end of the three years any unused portion of this security will be returned to the applicant along with accrued interest.*

The buffer/screening areas including the front yard area and around the perimeter of the parking area have been planted to provide sufficient screening as requested. This is shown on the landscape plan provided in the project plans.

j. *Open space.*

1. *In new residential developments: Open space shall be provided in the ratio of 1,000 square feet for each dwelling unit. This open space shall be identified as either a "green space" or as "recreational space."*

Based on the proposed unit density, 60 units would require 60,000SF of open space area. The Applicant has acknowledged this standard and approximately 153,330 S.F. of space remains undeveloped on the property.

2. *Whenever practicable, open space in a residential development shall include a mixture of active and passive recreational opportunities to benefit the various residents of the project. Such opportunities would include, but are not limited to, ball and other playing fields, tennis courts, etc.*

Please refer to the answer in the next requirement located below.

3. *In large-scale projects hiking trails or nature paths are encouraged.*

It is of the Applicant's opinion that a hiking or nature path is not necessary for this proposed development. As part of this project a portion of an existing trail running through the southeast portion of the proposed project area will be relocated to avoid impacts with the proposed development. The trail connects to the neighboring City of Biddeford Rotary Park which features walking trails and recreational activities that should suffice with this requirement. The Saco River Corridor Commission also requested that no trails or manmade structures be constructed within the 250' Saco River buffer.

4. *In projects that abut rivers or streams a public easement is encouraged, to provide access to a limited natural resource.*

As discussed during the sketch plan meeting, a public easement is not required for this development.

5 The plan shall reflect the natural capabilities of the site to support development. Buildings, lots, and support facilities will be clustered in those portions of the site that have the most suitable conditions for development. Environmentally sensitive areas, including but not limited to wetlands, steep slopes, floodplains, significant wildlife habitats, fisheries, scenic areas, habitat for rare and endangered plants and animals, unique natural communities and natural areas, and sand and gravel aquifers will be maintained and preserved to the maximum extent. The development shall include appropriate measures for protecting these resources, including but not limited to modification of the proposed design of the site, timing of construction, and limiting the extent of excavation.

The Applicant has explored several site layouts during the design phase of the project. The site layout shown on Sheet C101 – Site Plan depicts the layout of the site that resulted in the least wetland impacts. Side slopes are being tied in as quickly as possible within maximum 2:1 slopes to reduce impacts. As mentioned throughout this narrative the proposed project is not located within any 100-yr floodplain, significant wildlife habitats, fisheries, scenic areas, habitat for rare and endangered plants and animals, unique natural communities and natural areas, and sand and gravel aquifers.

k. External lighting.

- 1. All existing/proposed external lighting must be included on plat. Lighting will be described as needed.*
- 2. Lighting shall be designed to provide adequate illumination on-site, especially in parking areas, walkways and structural entrances, and site entrance from roadways. At the same time all illumination will be designed to mitigate adverse impact on abutting properties and structures, and traffic.*

Lighting for the proposed development is anticipated to be through the use of building mounted fixtures. These fixtures will be dark sky compliant shielded fixtures and designed in accordance with local requirements. Additional details can be provided upon request. Lighting fixtures will be identified on the final plans.

l. Signs.

- 1. All proposed signs shall meet standards provided in Article VI of the Zoning Ordinance of the City of Biddeford.*
- 2. Signs shall be indicated on plat.*
- 3. A detail of sign design shall be submitted as part of the application for site review.*

The applicant will coordinate with the City as required if any new signs are proposed at a later date.

- m. Historic and archaeological resources. If any portion of the site has been identified as containing historic or archaeological resources, the development shall include appropriate measures for protecting these resources, including but not limited to modification of the proposed design of the site, timing of construction, and limiting the extent of construction.*

The Maine Historic Preservation Commission (MHPC) was contacted initially on December 04, 2024, and informed of the proposed development. The response from the MHPC with no concern for historic properties to be affected by the proposed development is provided within Attachment 10.

SUBDIVISION REVIEW REQUIREMENTS

In accordance with § 66-39 *Board action on approval of preliminary plan* of the City of Biddeford's Code of Ordinances, the following information is provided.

Required Information § 66-35(d)

- (d) In addition to the above plat information, the subdivider shall provide the following documents;*

(1) Valid deed or option indicating an interest held by the subdivider in the parcel of land (this shall be kept current during the review process).

A copy of the deed for the subject parcel is provided in Attachment 2.

(2) Completed application form.

The completed application form is provided in Attachment 1.

(3) Narrative of the proposed project briefly describing the general nature of the project, i.e., type of project; residential or commercial; number of lots intended to create.

A narrative describing the project is provided at the beginning of this application letter.

(4) Draft covenants and deeds for each lot proposed.

The proposed development will not include the sale of lots. Condominium agreements will be provided under a separate cover as applicable.

(5) Easement documents for proposed rights-of-way for utilities, drainageways, roadways and other travelways or public amenities.

The applicant is proposing two existing to benefit the proposed development. There is an access and utility easement over condominium unit 1 to benefit condominium unit 2. Easement documents will be provided prior to the start of construction.

(6) Statement of financial capability of subdivider to undertake the proposed project.

The Applicant, Bateman Partners, LLC, has developed numerous residential buildings throughout the state. Bateman Partners will be seeking financing for this project through Maine State Housing Authorities (MSHA) annual Qualified Application Process (QAP). Bateman Partners has used this program numerous times for other low income housing projects. In order to secure financing from MSHA through the QAP the project must have all local and state approvals in hand prior to submission. Bateman Partners plans on submitting there application to finance with MSHA in August of this year once all local and state approvals are obtained.

(7) Statement identifying principals involved in the project.

- Project Architect – Archetype Architects
- Michael Coyne
- Project Engineer – Gorrill Palmer
- Doug Reynolds, PE

(8) Statement demonstrating that the subdividers have the technical capability to complete the proposed project as presented.

The Applicant, Bateman Partners, LLC, has developed numerous multifamily residential buildings throughout the state. Gorrill Palmer and their subconsultants have the technical ability to prepare the construction documents and oversee construction of the project in compliance with applicable regulations.

(9) Copies of such covenants or deed restrictions as are intended to all or part of the tract.

There are no known covenants or deed restrictions within the project area.

(10) Review by water company, power company and City Engineering, police, and fire department.

The applicant reached out to the Maine Water Company, Central Maine Power Company, City Engineering, and police and fire departments for review. Confirmation of capacity to serve has been received from Maine Water Company and Central Maine Power Company (see Attachment 4). The applicant will continue to work with City Engineering, police and fire department as required for final approval.

Conditions and Requirements § 66-39(b)

(b) The Board shall base its decision on the plans meeting the conditions and requirements outlined in this chapter; and that the plan meets in a positive fashion, the following:

(1) The project will not result in undue water or air pollution. In making this determination the Board shall consider:

- a. The elevation land, and its relation to the floodplains;*
- b. The nature of the soils and the subsoils;*
- c. The ability to adequately support waste disposal;*
- d. The slope of the land and its effects on effluents;*
- e. The availability of streams for the disposal of effluents; and*
- f. The applicable state and local health and water resources regulations.*

The project is not located within the FEMA flood boundary, floodway, or flood insurance maps. A FEMA FIRMet map is attached to this application in Attachment 3. The applicant has been working closely with the Public Works and Engineering departments and the Wastewater Superintendent to ensure the system has been adequately designed prior to construction.

The proposed development has been designed to limit the overall development footprint to minimize disturbances to the surrounding areas and will not result in undue water or air pollution in accordance with local and state requirements. The project does not intend to dispose of effluents to any nearby stream or river.

(2) The project has sufficient water available for the reasonably foreseeable needs of the subdivision;

The project will be served by public water which is stubbed onto the property from Park View Court. Domestic and fire services will be extended to the building. Maine Water Company has indicated their ability to serve the project as evidenced by the letter included in Attachment 4.

(3) The project will not cause an unreasonable burden on an existing water supply, if one is utilized;

The Maine Water Company has confirmed sufficient capacity to serve the proposed 60-unit residential development. The Ability to Serve letter is provided in Attachment 4 of this submission.

(4) The project will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy, condition may result;

The proposed site improvements will include a new building, pavement, and landscaped area which will remain stabilized post-construction. No unreasonable soil erosion or dangerous conditions will be created because of this project.

(5) The project will not cause unreasonable highway or public road congestion or unsafe conditions with respect to use of the highways or public roads existing or proposed;

The project is proposed to create 25 peak hour trip ends which is not anticipated to cause unsafe traffic conditions on Main Street and the adjacent street systems. A traffic memorandum is provided in Attachment 7 which demonstrates the trip generation.

(6) The project will provide for adequate sewage waste disposal.

The project will utilize the public sewer system. As discussed earlier, the applicant has been working closely with the Public Works and Engineering departments and the Wastewater Superintendent to ensure the system has been adequately designed prior to construction. The applicant understands the impact fees and has agreed to pay these fees prior to construction.

(7) The project will not cause unreasonable burden on the ability of the municipality to disposal of solid waste and sewage if municipal services are to be utilized;

The development will utilize a private trash collection vendor to handle solid waste generated. The development will not cause an unreasonable burden on the municipality to provide sewage treatment as discussed above.

(8) The project will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, or rare and irreplaceable natural areas or public rights for physical or visual access to the shoreline. Further, the plan shall reflect the natural capabilities of the site to support development. Buildings, lots, and support facilities will be clustered in those portions of the site that have the most suitable conditions for development. Environmentally sensitive areas, including but not limited to wetlands, steep slopes, floodplains, significant wildlife habitats, fisheries, scenic areas, habitat for rare and endangered plants and animals, unique natural communities and natural areas, and sand and gravel aquifers will be maintained and preserved to

the maximum extent. The development shall include appropriate measures for protecting these resources, including but not limited to modification of the proposed design of the site, timing of construction, and limiting the extent of excavation;

The project will not have an undue effect on the scenic character of the area. The project will utilize a similar color scheme as the surrounding building in the development and locate the proposed building set back from Main Street to provide buffering in the front yard area and around the perimeter of the development.

(9) The project is in conformance with a duly adopted subdivision regulation or ordinance, Comprehensive Plan, development plan, or land use plan, if any. In making this determination the Board is authorized to interpret these ordinances and plans;

The project is in line with the recent Comprehensive Plan which was completed in 2023. That plan outlined the rising cost of housing and the need for additional housing within the community.

(10)The subdivider has adequate financial and technical capacity to meet the above stated standards;

The Applicant, Bateman Partners, LLC, has developed numerous multifamily residential buildings throughout the state. Gorrill Palmer and their subconsultants have the technical ability to prepare the construction documents and oversee construction of the project in compliance with applicable regulations. Forest Green Associates, LP through its development agent Bateman Partners, LLC is in the process of seeking approvals for 60 new affordable rental housing units at Park View Court in Biddeford Maine. Bateman Partners is an experienced Developer of low income housing units in the State of Maine. The existing 40 units at Forest Green are also Low income housing units. Bateman Partners will be seeking financing for this project through Maine State Housing Authorities (MSHA) annual Qualified Application Process (QAP). Bateman Partners has used this program numerous times for other low income housing projects. In order to secure financing from MSHA through the QAP the project must have all local and state approvals in hand prior to submission. Bateman Partners plans on submitting there application to finance with MSHA in August of this year once all local and state approvals are obtained.

(11)Whenever situated, in whole or in part, within 250 feet of any lake, pond, river or tidal waters, the project will not adversely affect the quality of that body of water, or unreasonably affect the shoreline of that body of water, as indicated on the City of Biddeford, Official Zoning Map and referenced in the City's Comprehensive Plan;

The property parcel abuts the Saco River, however the proposed development footprint is not located within 250 feet of the Saco River. Minor impacts to the 250' buffer are proposed to facilitate drainage around the proposed development.

(12) The project will not, alone or in conjunction with existing activities, adversely affect the quality or quantity of ground water.

The project is not anticipated to have an adverse impact on the quantity or quality of groundwater.

(13) The subdivider will provide information, based on FEMA flood boundary, floodway, and flood insurance maps, whether or not the project is in a flood prone area;

The project is not located within the FEMA flood boundary, floodway, or flood insurance maps. A FEMA FIRMette map is attached to this application in Attachment 3.

(14) The project will not unreasonably obstruct abutting properties or structures access to direct sunlight;

The project will not obstruct abutting properties access to sunlight as it is separated a sufficient distance from the nearest structure with natural buffering in between.

(15) If any portion of the site has been identified as containing historic or archaeological resources, the development shall include appropriate measures for protecting these resources, including but not limited to modification of the proposed design of the site, timing of construction, and limiting the extent of construction.

The Maine Historic Preservation Commission (MHPC) was contacted initially on December 04, 2024, and informed of the proposed development. The response from the MHPC with no concern for historic properties to be affected by the proposed development is provided within Attachment 10.

CLOSURE

As discussed with the Code Enforcement Office, this package has been submitted digitally for your consideration and distribution, hard copies can be provided upon request. We have provided the following attachments and supplemental materials to assist in your review:

ATTACHMENT	DESCRIPTION
Attachment 1	Completed Application Form
Attachment 2	Deed and Agent Authorizations
Attachment 3	Project Maps
Attachment 4	Utility Correspondence
Attachment 5	Stormwater Memorandum
Attachment 6	Erosion Control Report
Attachment 7	Traffic Report
Attachment 8	Truck Turning Movement Figures
Attachment 9	Wetland Delineation Report
Attachment 10	Agency Correspondence
Attachment 11	Performance Guarantee
	Plan Set

We look forward to reviewing this project with you and the Planning Board at the next available meeting. If you have any questions about the information being submitted, please contact our office.

Sincerely,

GORRILL-PALMER



Doug Reynolds, PE

Project Manager

Phone 207-329-5584

DReynolds@GorrillPalmer.com

copy: Nathan Bateman, Bateman Partners, LLC

ATTACHMENT 1
APPLICATION FORM



City of Biddeford – Planning Department
Planning Board Application
P.O. Box 586, 205 Main Street Biddeford, Maine 04005
207-284-9115

Type of Application:

☐ Shoreland Zoning Permit ☒ Site Plan Review (Please include checklist) ☐ Extraction
☐ Conditional Use Permit ☒ Subdivision (Please include Checklist) ☐ Private Way
☐ Other: _____

Applicant Information:

Name: Bateman Partners, LLC
Mailing Address: 470 Fore Street, Suite 400, Portland ME 04101
Telephone: (207) 772 - 2992
Email: nathan@batemanpartnersllc.com
What is your legal interest in the property?
☒ Owner ☐ Potential Buyer with Contract ☐ Lease/Rental Agreement

Owner's Information:

Name: Forest Green Associates LP
Mailing Address: 470 Fore Street, Suite 400, Portland ME 04101
Telephone: (207) 772 - 2992
Email: nathan@batemanpartnersllc.com

Agent's Information:

Name: Doug Reynolds
Mailing Address: 300 Southborough Drive, Suite 200 South Portland, ME 04106
Telephone: (207) 772 - 2515
Email: dreynolds@gorrillpalmer.com

Engineer/Surveyor's Information:

Name: Doug Reynolds
Mailing Address: 300 Southborough, Suite 200 South Portland, ME 04106
Telephone: (207) 772 - 2515
Email: dreynolds@gorrillpalmer.com

Project Location and Lot Information:

Street Address: 1 Parkview Court, Biddeford 04005 Watershed: Saco River
Tax Map: 32 Lot: 1
Current Zoning: Mixed Residential (R3) Shoreland Zoning: General Development
Size of Lot: 10.15 (X) acres () s.f. Lot Frontage: 374 Feet
Existing Use of Property: Residential development with 5 existing buildings totaling 40 units with associated parking, accessways, and utility infrastructure.

Property currently serviced by:

☒ City Road ☒ Public Sewer ☒ Public Water ☐ Public Trash
☐ Private Road ☐ Septic System ☐ Private Well ☒ Private Hauler

Slope Conditions in Area of Construction (if applicable):

☐ Flat (0-3% slope) ☒ Rolling (3-8% slope) ☐ Hilly (8-15% slope) ☐ Steep (15%+ Slope)

Are there any wetlands or waterbodies on the site? ☒ (Yes) ☐ (No) if yes attach information

Is the project within the 100-year floodplain? ☐ (Yes) ☒ (No) if yes attach information

Do you plan to bring fill onto the lot? ☒ (Yes) ☐ (No) If yes attach information

Description of proposed use of property:

Project/Proposed Use: The project will consist of (2), thirty (30) unit buildings with associated parking for residents. The buildings will utilize the existing development entrance and have their own primary access via Park View Court. New buildings will have associated parking, utility infrastructure.

Property to be Serviced by:

☒ City Road ☒ Public Sewer ☒ Public Water ☐ Public Trash
☐ Private Road ☐ Septic System ☐ Private Well ☒ Private Hauler

Limits of Disturbance: 1.55 (X) acres () s.f.

Net change in impervious cover: 42,472 () acres (X) s.f.

Is this project part of a larger project? ☐ (Yes) ☒ (No)

Is the project proposing a new Private or Public Road? ☐ (Yes, Private) ☐ (Yes, Public) ☒ (No)

Is this project within the Urbanized Area/MS4 (see [City Drainage Map](#)) ☒ (Yes) ☐ (No)

Is the project proposing any Stormwater facilities/BMPs? ☐ (Yes) ☒ (No)

Will a Traffic Movement Permit (TMP) be required?: ☐ (Yes) ☒ (No)

X If in a Shoreland Zone:

Percent of residential lot coverage (Max 20%): 0%

Percent of structure expansion (Max 30%): 0%

X If Subdivision Review, number of lots proposed: 60 UNITS

If a Private Way is proposed, number of lots served: _____

If Site Plan Review, you must provide the following information:

Total new square feet footprint of structure: 20,545

Total new square feet paving/parking: 21,927

Waiver Requests (attach details):

1. _____
2. _____
3. _____
4. _____
5. _____

Required Submittal Attachments:

A. Letters of Approval

☐ Fire Department – Contact Chief or Deputy Chief – 282-9986

☒ Ability to Serve for Water Service – Maine Water – 282-1543

☐ Ability to Serve for Sewer Service – Engineering Department – Tom Milligan 284-9118

☐ Police Department – e-911 Road Name Designation – Contact Joanne Fisk 282-5127

☒ Ability to Serve for Electrical Service-CMP-1-866-225-4200

☒ Letter to Planning Board describing project, Waiver requests, proposed improvements, addressing permit requirements, etc.

B. Photographs of Site.

C. Architectural renderings/drawings of proposed buildings, as required.

D. Engineering Plans, as required.

E. Stormwater Management Report, as required.

Fees (Due at time of Submission):

- \$75 Nonrefundable Administration Fee is required for every application.
- Refer to "Attachment A Fees and Charges" of the Land Development Regulations for more information. Consult with Planning Staff if you have questions.

Required Signatures:

By signing this application, as the foresaid applicant or authorized agent:

- I certify that I have read and completely understand the application;
- I certify that the information contained in this application and its attachments are true and correct;
- I understand that all information provided on this form and all other documents submitted as part of my proposal is a matter of public record;
- I understand that copies of this information may be supplied upon request to an interested party.
- I understand that additional funds may be required through the course of the review for special studies, legal review costs, and/or engineering review.
- I understand that by submitting an application I am not guaranteed a place on any particular agenda. I further understand that the City Planner will place me on an agenda for review when the application is deemed substantially complete.

Will the proposed project cause 1 acre or more of site disturbance? X (Yes) ___ (No)

- If Yes, applicant is responsible for any required Maine Construction General Permits and shall comply with the requirements of DEP Chapter 500 Stormwater Regulations, as they apply.

Signature of Applicant: _____

Date

5/12/25

Signature of Property Owner: _____

Date

5/12/25

DIGITAL SUBMITTAL REQUIREMENTS FOR ALL SUBMITTALS:

- A) PDF OF SIGNED APPLICATION
- B) PDFs OF ALL DRAWING SETS AND OTHER REQUIRED SUBMITTAL ATTACHMENTS NOTED ABOVE

HARD-COPY SUBMITTAL REQUIREMENTS FOR PLANNING BOARD APPLICATIONS:

- A) SEVEN (7) FULL-SIZE PAPER COPIES OF DRAWING SETS

DIGITAL SUBMITTAL REQUIREMENTS FOR FINAL APPROVAL:

- A) INDIVIDUALLY NAMED PDFs OF EACH DRAWING (NOT A COMBINED PDF SET)
 - Individual Drawing PDF Naming Format: 'PROJECT/SHEETSET NAME_INDIVIDUAL DRAWING NAME.pdf'
- B) PDF COPIES OF ALL PERMIT APPROVALS, APPLICATIONS, REPORTS, NARRATIVES, LETTERS, ETC.
- C) FINAL CAD REFERENCE FILES IN DWG FORMAT (SURVEY & PROPOSED DESIGN LINEWORK)
 - All drawings & CAD reference files must be to-scale and within the following coordinate systems:
 - MAINE STATE PLANE WEST NAD83 (Horizontal Datum) & NAVD88 (Vertical Datum)

HARD-COPY SUBMITTAL REQUIREMENTS FOR FINAL APPROVAL:

- A) THREE (3) FULL-SIZE PAPER COPIES OF INDIVIDUAL DRAWINGS REQUIRING BOARD SIGNATURE
- B) ONE (1) FULL-SIZE PAPER COPY OF ENTIRE DRAWING SET FOR ENGINEERING RECORDS

PLEASE CONFIRM WITH PLANNING STAFF FOR CLARIFICATION

ATTACHMENT 2

DEED & AGENT AUTHORIZATION

WARRANTY DEED

BIDDEFORD ASSOCIATES LP, a Maine limited partnership with an address of 23781 Hwy 27 #316, Lake Wales, FL 33859, for consideration paid, grant to FOREST GREEN ASSOCIATES LIMITED PARTNERSHIP, a Maine limited partnership with an address of P. O. Box 3572, Portland, Maine 04104, with Warranty Covenants, the following described real property known as 1-6 Park View Court, Biddeford, Maine:

A certain lot or parcel of land, together with the buildings and improvements thereon, located on the northerly side of Main Street, in the City of Biddeford, County of York and State of Maine, being more particularly bounded and described as follows:

Beginning at a 1-1/4" iron pipe on the northerly right-of-way line of Main Street at the southwesterly corner of land now or formerly of the City of Biddeford, hereinafter known as "Rotary Park";

Thence N 82° 02' 00" W along the northerly right-of-way line of Main Street 423.63' to a #5 rebar being the southeasterly corner of land now or formerly of Richard J. and Sharon J. Rousselle as recorded in Deed Book 3631, Page 310, York County Registry of Deeds (YCRD);

Thence N 47° 22' 11" E along the southeasterly line of said Rousselle 447.35' to a 3/4" iron pipe at the most easterly corner of said Rousselle;

Thence N 37° 43' 49" W along the northeasterly line of said Rousselle 290.15' to a #5 rebar w/cap stamped "NCS, INC PLS 1314" on the southeasterly line of land now or formerly of Riverbend Housing Associates, LP as recorded in Deed Book 8499, Page 223 (YCRD);

Thence N 40° 35' 11" E along the southeasterly line of said Riverbend Housing Associates, LP 190.51' to a #5 rebar w/cap stamped "NCS, INC PLS 1314";

Thence continuing N 40° 35' 11" E along the southeasterly line of said Riverbend Housing Associates, LP 85' more or less to the southerly edge of the Saco River;

Thence in a generally easterly direction along the southerly edge of the Saco River 560' more or less to a point at the westerly corner of said Rotary Park;

Thence S 35° 07' 20" E along a southwesterly line of said Rotary Park 25' more or less to a #5 rebar w/cap stamped "NCS, INC PLS 1314". This rebar bears on a tie course of N 80° 47' 24" E 626.05' from the last stated rebar;

Thence continuing S 35° 07' 20" E along a southwesterly line of said Rotary Park 357.85' to a #5 rebar w/cap stamped "NCS, INC PLS 1314" set in a gravel road;

Thence S 51° 22' 00" W along a northwesterly line of said Rotary Park 870.29' to the point of beginning.

The above described parcel contains 11.6 acres more or less.

Meaning and intending to describe the same parcel conveyed to Biddeford Associates by Mitchell A. Hyder by deed dated June 11, 1974 and recorded in Deed Book 2052, Page 423.

The basis of bearing for the above described parcel is Magnetic North, 1973.

In Witness Whereof, Biddeford Associates LP has caused this instrument to be executed this 14th day of April, 2010.

WITNESS

Joann Collins
LeeAnn Collins

BIDDEFORD ASSOCIATES LP

By: [Signature]
Richard W. Jenney
Its General Partner

State of FLA.
County of Polk.

April 14, 2010

Personally appeared before me the above named Richard W. Jenney, General Partner of Biddeford Associates LP and acknowledged the foregoing instrument to be his free act and deed in said capacity and the free act and deed of Biddeford Associates LP.

[Signature]
Notary Public

Print Name Lisa L. Franklin

My Commission Expires 12-21-2010

LISA L. FRANKLIN
Notary Public, State of Florida
My comm. expires Dec. 21, 2010
Comm. No. DD 624515

Forest Green Associates, LP
470 Fore Street, Suite 400
Portland, ME 04101

4/15/25

City of Biddeford
Attn: David Galbraith
205 Main Street
Biddeford, ME 04005

Dear David,

Please be advised that the undersigned Forest Green Associates Limited Partnership, which owns the real property known as 1 Parkview Court in Biddeford Maine by virtue of a deed recorded at Book 15854, Page 978 of the York County Registry of Deeds (the "Property"), has engaged Bateman Partners, LLC as its agent for the purposes of pursuing a redevelopment of the Property. As our agent for this project, Bateman Partners, LLC has the full authority to act on behalf of the said partnership in connection with the application submitted to the City of Biddeford in connection with the project.

Forest Green Associates Limited Partnership

By: Bateman Investments, LLC, its general partner

By: 

Name: *Nathan Bateman*

Its: *Member*

December 23, 2024

Re: **Agent Authorization**
Forest Green Expansion Project
Biddeford, Maine

To Whom It May Concern:

Bateman Partners, LLC ("Developer") is in the process of developing a site (the "Site") in the state of Maine, York County, located on Main Street, in Biddeford. On behalf of the Developer, I hereby authorize Gorrill Palmer, (the "Engineer") to assist as agent for the purpose of obtaining permits and approvals related to the development of the Site. This authorization is effective as of the date of this correspondence, and will remain valid until revoked in writing.

If you have any questions or if I can be of any further assistance, please contact me.

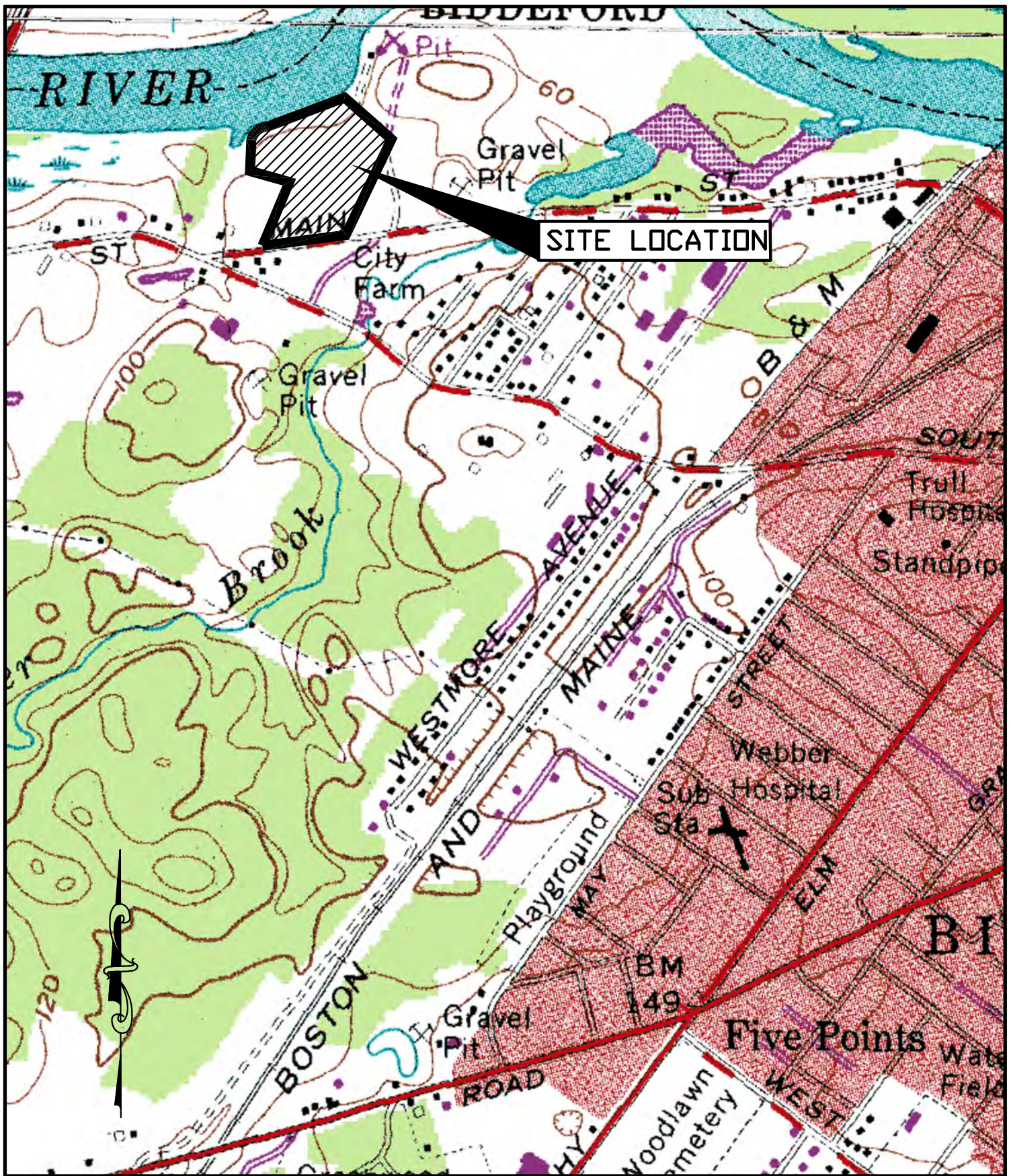
Very truly yours,



Nathan Bateman, Bateman Partners., LLC

ATTACHMENT 3

PROJECT MAPS



U.S.G.S. Location Map
 Forest Green Apartments Expansion - Biddeford, Maine
 U.S.G.S. Biddeford, State-7.5 Minute Series (Topographic)

Design: EJC	Date: NOV. 2024
Draft: EJC	Job No.: 4323
Checked: AJK	Scale: NTS
File Name: 4323-LOCATION MAP.dwg	



Gorrill Palmer, an LJB Engineering Company
 GorrillPalmer.com
 (207) 772-2515
 300 Southborough Drive - Suite 200
 South Portland, ME 04106

Figure

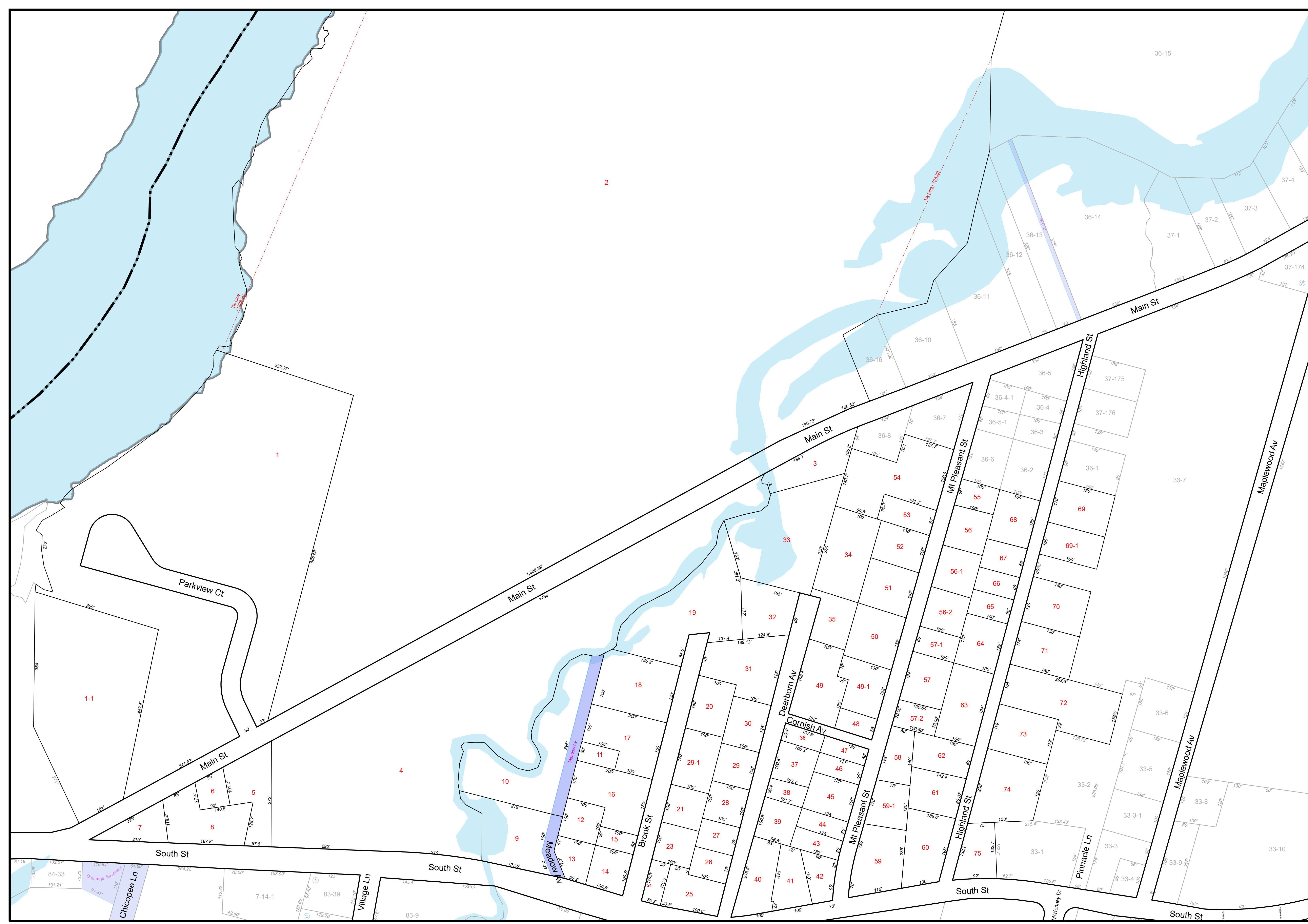
1



FOR ASSESSMENT PURPOSES ONLY

This Map is Prepared By
The City of Biddeford, Maine
Technology Department
GIS Division
205 Main Street • P.O. Box 586 • Biddeford, Maine 04005
207-571-0660 • gis@biddefordmaine.org

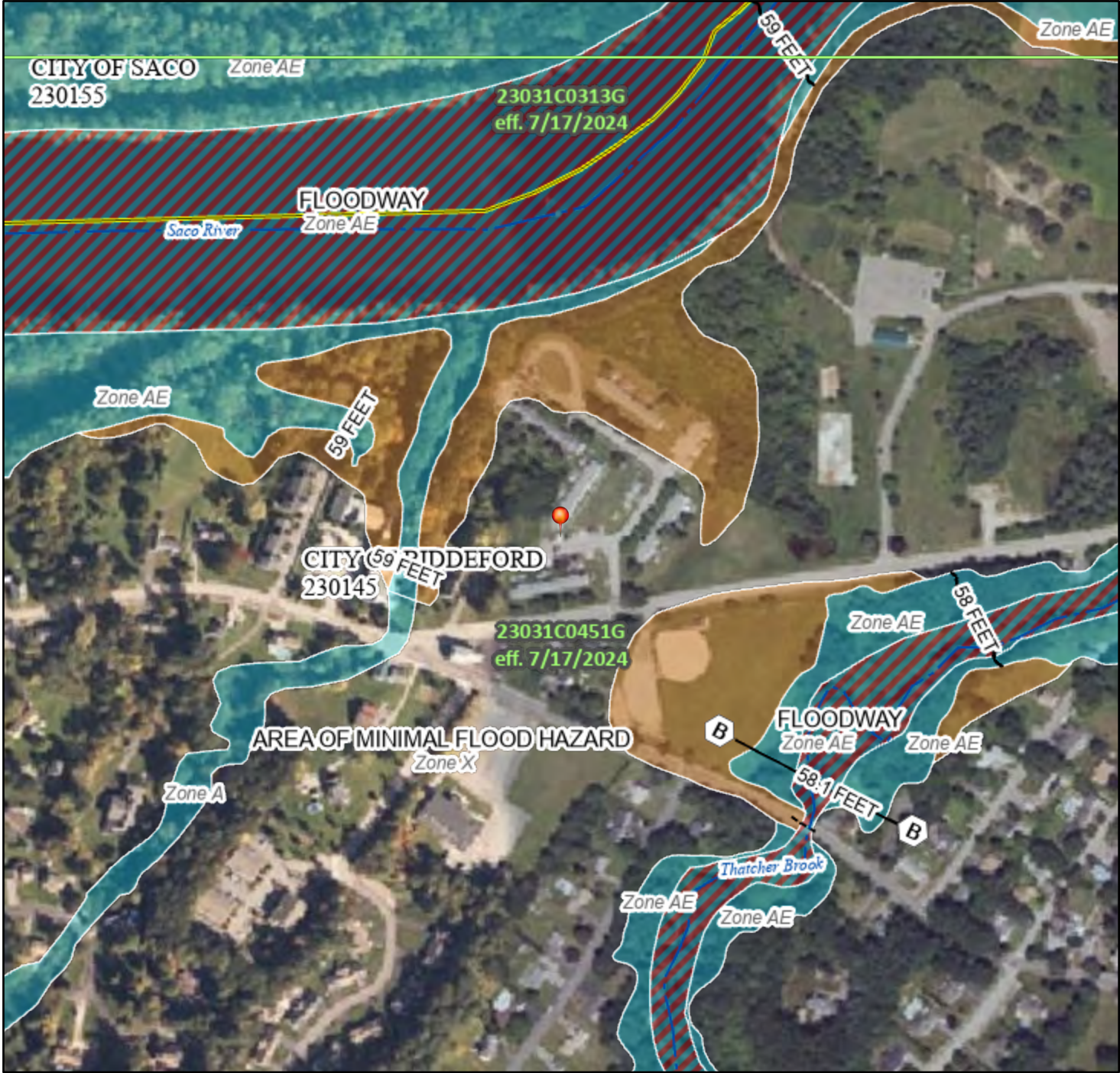
FILE 74917



National Flood Hazard Layer FIRMette



70°29'12"W 43°30'1"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
MAP PANELS		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/14/2025 at 2:37 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

ATTACHMENT 4

UTILITY CORRESPONDENCE

FW: CMP Three Phase Service Process and Ability to Serve Letter

From Agreste, Jay A. <Jay.Agreste@cmpco.com>

Date Wed 4/9/2025 8:01 AM

To Ethan Chadwick <echadwick@gorrillpalmer.com>; Doug E. Reynolds <dreynolds@gorrillpalmer.com>

Cc DELANEY, RICHARD <richard.delaney@cmpco.com>

 4 attachments (1 MB)

Easement_Information_Worksheet.doc; Standard Easement Sample.pdf; blank W9.pdf; EDET Feb 2024.xlsx;

Good morning, Ethan & Doug

Please see ability to serve letter. Thank you

Jay

From: Agreste, Jay A. <Jay.Agreste@cmpco.com>

Sent: Friday, December 20, 2024 9:00 AM

To: dhorne@acorn-engineering.com

Cc: DUPERRE, PAUL <paul.duperre@cmpco.com>

Subject: CMP Three Phase Service Process and Ability to Serve Letter

Douglas Reynolds, PE

Project Manager

Phone: 207-772-2515

dreynolds@gorrillpalmer.com

RE: Provide three-phase power services for a sixty-unit residential development located at 641 Main Street in Biddeford.

Letter of Ability to Serve Request

SAP TBD Please call 1-800-750-4000 when ready to get a notification/job# created

Project Description:

Central Maine Power has the ability to serve at a proposed project located at 641 Main Street in Biddeford, Maine. The development proposes the construction of two, three-story, 7,560 square-foot, multifamily dwellings. Each dwelling will consist of 30 units for a total of 60 units combined. The residential development is proposed to be accessed via Main Street with pedestrian access available to/from Main Street by sidewalk. Please keep in mind if the new diversified connected load is above 500kw. A circuit capacity study will be required by CMP's Distribution Planning Department. There is an existing 3phase Overhead primary line at the corner of Main Street & South Street. All to be determined at a future Field Planner appointment.

CMP has the ability to serve the proposed project in accordance with our CMP Handbook (web link below). We can provide you the desired pad or pole mounted transformers per your request and city approval, in accordance with our CMP Handbook of Standard Requirements. If you have any questions on the process, or need help in completion of the documents, please contact CMP at 800-565-3181.

Here is our typical process for getting your three phase or CT rated single phase service installed. If you have any questions, please let us know. The underlined links will redirect you to the appropriate site for additional information.

Service Milestones for Three Phase Services and CT Rated Single Phase Services. There are additional requirements for primary metered Solar Service Installations listed in the Chapter 324 Interconnections section below. Please refer to [CMP Installation Checklists](#) for other installations.

- Call 800-750-4000 option 4 to establish a new account (if needed) and an SAP work order. Please provide both of these to me.
- Submit Load information. Please complete the attached EDET (excel file) using load information. Please complete this and email back to me. If the loads are over 500 kw, more in depth load studies may be required with our Distribution Planning and Transmission Planning Departments. Be advised that these will involve more detailed load information, a load study agreement (signed contract), as well as other items. This additional study process may add up to two additional months to completion of the job.
- Submit the easement information worksheet, including where any CMP structures may be on ANY private property (Poles, Wires, Anchors). You are responsible for obtaining all information for all required easements. Please complete this form and either email or fax back to me.
- Submit any electronic drawings (PDF (preferred) or DWG files) of the site layout and proposed electrical connections.
- For Primary Metered installations (including PV), please have the access road in for pole staking.
- Preliminary meetings with CMP Advisor and Engineer to determine details of job (I will need to schedule with your electrician/contractor-please let me know who this is)
- Field planner design appointment scheduled once the preliminary information is complete. This will allow us to cost out the job and develop a CMP Invoice. The invoice is typically generated 5-6 weeks after the design appointment. This expires after 90 days from the invoice date.
- Submit completed W9 so that your bill can be properly processed. This is a new CMP process.
- CMP submits invoice to the customer for payment (typically via email). Payment received from customer.
- Easements (based on easement information worksheet) sent out, signed and originals returned to CMP.
- Job scheduled for completion after the electrical inspection has been received.

This process can take several months, depending upon several factors including transformer or materials delivery, return of completed paperwork, and other jobs in the system that may be ahead of yours. In addition, contact with the other utilities, including telephone and cable, should be commenced as soon as practical. They may have additional work or charges in addition to the CMP work required to bring your project on line.

As you may be aware, there are global supply chain issues impacting the utility industry. CMP is closely monitoring and managing their inventory in order to serve our customers. Larger padmount transformers may not be readily available for the date that you will need to be energized. Please consider this as part of your construction plan. The energy service advisor will continue to work closely with you and let you know as soon as the transformer becomes available. Should you have any questions or concerns throughout this process, please do not hesitate to contact your ESA directly at the number or email provided.

Please complete the attached forms (the specific instructions are on each form). Please email them at your earliest convenience. If you are returning an Easement Form, a 1190 or State Permit please be sure to send those documents to lineclerknewservice@cmpco.com, All W9's should be sent to gettingconnected@cmpco.com. All other forms including the EDET (load sheet) and technical information should be sent to me.

For your convenience, here is a link to the CMP Website which contains our Handbook with details on most service requirements: [CMP Handbook of Standard Requirements](#) An additional resource is our Distribution Construction Standards: CMP Distribution Construction Standards [CMP Distribution Construction Standards](#).

You will be responsible for installing the customer connections, conduits, and metering in accordance with the [CMP Handbook of Standard Requirements](#) The transformer will be sized based on your submitted load sheets.

Your deposit amount will be typically based on an estimated two month bill, calculated from your completed load sheet unless otherwise determined by CMP.

In addition, we have recently added on an online map that shows single phase and three phase power locations within CMP. Here is that link: [CMP ArcGIS Information](#)

Metering:

All metering (including locations) must be preapproved by CMP. If you have any questions, please consult the [CMP Handbook of Standard Requirements](#)

Chapter 324 Interconnections:

Please be advised that if you plan to install solar/wind/hydro generation, you must complete an application under the MPUC mandated Chapter 324 Interconnection Standards. If you go to [Chapter 324 Interconnection Standards](#) and follow the instructions for the Small Generator Interconnection Procedures, CMP can do this work in parallel to your service request that will be handled by me. If your project is under 660 KW You will be able to have a Customer Net Energy Billing contract. Information concerning Customer Net Energy Billing can be accessed thru the Chapter 324 website or by clicking here: [Net Energy Billing](#)

Reallocation/Line Extensions:

Recently, changes were made to the three-phase construction policy, which require CMP to reallocate construction costs paid by customers. If applicable, those projects identified as “developments” do not qualify for reallocation of funds. Please see this document at our website for details about the reallocation conditions. Any reallocation charges will be specifically denoted on your invoice. The website address for this is: [PolyphaseLineExtension](#).

This line extension will be part of Central Maine Power's distribution system. In the event the property served under this Agreement is sold or otherwise conveyed, all rights and obligations of the Agreement shall stay with the property. Please note that if you rent or lease this property to another and you want to receive the reimbursement payments, you must make special arrangements with the Central Maine Power Company. Otherwise, any reimbursement payments will be sent to the "Customer" taking service at the service location.

Electricity Supplier Information:

Central Maine Power Company (CMP) will provide your facility with electric delivery service. If you don't already have a provider, you will need to make arrangements with a competitive electricity provider in order to receive electricity supply for your facility. In the event you fail to choose a competitive electricity provider, you will receive Standard Offer service arranged by the Maine Public Utilities Commission. If you wish to be served by a competitive electricity provider immediately upon establishment of delivery service, you must arrange for this service directly through your chosen competitive electricity provider, who must enroll your account no later than 5 PM on the business day prior initiation of delivery service by CMP. An up-to-date list of competitive suppliers can be found at the:

1. Maine Public Utilities Commission (MPUC) web site- [Maine PUC](#)
2. By calling the MPUC at (207) 287-3831

Attachments:

Excel Load Sheet (EDET)
Easement Worksheet and Sample Standard Easement
W9

Jay Agreste

Energy Service Specialist

Central Maine Power

439 Sanford Rd, Alfred ME.04002

Jay.Agreste@cmpco.com

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April 11, 2025

Doug Reynolds, PE
Gorrill-Palmer Consulting Engineers, LLC
300 Southborough Drive, Suite 200
South Portland, ME 04106

Re: Ability to Serve Determination – 641 Main St, Biddeford

Greetings,

The Maine Water Company (MWC) has received your Ability to Serve Determination request on the behalf of your client, Bateman Partners, for a proposed residential development to be located at 641 Main St, Biddeford, Maine. The request specifies a plan to construct utility infrastructure improvements to serve 60 units within two buildings. The expected average domestic service demand is 10,980 gallons per day. The expected fire service demand for the project is unknown.

Based on the criteria provided by the developer's agent, the expected increase in water usage is within the water system's available capacity. The static pressure in the area is approximately **55 psi**. The Biddeford Saco Division of MWC does have sufficient capacity from the existing 8-inch ductile iron water main in the Parkview Court Right-of-Way to serve this project. Additional infrastructure improvements may be required at the expense of the developer to meet the overall needs of this project.

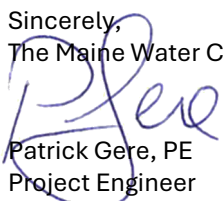
Conditions of Service

- MWC has the understanding that fire service demand is unknown at this time, are not to be included in this request, or accounted for in this Ability to Serve Determination.
- If fire service is required, a hydrant flow test at the nearest available hydrant will need to be conducted and analyzed by the sprinkler designer to ensure that adequate flows can be met during a peak fire demand event.
- The developer is required to pay for the cost of any modification, renewal of impacted service lines, and retirement of unused or discontinued services to MWC standards of best practice.
- Additional plan approval, paperwork, and fees associated with this project will require proper coordination with MWC. MWC requires upfront payment for inspection and paperwork to be fully completed before any construction on waterworks materials.
- Service lines must comply with MWC Cross Connection Control Program.
- Allow up to 30 days for the MWC utility review process once final plans are ready to be completed before any construction on waterworks materials will be approved.

Should a request for service or completion of the project not be executed within one year of the date of this letter, MWC reserves the right to reevaluate its ability to serve this project. All work must be completed in accordance with MWC Terms and Conditions as well as material specifications. All appropriate paperwork must be completed, and deposit paid prior to the start of construction. Please forward all design plan revisions as the project develops to prevent construction delays. Water service will be provided in accordance with Maine Public Utility Commission rules.

If you have any additional questions, please do not hesitate to contact our office at 1-800-287-1643 or by email at Patrick.Gere@mainewater.com. We look forward to working with you throughout design and construction.

Sincerely,
The Maine Water Company


Patrick Gere, PE
Project Engineer

ATTACHMENT 5

STORMWATER MEMORANDUM

ATTACHMENT 5

STORMWATER MEMORANDUM

Stormwater Memo

To:	David Galbraith, City Planner	From:	Douglas Reynolds, PE
Date:	May 09, 2025	Re:	Forest Green Apartment Expansion 1 Parkview Court, Biddeford, ME Bateman Partners, LLC

Task:

Perform a stormwater management analysis for the proposed development of (2) thirty (30) units located at 1 Park View Court in Biddeford, ME.

References:

- Field reconnaissance by Gorrill Palmer
- LiDAR topography from the Maine Office of GIS
- "Topographic Survey at Park View Court, Biddeford, Maine" dated January 2025, and prepared by Owen Haskell, Inc. for Bateman Partners, LLC.
- Design plans titled "Forest Green Apartment Expansion" prepared by Gorrill Palmer.
- City of Biddeford, ME City Code Article IV – Section 61.A

Background:

Bateman Partners, LLC is currently seeking a Final Site Plan and Subdivision Permit from the City of Biddeford Planning for the construction of (2), thirty (30) unit buildings. The unit breakdown will incorporate forty-two (42) two-bedroom units and eighteen (18) one-bedrooms with associated parking, utility, and drainage infrastructure. The site consists of a 10.15 acre property identified as Lot 1 on Tax Map 32 of the City of Biddeford's Assessor's Map. The property owner (Forest Green Associates LP) is a subsidiary of the Applicant (Bateman Partners, LLC) has retained and authorized Gorrill Palmer to perform all work necessary to submit this application (see Attachment 2 for the Current Deed and Agent Authorization).

The project will create less than 1 acre of impervious area and, therefore, does not meet the threshold for a Maine DEP Stormwater Law permit under the Ch. 500 standards for water quality and quantity control. However, the project is subject to the City of Biddeford's stormwater management standards outlined in Article IV – Section 61.A of the City Code, which requires post-development peak discharges do not exceed pre-development conditions. The plans prepared by Gorrill Palmer include the infrastructure necessary to serve the project and to comply with current local stormwater standards. Erosion and Sedimentation Controls (Basic Standards) will also be employed during the construction of this project and are summarized in the Erosion and Sedimentation Control Plans provided on Sheets C002, C404, and C405 and as described in the Erosion and Sedimentation

Control Report in Attachment 3. An Operation and Maintenance Manual prepared by Gorrill Palmer outlines the inspection and maintenance requirements for the proposed stormwater facilities and is included in Attachment 3.

The purpose of this analysis and memorandum is to document what measures will be implemented to control the peak rate of discharge during large storm events to meet city standards. Based on our review of the City Ordinances, there is no standard for the treatment of stormwater runoff, therefore the proposed development is not proposing treatment of stormwater runoff.

Existing Conditions

The 10.15-acre property includes 5 existing residential buildings with a total of 40 units with associated parking and access ways. A portion on the western side of the parcel is primarily undeveloped wooded areas.

The USDA NRCS Class D Intensity Soil Survey for York Country identifies the site soils to be comprised of:

Map Symbol	Soil Type	K Value	Hydrologic Soil Group
EmB	Elmwood Fine Sandy Loam	0.32	B
MaB	Madawaska Fine Sandy Loam	0.28	B
Ra	Raynham Silt Loam	0.64	C/D
BuC	Buxton Silt Loam	0.32	C
Po	Podunk and Winooski Soils	0.24	B

The majority of the development is located on Raynham Silt Loam soils, which is considered to have very deep, poorly drained soils with a moderately high or high saturated hydraulic conductivity. The soils are also acceptable to support the installation of the proposed drainage infrastructure installation techniques and measures to prevent erosion.

Proposed Development

The proposed site improvements will include two (2) approximately 9,800 SF footprint three-story buildings connected by an 800 SF shared entry that will contain an elevator for accessibility to the upper floors of both buildings. Additionally, there is a associated driveway for access to the 63 proposed exterior parking spaces. In total, the proposed project is anticipated to create approximately 42,472 SF of new non vegetated area, which includes new paved, gravel, and roof areas. The developed area of the site is anticipated to increase 67,346 SF bringing the total developed footprint of the site to 288,625 SF.

Analysis:

The proposed development was designed to meet the local requirements of Article IV – Section 61.A, which requires the reduction of peak discharge for the twenty-five-year storm to the greatest extent practicable. . Runoff from the site is ultimately tributary to the Saco River which has a watershed area that spans throughout multiple states. Through inspection of the portion of the

watershed between the Skelton Dam in Buxton to the project site, it will be demonstrated that the Flooding Standard is met by the development's proximity to the Saco River and the vastness of the upstream watershed (almost 25,000 acres with a Tc of about 17.7 hours). The increase in impervious area for the development is insignificant compared to the overall watershed and will reach the Saco River well before the peak of the overall watershed and therefore will not lead to increases in peak discharge above the predevelopment levels. The watershed model (included in Attachment 2) was developed to predict peak discharge rates at the Point of Interest (POI) depicted on the watershed maps (included in Attachment 1). The following sections describe the pre-development and the post-development conditions.

In general, the site drains northerly to existing wetlands eventually draining into the Saco River. The slopes range from 1-10%. Elevations (referenced to grid north, Maine State Plane Coordinate System, West Zone, NAD83) range from 72 feet in the southerly portion of the site to 55 feet in the northern portion (POI #1). The proposed site plans have been designed to match the existing drainage patterns to the greatest extent practicable.

Existing Conditions (WS1)

The existing conditions were modeled as one subcatchments as shown on Sheet WS1 and described below:

- S1 encompasses the entire watershed that feeds into the Saco River (POI #1), including the river segment extending from the project site to the Skelton Dam in Buxton. This watershed covers an area of approximately 24,370.6 acres. For modeling purposes, it is assumed that 10% of the watershed will be represented as impervious surface, while 20% will be classified as developed land.

Post-Development Conditions (WS2)

The post-development condition was modeled as five subcatchments as shown on Sheet WS2 and which are described below:

- S1 consists of the watershed modeled in the predevelopment conditions minus the proposed land cover for the proposed project. The subcatchment is tributary to the Saco River identified as POI #1.
- S2 consists of grassed, roof, paved, and remaining undeveloped areas onsite. This subcatchment is first tributary to the onsite drainage system which outlets within the project site to a level lip spreader which ensures runoff flows to the existing lowpoint. The runoff is ultimately tributary to the Saco River (POI #1). It was the intent of the proposed development to maintain the existing drainage pattern of the site.

The following table shows the peak flows measured at the points-of-interest in the pre- and post-development conditions:

Comparison of Pre- and Post-Development Peak Flow Rates						
Point of Interest	Peak Flow (cfs)					
	2 Year		10 Year		25 Year	
	Pre	Post	Pre	Post	Pre	Post
POI #1	951.31	951.30	2308.74	2308.72	3616.71	3616.69

As shown in the table above, the peak flow rate at POI #1 is reduced in the post-development condition. The increase in impervious area for the development is insignificant compared to the

overall watershed and will reach the Saco River well before the peak of the overall watershed and therefore will not lead to increases in peak discharge above the predevelopment levels.

Proposed BMPs

Runoff from the proposed development is designed to be managed with a level lip spreader. The level lip spreader aids in controlling peak flow rates by dispersing flows and mitigating erosive flows. Analysis for the post development condition consists of determining peak flows and limiting the post development flows to at or below predevelopment levels to the greatest extent practicable as required by the City of Biddeford.

The proposed development is not required by the City to provide treatment of stormwater runoff. Additionally, since the site contains a lot of moderate-low permeability soils, stormwater infiltration is not proposed as part of the stormwater management system. Therefore, we do not anticipate any adverse effects on subsurface water quality.

The following section summarizes the design of the Level Lip Spreader BMP being utilized for the proposed development.

Level Lip Spreader:

Runoff from the proposed roof, driveway, and parking areas will be conveyed via open bottom 3'x2' pipe arch culvert to level lip spreader. A rip rap apron is provided at the culvert entrance located southeast of the proposed building to collect fugitive sediment from parking and landscaped areas.

Conclusion:

The proposed stormwater management plan for this project is anticipated to mitigate any impacts of stormwater runoff rates resulting from the proposed development and to reduce peak runoff to the greatest extent practicable.

Erosion and sediment control measures will be employed during construction as outlined in the attached report (see Attachment 3). These include a stabilized construction entrance, silt sacks, silt fence and/or erosion control mix barriers and mulching to assure that the construction activity does not result in any sediment transport off the site.

Based on the proposed design, the runoff from the proposed development will be captured and conveyed in a manner that will not have an adverse impact to the surrounding stormwater systems or the environment.

Gorrill Palmer



Douglas Reynolds, PE
Project Manager
Phone: 207-772-2515 x239
dreynolds@gorrillpalmer.com

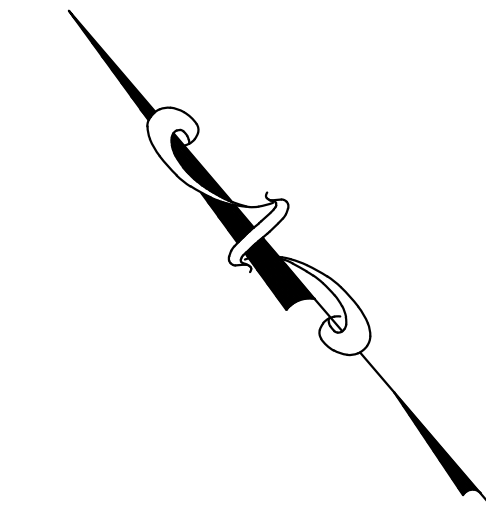
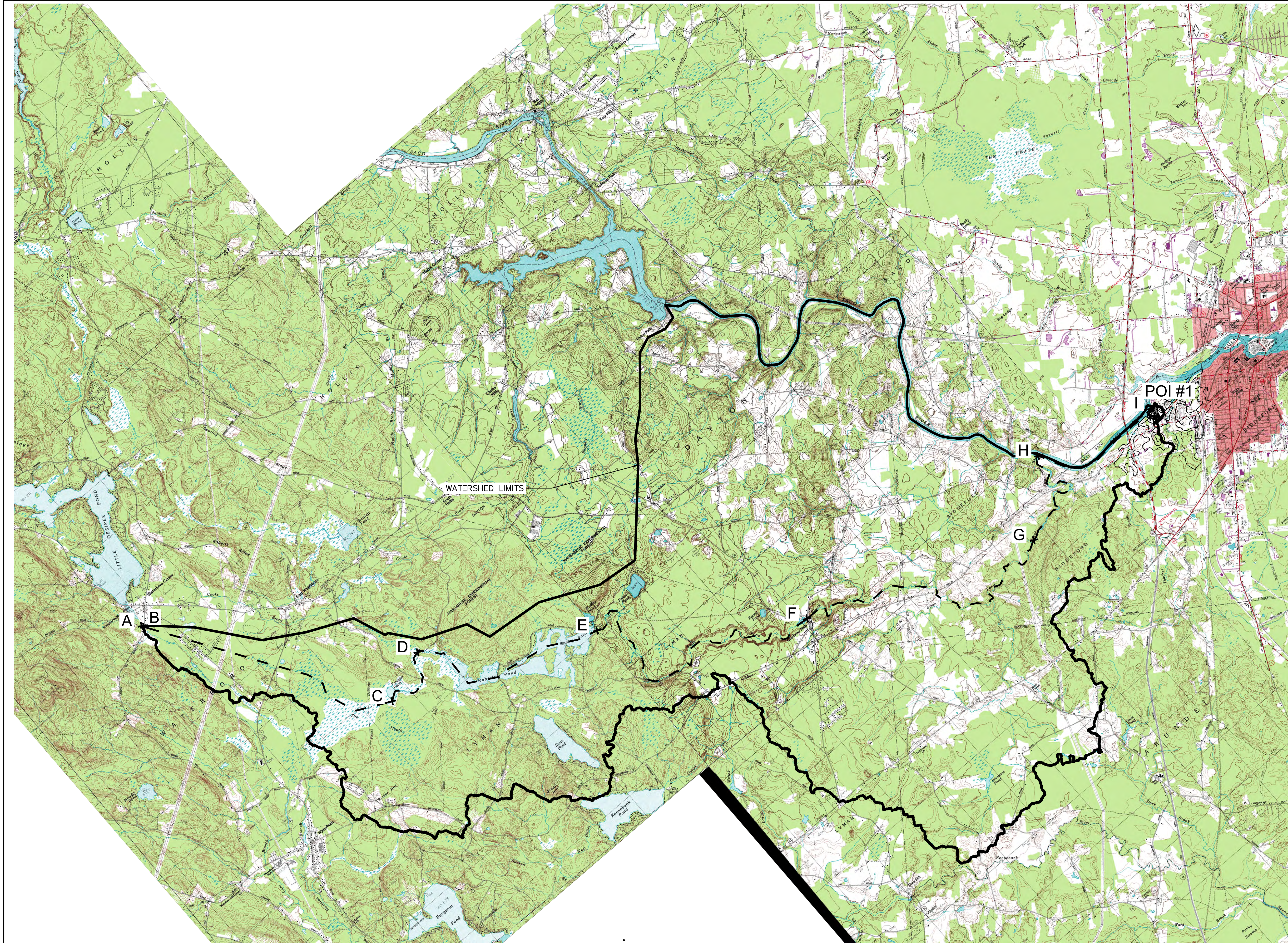
Attachments:

- 1 Watershed Maps:
WS1 Predevelopment Watershed Map
WS2 Post Development Watershed Map
- 2 Pre and Post Development HydroCAD Models

ATTACHMENT 1

Watershed Maps

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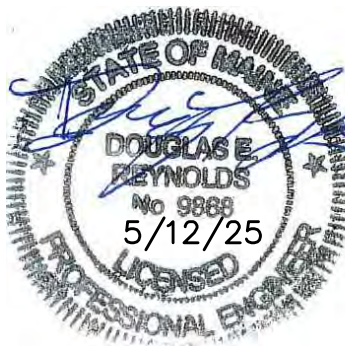


LEGEND

- 1 SUBCATCHMENT AREA
- A TIME OF CONCENTRATION FLOW PATH
- WATERSHED BOUNDARY
- WETLAND BOUNDARY
- SF SHEET FLOW
- PF PIPE FLOW
- SCF SHALLOW CONCENTRATED FLOW
- CF CHANNEL FLOW
- POI POINT OF INTEREST
- 1 REACH



NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.



Rev.	Date	Revision

LOCAL PRELIMINARY PLAN SUBMISSION	5/12/25	DER
NRPA APPLICATION SUBMISSION	5/12/25	DER
SACO RIVER CORRIDOR SUBMISSION	5/7/25	DER
LOCAL SKETCH PLAN SUBMISSION	4/16/25	DER
Issued For	Date	By

Design: EC	Draft: CG	Date: JUNE 2024
Checked: DER	Scale: 1"=3000'	Job No.: 4323
File Name: 4323-WS-PRE-BTP.dwg		
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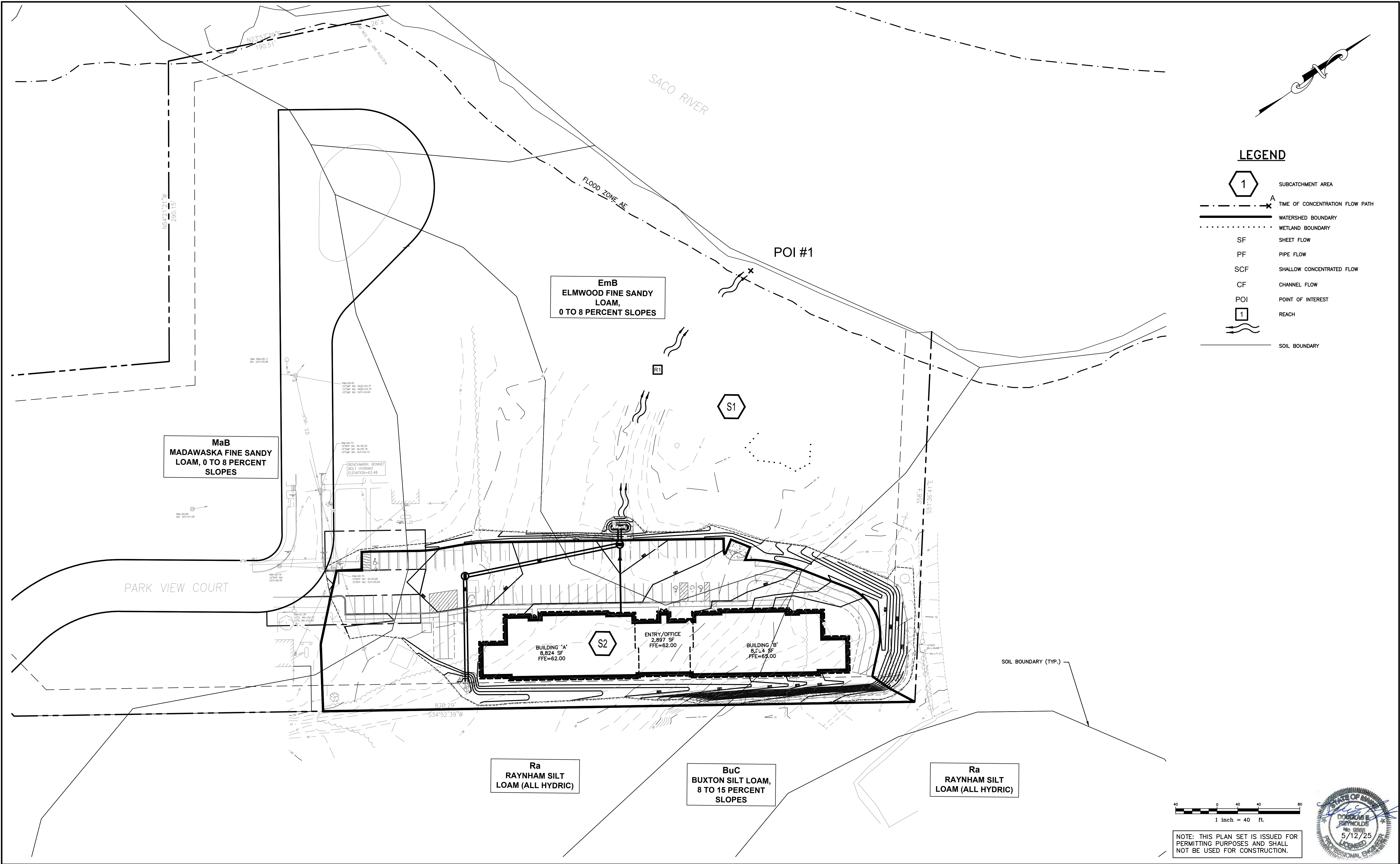


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www.gorrillpalmer.com
207.772.2515
300 Southborough Drive - Suite 200
South Portland, ME 04106

Drawing Name:	Pre Development Watershed Map
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.
W1

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Rev.	Date	Revision

LOCAL PRELIMINARY PLAN SUBMISSION	5/12/25	DER
NRPA APPLICATION SUBMISSION	5/12/25	DER
SACO RIVER CORRIDOR SUBMISSION	5/7/25	DER
LOCAL SKETCH PLAN SUBMISSION	4/16/25	DER
Issued For	Date	By

Design: EC	Draft: CG	Date: JUNE 2024
Checked: DER	Scale: 1"=40'	Job No.: 4323
File Name: 4323-WS-POST-BTP.dwg		
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300 Southborough Drive - Suite 200
South Portland, ME 04106

Drawing Name:	Post Development Watershed Map
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

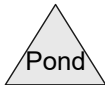
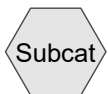
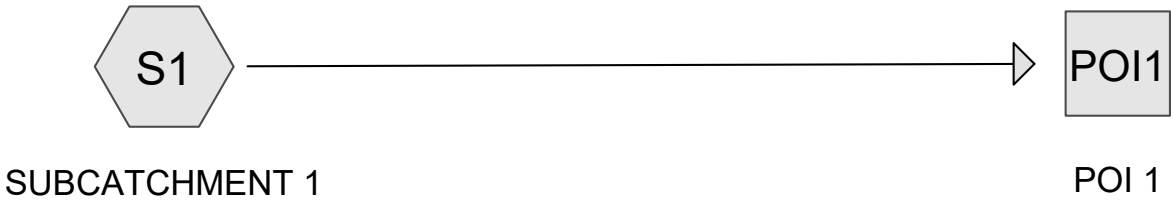
Drawing No.

W2

ATTACHMENT 2

Pre- and Post-development HydroCAD Model

PREDEVELOPMENT



Pre-EJC - BTP

Prepared by LJB, Inc

HydroCAD® 10.20-5c s/n 01265 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2 YR Rainfall=3.30"

Printed 5/9/2025

Page 2

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S1: SUBCATCHMENT 1 Runoff Area=24,370.600 ac 10.65% Impervious Runoff Depth>0.66"
Flow Length=99,829' Tc=1,062.3 min UI Adjusted CN=66 Runoff=951.31 cfs 1,345.685 af

Reach POI1: POI 1

Inflow=951.31 cfs 1,345.685 af

Outflow=951.31 cfs 1,345.685 af

Total Runoff Area = 24,370.600 ac Runoff Volume = 1,345.685 af Average Runoff Depth = 0.66"
89.35% Pervious = 21,774.800 ac 10.65% Impervious = 2,595.800 ac

Pre-EJC - BTP

Prepared by LJB, Inc

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Type III 24-hr 10 YR Rainfall=4.90"

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Page 3

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S1: SUBCATCHMENT 1 Runoff Area=24,370.600 ac 10.65% Impervious Runoff Depth>1.59"
Flow Length=99,829' Tc=1,062.3 min UI Adjusted CN=66 Runoff=2,308.74 cfs 3,228.494 af

Reach POI1: POI 1

Inflow=2,308.74 cfs 3,228.494 af

Outflow=2,308.74 cfs 3,228.494 af

Total Runoff Area = 24,370.600 ac Runoff Volume = 3,228.494 af Average Runoff Depth = 1.59"
89.35% Pervious = 21,774.800 ac 10.65% Impervious = 2,595.800 ac

Pre-EJC - BTP

Prepared by LJB, Inc

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Type III 24-hr 25 YR Rainfall=6.20"

Printed 5/9/2025

Page 1

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S1: SUBCATCHMENT 1 Runoff Area=24,370.600 ac 10.65% Impervious Runoff Depth>2.48"
Flow Length=99,829' Tc=1,062.3 min UI Adjusted CN=66 Runoff=3,616.71 cfs 5,043.681 af

Reach POI1: POI 1

Inflow=3,616.71 cfs 5,043.681 af

Outflow=3,616.71 cfs 5,043.681 af

Total Runoff Area = 24,370.600 ac Runoff Volume = 5,043.681 af Average Runoff Depth = 2.48"
89.35% Pervious = 21,774.800 ac 10.65% Impervious = 2,595.800 ac

Pre-EJC - BTP

Prepared by LJB, Inc

HydroCAD® 10.20-5c s/n 01265 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25 YR Rainfall=6.20"

Printed 5/9/2025

Page 2

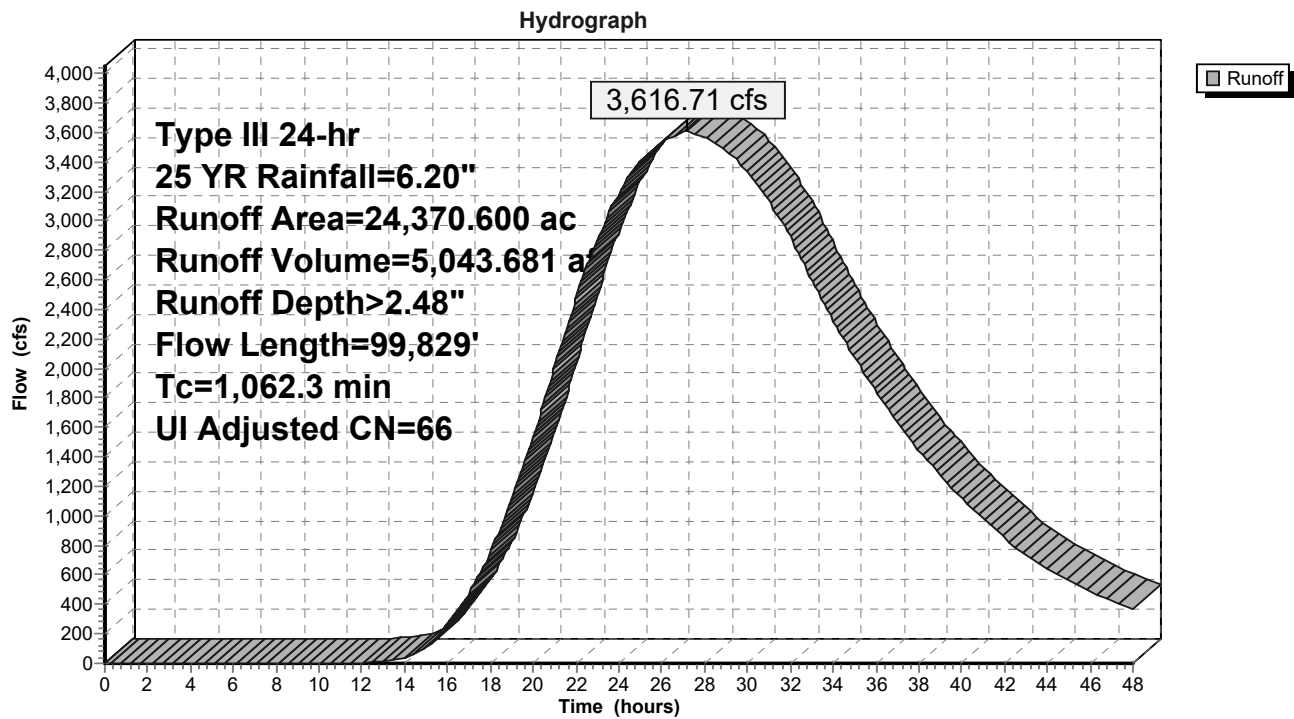
Summary for Subcatchment S1: SUBCATCHMENT 1

Runoff = 3,616.71 cfs @ 27.15 hrs, Volume= 5,043.681 af, Depth> 2.48"
 Routed to Reach POI1 : POI 1

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 YR Rainfall=6.20"

Area (ac)	CN	Adj	Description
* 253.200	98		Rock Outcrop
640.300	98		Unconnected pavement, HSG A
640.300	30		Meadow, non-grazed, HSG A
5,122.400	30		Woods, Good, HSG A
77.880	98		Unconnected pavement, HSG B
77.880	58		Meadow, non-grazed, HSG B
623.040	55		Woods, Good, HSG B
310.520	98		Unconnected pavement, HSG C
310.520	71		Meadow, non-grazed, HSG C
2,484.160	70		Woods, Good, HSG C
1,313.900	98		Unconnected pavement, HSG D
1,313.900	78		Meadow, non-grazed, HSG D
10,511.200	77		Woods, Good, HSG D
691.400	98		Water Surface, 0% imp, HSG D
24,370.600	67	66	Weighted Average, UI Adjusted
21,774.800			89.35% Pervious Area
2,595.800			10.65% Impervious Area
2,342.600			90.25% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3	150	0.0500	0.12		Sheet Flow, A to B Woods: Light underbrush n= 0.400 P2= 3.30"
883.4	17,779	0.0045	0.34		Shallow Concentrated Flow, B to C Woodland Kv= 5.0 fps
20.4	5,306	0.0025	4.35	869.02	Trap/Vee/Rect Channel Flow, C to D Bot.W=20.00' D=10.00' n= 0.050 Mountain streams w/large boulders
7.4	13,751		31.08		Lake or Reservoir, D to E Mean Depth= 30.00'
47.3	21,822	0.0050	7.68	1,536.22	Trap/Vee/Rect Channel Flow, E to F Bot.W=20.00' D=10.00' n= 0.040 Winding stream, pools & shoals
55.3	21,894	0.0073	6.60	495.18	Trap/Vee/Rect Channel Flow, F to G Bot.W=15.00' D=5.00' n= 0.040 Winding stream, pools & shoals
21.5	10,055	0.0030	7.80	4,677.83	Trap/Vee/Rect Channel Flow, G to H Bot.W=60.00' D=10.00' n= 0.040 Winding stream, pools & shoals
6.7	9,072	0.0025	22.48	196,689.42	Trap/Vee/Rect Channel Flow, H to I Bot.W=250.00' D=35.00' n= 0.030 Stream, clean & straight
1,062.3	99,829	Total			

Subcatchment S1: SUBCATCHMENT 1

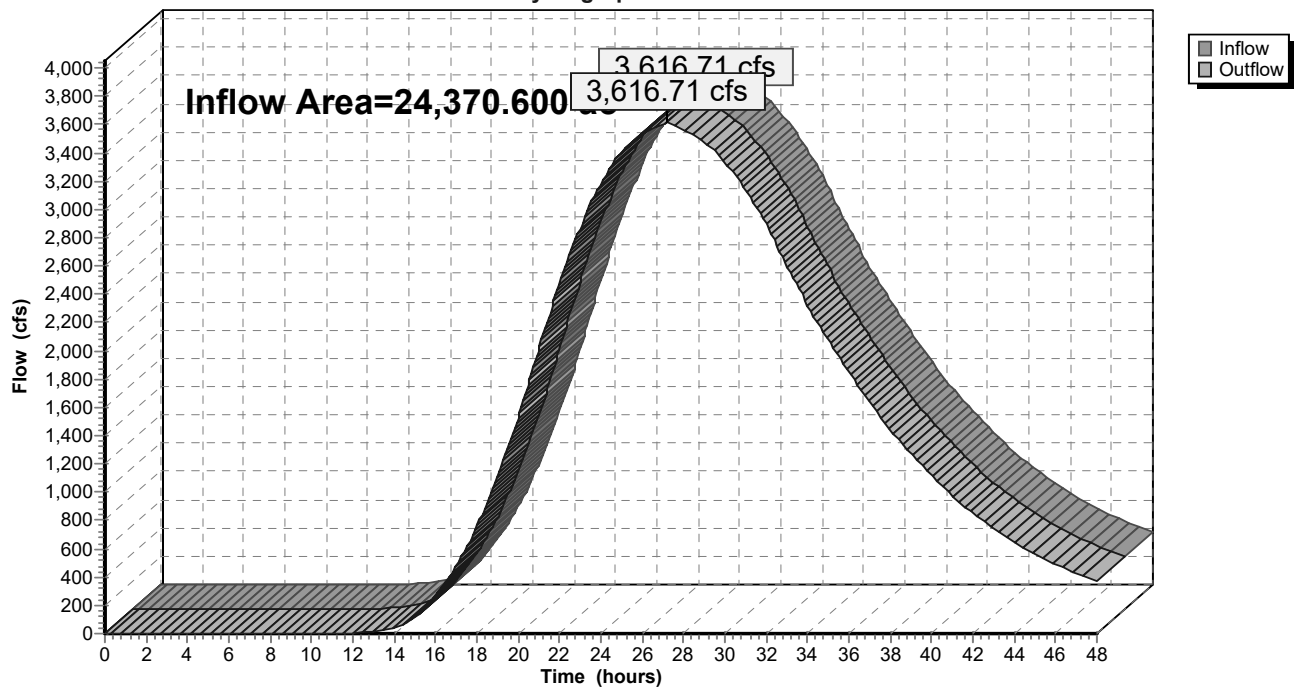
Summary for Reach POI1: POI 1

Inflow Area = 24,370.600 ac, 10.65% Impervious, Inflow Depth > 2.48" for 25 YR event

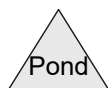
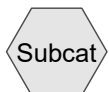
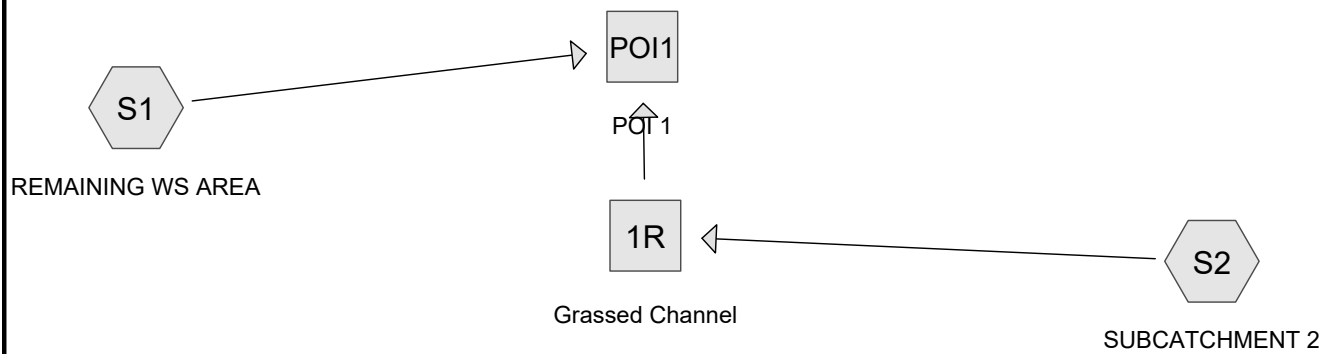
Inflow = 3,616.71 cfs @ 27.15 hrs, Volume= 5,043.681 af

Outflow = 3,616.71 cfs @ 27.15 hrs, Volume= 5,043.681 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2

Reach POI1: POI 1**Hydrograph**

POSTDEVELOPMENT



Routing Diagram for Post-EJC - BTP

Prepared by LJB, Inc, Printed 5/9/2025

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Post-EJC - BTP

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Type III 24-hr 2 YR Rainfall=3.30"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S1: REMAINING WS Runoff Area=1,061,575,768 sf 10.65% Impervious Runoff Depth>0.66"
Flow Length=99,829' Tc=1,062.3 min UI Adjusted CN=66 Runoff=951.30 cfs 1,345.675 af

Subcatchment S2: SUBCATCHMENT2 Runoff Area=79,568 sf 62.28% Impervious Runoff Depth=2.09"
Tc=6.0 min CN=88 Runoff=4.45 cfs 0.318 af

Reach 1R: Grassed Channel Avg. Flow Depth=0.43' Max Vel=2.61 fps Inflow=4.45 cfs 0.318 af
n=0.030 L=286.0' S=0.0118 '/' Capacity=20.60 cfs Outflow=4.31 cfs 0.318 af

Reach POI1: POI 1 Inflow=951.30 cfs 1,345.993 af
Outflow=951.30 cfs 1,345.993 af

Total Runoff Area = 24,372.253 ac Runoff Volume = 1,345.993 af Average Runoff Depth = 0.66"
89.35% Pervious = 21,775.626 ac 10.65% Impervious = 2,596.626 ac

Post-EJC - BTP

Prepared by LJB, Inc

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Type III 24-hr 10 YR Rainfall=4.90"

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Page 3

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S1: REMAINING WS Runoff Area=1,061,575,768 sf 10.65% Impervious Runoff Depth>1.59"
Flow Length=99,829' Tc=1,062.3 min UI Adjusted CN=66 Runoff=2,308.72 cfs 3,228.471 af

Subcatchment S2: SUBCATCHMENT2 Runoff Area=79,568 sf 62.28% Impervious Runoff Depth=3.57"
Tc=6.0 min CN=88 Runoff=7.49 cfs 0.544 af

Reach 1R: Grassed Channel Avg. Flow Depth=0.58' Max Vel=3.06 fps Inflow=7.49 cfs 0.544 af
n=0.030 L=286.0' S=0.0118 '/' Capacity=20.60 cfs Outflow=7.31 cfs 0.544 af

Reach POI1: POI 1 Inflow=2,308.72 cfs 3,229.015 af
Outflow=2,308.72 cfs 3,229.015 af

Total Runoff Area = 24,372.253 ac Runoff Volume = 3,229.015 af Average Runoff Depth = 1.59"
89.35% Pervious = 21,775.626 ac 10.65% Impervious = 2,596.626 ac

Post-EJC - BTP

Prepared by LJB, Inc

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Type III 24-hr 25 YR Rainfall=6.20"

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Page 1

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S1: REMAINING WS Runoff Area=1,061,575,768 sf 10.65% Impervious Runoff Depth>2.48"
Flow Length=99,829' Tc=1,062.3 min UI Adjusted CN=66 Runoff=3,616.69 cfs 5,043.645 af

Subcatchment S2: SUBCATCHMENT2 Runoff Area=79,568 sf 62.28% Impervious Runoff Depth=4.82"
Tc=6.0 min CN=88 Runoff=9.95 cfs 0.733 af

Reach 1R: Grassed Channel Avg. Flow Depth=0.67' Max Vel=3.33 fps Inflow=9.95 cfs 0.733 af
n=0.030 L=286.0' S=0.0118 '/' Capacity=20.60 cfs Outflow=9.74 cfs 0.733 af

Reach POI1: POI 1 Inflow=3,616.69 cfs 5,044.378 af
Outflow=3,616.69 cfs 5,044.378 af

Total Runoff Area = 24,372.253 ac Runoff Volume = 5,044.378 af Average Runoff Depth = 2.48"
89.35% Pervious = 21,775.626 ac 10.65% Impervious = 2,596.626 ac

Post-EJC - BTP

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Type III 24-hr 25 YR Rainfall=6.20"

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Summary for Subcatchment S1: REMAINING WS AREA

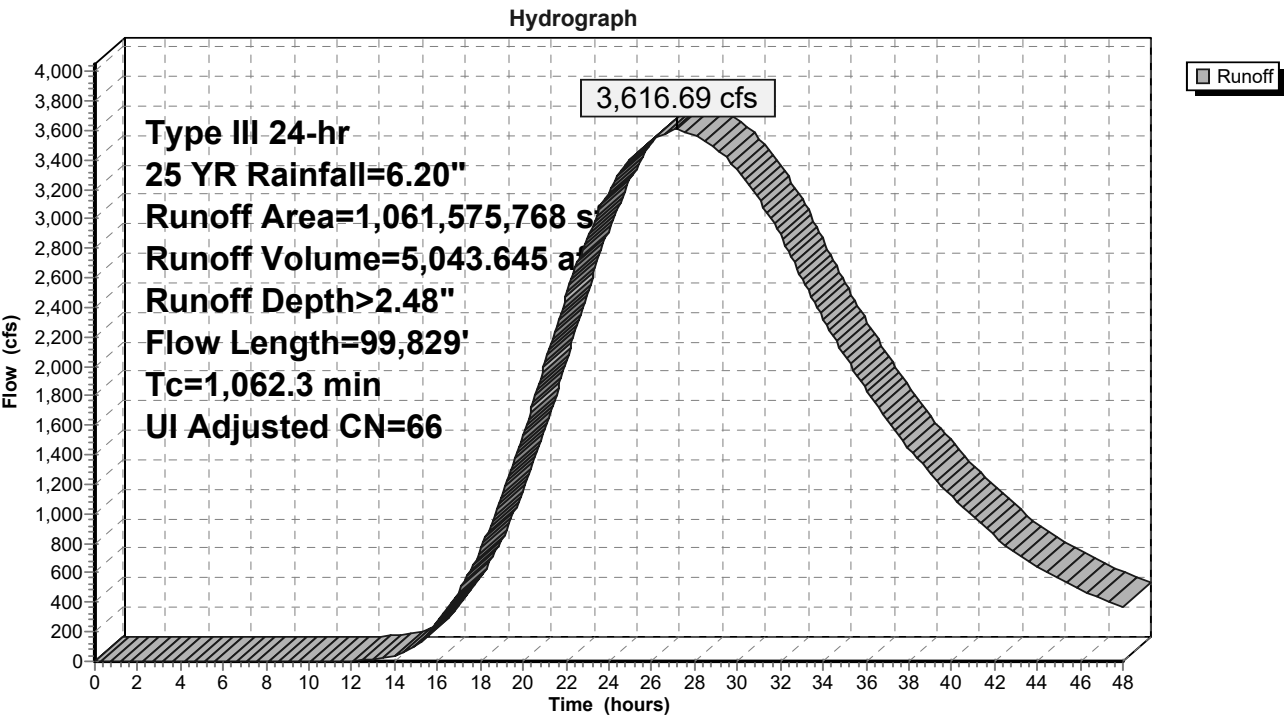
Runoff = 3,616.69 cfs @ 27.15 hrs, Volume= 5,043.645 af, Depth> 2.48"
 Routed to Reach POI1 : POI 1

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 YR Rainfall=6.20"

Area (sf)	CN	Adj	Description
* 11,029,392	98		Rock Outcrop
27,891,468	98		Unconnected pavement, HSG A
27,891,468	30		Meadow, non-grazed, HSG A
223,131,744	30		Woods, Good, HSG A
3,380,628	98		Unconnected pavement, HSG B
3,389,813	58		Meadow, non-grazed, HSG B
27,139,622	55		Woods, Good, HSG B
13,524,520	98		Unconnected pavement, HSG C
13,538,816	71		Meadow, non-grazed, HSG C
108,206,073	70		Woods, Good, HSG C
57,233,484	98		Unconnected pavement, HSG D
57,233,484	78		Meadow, non-grazed, HSG D
457,867,872	77		Woods, Good, HSG D
30,117,384	98		Water Surface, 0% imp, HSG D
1,061,575,768	67	66	Weighted Average, UI Adjusted
948,516,276			89.35% Pervious Area
113,059,492			10.65% Impervious Area
102,030,100			90.24% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3	150	0.0500	0.12		Sheet Flow, A to B Woods: Light underbrush n= 0.400 P2= 3.30"
883.4	17,779	0.0045	0.34		Shallow Concentrated Flow, B to C Woodland Kv= 5.0 fps
20.4	5,306	0.0025	4.35	869.02	Trap/Vee/Rect Channel Flow, C to D Bot.W=20.00' D=10.00' n= 0.050 Mountain streams w/large boulders
7.4	13,751		31.08		Lake or Reservoir, D to E Mean Depth= 30.00'
47.3	21,822	0.0050	7.68	1,536.22	Trap/Vee/Rect Channel Flow, E to F Bot.W=20.00' D=10.00' n= 0.040 Winding stream, pools & shoals
55.3	21,894	0.0073	6.60	495.18	Trap/Vee/Rect Channel Flow, F to G Bot.W=15.00' D=5.00' n= 0.040 Winding stream, pools & shoals
21.5	10,055	0.0030	7.80	4,677.83	Trap/Vee/Rect Channel Flow, G to H Bot.W=60.00' D=10.00' n= 0.040 Winding stream, pools & shoals
6.7	9,072	0.0025	22.48	196,689.42	Trap/Vee/Rect Channel Flow, H to I Bot.W=250.00' D=35.00' n= 0.030 Stream, clean & straight
1,062.3	99,829	Total			

Subcatchment S1: REMAINING WS AREA



Post-EJC - BTP

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Type III 24-hr 25 YR Rainfall=6.20"

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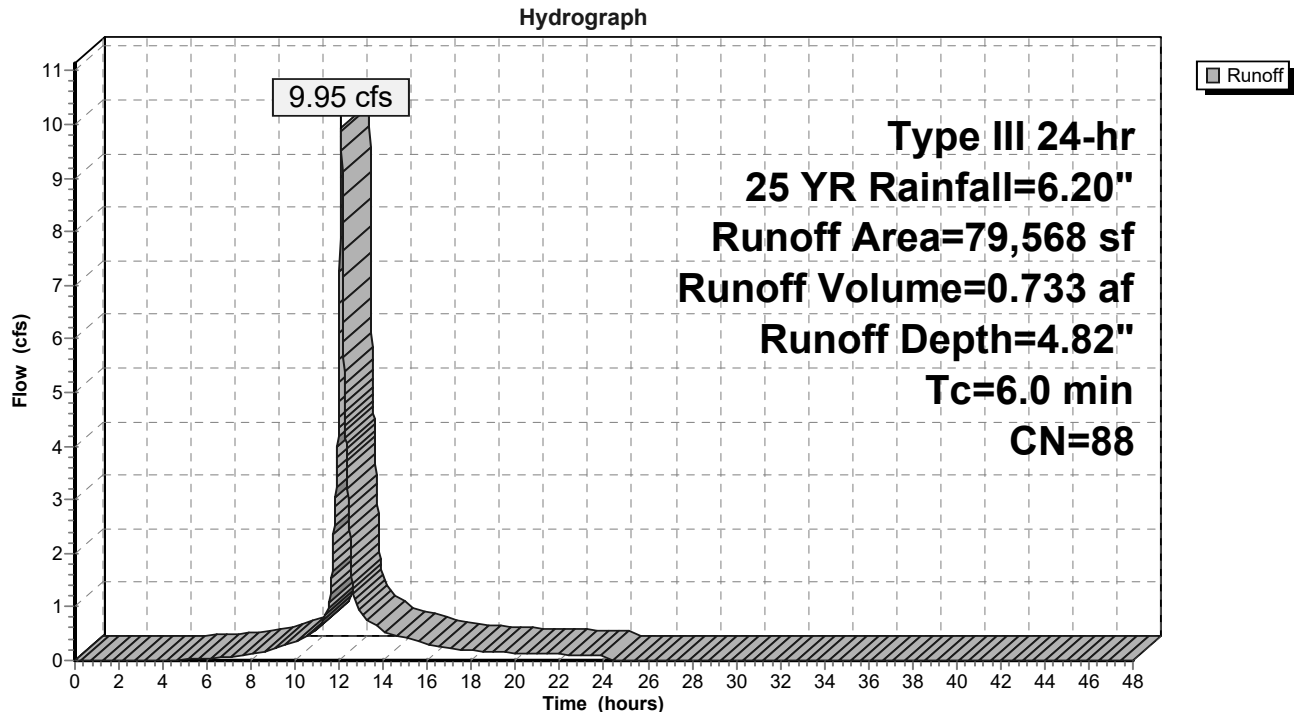
Summary for Subcatchment S2: SUBCATCHMENT 2

Runoff = 9.95 cfs @ 12.09 hrs, Volume= 0.733 af, Depth= 4.82"
 Routed to Reach 1R : Grassed Channel

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 YR Rainfall=6.20"

Area (sf)	CN	Description
2,640	61	>75% Grass cover, Good, HSG B
23,435	74	>75% Grass cover, Good, HSG C
11,825	98	Paved parking, HSG B
37,731	98	Paved parking, HSG C
3,937	70	Woods, Good, HSG C
79,568	88	Weighted Average
30,012		37.72% Pervious Area
49,556		62.28% Impervious Area

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

Subcatchment S2: SUBCATCHMENT 2

Post-EJC - BTP

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Type III 24-hr 25 YR Rainfall=6.20"

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Summary for Reach 1R: Grassed Channel

Inflow Area = 1.827 ac, 62.28% Impervious, Inflow Depth = 4.82" for 25 YR event
Inflow = 9.95 cfs @ 12.09 hrs, Volume= 0.733 af
Outflow = 9.74 cfs @ 12.10 hrs, Volume= 0.733 af, Atten= 2%, Lag= 1.0 min
Routed to Reach POI1 : POI 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3

Max. Velocity= 3.33 fps, Min. Travel Time= 1.4 min

Avg. Velocity = 0.89 fps, Avg. Travel Time= 5.3 min

Peak Storage= 836 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.67' , Surface Width= 5.69'

Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 20.60 cfs

3.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding

Side Slope Z-value= 2.0 '/' Top Width= 7.00'

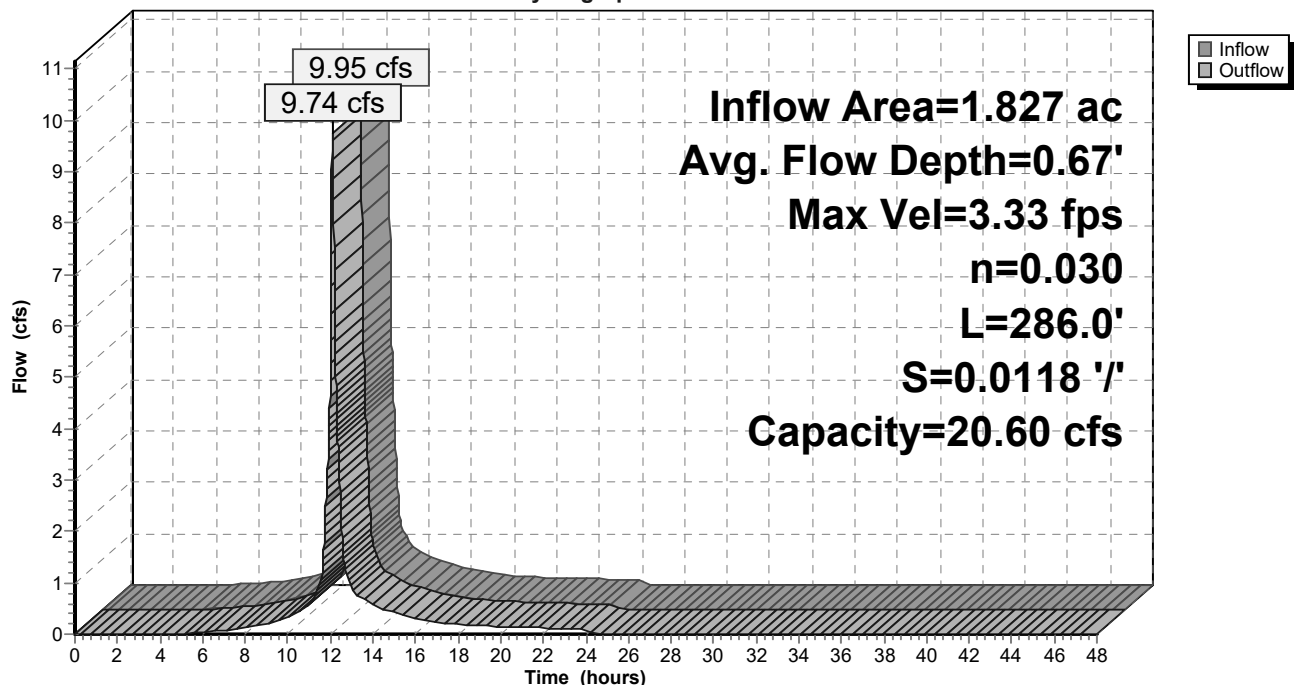
Length= 286.0' Slope= 0.0118 '/'

Inlet Invert= 55.38', Outlet Invert= 52.00'



Reach 1R: Grassed Channel

Hydrograph



Summary for Reach POI1: POI 1

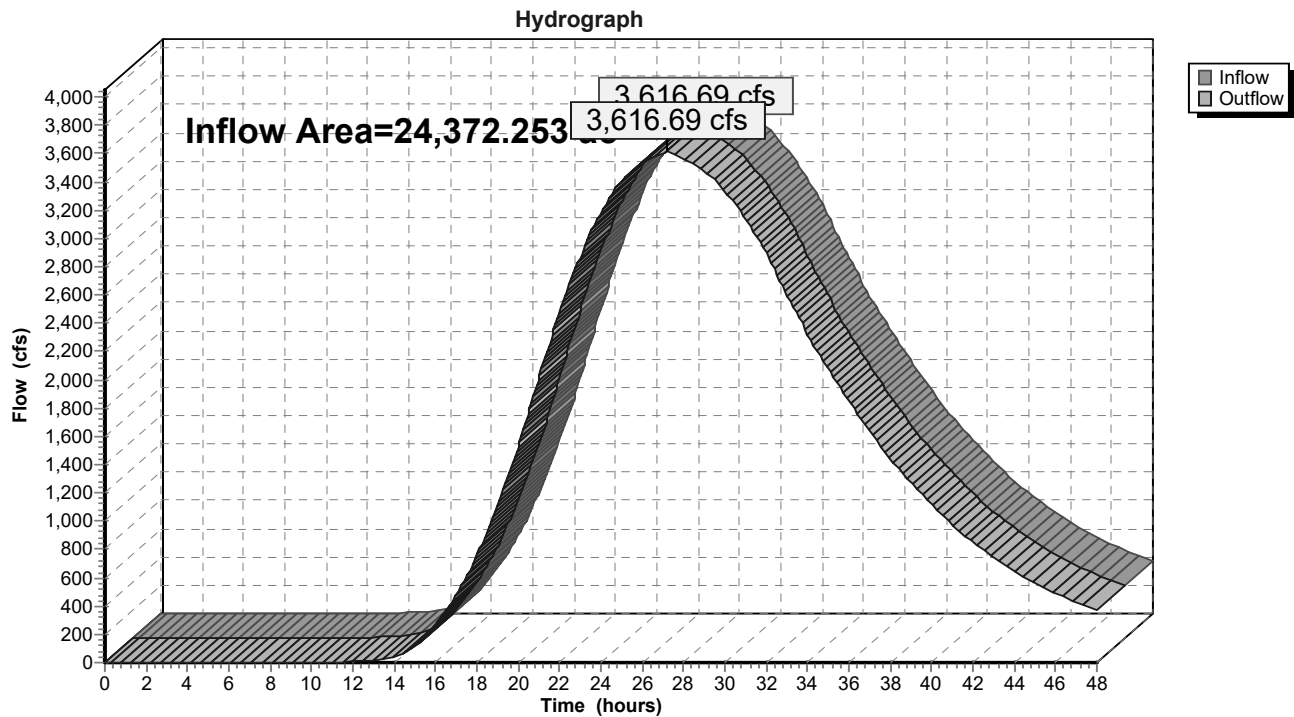
Inflow Area = 24,372.253 ac, 10.65% Impervious, Inflow Depth > 2.48" for 25 YR event

Inflow = 3,616.69 cfs @ 27.15 hrs, Volume= 5,044.378 af

Outflow = 3,616.69 cfs @ 27.15 hrs, Volume= 5,044.378 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3

Reach POI1: POI 1



ATTACHMENT 6

EROSION CONTROL REPORT

BASIC STANDARDS
EROSION AND SEDIMENTATION CONTROL REPORT
RESIDENTIAL DEVELOPMENT
BIDDEFORD , MAINE

Prepared for

BATEMAN PARTNERS
470 FORE STREET, SUITE 400
PORTLAND, ME 04103

Prepared by

Gorrill Palmer
300 Southborough Drive – Suite 200
South Portland, Maine 04106
207.772.2515

MAY 2025



Overview

This Exhibit demonstrates the developer has made adequate provision for controlling erosion and sedimentation.

Gorrill Palmer has been retained by Bateman Partners, LLC to prepare an Erosion and Sedimentation Control Report for a proposed 60-unit residential development in Biddeford, Maine.

Figure 1 is a map showing the project location. This narrative contains the general erosion and sedimentation control measures, which are appropriate for the construction of the project.

This narrative contains the general erosion and sedimentation control measures, which are appropriate for the construction of the project. Erosion and sedimentation control plans and details have also been prepared by Gorrill Palmer to accompany this report.

Existing Conditions and Soil Types

The proposed project site is approximately 10.15 acres in size. The City of Biddeford identifies the property on the Maine Parcel Viewer as Parcel 32, Lot 1. The 10.15-acre property includes 5 existing residential buildings with a total of 40 units with associated parking and access ways. A portion on the western side of the parcel is primarily undeveloped wooded areas.

Existing topography of the proposed construction area slopes in a generally north direction with slopes in the range of 1% to 10%. The project will discharge northerly to existing wetlands on the parcel and eventually drain into the Saco River.

Abutting land uses include:

- North – Saco River
- West – Residential Home & Riverbend Apartments
- South – Main Street
- East – Biddeford Teen Center & Skate Park

The Class D Intensity Soil Survey for York County as prepared by the Natural Resources Conservation Service was utilized in identifying the on-site soils. The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69. The higher values are indicative of the more erodible soils. The following table lists the soils found in the proposed development area and their K values:

Map Symbol	Soil Type	K Value	Hydrologic Soil Group
EmB	Elmwood Fine Sandy Loam	0.32	B
MaB	Madawaska Fine Sandy Loam	0.28	B
Ra	Raynham Silt Loam	0.64	C/D
BuC	Buxton Silt Loam	0.32	C
Po	Podunk and Winooski Soils	0.24	B

Based on the review of the K Values, the on-site soils have moderate susceptibility to erosion.

Existing Erosion Problems

Gorrill Palmer is not aware of any existing erosion problems at the project site.

Protected Natural Resources

Based on a report by Flycatcher LLC, two wetland areas currently exist on the site. No potential vernal pools were identified on site. Approximately 22,160 S.F. of wetland will be disturbed as part of this development. Based upon the FEMA maps, the site is not located in a 100-year floodplain.

Critical Areas

No critical areas that would require special attention during construction are present on site.

Erosion Control Measures and Site Stabilization

The primary emphasis of the erosion/sedimentation control plan, which will be implemented for this project, is as follows:

- Development of a careful construction sequence.
- Rapid revegetation of denuded areas to minimize the period of soil exposure.
- Rapid stabilization of drainage paths to avoid rill and gully erosion.
- The use of on-site measures to capture sediment (hay bales/stone check dams/silt fence, etc.)

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 described within this report. For further reference, see the latest edition of the Maine Erosion and Sediment Control Practices Field Guide for Contractors.

A. Dewatering

Water from construction trench dewatering shall pass first through a filter bag or secondary containment structure (e.g. hay bale lined pool) prior to discharge. The discharge site shall be selected to avoid flooding, icing, and sediment discharges to a protected resource. In no case shall the filter bag or containment structure be located within 50 feet of a protected natural resource.

B. Inspection and Construction Monitoring

Maintenance measures shall be applied as needed during the entire construction season. Before and within 24 hours after each wet weather event that produces more than 0.5 inch of rainfall in a consecutive 24-hour period, snowstorm, or period of thawing and runoff, the qualified contractor knowledgeable of DEP standards shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuous function. Additionally, inspections shall be performed at least once a week. Following the temporary and/or final seeding and mulching, the contractor shall in the spring inspect and repair any damages and/or unestablished spots. Established vegetative cover means a minimum of 90% of areas vegetated with vigorous growth.

C. Temporary Erosion Control Measures

The following measures are planned as temporary erosion/sedimentation control measures during construction:

1. A crushed stone-stabilized construction entrance shall be placed at the approved access drive as depicted on the plans.
2. Siltation fence or wood waste compost berms shall be installed downstream of any disturbed areas to trap runoff-borne sediments until grass areas are revegetated. The silt fence and/or wood waste compost berms shall be installed per the details provided in this package and inspected at least once a week and before and immediately after a storm event of 0.5 inches or greater, and at least daily during prolonged rainfall. Repairs shall be made if there are any signs of erosion or sedimentation below the fence or berm line. If there are signs of undercutting at the center or the edges, or impounding of large

volumes of water behind the fence or berm, the barrier shall be replaced with a stone check dam. Wood waste compost berms are not to be used adjacent to wetland areas that are not to be disturbed.

3. Straw or hay mulch including hydroseeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulch placed between April 15th and October 15th on slopes of less than 15 percent shall be anchored by applying water; mulch placed on slopes of equal to or steeper than 15 percent shall be covered by a fabric netting and anchored with staples in accordance with manufacturer's recommendation. Fabric netting and staples shall be used on disturbed areas within 50' of lakes, streams, and wetlands regardless of the upstream slope. Mulch placed between October 15th and April 15th on slopes equal to or steeper than 8 percent shall be covered with a fabric netting and anchored with staples in accordance with the manufacturer's recommendations. Slopes steeper than 3:1 and equal to or flatter than 2:1, which are to be revegetated, shall receive curlex blankets by American Excelsior or equal. Slopes steeper than 2:1 shall receive riprap as noted on the plans. The mulch application rate for both temporary and permanent seeding is 75 lbs per 1000 sf as identified in Appendix A of this section. Mulch shall not be placed over snow.
4. Temporary stockpiles of stumps, grubblings, or common excavation will be protected as follows:
 - a.) Temporary stockpiles shall not be located within 50 feet of any wetlands which will not be disturbed and shall be located away from drainage swales.
 - b.) Stockpiles shall be stabilized within 7 days by either temporarily seeding the stockpile by a hydroseed method containing an emulsified mulch tackifier or by covering the stockpile with mulch, such as hay, straw, or erosion control mix.
 - c.) Stockpiles shall be surrounded by sedimentation barrier at the time of formation.
5. All denuded areas that are within 50 feet of an undisturbed wetland, which have been rough graded and are not located within a building pad, parking area, or access drive subbase area, shall receive mulch or erosion control mesh fabric within 48 hours of initial disturbance of soil. All areas within 100 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window. In other areas, the time period may be extended to 7 days.
6. For work, which is conducted between October 15th and April 15th of any calendar year, all denuded areas, shall be covered with hay mulch or erosion control mix, applied at twice the normal application rate and anchored with a fabric netting. The time period for applying mulch shall be limited to 2 days for all areas.
7. Park View Court shall be swept to control mud and dust as necessary.
8. During grubbing operations stone check dams shall be installed at any evident concentrated flow discharge points and as directed on the Erosion Control Plans.
9. Silt fencing with a minimum stake spacing of 6 feet shall be used, unless the fence is supported by wire fence reinforcement of minimum 14 gauge and with a maximum mesh spacing of 6 inches, in which case stakes may be spaced a maximum of 10 feet apart. The bottom of the fence shall be anchored.
10. Wood waste compost/bark berms may be used in lieu of siltation fencing. Berms shall be removed and spread in a layer not to exceed 3" thick once upstream areas are completed and a 90% catch of vegetation is attained.
11. Water and/or calcium chloride shall be furnished and applied in accordance with MDOT specifications – Section 637 – Dust Control.

12. Loam and seed is intended to serve, as the primary permanent revegetative measure for all denuded areas not provided with other erosion control measures, such as riprap. Application rates are provided in Appendix A of this section. Seeding shall not occur over snow.

D. Permanent Erosion Control Measures

The following permanent erosion control measures have been designed as part of the Erosion/Sedimentation Control Plan:

1. All areas disturbed during construction, but not subject to other restoration (paving, riprap, gravel subbase, etc.) will be loamed, limed, fertilized, mulched, and seeded. Fabric netting, anchored with staples, shall be placed over the mulch in areas as noted in Temporary Erosion Control Measures paragraph 4 of this report. All areas within 50 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48-hour window. Native topsoil shall be stockpiled and reused for final restoration when it is of sufficient quality.
2. All storm drain pipe outlets shall have riprap aprons at their outlet to protect the outlet and receiving channel from scour and deterioration. Installation details are provided in the plan set. The aprons shall be installed and stabilized to the extent practicable prior to directing runoff to the tributary pipe or culvert.

Implementation Schedule

The following construction sequence shall be required to ensure the effectiveness of the erosion and sedimentation control measures are optimized:

It is anticipated that construction will begin in fall of 2025, with first occupancy anticipated by the end of 2026.

Note: For all grading activities, the contractor shall exercise extreme caution not to overexpose the site, this shall be accomplished by limiting the disturbed area. Area shall be limited to no more than the contractor can mulch in one day.

1. Install stabilized construction entrances at the approved locations.
2. Install perimeter silt fence and/or wood waste berms.
3. Install diversion dikes, or check dams (clear only those areas necessary to install BMP's)
4. Clear and grub site. Install stone check dams at any evident concentrated flow discharge points.
5. Commence installation of drainage appurtenances.
6. Commence earthwork and grading to subgrade.
7. Commence installation of water and sewer lines.
8. Continue earthwork and grading to subgrade as necessary for construction.
9. Complete installation of underground utilities to within 5' of future buildings.
10. Install light pole foundations and light poles.
11. Complete remaining earthwork operations.
12. Complete installation of drainage appurtenances.
13. Install sub-base and base gravel within parking areas, walkways, and all driveways.

14. Install curbing in parking areas as needed.
15. Install base course paving for drives and parking area as well as concrete surfaces.
16. Loam, lime, fertilize, seed and mulch disturbed areas and complete all landscaping.
17. Install surface course paving for drives and parking areas. Stripe per plan.
18. Once the site is stabilized and a 90% catch of vegetation has been obtained, remove all temporary erosion control measures.
19. Touch up loam and seed.

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 following criteria:

1. The above construction sequence should generally be completed in the specified order; however, several separate items may be constructed simultaneously. Work must also be scheduled or phased 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 denuded.
2. The work shall be conducted in sections which shall:
 - Limit the amount of exposed area to those areas in which work is expected to be undertaken during the proceeding 30 days.
 - Revegetate disturbed areas as rapidly as possible. All areas shall be permanently stabilized within 7 days of final grading or before a storm event; or temporarily stabilized within 48 hours of initial disturbance of soil for areas within 50 feet of an undisturbed wetland and 7 days for all other areas. Areas within 50 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window.
 - Incorporate planned inlets and drainage system as early as possible into the construction phase. The ditches shall be immediately lined or revegetated as soon as their installation is complete.

Erosion, Sedimentation and Stabilization Control Plan

The Erosion Control information is included in the plan set.

Details and Specifications

The Erosion Control details and specifications are 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, 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 any area left exposed can be controlled by the contractor. Limit the exposed area to one acre or an area that can be mulched in one day prior to any snow event.

All areas shall be considered to be denuded until the subbase gravel is installed in parking areas or the areas of

future loam and seed have been loamed, seeded and mulched. Hay and straw mulch rate shall be a minimum of 150 lbs./1,000 square-feet (3 tons/acre) and shall be properly anchored.

For work, which is conducted between October 15th and April 15th of any calendar year, all denuded areas, shall be covered with hay mulch or erosion control mix, applied at twice the normal application rate and anchored with a fabric netting. The time period for applying mulch shall be limited to 2 days for all areas.

The contractor shall install any added measures which may be necessary to control erosion/sedimentation from the site dependent upon the actual site and weather conditions. Continuation of earthwork operations on additional areas shall not begin until the exposed soil surface on the area being worked has been stabilized, in order to minimize areas without erosion control protection.

1. Soil Stockpiles

Stockpiles of soil or subsoil shall be mulched for over winter protection with hay or straw at twice the normal rate or at 150 lbs./1,000 square-feet (3 tons per acre) or with a four-inch layer of wood waste 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 50 feet from any natural resources.

2. Natural Resources Protection

Any areas within 75 feet from any natural resources, if not stabilized with a minimum of 90% 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) shall be placed between any natural resource and the disturbed area. Projects crossing the natural resource shall be protected a minimum distance of 75 feet on either side from the resource. Existing projects not stabilized by December 1 shall be protected with the second line of sediment barrier to ensure functionality during the spring thaw and rains.

3. Sediment Barriers

During frozen conditions, sediment barriers shall consist of wood waste filter berms as frozen soil prevents the proper installation of hay bales and sediment silt fences.

4. Mulching

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

Between the dates of November 1 and April 15, all mulch shall be anchored by peg line, mulch netting, asphalt emulsion chemical, or wood cellulose fiber. When ground surface is not visible through the mulch then cover is sufficient. After November 1st, mulch and anchoring of all bare soil shall occur at the end of each final grading workday.

5. Mulching of Slopes and Ditches

Slopes shall not be left exposed for any extended time of work suspension unless fully mulched and anchored with peg and netting or with erosion control blankets. Mulching shall be applied at a rate of 230

lbs./1,000 square feet on all slopes greater than 8%.

Mulch netting shall be used to anchor mulch in all drainage ways with a slope greater than 3% for slopes exposed to direct winds and for all other slopes greater than 8%. Erosion control blankets shall be used in lieu of mulch in all drainage ways with slopes greater than 8%. Erosion control mix can be used to substitute erosion control blankets on all slopes except ditches.

6. Seeding

Between the dates of October 15 and April 1st, loam or seed will not be required. During periods of above freezing temperatures finished areas shall be fine graded and either protected with mulch or temporarily seeded and mulched until such time as the final treatment can be applied. If the date is after November 1st and if the exposed area has been loamed, final graded with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched. Dormant seeding may be selected to be placed prior to the placement of mulch and fabric netting anchored with staples. If dormant seeding is used for the site, all disturbed areas shall receive 4" of loam and seed at an application rate of 5 lbs./1,000 square-feet. All areas seeded during the winter shall be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 90% catch) shall be revegetated by replacing loam, seed, and mulch. If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.

7. Winter Construction Inspection

After each rainfall, snowstorm or period of thawing and runoff, the qualified contractor knowledgeable of DEP standards shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuous function. Inspections shall be performed a minimum of once per week and shall be conducted in accordance with the Erosion Control Measures and Site Stabilization within the Erosion Control Report.

Standards for Timely Stabilization of Construction Sites During Winter

1. Standard for the timely stabilization of ditches and channels - The applicant shall construct and stabilize all stone-lined ditches and channels on the site by November 15. The applicant shall construct and stabilize all grass-lined ditches and channels on the site by September 1. If the applicant fails to stabilize a ditch or channel to be grass-lined by September 1, then the applicant will take one of the following actions to stabilize the ditch for late fall and winter.

Install a sod lining in the ditch - The applicant shall line the ditch with properly installed sod by October 1. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, watering the sod to promote root growth into the disturbed soil, and anchoring the sod with jute or plastic mesh to prevent the sod strips from sloughing during flow conditions.

Install a stone lining in the ditch - The applicant shall line the ditch with stone riprap by November 15. The applicant shall hire a registered professional engineer to determine the stone size and lining thickness needed to withstand the anticipated flow velocities and flow depths within the ditch. If necessary, the applicant shall regrade the ditch prior to placing the stone lining so to prevent the stone lining from reducing the ditch's cross-sectional area.

2. Standard for the timely stabilization of disturbed slopes - The applicant shall construct and stabilize stone-covered slopes by November 15. The applicant shall seed and mulch all slopes to be vegetated by September 1. The department 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 1, 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 September 1 the applicant shall seed the disturbed slope with winter rye at a seeding rate of 3 pounds per 1,000 square feet and apply erosion control mats over the mulched slope. The applicant shall monitor the growth of the rye over the next 30 days. If the rye fails to grow at least three inches or cover at least 75% of the disturbed slope by November 1, then the applicant shall cover the slope with a layer of wood waste compost as described in item iii of this standard or with stone riprap as described in item iv of this standard.

Stabilize the slope with sod - The applicant shall stabilize the disturbed slope with properly installed sod by September 1. Proper installation includes the applicant pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The applicant shall not use late-season sod installation to stabilize slopes having a grade greater than 33% (3H:1V).

Stabilize the slope with wood waste compost - The applicant shall place a six-inch layer of wood waste compost on the slope by November 15. Prior to placing the wood waste compost, the applicant shall remove any snow accumulation on the disturbed slope. The applicant shall not use wood waste compost to stabilize slopes having grades greater than 50% (2H:1V) 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 15. The applicant shall hire a registered professional engineer to determine the stone size needed for stability and to design a filter layer underneath the riprap.

3. Standard for the timely stabilization of disturbed soils - By September 15 the applicant shall seed and mulch all disturbed soils on areas having a slope less than 15%. If the applicant fails to stabilize these soils by this date, then the applicant shall take one of the following actions to stabilize the soil for late fall and winter.

Stabilize the soil with temporary vegetation - By September 1 the applicant shall seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1000 square feet and anchor the mulch with plastic netting. The applicant 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 90% of the disturbed soil before November 1, then the applicant shall mulch the area for over-winter protection as described below.

Stabilize the soil with sod - The applicant shall stabilize the disturbed soil with properly installed sod by September 15. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

Stabilize the soil with mulch - By November 15 the applicant shall mulch the disturbed soil by spreading hay or straw at a rate of at least 150 pounds per 1000 square feet on the area so that no soil is visible through the mulch. Prior to applying the mulch, the applicant shall remove any snow accumulation on the disturbed area. Immediately after applying the mulch, the applicant will anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

Maintenance of Facilities

The stormwater facilities will be maintained by the Applicant, Bateman Partners, LLC or their assigned heirs. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction as required by the Erosion Control Report. Long-term operation/maintenance recommended for the stormwater facilities is presented below.

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 hereunder, provided, that the following operation and maintenance procedures are hereby established as a minimum for compliance with this

section. A maintenance log of the inspections shall be kept by the responsible party.

Inspection and Maintenance Frequency and Corrective Measures:

The following areas, 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.

Culverts: Inspect culverts 2 times per year (preferably in Spring and Fall) to ensure that the culverts are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit and repair any erosion damage at the culvert's inlet and outlet.

Vegetated Areas: Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. The facilities will 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. Repair potholes and other roadway obstructions and hazards. Plowing and sanding of paved areas shall be performed as necessary to maintain vehicular traffic safety.

Stormdrain Outlets: Inspect outlets 2 times per year (preferably in Spring and Fall) to ensure that the outlets are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris at the outlet and within the conduit. Repair any erosion damage at the stormdrain outlet.

Ditches, Swales and other Open Stormwater Channels: Inspect 2 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 and 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 side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. Correct any erosion of the channel's bottom or side slopes. The facilities shall be inspected after major storms and any identified deficiencies shall be corrected.

Recertification

As part of the Stormwater Permit, the applicant is required to meet the standards in Appendix B of the Chapter 500 Rules. Appendix B states that a project must submit a certification of the following to the department within three months of the expiration of each five-year interval from the date of issuance of the permit.

- (a) Identification and repair of erosion problems. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.
- (b) Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.

- (c) Maintenance. The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the department, and the maintenance log is being maintained.

Chapter 500: Appendix C – Good Housekeeping

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

1. Discharges from firefighting activity;
2. Discharges from firefighting activity;
3. Fire hydrant flushings;
4. Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);
5. Dust control runoff in accordance with permit conditions and Appendix (C)(3);
6. Routine external building washdown, not including surface paint removal, that does not involve detergents;
7. Pavement washwater (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material had been removed) if detergents are not used;
8. Uncontaminated air conditioning or compressor condensate;
9. Uncontaminated groundwater or spring water;
10. Foundation or footer drain-water where flows are not contaminated;
11. Uncontaminated excavation dewatering (see requirements in Appendix C(5));
12. Potable water sources including waterline flushings; and
13. Landscape irrigation.

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

1. Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;
2. Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;
3. Soaps, solvents, or detergents used in vehicle and equipment washing; and
4. Toxic or hazardous substances from a spill or other release.

Conclusion

The Applicant has provided temporary and permanent erosion control measures as well as specifying a sequence of construction as measures to minimize erosion and sedimentation.

Attachments

Appendix A Seeding Plan

Appendix B Inspection Report

Appendix C Operation & Maintenance Plan

APPENDIX A

Seeding Plan

SEEDING PLAN

Project: Residential Development – Biddeford, ME

Site Location: 1 Park View Court, Biddeford, ME

☐ Permanent Seeding ☒ Temporary Seeding

1. Instruction on preparation of soil: Prepare a good seed bed for planting method used.
2. Apply lime as follows: _____ # / acres, OR 138 # /M Sq. Ft.
3. Fertilize with _____ pounds of _____ N-P-K/ac. OR 13.8 pounds of 10-10-10 N-P-K/M Sq. Ft.
4. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
5. Seed with the following mixture:
 50% Winter Rye
 50% Annual Rye
6. Mulching instructions: Apply at the rate of _____ per acre, OR 75 pounds per M. Sq. Ft.

	<u>Amount</u>	<u>Unit # Tons. Etc.</u>
7. TOTAL LIME	138	#/1000 sq. ft.
8. TOTAL FERTILIZER	13.8	#/1000 sq. ft.
9. TOTAL SEED	1.03	#/1000 sq. ft.
10. TOTAL MULCH	75	#/1000 sq. ft.
11. TOTAL other materials, seeds, etc.		
12. REMARKS		

Spring seeding is recommended; however, late summer (prior to September 1) seeding can be made. Permanent seeding should be made prior to August 5 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

SEEDING PLAN

Project: Residential Development – Biddeford, ME

Site Location: I Park View Court, Biddeford, ME

☒ Permanent Seeding ☐ Temporary Seeding

1. Instruction on preparation of soil: Prepare a good seed bed for planting method used.
2. Apply lime as follows: _____ # / acres, OR 138 # /M Sq. Ft.
3. Fertilize with _____ pounds of _____ N-P-K/ac. OR 18.4 pounds of 10-20-20 N-P-K/M Sq. Ft.
4. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
5. Seed with the following mixture:
 - 40% Creeping Red Fescue
 - 30% Charger II Perennial Ryegrass
 - 20% KenBlue Kentucky Bluegrass
 - 10% Tiffany Chewings Fescue
6. Mulching instructions: Apply at the rate of _____per acre, OR 75 pounds per M. Sq. Ft.

	<u>Amount</u>	<u>Unit # Tons. Etc.</u>
7. TOTAL LIME	138	#/1000 sq. ft.
8. TOTAL FERTILIZER	18.4	#/1000 sq. ft.
9. TOTAL SEED	1.03	#/1000 sq. ft.
10. TOTAL MULCH	75	#/1000 sq. ft.
11. TOTAL other materials, seeds, etc.		
12. REMARKS		

Spring seeding is recommended, however, late summer (prior to September 1) seeding can be made. Permanent seeding should be made prior to August 5 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

APPENDIX B

Inspection Report

STORMWATER POLLUTION PREVENTION PLAN

INSPECTION REPORT

PROJECT INFORMATION

Project Name: Forest Green Residential Development

Address: 1 Park View Court, Biddeford Maine

CONTRACTOR/SUBCONTRACTOR INFORMATION

Inspector Name: _____

Firm: _____

Title: _____

Qualifications: _____

INSPECTION SUMMARY

Date of Inspection: _____

Major Observations: _____

THE FACILITY IS IN COMPLIANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN WITH THE FOLLOWING EXCEPTIONS:

ACTIONS NECESSARY TO BRING FACILITY INTO COMPLIANCE:

REQUIRED MODIFICATIONS TO STORMWATER POLLUTION PREVENTION PLAN
(MUST BE IMPLEMENTED WITHIN 7 DAYS OF INSPECTION):

CERTIFICATION STATEMENT:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the systems, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Signature

Typed Name

Title

Date

APPENDIX C

Operation & Maintenance Plan

**1 PARK VIEW COURT
BIDDEFORD, MAINE**

**STORMWATER MANAGEMENT SYSTEM
OPERATION AND MAINTENANCE MANUAL FOR
STORMWATER FACILITIES**

Prepared for

**BATEMAN PARTNERS
470 FORE STREET, SUITE 400
PORTLAND, ME 04103**

Prepared by

**Gorrill Palmer
300 Southborough Drive – Suite 200
South Portland, Maine 04106
207.772.2515**

MAY 2025

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APPENDICES

Appendix 1 – Summary Checklist for Inspection and Maintenance

Appendix 2 – Inspection Logs

Appendix 3 – Permits for Project

I. INTRODUCTION

Runoff from developed areas, may contain a number of contaminants especially when emanating from rooftops, paved or lawn areas. This runoff can contain a significant amount of non-point contaminants, which can have an adverse impact on the receiving waters. The installation of soil media filters can significantly reduce the non-point pollution discharge from the developed area.

The effectiveness of stormwater facilities and other components of the system are dependent on their upkeep and maintenance to assure they meet their design function over an extended period of years. It is critical that the stormwater management facilities are inspected on a regularly scheduled basis, and that maintenance is performed on an as needed basis. It must also be recognized that the effectiveness of these facilities, and their maintenance requirements, are related to the stormwater drainage facilities that transport the flow to the ponds or treatment measures. Thus, maintenance should be directed to the total system.

The purpose of this document is to define in detail the inspection and maintenance requirements deemed necessary to assure that the stormwater management facilities function as intended on a long-term basis for proposed Residential Development at 1 Park View Court. This Operations and Maintenance Manual is specific to the existing and proposed stormwater measures utilized to execute a successful stormwater management plan. Subsequent sections identify individual maintenance items, give a brief commentary of the function and need of the item, a description of the work required, and a suggested frequency of accomplishment. While the suggested programs and schedules must be adapted to specific projects, the material presented should provide guidance for a successful long-term program.

A. Guidelines Overview

A summary of the individual components of stormwater management facilities for this project has been prepared. The format used in the summary is as follows:

Preface: A general description of what function/benefit the element is intended to provide. This is a short summary and not intended to provide the design basis, which can be found in other sources.

Inspection: This section provides the inspection requirements for the individual component.

Maintenance: The section provides general information on the routine maintenance requirements of this element.

Frequency: This section outlines the best judgment of the designer of the system to the frequency of maintenance.

Comments: This section provides any particular comment on the site-specific features of this element. This is a summary only. The owner/operator should review the design drawings and documents carefully to understand the particular elements of the project. The end of this section should allow the owner/operator to make notes on the specific

program. This may include the selected maintenance procedure, cross-references to applicable design drawings, etc.

A list of the individual inspection/maintenance elements is provided in the table of contents. The guidelines are proposed for initial use with adjustments made as appropriate based upon specific project experience.

This report includes the Operation and Maintenance requirements for any potential BMP identified in the Stormwater Management Report for this project.

B. Responsible Party

The responsible party for operation and maintenance of the stormwater and other site infrastructure will be the applicant or their agents or assigns. The applicant or their agents or assigns must adhere to the City of Biddeford Performance Standards Section 26 - Erosion Control.

II. PROJECT OVERVIEW

Key permits issued (or applied for) on the project include:

- City of Biddeford Major Site Plan / Subdivision Application
- Saco River Corridor Commission Permit Application
- NRPA Tier II
- MDEP Stormwater Permit By-Rule

A copy of the permits should be appended to this manual as Appendix C. The Owner/Operator of the stormwater management system should review these permits for a general description and background of the project, as well as any specific permit conditions or requirements of the project.

The applicant has retained Gorrill Palmer for civil engineering for the development project. Gorrill Palmer has prepared the design for the stormwater management facilities and may be contacted at:

Gorrill Palmer
300 Southborough Drive, Suite 200
South Portland, Maine 04106
207.772.2515

The applicable plans and design documents which apply to the project are:

1. Civil Site Plans Prepared by Gorrill Palmer
2. The Erosion Control/Sedimentation Control Plan for the project
3. The Stormwater Management Plan for the project

A copy of these documents should be retained with this manual.

The proposed design includes inlets, stormwater conveyance lines, ditches and swales.

The site is ultimately tributary to the Saco River though it appears that most of the runoff infiltrates and does not leave the site.

The manual is intended for general guidance; however, any substituted deviations from the manual should be reviewed with respect to provisions of Appendix C.

III. STANDARD INSPECTION/MAINTENANCE DESCRIPTIONS

The following narratives describe the inspection/maintenance provisions for the Stormwater Management system. Proper O&M is necessary to make sure the system will provide its intended purpose of conveying runoff, removing a substantial amount of the suspended solids, and other contaminants in the stormwater runoff.

A. Stormwater Inlets

Preface: The success of any stormwater facility relies on the ability to intercept stormwater runoff at the design locations. Stormwater inlets include catch basins, open culverts, and field inlets. Inlets exist throughout the property.

Inspection: The inspection of inlet points will need to be coordinated with other maintenance items, these include:

- Building maintenance areas
- Grounds maintenance

The key elements of the inspection are to assure the inlet entry point is clear of debris and will allow the intended water entry.

Maintenance: The key maintenance is the removal of any blockage which restricts the entry of stormwater to the inlet. The removed material should be taken out of the area of the inlet and placed where it will not reenter the runoff collection system. Snow should be removed from inlets on parking lots. Grass clippings and leaves should be bagged and removed particularly near the yard inlets near the building and exposed culvert inlets.

Frequency: All inlets should be inspected on a quarterly basis, and after/during significant storm events i.e. >1" rainfall).

Maintenance Personnel: The maintenance personnel will perform the normal maintenance/inspections of the inlets and tributary drainage system.

Comments: Maintenance of inlets is critical on this project.

B. Tributary Drainage System

Preface: Stormwater from most of the project will be directed through a conveyance (tributary) system which transports the flow to the proposed BMPs, and ultimately to the Saco River. This conveyance system will be principally overland flow discharging to piped drain

systems. Most of the sediment carried by the drainage system is intended to be trapped in structures. Maintenance of this system can play a major role in the long-term maintenance costs and the effectiveness of the onsite systems. The primary pretreatment measure for the site will be through deep sumped catch basins with hooded outlets.

Inspection: The tributary drainage system should be periodically inspected to assure that it is operating as intended, and that the carrying capacity has not been diminished by accumulations of debris and sediment or other hydraulic impediments. On piped systems, the inlets must be inspected to ensure the rims are set at the proper elevation to optimize flow entry and are not clogged with debris.

The level of sediment in the sumps should be checked to assure their effectiveness. Pipelines connecting the inlets should be checked to determine if siltation is occurring. This will be most critical on drain lines laid at minimal slopes. This can usually be accomplished by a light and mirror procedure.

Maintenance: Maintenance of the storm drainage system must assure that it continues to serve its design function on a long-term basis, and that its operation does not transport excessive sediments to any downstream treatment device or the receiving waters. Elevations on the rim of catch basins should be adjusted as needed to assure optimal water entry. Depending on the frost susceptibility of the soil, the rims may become elevated over time causing flow to circumvent the inlet. If a temporary filter bag has been designated for the inlet during construction, silt or other deleterious materials, can significantly reduce capacity and the bags should be removed with the sediment and replaced during construction. Catch basin cleaning would normally be accomplished with vacuum trucks contracted as a maintenance service for the Development. The removed material must be disposed of at an approved site for such materials.

If sediment in the pipeline is observed, it should be removed. This may be accomplished by hydraulic flushing, or by mechanical means. If hydraulic flushing is used the downstream conditions should be analyzed.

Frequency: The tributary drainage system should be inspected on an annual basis. Adjustment of inlet rim elevations should be on an as needed basis. Cleaning catch basin sumps and pipelines will depend on the rate of accumulation.

C. Stone Bermed Level Lip Spreader

Inspect 2 times per year (preferably in Spring and Fall) to ensure that they are free of debris and no undesirable growth is impeding water flow through the berm. In addition, the stone bermed level lip spreaders shall be inspected to ensure that runoff is not bypassing the bermed spreader.

D. Ditches, Swales, and Other Open Stormwater Channels

Inspect 2 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 and 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 side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. Correct any erosion of the channel's bottom or sideslopes. The facilities shall be inspected after major storms and any identified deficiencies shall be corrected.

E. 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. Repair potholes and other roadway obstructions and hazards. Plowing and sanding of paved areas shall be performed as necessary to maintain vehicular traffic safety.

F. Litter

Litter should be removed as a matter of course by workers and as part of the ground's maintenance contract.

IV. PROGRAM ADMINISTRATION

A. General

A reliable administrative structure must be established to assure implementation of the maintenance programs described in the foregoing section. Key factors that must be considered in establishing a responsive administrative structure include:

1. Administrative body must be responsible for long-term operation and maintenance of the facilities. (Maintenance continues for the lifespan of the development in accordance with this document)
2. Administrative body must have the financial resources to accomplish the inspection and maintenance program over the life of the facility.
3. The administrative body must have a responsible administrator to manage the inspection and maintenance programs.
4. The administrative body must have the staff to accomplish the inspection and maintenance programs or must have authority to contract for the required services.
5. The administrative body must have a management information system sufficient to file, retain, and retrieve all inspection and maintenance records associated with the inspection and maintenance programs.
6. A qualified post construction inspector shall be retained by the Owner. His/her duties shall include preparing schedules for the Owner's maintenance, summarizing the

results of this maintenance and preparing an annual report on the operation, maintenance, and repair of the stormwater system which must be copied to the Town of Westbrook. (The Owner shall be responsible for retaining a separate entity to perform maintenance which cannot be performed by the management of building and property grounds.) This person shall also participate in troubleshooting of the stormwater management system if a problem develops.

If any of the above criteria cannot be met by the entity assigned inspection and maintenance responsibilities, it is likely that the system will fail to meet its water quality objectives at some point during its life. While each of the above criteria may be met by a variety of formats, it is critical to clearly establish the assigned administrative body in a responsible and sustainable manner.

B. Record Keeping

Records of all inspections and maintenance work accomplished must be kept and maintained to document facility operations. These records should be filed and retained for a minimum 5-year time span. The filing system should be capable of ready retrieval of data for periodic reviews by appropriate regulatory bodies. Where possible, copies of such records should also be filed with the designated primary regulatory agency for their review for compliance with permit conditions. Typical inspection and maintenance record forms are attached hereto as Appendix B.

Beyond the initial 5-year time span of the original approval and maintenance plan, the stormwater management system will need to be recertified through the Maine Department of Environmental Protection every 5 years to confirm that there is conformance with the original permit documents. This process will ensure all systems function properly over time. This document will remain valid throughout any subsequent recertification processes.

C. Contract Services

In some instances, or at specific times, the Maintenance Personnel may not have the staff to conduct the required inspection and/or maintenance programs as outlined in this document. In such cases, the work should be accomplished on a contractual basis with a firm or organization that has the staff and equipment to accomplish the required work.

The service contract for inspection and maintenance should be formal, well written legal document which clearly defines the services to be provided, the contractual conditions that will apply, and detailed payment schedules. Liability insurance should be required in all contracts.

APPENDIX 1

Summary Checklist Inspection and Maintenance

Stormwater Management System Maintenance Program Summary Checklist						
Item	Commentary	Frequency				
		Monthly	Quarterly	Semi-Annual	Annual	Long Term
Stormwater Inlets	Stormwater inlets allow flow entry from a surface swale to a piped system. Entry may or may not be equipped with a bar rack. Inspect entry for debris accumulation. Remove debris to allow unimpeded entry. Lawn clippings and leaves should be removed from yard areas.		X		X Clearing	
Tributary Drainage System	Inspect to assure that the carrying capacity has not been diminished by debris, sediment or other hydraulic impediments.				X	
Stone Bermed Level Lip Spreader	Observe sediment accumulation to ensure it is free of debris and no undesirable growth is impeding water flow. Level lip spreader shall be inspected to ensure runoff is not bypassing the bermed spreader.			X		
Ditches Swales and Other open Stormwater Channels	Inspect to ensure the ditch is not eroding or blocked by debris.			X		
Roadways and Parking Surfaces	Remove accumulated sand.				X	
Litter	Litter should be removed daily.					

APPENDIX 2

Sample Inspection Logs

**BATEMAN PARTNERS, LLC
BIDDEFORD, MAINE**

**STORMWATER MANAGEMENT
SAMPLE STORMWATER INSPECTION & MAINTENANCE LOG**

This log is intended to accompany the Operation and Maintenance Manual for Stormwater Management and Related Facilities. All stormwater BMPs shall be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions of the DEP Stormwater Permit, shall conduct inspections of the facilities as described in the O&M Manual and on this form, and identified deficiencies must be corrected. This log shall be kept on file for a minimum of five (5) years.

A. General Information			
Project Name:	Inspection Date:		
Parcel/Lot:	Current Weather:		
BMP Owner:	Date/Amount Last Precip.:		
Owner Mailing Address:	Inspection Company:		
Owner Phone #:	Inspection Co. Mailing Address:		
Owner Email:	Inspector Name:		
	Inspector Phone #:		
	Inspector Email:		
B. Stormwater Inlets (Catch Basins)			
Frequency: Annually in the spring	Observations		
Accumulated sediments from inflow channels and pipes between basins have been removed and legally disposed of	☐ Yes ☐ No ☐ NA		
Floating debris and large sediment particles have been removed from inlets.	☐ Yes ☐ No ☐ NA		
Stormwater Inlet Notes:			
C. Tributary Drainage System			
Frequency: Annually spring or late fall and after heavy rains	Observations		
Remove and legally dispose of sediments	☐ Yes ☐ No ☐ NA		
Remove floatables and other objects	☐ Yes ☐ No ☐ NA		
Check for overgrown vegetation impeding flow	☐ Yes ☐ No ☐ NA		
Check pipelines for siltation and clogging	☐ Yes ☐ No ☐ NA		
Repair any slumping side slopes or erosion	☐ Yes ☐ No ☐ NA		
Replace any riprap on areas where any underlying fabric or underlying gravel is exposed.	☐ Yes ☐ No ☐ NA		
Tributary Drainage System Notes:			

D. Stone Bermed Level Lip Spreader	Observations
Frequency: Semi-annually	
Inspect for debris	☐ Yes ☐ No ☐ NA
Undesirable growth impeding water flow	☐ Yes ☐ No ☐ NA
Ensure runoff is not bypassing the bermed spreader, repair as necessary	☐ Yes ☐ No ☐ NA
Level Lip Spreader Notes:	
E. Ditches, Swales, and Other Open Stormwater Channels	Observations
Frequency: Semi Annually spring and late fall and after heavy rains	
Remove and legally dispose of sediments	☐ Yes ☐ No ☐ NA
Remove floatables and other objects	☐ Yes ☐ No ☐ NA
Check for overgrown vegetation impeding flow.	☐ Yes ☐ No ☐ NA
Mow to control growth and maintain flow capacity.	☐ Yes ☐ No ☐ NA
Repair any slumping side slopes or erosion	☐ Yes ☐ No ☐ NA
Replace any riprap on areas where any underlying fabric or underlying gravel is exposed.	☐ Yes ☐ No ☐ NA
Ditches Swales and Other Channel Notes:	
F. Roadways and Parking Surfaces	Observations
Frequency: Annually preferably in spring	
Remove and legally dispose of accumulated winter sand	☐ Yes ☐ No ☐ NA
Repair potholes and other roadway obstructions and hazards.	☐ Yes ☐ No ☐ NA
Roadways and Parking Surfaces Notes:	

APPENDIX 3

Permits for Project

(To be Added at a Subsequent Time)

ATTACHMENT 7
TRAFFIC REPORT

MEMORANDUM
TRAFFIC EVALUATION
FOREST GREEN
BIDDEFORD, ME
April 14, 2025

INTRODUCTION

Bateman Partners, LLC proposes constructing two three-story apartment buildings with 60 total dwelling units within the current Forest Green Apartments. The Forest Green apartments are at 1 Park View Court in Biddeford, Maine.

Per City of Biddeford's ordinance, Article VI, Section 47 D. 1. *"The proposed development shall provide for safety access to and from public or private roads. Safe access shall be assured by providing an adequate number and location of access points, with respect to sight distances, intersections, schools, and other traffic generators."* & 2. *"The proposed development shall not have an unreasonable adverse impact on the public road system as determined by existing level of road service and post-development level of service (a detailed traffic study may be required for this determination), and shall assure safe interior circulation within its site, by separating pedestrian and vehicular traffic and by providing adequate parking and turnaround areas as set forth in the parking provisions of this ordinance."*

This evaluation discusses the following, at a minimum:

- A. Trip Generation & Distribution;
- B. Access conditions at the site;
- C. Accident review;
- D. Operation of the Parkview Drive

The following summarizes the data and information used, assumptions, methodology, and evaluation results.

TRIP GENERATION & DISTRIBUTION (Requirement A)

Trip generation for the site has been calculated using the Institute of Transportation Engineers' (ITE) publication, *Trip Generation*, 11th Edition, the most recent edition accepted by MaineDOT. The proposed residential development will include 60 dwelling units within multifamily housing (Low-Rise). After a review of the Land Use Codes (LUCs) provided in the 11th Edition of *Trip Generation*, the following was selected to calculate the trip generation for the proposed uses:

Proposed Trip Generation Variables

- LUC 220 – Multifamily Housing (Low-Rise) – 60 Units

Trip generation calculations are provided in Attachment B.

Table I summarizes the trip generation for multifamily housing (Low-Rise)

Table I – Trip Generation (LUC 220 – 60 dwelling units)

Time Period	Trip Generation (Trip Ends)	
	Trip Gen Rates	Trip Generation
Weekday	6.74	404
AM Peak Hour of Adjacent Street	0.40	24
PM Peak Hour of Adjacent Street	0.51	31
AM Peak Hour Generator	0.47	28
PM Peak Hour Generator	0.57	34
Saturday Peak Hour Generator*	0.41	25

*Based on one study

It should be noted that based on the number of dwelling units proposed (60), the average rate was considered more representative than using the fitted curve equation. The approximate number of dwelling units used for the ITE graphs is 229-241. Because this project only proposes 60 units, the fitted curve equation forecasts higher trip generation than would be expected and was, therefore, not used.

Table 2 summarizes the trip distribution for multifamily housing (Low-Rise).

Table 2 – Trip Distribution

Time Period	Trip Generation (Trip Ends)		
	Enter	Exit	Total
Weekday*	202	202	404
AM Peak Hour of Adjacent Street	6	18	24
PM Peak Hour of Adjacent Street	20	11	31
AM Peak Hour of Generator	7	21	28
PM Peak Hour of Generator	21	13	34
Saturday Peak Hour of Generator	13	12	25

Due to the residential nature of the proposed project, the site is not expected to experience significant heavy vehicle use.

Trip distribution and assignment are shown in Attachment B. Based on the trip distribution and assignment; the anticipated study area is limited to the site frontage on Main Street.

SITE ACCESS (Requirement B)

The site is proposed to be accessed indirectly via Main Street and directly via an extension of Parkview Court. The existing Parkview Court at Main Street includes a single ingress and single egress lane.

The City of Biddeford and MaineDOT use the same standards for sight distances. Table 3 below presents MaineDOT's sight distance standards.

Table 3 – Standards for Sight Distance

Speed Limit (mph)	Passenger Vehicle – MaineDOT (ft)
25	200
30	250
35	305
40	360
45	425

The City of Biddeford and MaineDOT sight distance evaluation methodology is the same; the methodology is as follows:

Driveway Observation Point:	10 feet from traveled way
Height of Eye at Driveway:	3.5 feet above the ground
Height of Approaching vehicle:	4.25 feet above the ground

According to the MaineDOT Map Viewer, Main Street in the site vicinity is 35 mph. This speed was used for the sight distance evaluation, which Gorrill Palmer completed on 3/25/25.

Table 4 summarizes the measured sight distances at the intersection of Parkview Court / Main Street.

Table 4 – Sight Distance Summary

Driveway	Passenger Vehicle (feet)	Observed Looking Left (feet)	Observed Looking Right (feet)
Parkview Court	305	150	400+

As seen from the results in Table 4, the available sight distance looking right exceeds the City's minimum requirements. The available sight distance looking left does not meet the City's minimum requirements due to a large tree. Removing the tree would, in our opinion, provide adequate sight distance. It is our recommendation that the tree be removed.

SAFETY REVIEW (Requirement C)

GP requested and reviewed the latest three-year (2021-2023) and five-year (2019-2023) MaineDOT crash history for the anticipated study area. Crash history is provided in Attachment C.

MaineDOT evaluates whether a location has a crash problem by using two criteria to define a High Crash Location (HCL). Both criteria must be met for a location to be classified as an HCL.

1. A critical rate factor (CRF) of 1.00 or more for a three-year period. A CRF compares the actual crash rate to the rate for similar intersections in the state. A CRF of less than 1.00 indicates a rate of less than average **and**:
2. A minimum of eight crashes over the same three-year period.

Based on a review of the crash history, no high crash locations exist in the immediate study area.

OPERATIONS OF PARKVIEW DRIVE (Requirements D)

Based on the proposed residential units' low trip generation and the fact that Main Street at that location only has an AADT (Annual Average Daily Traffic) of approximately 2,900, the proposed residential development is not expected to impact the surrounding roadway network significantly.

Attachments:

Attachment A – Trip Generation

Attachment B – Trip Figures

Attachment C – Safety Review

Attachment A

Trip Generation

Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

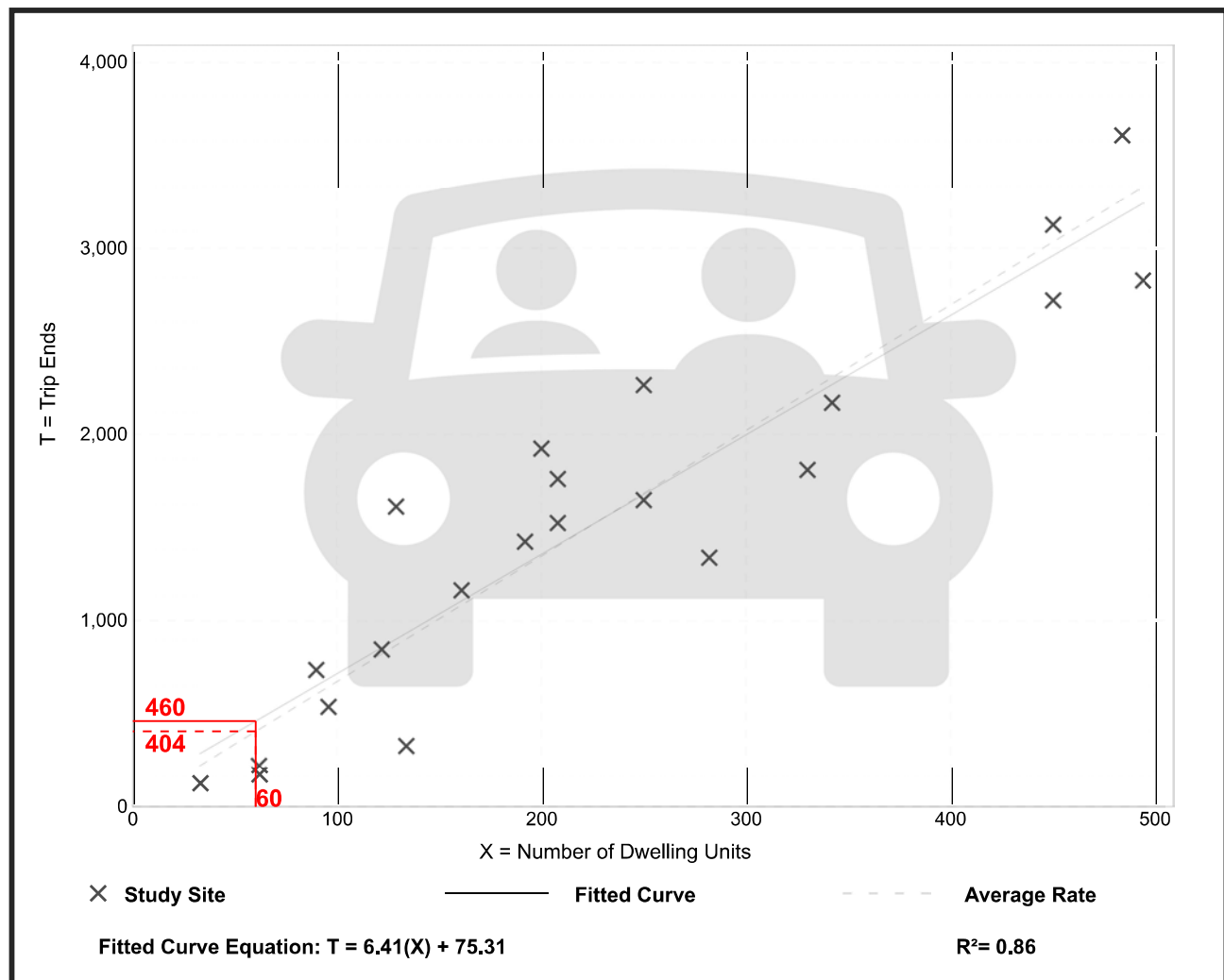
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 22
Avg. Num. of Dwelling Units: 229
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.74	2.46 - 12.50	1.79

Data Plot and Equation



Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 49

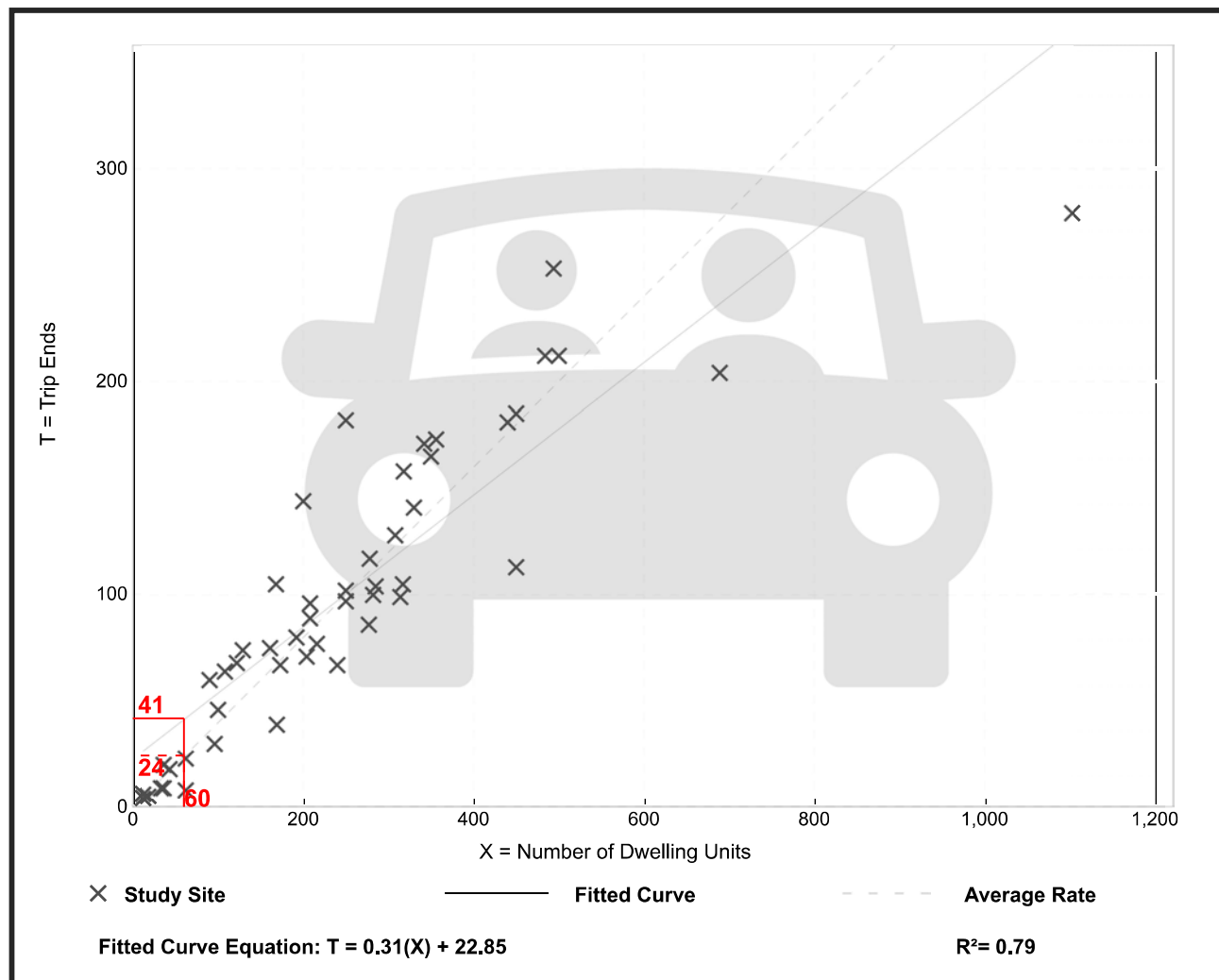
Avg. Num. of Dwelling Units: 249

Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

Data Plot and Equation



Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 59

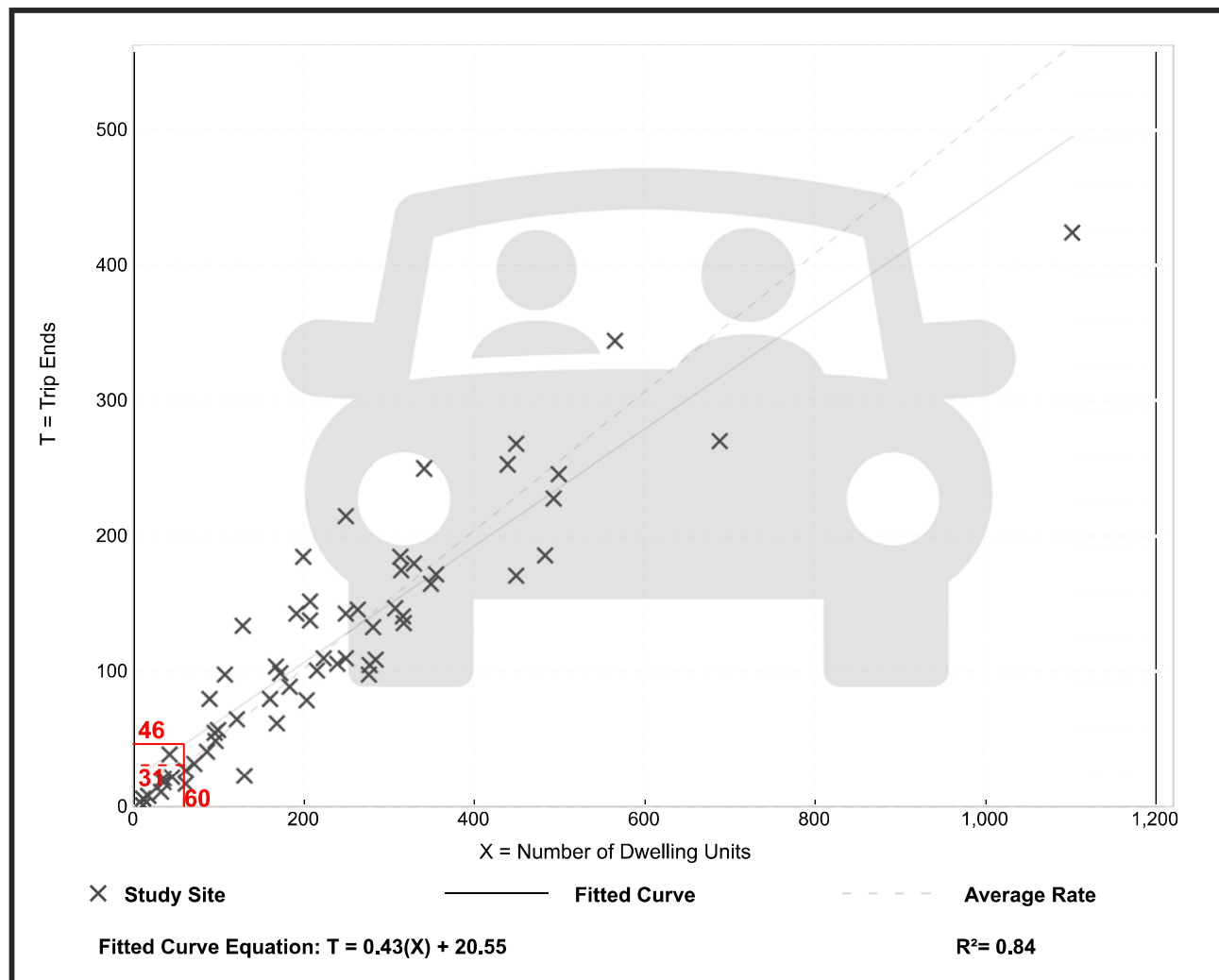
Avg. Num. of Dwelling Units: 241

Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

Data Plot and Equation



Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

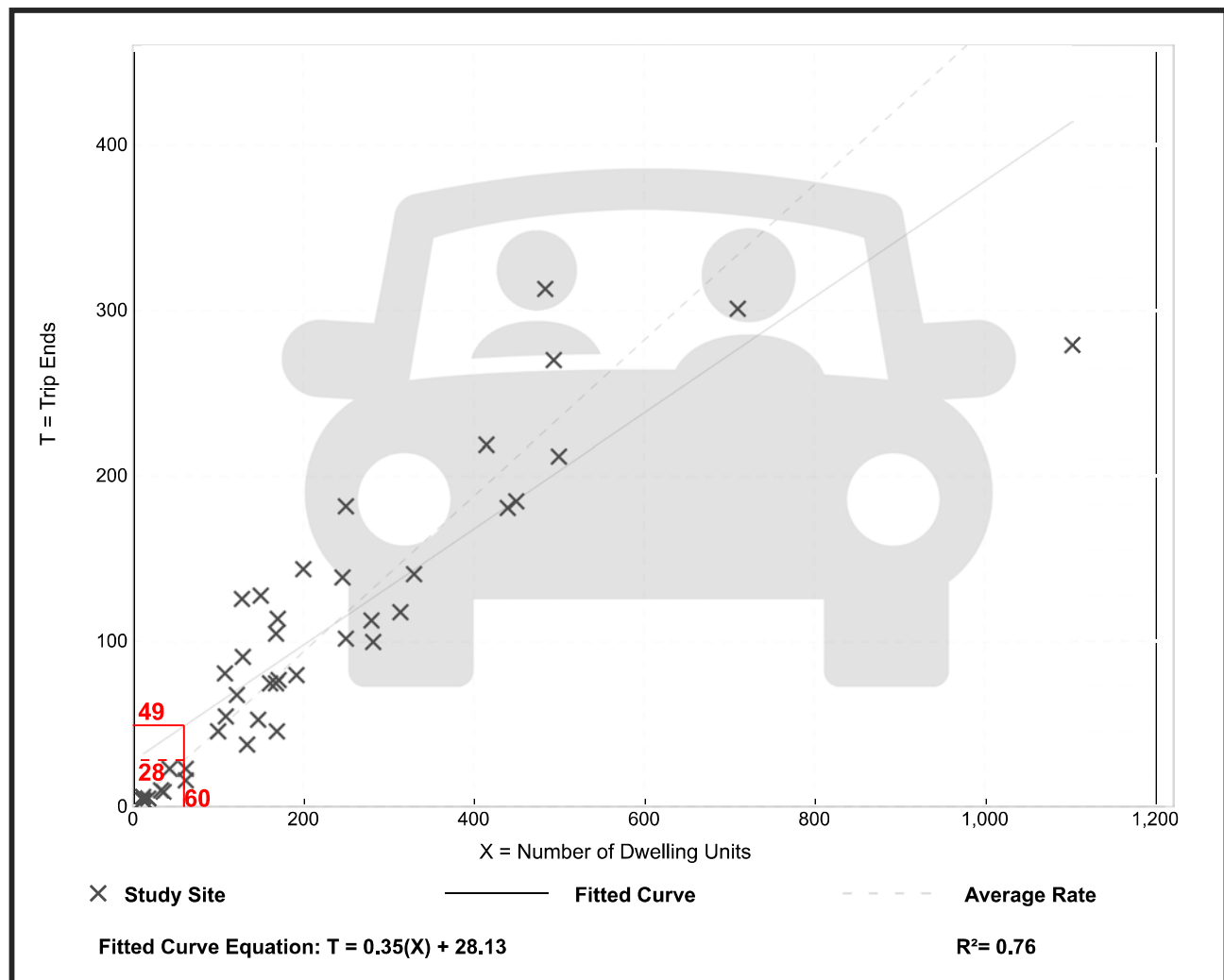
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 40
Avg. Num. of Dwelling Units: 234
Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.47	0.25 - 0.98	0.16

Data Plot and Equation



Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

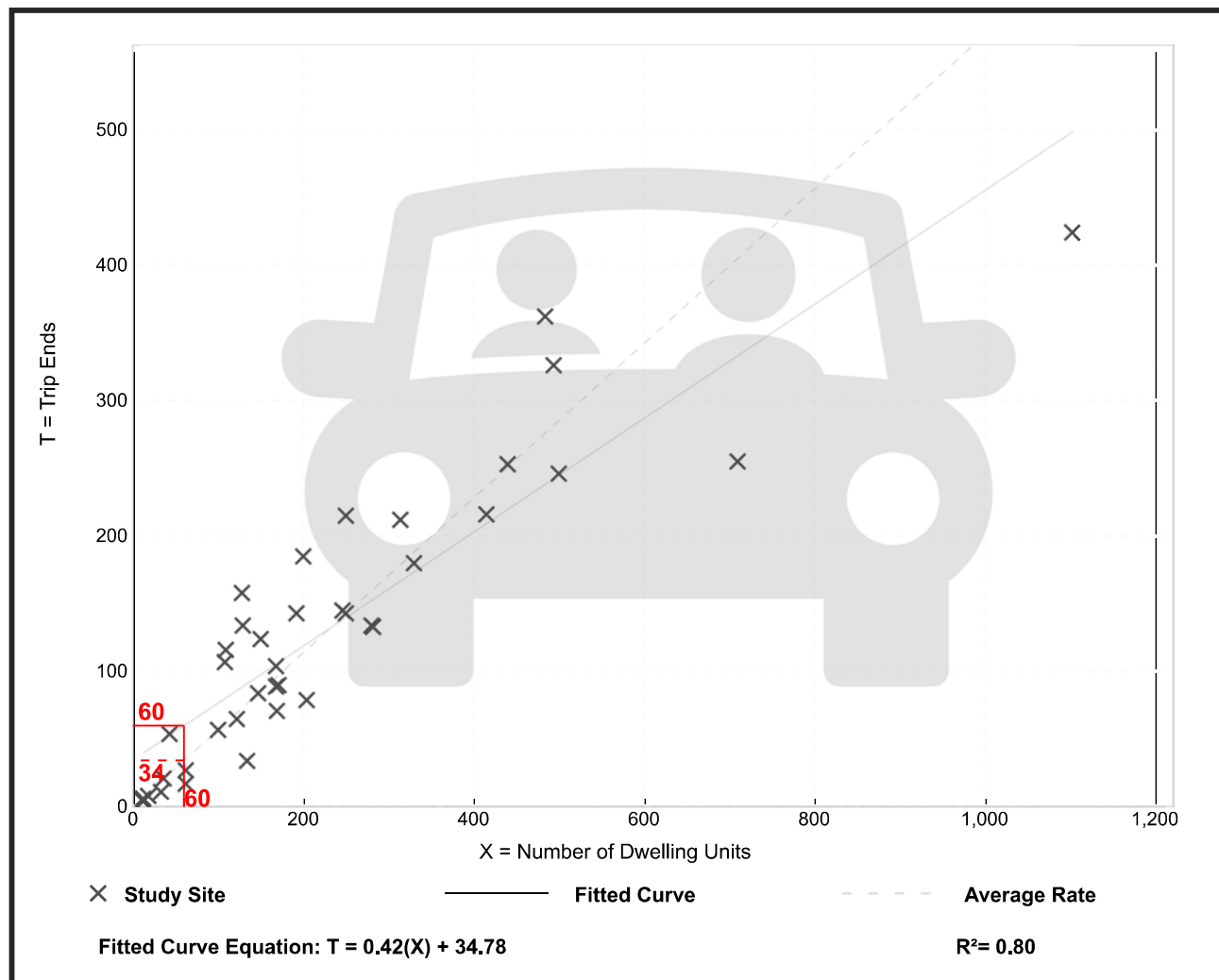
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 38
Avg. Num. of Dwelling Units: 231
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.25 - 1.26	0.20

Data Plot and Equation



Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units
On a: Saturday, Peak Hour of Generator

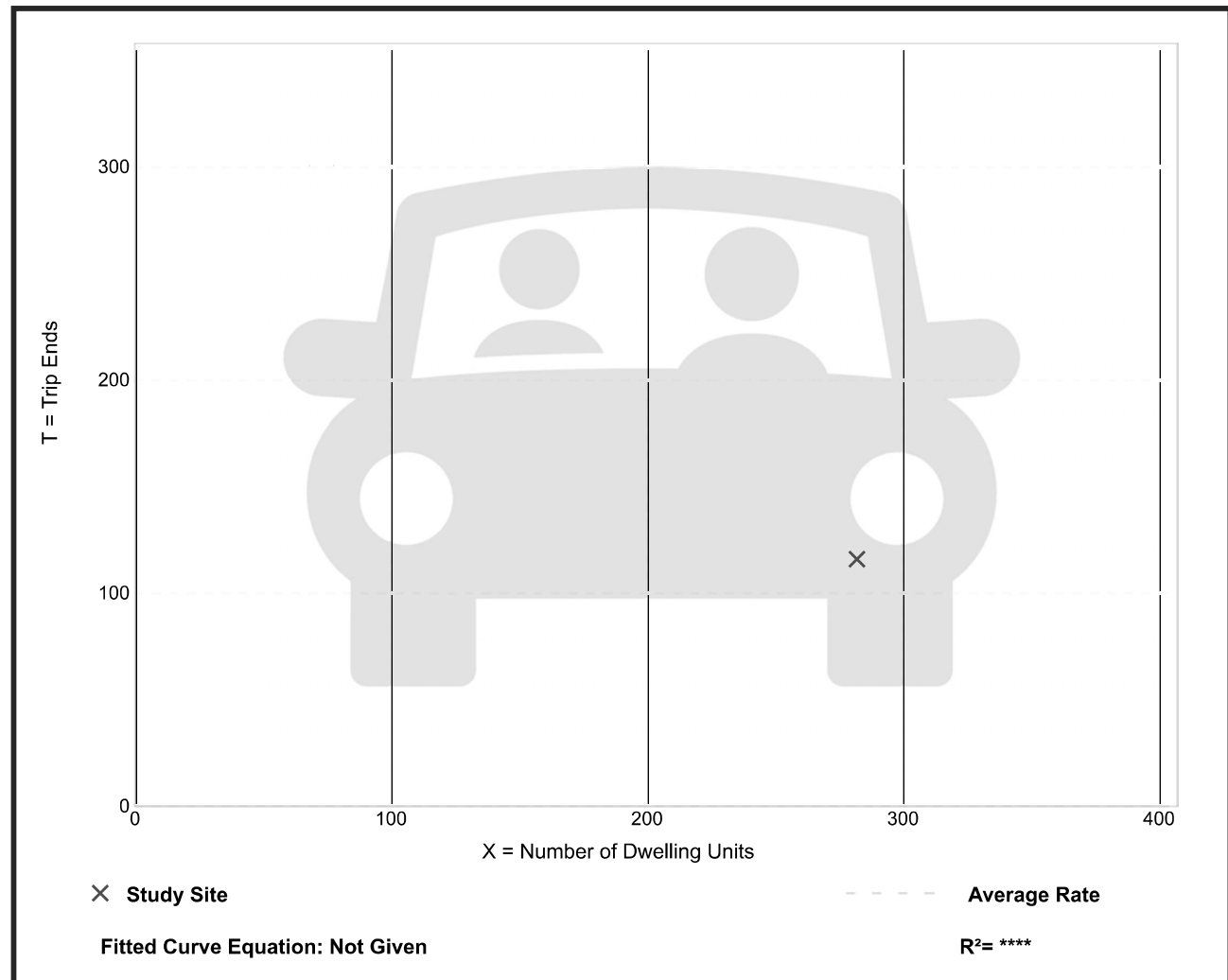
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Dwelling Units: 282
Directional Distribution: Not Available

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.41	0.41 - 0.41	*

Data Plot and Equation

Caution – Small Sample Size



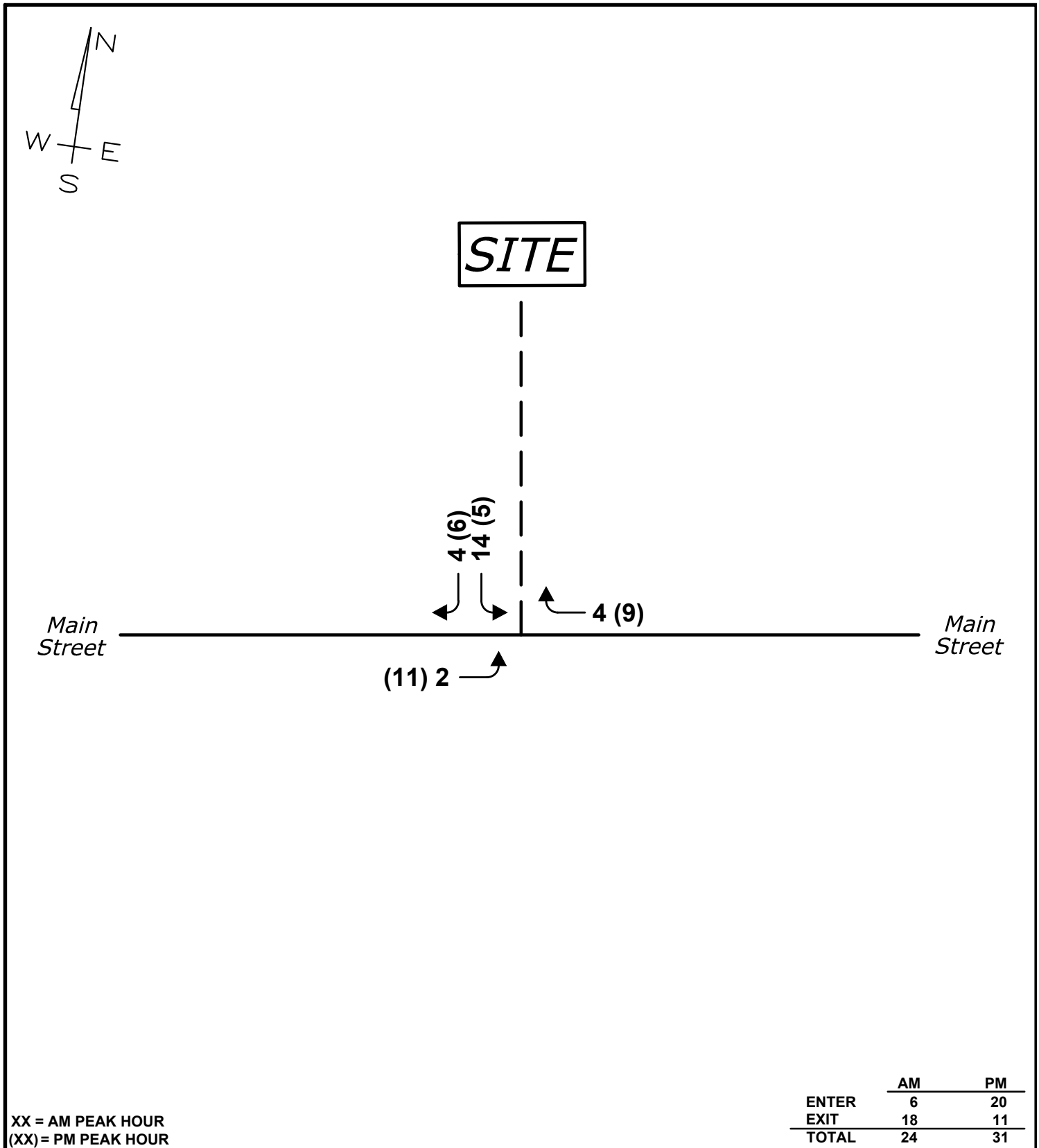
Attachment B

Trip Distribution and Assignment

TRIP DISTRIBUTION & ASSIGNMENT

Figure No.

1



FOREST GREEN BIDDEFORD, MAINE

Design: KJB Scale: NONE
 Draft: KJB Date: 3/24/2025
 Checked: RED File Name: Trip Dist.dwg



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Attachment C

Safety Review



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

Biddeford
Main St and Parkview Ct area

REPORT PARAMETERS

Year 2021, Start Month 1 through Year 2023 End Month: 12

Route: 3110104	Start Node: 58485 End Node: 58459	Start Offset: 0 End Offset: 0	☐ Exclude First Node ☐ Exclude Last Node
Route: 3110236	Start Node: 57134 End Node: 57135	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	K	Injury Crashes			PD	Injury	Percent Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
57134	3110104 - 1.51	Int of MAIN ST PARK VIEW CT	2	0	0	0	0	0	0	0.0	0.950	0.00	0.50	0.00
												Statewide Crash Rate: 0.13		
58459	3110104 - 1.62	Int of MAIN ST SOUTH ST	2	3	0	0	1	1	1	66.7	1.946	0.51	0.43	1.20
												Statewide Crash Rate: 0.13		
58485	3110104 - 1.11	Int of MAIN ST MT PLEASANT ST	2	0	0	0	0	0	0	0.0	1.141	0.00	0.49	0.00
												Statewide Crash Rate: 0.13		
57134	3110236 - 0	Int of MAIN ST PARK VIEW CT	2	0	0	0	0	0	0	0.0	0.950	0.00	0.50	0.00
												Statewide Crash Rate: 0.13		
57135	3110236 - 0.14	End of PARK VIEW CT	2	0	0	0	0	0	0	0.0	0.039	0.00	-1.44	0.00
												Statewide Crash Rate: 0.13		
Study Years: 3.00			NODE TOTALS:		3	0	0	1	1	66.7	5.026	0.20	0.34	0.59

Crash Summary I

Sections																	
Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	Section U/R	Total Crashes	K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
58485	57134	3942491	0 - 0.40	3110104 - 1.11	0.40	2	0	0	0	0	0	0	0.0	0.00425	0.00	426.83	0.00
		Int of MAIN ST MT PLEASANT ST		RD INV 31 10104											Statewide Crash Rate: 169.27		
57134	58459	3114468	0 - 0.11	3110104 - 1.51	0.11	2	1	0	1	0	0	0	100.0	0.00083	399.34	639.34	0.00
		Int of MAIN ST PARK VIEW CT		RD INV 31 10104											Statewide Crash Rate: 169.27		
57134	57135	5084605	0 - 0.14	3110236 - 0	0.14	2	1	0	0	0	0	1	0.0	0.00011	3062.52	1573.79	1.95
		Int of MAIN ST PARK VIEW CT		RD INV 31 10236											Statewide Crash Rate: 368.50		
Study Years:		3.00	Section Totals:		0.65		2	0	1	0	0	1	50.0	0.00520	128.33	413.11	0.31
Grand Totals:					0.65		5	0	1	1	1	2	60.0	0.00520	320.82	536.46	0.60

Crash Summary

Section Details														
Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
58485	57134	3942491	0 - 0.40	3110104 - 1.11	0	0	0	0	0	0				
57134	58459	3114468	0 - 0.11	3110104 - 1.51	1	0	1	0	0	0	2023-36749	12/07/2023	1.52	A
57134	57135	5084605	0 - 0.14	3110236 - 0	1	0	0	0	0	1	2023-25475	08/30/2023	0.03	PD
Totals:					2	0	1	0	0	1				

Crash Summary II - Characteristics

Crashes by Day and Hour

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

Vehicle Counts by Type

Unit Type	Total	Unit Type	Total
1-Passenger Car	3	23-Bicyclist	0
2-(Sport) Utility Vehicle	1	24-Witness	2
3-Passenger Van	1	25-Other	0
4-Cargo Van (10K lbs or Less)	0	26-Construction	0
5-Pickup	2	27-Farm Vehicle	0
6-Motor Home	0	28-Horse and Buggy	0
7-School Bus	0	Total	10
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)	1		
18-ATV - (4 wheel)	0		
20-ATV - (2 wheel)	0		
21-Snowmobile	0		
22-Pedestrian	0		

Crash Summary II - Characteristics

Crashes by Driver Action at Time of Crash							
Driver Action at Time of Crash	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
No Contributing Action	1	2	0	0	0	0	3
Ran Off Roadway	0	0	0	0	0	0	0
Failed to Yield Right-of-Way	2	0	0	0	0	0	2
Ran Red Light	0	0	0	0	0	0	0
Ran Stop Sign	0	0	0	0	0	0	0
Disregarded Other Traffic Sign	0	0	0	0	0	0	0
Disregarded Other Road Markings	0	0	0	0	0	0	0
Exceeded Posted Speed Limit	0	0	0	0	0	0	0
Drove Too Fast For Conditions	0	0	0	0	0	0	0
Improper Turn	0	0	0	0	0	0	0
Improper Backing	0	0	0	0	0	0	0
Improper Passing	0	0	0	0	0	0	0
Wrong Way	0	0	0	0	0	0	0
Followed Too Closely	0	0	0	0	0	0	0
Failed to Keep in Proper Lane	0	0	0	0	0	0	0
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	2	0	0	0	0	0	2
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	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0
Total	5	2	0	0	0	0	7

Crashes by Apparent Physical Condition And Driver							
Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	5	2	0	0	0	0	7
Physically Impaired	0	0	0	0	0	0	0
Emotional(Depressed, Angry, Disturbed, etc.)	0	0	0	0	0	0	0
Ill (Sick)	0	0	0	0	0	0	0
Asleep or Fatigued	0	0	0	0	0	0	0
Under the Influence of Medications/Drugs/Alcohol	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Total	5	2	0	0	0	0	7

Driver Age by Unit Type					
Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV
09-Under	0	0	0	0	0
10-14	0	0	0	0	0
15-19	1	0	0	0	0
20-24	0	0	0	0	0
25-29	3	0	0	0	0
30-39	0	0	0	0	0
40-49	0	0	0	0	0
50-59	1	0	0	0	0
60-69	1	0	0	0	0
70-79	1	0	0	0	0
80-Over	0	0	0	0	0
Unknown	1	0	0	0	0
Total	8	0	0	0	0

Crash Summary II - Characteristics

Most Harmful Event				Injury Data		
Most Harmful Event	Total	Most Harmful Event	Total	Severity Code	Injury Crashes	Number Of Injuries
1-Overturn / Rollover	0	38-Other Fixed Object (wall, building, tunnel, etc.)	0	K	0	0
2-Fire / Explosion	0	39-Unknown	0	A	1	1
3-Immersion	0	40-Gate or Cable	0	B	1	2
4-Jackknife	0	41-Pressure Ridge	0	C	1	1
5-Cargo / Equipment Loss Or Shift	0	Total	8	PD	2	0
6-Fell / Jumped from Motor Vehicle	0			Total	5	4
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	6					
14-Parked Motor Vehicle	0					
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	0					
16-Work Zone / Maintenance Equipment	0	Traffic Control Devices			Road Character	
17-Other Non-Fixed Object	0	Traffic Control Device		Total	Road Grade	Total
18-Impact Attenuator / Crash Cushion	0	1-Traffic Signals (Stop & Go)	0		1-Level	5
19-Bridge Overhead Structure	0	2-Traffic Signals (Flashing)	0		2-On Grade	0
20-Bridge Pier or Support	0	3-Advisory/Warning Sign	0		3-Top of Hill	0
21-Bridge Rail	0	4-Stop Signs - All Approaches	0		4-Bottom of Hill	0
22-Cable Barrier	0	5-Stop Signs - Other	4		5-Other	0
23-Culvert	0	6-Yield Sign	0		Total	5
24-Curb	0	7-Curve Warning Sign	0			
25-Ditch	0	8-Officer, Flagman, School Patrol	0	1-Daylight		3
26-Embankment	0	9-School Bus Stop Arm	0	2-Dawn		0
27-Guardrail Face	0	10-School Zone Sign	0	3-Dusk		1
28-Guardrail End	0	11-R.R. Crossing Device	0	4-Dark - Lighted		0
29-Concrete Traffic Barrier	0	12-No Passing Zone	0	5-Dark - Not Lighted		1
30-Other Traffic Barrier	0	13-None	1	6-Dark - Unknown Lighting		0
31-Tree (Standing)	0	14-Other	0	7-Unknown		0
32-Utility Pole / Light Support	1	Total	5	Total		5
33-Traffic Sign Support	0					
34-Traffic Signal Support	0					
35-Fence	0					
36-Mailbox	0					
37-Other Post, Pole, or Support	0					

Crashes by Year and Month

Month	2021	2022	2023	Total
JANUARY	0	0	1	1
FEBRUARY	0	0	0	0
MARCH	0	0	0	0
APRIL	0	0	0	0
MAY	0	0	0	0
JUNE	0	0	0	0
JULY	0	0	0	0
AUGUST	0	0	1	1
SEPTEMBER	0	0	0	0
OCTOBER	0	0	1	1
NOVEMBER	0	1	0	1
DECEMBER	0	0	1	1
Total	0	1	4	5

Report is limited to the last 10 years of data.

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five or More Leg Intersection	Driveways	Bridges	Interchanges	Other	Parking Lot	Private Way	Cross Over	Railroad Crossing	Traffic Circle-Roundabout	Total
Object in Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rear End - Sideswipe	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Head-on - Sideswipe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection Movement	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
All Other Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jackknife	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thrown or Falling Object	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	0	3	0	0	0	0	0	0	0	0	0	0	0	5

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Blowing Sand, Soil, Dirt												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Blowing Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Clear												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	1	0	0	0	0	0	0	0	0	0	0	1
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	3	0	0	0	0	0	0	0	0	0	0	3
Dusk	0	0	0	0	0	0	0	0	0	0	1	1
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Cloudy												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Other												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Rain												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Severe Crosswinds												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Sleet, Hail (Freezing Rain or Drizzle)												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	4	0	0	0	0	0	0	0	0	0	1	5

Report Selections and Input Parameters

REPORT SELECTIONS

☒ Crash Summary I

☐ Section Detail

☒ Crash Summary II

☐ 1320 Public

☐ 1320 Private

☐ 1320 Summary

REPORT DESCRIPTION

Biddeford

Main St and Parkview Ct area

REPORT PARAMETERS

Year 2019, Start Month 1 through Year 2023 End Month: 12

Route: 3110104

Start Node: 58485

End Node: 58459

Start Offset: 0

End Offset: 0

☐ Exclude First Node

☐ Exclude Last Node

Route: 3110236

Start Node: 57134

End Node: 57135

Start Offset: 0

End Offset: 0

☐ Exclude First Node

☐ Exclude Last Node

Nodes														
Node	Route - MP	Node Description	U/R	Total Crashes	K	Injury Crashes			PD	Injury	Percent Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
57134	3110104 - 1.51	Int of MAIN ST PARK VIEW CT	2	1	0	0	0	0	1	0.0	0.950	0.21	0.45	0.00
											Statewide Crash Rate: 0.13		0.13	
58459	3110104 - 1.62	Int of MAIN ST SOUTH ST	2	6	0	1	1	1	3	50.0	1.946	0.62	0.38	1.64
											Statewide Crash Rate: 0.13		0.13	
58485	3110104 - 1.11	Int of MAIN ST MT PLEASANT ST	2	0	0	0	0	0	0	0.0	1.141	0.00	0.43	0.00
											Statewide Crash Rate: 0.13		0.13	
57134	3110236 - 0	Int of MAIN ST PARK VIEW CT	2	1	0	0	0	0	1	0.0	0.950	0.21	0.45	0.00
											Statewide Crash Rate: 0.13		0.13	
57135	3110236 - 0.14	End of PARK VIEW CT	2	0	0	0	0	0	0	0.0	0.039	0.00	-0.34	0.00
											Statewide Crash Rate: 0.13		0.13	
Study Years: 5.00			NODE TOTALS:											
				8	0	1	1	1	5	37.5	5.026	0.32	0.29	1.08

Crash Summary I

Sections																	
Start Node	End Node	Element	Offset Begin - End	Route - MP	Section U/R Length	Total Crashes	K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF	
58485	57134	3942491	0 - 0.40	3110104 - 1.11	0.40	2	0	0	0	0	0	0.0	0.00425	0.00	375.62	0.00	
Int of MAIN ST		MT PLEASANT ST		RD INV 31 10104										Statewide Crash Rate: 169.27			
57134	58459	3114468	0 - 0.11	3110104 - 1.51	0.11	2	1	0	1	0	0	100.0	0.00083	239.60	568.25	0.00	
Int of MAIN ST		PARK VIEW CT		RD INV 31 10104										Statewide Crash Rate: 169.27			
57134	57135	5084605	0 - 0.14	3110236 - 0	0.14	2	1	0	0	0	1	0.0	0.00011	1837.51	1569.47	1.17	
Int of MAIN ST		PARK VIEW CT		RD INV 31 10236										Statewide Crash Rate: 368.50			
Study Years: 5.00				Section Totals:		0.65	2	0	1	0	0	1	50.0	0.00520	77.00	364.69	0.21
Grand Totals:						0.65	10	0	2	1	1	6	40.0	0.00520	384.98	476.44	0.81

Crash Summary

Section Details														
Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
58485	57134	3942491	0 - 0.40	3110104 - 1.11	0	0	0	0	0	0				
57134	58459	3114468	0 - 0.11	3110104 - 1.51	1	0	1	0	0	0	2023-36749	12/07/2023	1.52	A
57134	57135	5084605	0 - 0.14	3110236 - 0	1	0	0	0	0	1	2023-25475	08/30/2023	0.03	PD
Totals:					2	0	1	0	0	1				

Crashes by Day and Hour

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

Vehicle Counts by Type

Unit Type	Total	Unit Type	Total
1-Passenger Car	7	23-Bicyclist	1
2-(Sport) Utility Vehicle	2	24-Witness	2
3-Passenger Van	1	25-Other	0
4-Cargo Van (10K lbs or Less)	0	26-Construction	0
5-Pickup	6	27-Farm Vehicle	0
6-Motor Home	0	28-Horse and Buggy	0
7-School Bus	0	Total	20
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)	1		
18-ATV - (4 wheel)	0		
20-ATV - (2 wheel)	0		
21-Snowmobile	0		
22-Pedestrian	0		

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	2	4	0	0	0	0	6
Ran Off Roadway	0	0	0	0	0	0	0
Failed to Yield Right-of-Way	2	0	0	0	0	0	2
Ran Red Light	0	0	0	0	0	0	0
Ran Stop Sign	0	0	0	0	0	0	0
Disregarded Other Traffic Sign	0	0	0	0	0	0	0
Disregarded Other Road Markings	0	0	0	0	0	0	0
Exceeded Posted Speed Limit	0	0	0	0	0	0	0
Drove Too Fast For Conditions	0	0	0	0	0	0	0
Improper Turn	0	0	0	0	0	0	0
Improper Backing	0	0	0	0	0	0	0
Improper Passing	2	0	0	0	0	0	2
Wrong Way	0	0	0	0	0	0	0
Followed Too Closely	1	0	0	0	0	0	1
Failed to Keep in Proper Lane	0	0	0	0	0	0	0
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	2	0	0	0	0	0	2
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	2	0	0	0	0	3
Unknown	0	0	0	0	0	0	0
Total	10	6	0	0	0	0	16

Crashes by Apparent Physical Condition And Driver							
Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	10	6	0	0	0	0	16
Physically Impaired	0	0	0	0	0	0	0
Emotional(Depressed, Angry, Disturbed, etc.)	0	0	0	0	0	0	0
Ill (Sick)	0	0	0	0	0	0	0
Asleep or Fatigued	0	0	0	0	0	0	0
Under the Influence of Medications/Drugs/Alcohol	0	1	0	0	0	0	1
Other	0	0	0	0	0	0	0
Total	10	7	0	0	0	0	17

Driver Age by Unit Type					
Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV
09-Under	0	0	0	0	0
10-14	0	0	0	0	0
15-19	2	0	0	0	0
20-24	2	0	0	0	0
25-29	3	0	0	0	0
30-39	2	0	0	0	0
40-49	1	0	0	0	0
50-59	4	0	0	0	0
60-69	1	0	0	0	0
70-79	1	0	0	0	0
80-Over	0	0	0	0	0
Unknown	1	1	0	0	0
Total	17	1	0	0	0

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	0
3-Immersion	0	40-Gate or Cable	0
4-Jackknife	0	41-Pressure Ridge	0
5-Cargo / Equipment Loss Or Shift	0	Total	17
6-Fell / Jumped from Motor Vehicle	0		
7-Thrown or Falling Object	0		
8-Other Non-Collision	0		
9-Pedestrian	0		
10-Pedalcycle	1		
11-Railway Vehicle - Train, Engine	0		
12-Animal	0		
13-Motor Vehicle in Transport	14		
14-Parked Motor Vehicle	0		
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	0		
Traffic Control Devices			
		Traffic Control Device	Total
16-Work Zone / Maintenance Equipment	0	1-Traffic Signals (Stop & Go)	0
17-Other Non-Fixed Object	0	2-Traffic Signals (Flashing)	0
18-Impact Attenuator / Crash Cushion	0	3-Advisory/Warning Sign	0
19-Bridge Overhead Structure	0	4-Stop Signs - All Approaches	0
20-Bridge Pier or Support	0	5-Stop Signs - Other	9
21-Bridge Rail	0	6-Yield Sign	0
22-Cable Barrier	0	7-Curve Warning Sign	0
23-Culvert	0	8-Officer, Flagman, School Patrol	0
24-Curb	0	9-School Bus Stop Arm	0
25-Ditch	0	10-School Zone Sign	0
26-Embankment	0	11-R.R. Crossing Device	0
27-Guardrail Face	0	12-No Passing Zone	0
28-Guardrail End	0	13-None	1
29-Concrete Traffic Barrier	0	14-Other	0
30-Other Traffic Barrier	0	Total	10
31-Tree (Standing)	1		
32-Utility Pole / Light Support	1		
33-Traffic Sign Support	0		
34-Traffic Signal Support	0		
35-Fence	0		
36-Mailbox	0		
37-Other Post, Pole, or Support	0		

Injury Data			
Severity Code	Injury Crashes	Number Of Injuries	
K	0	0	
A	2	2	
B	1	2	
C	1	1	
PD	6	0	
Total	10	5	

Road Character	
Road Grade	Total
1-Level	10
2-On Grade	0
3-Top of Hill	0
4-Bottom of Hill	0
5-Other	0
Total	10

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

Crashes by Year and Month

Month	2019	2020	2021	2022	2023	Total
JANUARY	0	1	0	0	1	2
FEBRUARY	0	2	0	0	0	2
MARCH	0	0	0	0	0	0
APRIL	0	1	0	0	0	1
MAY	0	0	0	0	0	0
JUNE	0	1	0	0	0	1
JULY	0	0	0	0	0	0
AUGUST	0	0	0	0	1	1
SEPTEMBER	0	0	0	0	0	0
OCTOBER	0	0	0	0	1	1
NOVEMBER	0	0	0	1	0	1
DECEMBER	0	0	0	0	1	1
Total	0	5	0	1	4	10

Report is limited to the last 10 years of data.

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five or More Leg Intersection	Driveways	Bridges	Interchanges	Other	Parking Lot	Private Way	Cross Over	Railroad Crossing	Traffic Circle-Roundabout	Total
Object in Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rear End - Sideswipe	0	0	5	0	0	0	0	0	0	0	0	0	0	0	5
Head-on - Sideswipe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection Movement	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
All Other Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jackknife	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thrown or Falling Object	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	0	8	0	0	0	0	0	0	0	0	0	0	0	10

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Blowing Sand, Soil, Dirt												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Blowing Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Clear												
Dark - Lighted	1	0	0	0	0	0	0	0	0	0	0	1
Dark - Not Lighted	1	0	0	0	0	0	0	0	0	0	0	1
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	5	0	0	0	0	0	0	0	0	0	0	5
Dusk	0	0	0	0	0	0	0	0	0	0	1	1
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Cloudy												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	2	0	0	0	0	0	0	0	0	0	0	2
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Other												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Rain												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Severe Crosswinds												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

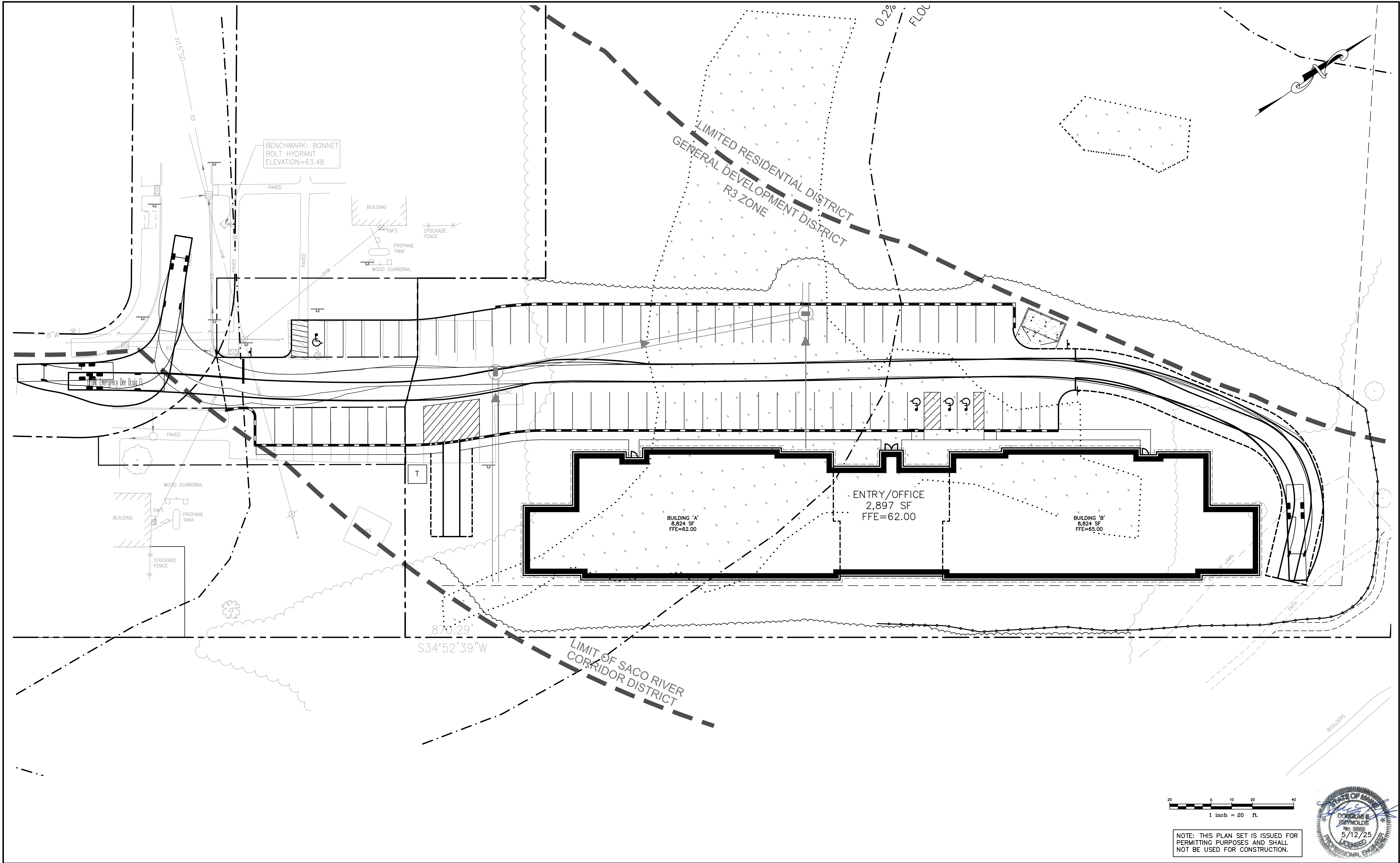
Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Sleet, Hail (Freezing Rain or Drizzle)												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	9	0	0	0	0	0	0	0	0	0	1	10

ATTACHMENT 8

TRUCK TURNING MOVEMENT FIGURES

U:\Bateman Partners\4323-Bateman Partners - Forest Green Apts Expansion - Biddeford\Z - CAD\DWG\4323-SP.dwg 5/12/2025 12:55 PM



Rev.	Date	Revision

LOCAL PRELIMINARY PLAN SUBMISSION	5/12/25	DER
NRPA APPLICATION SUBMISSION	5/12/25	DER
SACO RIVER CORRIDOR SUBMISSION	5/7/25	DER
LOCAL SKETCH PLAN SUBMISSION	4/16/25	DER
Issued For	Date	By

Design: EC	Draft: CG	Date: JUNE 2024
Checked: DER	Scale: 1"=20'	Job No.: 4323
File Name: 4323-SP.dwg		
This plan shall not be modified without written permission from Gorrill Palmer. Any alterations, authorized or otherwise, shall be at the user's sole risk and without liability to Gorrill Palmer.		

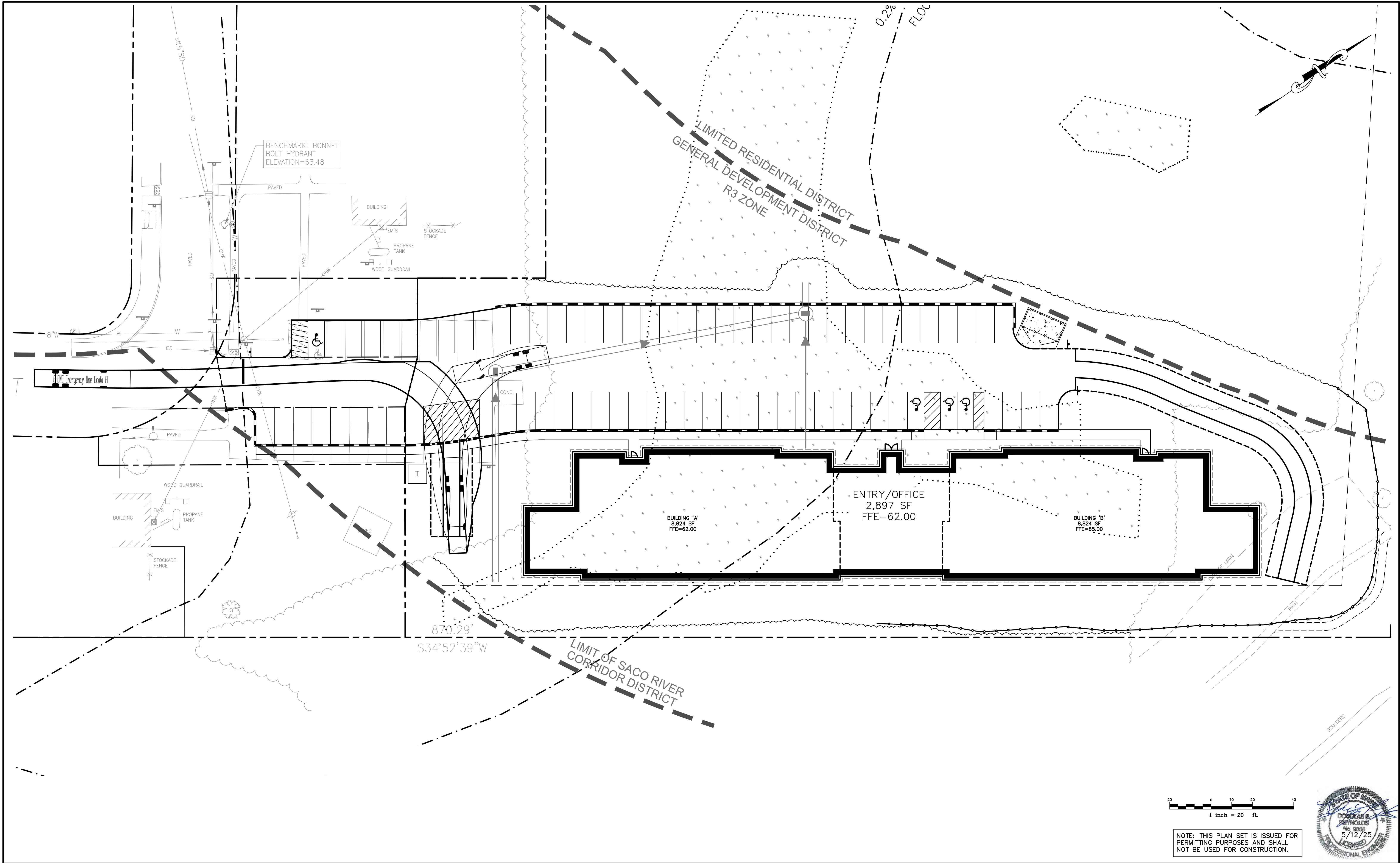


Relationships. Responsiveness. Results.
www.gorrillpalmer.com
207.772.2515
300 Southborough Drive - Suite 200
South Portland, ME 04106

Drawing Name:	Fire Truck Turning Template
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.
1

U:\Bateman Partners\4323-Bateman Partners - Forest Green Apts Expansion - Biddeford\Z - CAD\DWG\4323-SP.dwg 5/12/2025 1:31 PM



Rev.	Date	Revision

LOCAL PRELIMINARY PLAN SUBMISSION	5/12/25	DER
NRPA APPLICATION SUBMISSION	5/12/25	DER
SACO RIVER CORRIDOR SUBMISSION	5/7/25	DER
LOCAL SKETCH PLAN SUBMISSION	4/16/25	DER
Issued For	Date	By

Design: EC	Draft: CG	Date: JUNE 2024
Checked: DER	Scale: 1"=20'	Job No.: 4323
File Name: 4323-SP.dwg		
This plan shall not be modified without written permission from Gorrill Palmer. Any alterations, authorized or otherwise, shall be at the user's sole risk and without liability to Gorrill Palmer.		



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www.gorrillpalmer.com
207.772.2515
300 Southborough Drive - Suite 200
South Portland, ME 04106

Drawing Name:	Fire Truck Turning Template
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.
2

ATTACHMENT 9

WETLAND DELINEATION REPORT

Memorandum of Findings

Date: April 24, 2025

To: Doug Reynolds (Gorrill Palmer)

From: Chuck Ferris (Flycatcher)

Cc: Rich Jordan (Flycatcher)

Subject: Parkview, Biddeford - Wetland Delineation Survey Results – REV 1

At the request of Gorrill Palmer, on October 22, 2024, a scientist from Flycatcher LLC (Flycatcher) completed a wetland and waterbody survey on approximately 2.1 acres (the Survey Area) located west of the entrance to Rotary Park and Redman Field at 550 Main Street in Biddeford, Maine. Figure 1 in Attachment 1 depicts the Survey Area boundaries. The purpose of the field survey was to identify and map wetlands, streams, and potential vernal pools to inform avoidance and minimization of impacts to protected natural resources during future property developments. This memo report provides a summary of the methods and findings of our field surveys.

Methods

Wetlands

Wetland delineations were conducted in accordance with the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual¹ and the Northcentral and Northeast Regional Supplement (Version 2.0).² The manual and supplement provide a repeatable methodology to identify wetland areas and are the accepted wetland delineation methodology of the Maine Department of Environmental Protection (MDEP) and the USACE.

The Survey Area was investigated by wetland scientists via a meander survey. When a location appeared to have the requisite three factors that constitute a wetland (i.e., hydrophytic vegetation, indicators of hydrology, and the presence of hydric soils) the scientist analyzed the site-specific data to determine if the area met the criteria to be considered a wetland. Boundaries of wetlands identified in forested areas were marked with pink survey flagging labelled with the word “Wetland Delineation” and numbered in sequential order. The location of each flag was collected via GPS as described in **GPS Location** below.

¹ Environmental Laboratory. (1987). *Corps of Engineers Wetlands Delineation Manual*, Technical Report Y-87-1, U.S. Army Corps of Engineers Waterways Experiment Station. Vicksburg, MS.

² USACE (2011). *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast region (Version 2.0)*, ed. J.S. Wakely, R.W. Lichvar and C.V. Noble, and J.F. Berkowitz. ERDC/EL TR-08-27. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

Streams

Stream identification followed the Natural Resources Protection Act (NRPA) definition of a “river, stream or brook” (38 M.R.S. §. 480-B9). If a stream meeting the above definition was observed, blue survey flagging was hung, and GPS data collected, along the centerline for streams less than ten feet in width, or along the top of the bank for streams ten feet or wider.

Potential Vernal Pools

Flycatcher conducted a potential vernal pool survey concurrent with the wetland delineation and stream survey. Vernal pools are temporarily/seasonally flooded wetlands that provide the primary breeding habitat for vernal pool indicator species, and a host of secondary faunal species. Wood frogs (*Lithobates sylvaticus*) spotted salamanders (*Ambystoma maculatum*), blue spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubbranchipus* spp.) are vernal pool indicator species that depend on vernal pools to complete their life cycle. Vernal pool habitats are defined in Chapter 335 of the Maine Natural Resources Protection Act (NRPA) and in the USACE Maine General Permit. Each definition is similar, except the Maine General Permit definition does not require a pool to be of natural origin to be regulated.

Productivity of breeding vernal pool species is the primary metric used by regulatory authorities to assess vernal pool quality; thus, vernal pools must be assessed during the breeding season (generally mid-April to late-May). Potential vernal pools were identified within the Survey Area following the Maine Association of Wetland Scientists (MAWS) Vernal Pool Technical Committee Vernal Pool Survey Protocol (April 2014) methods for performing potential vernal pool (PVP) surveys.

GPS Location

Features (e.g., wetlands, streams) located during the survey were geolocated using a mapping grade global positioning system (“GPS”) unit (Juniper Systems’ Geode GPS Antenna and ESRI’s ArcGIS Field Maps software). The data were collected using real-time correction and standards specified by the manufacturer to achieve sub-meter accuracy. The data was exported to CAD and provided to you via email.

Natural Resource Agency Correspondence

Natural Resource Agency outreach was not conducted by Flycatcher.

Wetlands of Special Significance (WoSS)

Chapter 310 of the Maine Natural Resources Protection Act (NRPA)¹ defines a subset of wetlands that provide a high level of valuable functions and/or values to the surrounding and regional environment. Wetlands of Special Significance (WoSS) are afforded additional protections and generally more rigorous permitting oversight if a permittee’s project will result in unavoidable impacts to WoSS. Flycatcher made WoSS determinations based on observations of physical features noted during the delineation.

¹ MEDEP. Natural Resources Protection Act. Chapter 310. Wetlands and Waterbodies Protection Rules. Section 4. A. Wetlands of Special Significance.

Results

Survey Area Description

The Survey Area is located west of the entrance to Rotary Park and Redman Field at 550 Main Street in Biddeford, Maine. Surrounding land use includes recreational fields and parking facilities associated with Rotary Park to the east, and a residential complex to the southwest. The Saco River lies less than 200 ft to the northwest. Land cover within the Survey Area is primarily forested, and the terrain is gently sloping, with wetlands occurring in the lower drainage of the site. Resources identified within the Survey Area can be seen on the Natural Resource Map in Attachment 1. Representative photographs are provided in Attachment 2.

Wetlands

Two wetlands were mapped within the Survey Area. Summary descriptions of wetlands including covertype¹, vegetation, hydrology, and hydric soil indicators, preliminary WoSS determinations, and principal functions and values are provided in Table 1, below. The location of each mapped wetland is depicted in Figure 2, Attachment 1.

Streams

No streams were identified within the Survey Area.

Potential Vernal Pools

No potential vernal pools were observed within the Survey Area.

WOSS

Preliminary WoSS determinations are included in Table 1. WoSS determination may require consultation with the Maine Department of Inland Fisheries and Wildlife (MDIFW) and the Maine Natural Areas Program (MNAP) to ascertain known or potential presence of certain threatened or endangered natural resources. Flycatcher did not perform these consultations but based on agency correspondence provided to Gorrill Palmer on March 20, 2025 MDIFW, and on December 17, 2024 from MNAP, agency responses indicate no known significant wildlife habitat or rare natural communities that would categorize wetlands onsite as WoSS.

¹Wetland classifications per USFWS' Cowardin et al. 1979 (<https://www.fws.gov/wetlands/Documents/Classification-of-Wetlands-and-Deepwater-Habitats-of-the-United-States.pdf>).

Table 1. Summary Descriptions of Wetlands Delineated Within the Survey Area

Resource ID	Cowardin Classification ¹	Hydrology Indicators	Dominant Vegetation	Principal Functions and Values	Hydric Soil Indicators	WoSS ²	Description & Notes
W-CWF-1	PFO	Water-Stained Leaves (B9), Moss Trim Lines (B16)	Red maple (<i>Acer rubrum</i>), quaking aspen (<i>Populus tremuloides</i>), red osier (<i>Cornus alba</i>), sensitive fern (<i>Onoclea sensibilis</i>), lamp rush (<i>Juncus effusus</i>)	Groundwater recharge/discharge, nutrient removal, wildlife habitat	Depleted Matrix (F3)	No	Low area next to northeast border. Wetland extends out of the Survey Area to the northwest.
W-CWF-2	PFO	Saturation (A3), Water-Stained Leaves (B9)	Red maple, American elm (<i>Ulmus americana</i>), green ash (<i>Fraxinus pennsylvanica</i>), red osier, Morrow's honeysuckle (<i>Lonicera morrowii</i>), broad-leaf meadowsweet (<i>Spiraea latifolia</i>), sensitive fern, bluejoint (<i>Calamagrostis canadensis</i>), wrinkle-leaf goldenrod (<i>Solidago rugosa</i>)	Groundwater recharge/discharge, nutrient removal, wildlife habitat	Redox Dark Surface (F6), over Loamy Gleyed Matrix (F2)	No	Wetland drainage west of access road. Wetland extends out of the Survey Area to the northwest.
1. Wetland classifications per USFWS' Cowardin et al. 1979. (https://www.nps.gov/goga/learn/management/upload/-1411-Classification-of-Wetlands-and-Deepwater-Habitats-of-the-U-S.pdf) 2. WoSS determinations per MEDEP. Natural Resource Protection Act. Chapter 310. Wetlands and Waterbodies Protection Rules. Section 4 A. Wetlands of Special Significance.							

Thank you for the opportunity to assist you with natural resource identification for this project. If you have any questions regarding the results provided in this report, please do not hesitate to contact me.

Sincerely,

Charles W. Ferris

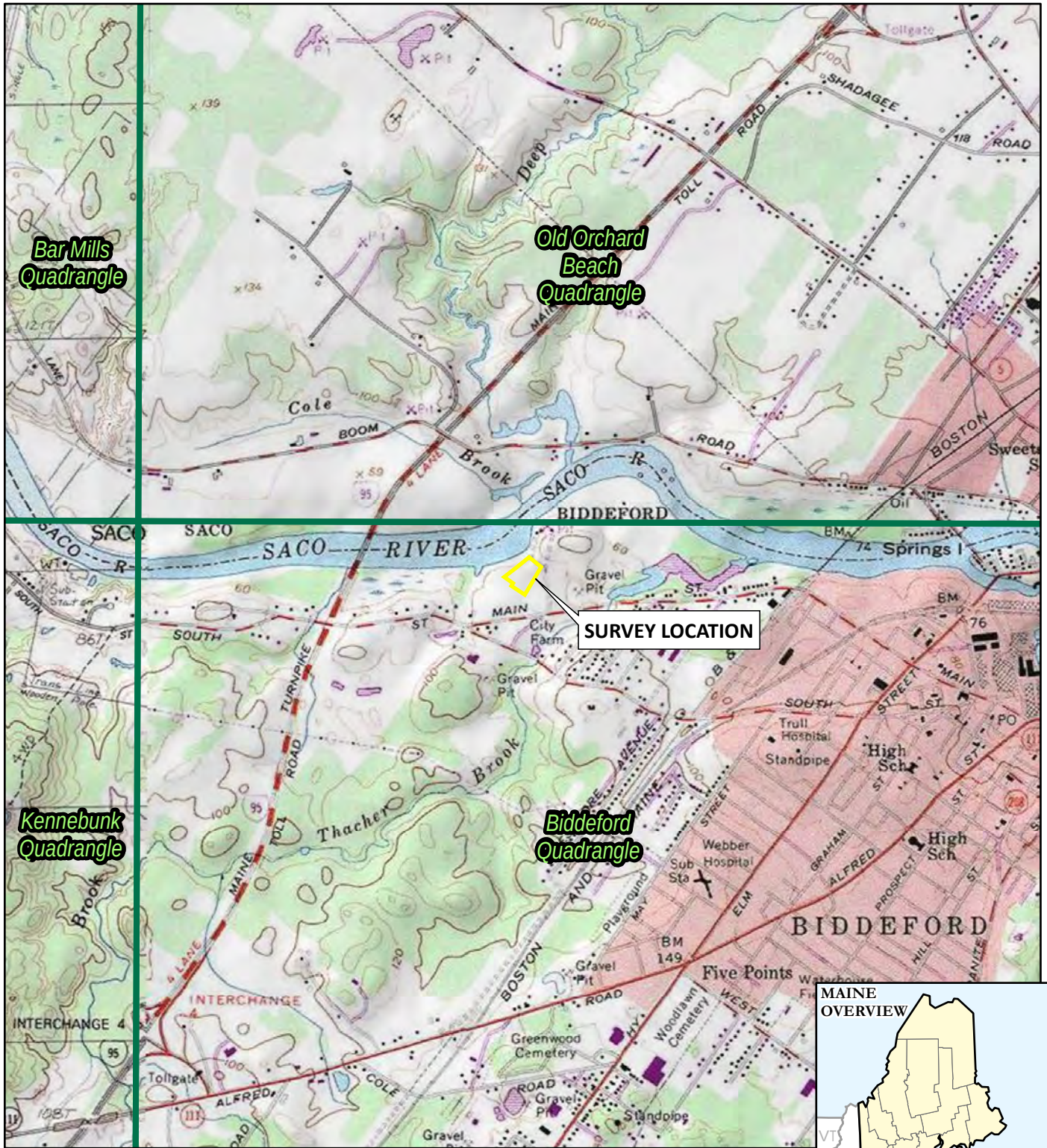
Chuck Ferris, Lead Environmental Specialist
Flycatcher LLC

Attachments (3)

ATTACHMENT 1

Figure 1. USGS Location Map

Figure 2. Delineated Natural Resource Map

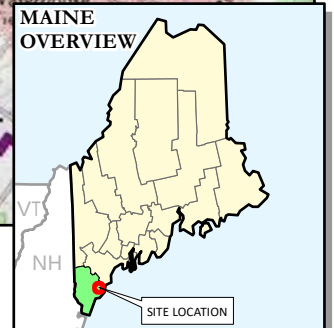


BASE MAP FROM USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.



1" = 2,000'
1:24,000

0 2,000 4,000
FEET



PROJECT:

**GORILL PALMER
550 MAIN STREET
BIDDEFORD, YORK COUNTY, MAINE**

LEGEND:



SURVEY AREA

USGS 7.5-MINUTE QUADRANGLE BOUNDARY

DRAWN BY:

D. KENWORTHY

CHECKED BY:

R. THURRELL

MONTH:

NOVEMBER

YEAR:

2024

PROJ. NO.:

20F-045

CLIENT:

GP

FIGURE 1 - USGS LOCATION MAP

Plot Date: 11/7/2024, 11:12:27 AM by DREWKENWORTHY -- LAYOUT: ANSI B(11"x17")
Path: C:\FLYCATCHER\Projects\GorillPalmer\GP_20F045_Biddeford_Delin_Fig2_Resources_11x17L.mxd

Coordinate System: NAD 1983 StatePlane Maine West FIPS 1802 Feet (Foot US)
Map Rotation: 0



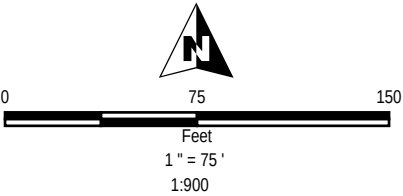
LEGEND

- SURVEY AREA
- UPLAND PLOT
- WETLAND PLOT
- DELINEATED WETLAND BOUNDARY
- DELINEATED WETLAND
- CONTOUR LINE (10' INTERVAL)
- CONTOUR LINE (2' INTERVAL)



NOTES:

- 1 BASEMAP IMAGERY FROM ESRI/NAIP "WORLD IMAGERY" SERVICE LAYER.
- 2 RESOURCE DELINEATIONS WERE CONDUCTED BY FLYCATCHER IN OCTOBER 2024.



PROJECT:		GORILL PALMER 550 MAIN STREET BIDDEFORD, YORK COUNTY, MAINE	
TITLE:		DELINEATED NATURAL RESOURCE MAP	
DRAWN BY:	D. KENWORTHY	PROJ NO.:	20F-045
CHECKED BY:	R. THURRELL	FIGURE 2	
MONTH:	NOVEMBER		
YEAR:	2024	 	
FILE NO.:			

GP_20F045_Biddeford_Delin_Fig2_Resources_11x17L.mxd

ATTACHMENT 2

Representative Photographs



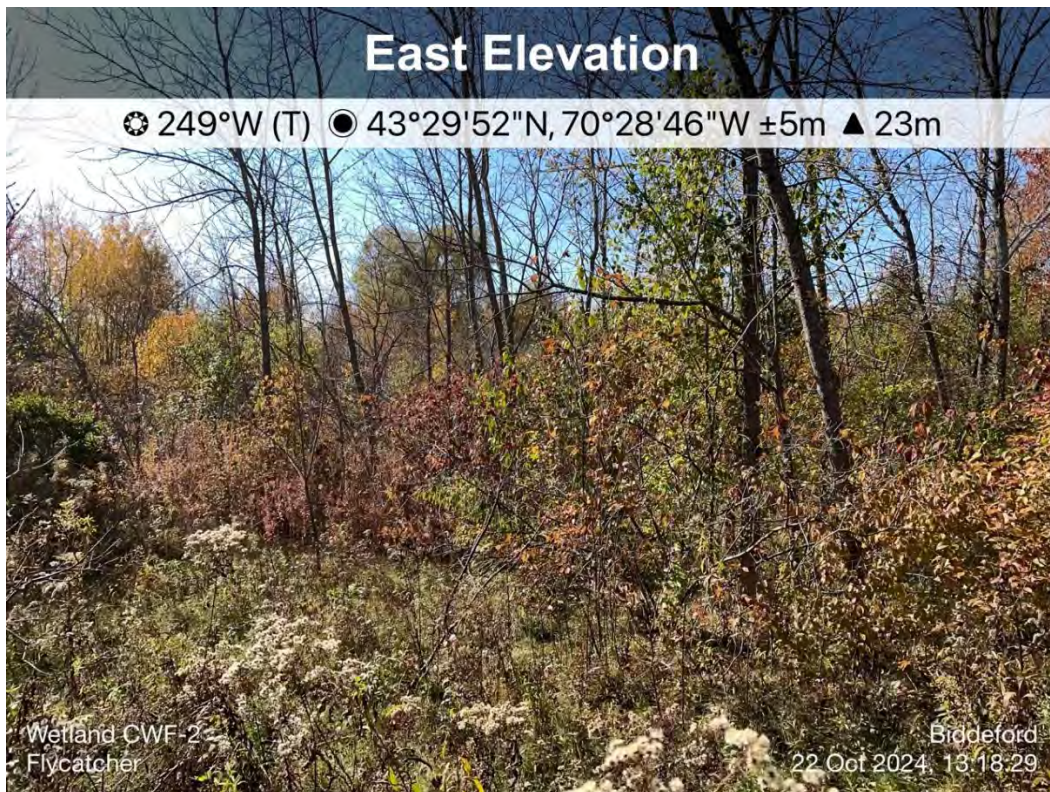
Forested wetland W-CWF-1, October 22, 2024.



Scrub-shrub portion of wetland W-CWF-2, October 22, 2024.



View of drainage in wetland W-CWF-2, October 22, 2024.



Forested wetland W-CWF-2, October 22, 2024.

ATTACHMENT 3

U.S. Army Corps of Engineers Wetland Determination Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Parkview Ct Biddeford City/County: Biddeford/York Sampling Date: 10/22/2024
 Applicant/Owner: Gorrill Palmer State: ME Sampling Point: Upl
 Investigator(s): Chuck Ferris Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Side slope Local relief (concave, convex, none): Convex Slope %: 2
 Subregion (LRR or MLRA): LRR R Lat: 43.498042 Long: 70.479790 Datum: NAD83
 Soil Map Unit Name: Elmwood fine sandy loam, 0 to 8 percent slopes (EmB) NWI classification: none
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

 Sampling Point: Upl

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Ulmus americana</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>37.5%</u> (A/B)																
2. <u>Acer rubrum</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Pinus strobus</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>																	
4. <u>Malus sylvestris</u>	<u>5</u>	<u>Yes</u>	<u>UPL</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
<u>25</u> =Total Cover				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="text-align: left;">Total % Cover of:</th> <th style="text-align: left;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>25</u></td> <td>x 2 = <u>50</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>85</u></td> <td>x 4 = <u>340</u></td> </tr> <tr> <td>UPL species <u>10</u></td> <td>x 5 = <u>50</u></td> </tr> <tr> <td>Column Totals: <u>130</u> (A)</td> <td><u>470</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.62</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>25</u>	x 2 = <u>50</u>	FAC species <u>10</u>	x 3 = <u>30</u>	FACU species <u>85</u>	x 4 = <u>340</u>	UPL species <u>10</u>	x 5 = <u>50</u>	Column Totals: <u>130</u> (A)	<u>470</u> (B)	Prevalence Index = B/A = <u>3.62</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>25</u>	x 2 = <u>50</u>																			
FAC species <u>10</u>	x 3 = <u>30</u>																			
FACU species <u>85</u>	x 4 = <u>340</u>																			
UPL species <u>10</u>	x 5 = <u>50</u>																			
Column Totals: <u>130</u> (A)	<u>470</u> (B)																			
Prevalence Index = B/A = <u>3.62</u>																				
<u>25</u> =Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u>Cornus alba</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u>Lonicera morrowii</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Malus sylvestris</u>	<u>5</u>	<u>Yes</u>	<u>UPL</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
<u>25</u> =Total Cover				Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
<u>25</u> =Total Cover																				
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u>Festuca rubra</u>	<u>70</u>	<u>Yes</u>	<u>FACU</u>																	
2. <u>Solidago rugosa</u>	<u>5</u>	<u>No</u>	<u>FAC</u>																	
3. <u>Doellingeria umbellata</u>	<u>5</u>	<u>No</u>	<u>FACW</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
<u>80</u> =Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
<u>80</u> =Total Cover																				
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
<u> </u> =Total Cover																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

Sampling Point	Upl
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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Parkview Ct Biddeford City/County: Biddeford/York Sampling Date: 10/22/2024
 Applicant/Owner: Gorrill Palmer State: ME Sampling Point: Wet
 Investigator(s): Chuck Ferris Section, Township, Range: _____

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope %: 2

Subregion (LRR or MLRA): LRR R Lat: 43.497926 Long: 70.479670 Datum: NAD83

Soil Map Unit Name: Elmwood fine sandy loam, 0 to 8 percent slopes (EmB) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) <u>X</u> Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) <u>X</u> Drainage Patterns (B10) <u>X</u> Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

 Sampling Point: Wet

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. <u>Ulmus americana</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>																	
3. <u>Fraxinus pennsylvanica</u>	<u>5</u>	<u>No</u>	<u>FACW</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>35</u>	=Total Cover	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>5</u></td> <td>x 1 = <u>5</u></td> </tr> <tr> <td>FACW species <u>120</u></td> <td>x 2 = <u>240</u></td> </tr> <tr> <td>FAC species <u>15</u></td> <td>x 3 = <u>45</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>140</u> (A)</td> <td><u>290</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.07</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>5</u>	x 1 = <u>5</u>	FACW species <u>120</u>	x 2 = <u>240</u>	FAC species <u>15</u>	x 3 = <u>45</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>140</u> (A)	<u>290</u> (B)	Prevalence Index = B/A = <u>2.07</u>	
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Column Totals: <u>140</u> (A)	<u>290</u> (B)																			
Prevalence Index = B/A = <u>2.07</u>																				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u>Cornus alba</u>	<u>40</u>	<u>Yes</u>	<u>FACW</u>																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>40</u>	=Total Cover	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>X</u> <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u>Onoclea sensibilis</u>	<u>60</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u>Lythrum salicaria</u>	<u>5</u>	<u>No</u>	<u>OBL</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
		<u>65</u>	=Total Cover	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
		_____	=Total Cover	Hydrophytic Vegetation Present? Yes <u>X</u> No _____																

Remarks: (Include photo numbers here or on a separate sheet.)

Sampling Point	Wet
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ATTACHMENT 10

AGENCY CORRESPONDENCE



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Maine Ecological Services Field Office

P. O. Box A

East Orland, ME 04431

Phone: (207) 469-7300 Fax: (207) 902-1588



In Reply Refer To:

11/19/2024 14:43:39 UTC

Project Code: 2025-0021311

Project Name: Forest Green Apartments

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

To Whom It May Concern:

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

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

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

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

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

<https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see <https://www.fws.gov/program/migratory-bird-permit/what-we-do>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see <https://www.fws.gov/library/collections/threats-birds>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/partner/council-conservation-migratory-birds>.

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

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

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

This species list is provided by:

Maine Ecological Services Field Office

P. O. Box A

East Orland, ME 04431

(207) 469-7300

PROJECT SUMMARY

Project Code: 2025-0021311

Project Name: Forest Green Apartments

Project Type: Residential Construction

Project Description: Residential Development

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@43.497419550000004,-70.48094647707944,14z>



Counties: York County, Maine

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

MAMMALS

NAME	STATUS
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

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

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act¹ and the Migratory Bird Treaty Act².

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats³, should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the ["Supplemental Information on Migratory Birds and Eagles"](#).

-
1. The [Bald and Golden Eagle Protection Act](#) of 1940.
 2. The [Migratory Birds Treaty Act](#) of 1918.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to [Bald Eagle Nesting and Sensitivity to Human Activity](#)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)

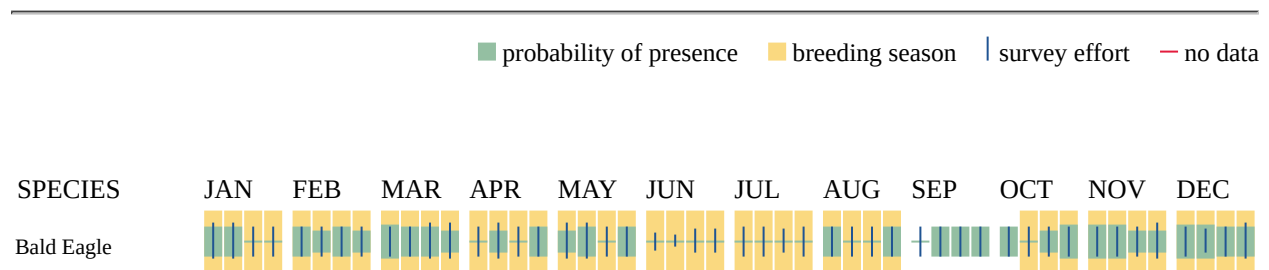
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (—)

A week is marked as having no data if there were no survey events for that week.



Non-BCC
Vulnerable

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats³ should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "[Supplemental Information on Migratory Birds and Eagles](#)".

-
1. The [Migratory Birds Treaty Act](#) of 1918.
 2. The [Bald and Golden Eagle Protection Act](#) of 1940.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Oystercatcher <i>Haematopus palliatus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8935	Breeds Apr 15 to Aug 31

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Black Skimmer <i>Rynchops niger</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234	Breeds May 20 to Sep 15
Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Blue-winged Warbler <i>Vermivora cyanoptera</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9509	Breeds May 1 to Jun 30
Bobolink <i>Dolichonyx oryzivorus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9454	Breeds May 20 to Jul 31
Canada Warbler <i>Cardellina canadensis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9643	Breeds May 20 to Aug 10
Chimney Swift <i>Chaetura pelagica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Eastern Whip-poor-will <i>Antrostomus vociferus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10678	Breeds May 1 to Aug 20
Grasshopper Sparrow <i>Ammodramus savannarum perpallidus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8329	Breeds Jun 1 to Aug 20
Gull-billed Tern <i>Gelochelidon nilotica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9501	Breeds May 1 to Jul 31

NAME	BREEDING SEASON
Hudsonian Godwit <i>Limosa haemastica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9482	Breeds elsewhere
Least Tern <i>Sternula antillarum antillarum</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/11919	Breeds Apr 25 to Sep 5
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Pectoral Sandpiper <i>Calidris melanotos</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9561	Breeds elsewhere
Prairie Warbler <i>Setophaga discolor</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9513	Breeds May 1 to Jul 31
Purple Sandpiper <i>Calidris maritima</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9574	Breeds elsewhere
Ruddy Turnstone <i>Arenaria interpres morinella</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/10633	Breeds elsewhere
Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9478	Breeds elsewhere
Saltmarsh Sparrow <i>Ammodramus caudacuta</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9719	Breeds May 15 to Sep 5
Scarlet Tanager <i>Piranga olivacea</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/11967	Breeds May 10 to Aug 10

NAME	BREEDING SEASON
Semipalmated Sandpiper <i>Calidris pusilla</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9603	Breeds elsewhere
Short-billed Dowitcher <i>Limnodromus griseus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Whimbrel <i>Numenius phaeopus hudsonicus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/11991	Breeds elsewhere
Willet <i>Tringa semipalmata</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10669	Breeds Apr 20 to Aug 5
Wood Thrush <i>Hylocichla mustelina</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9431	Breeds May 10 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)

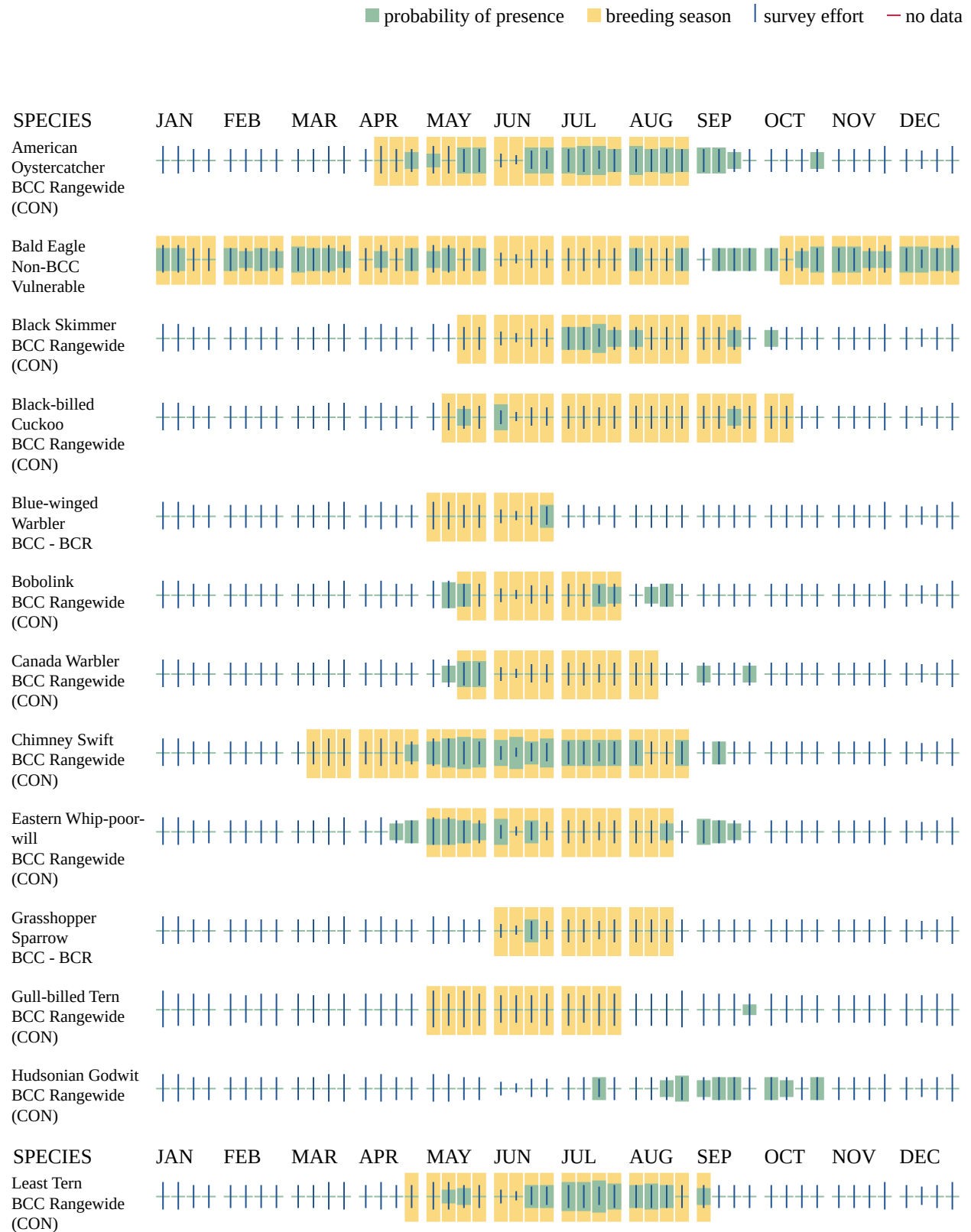
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

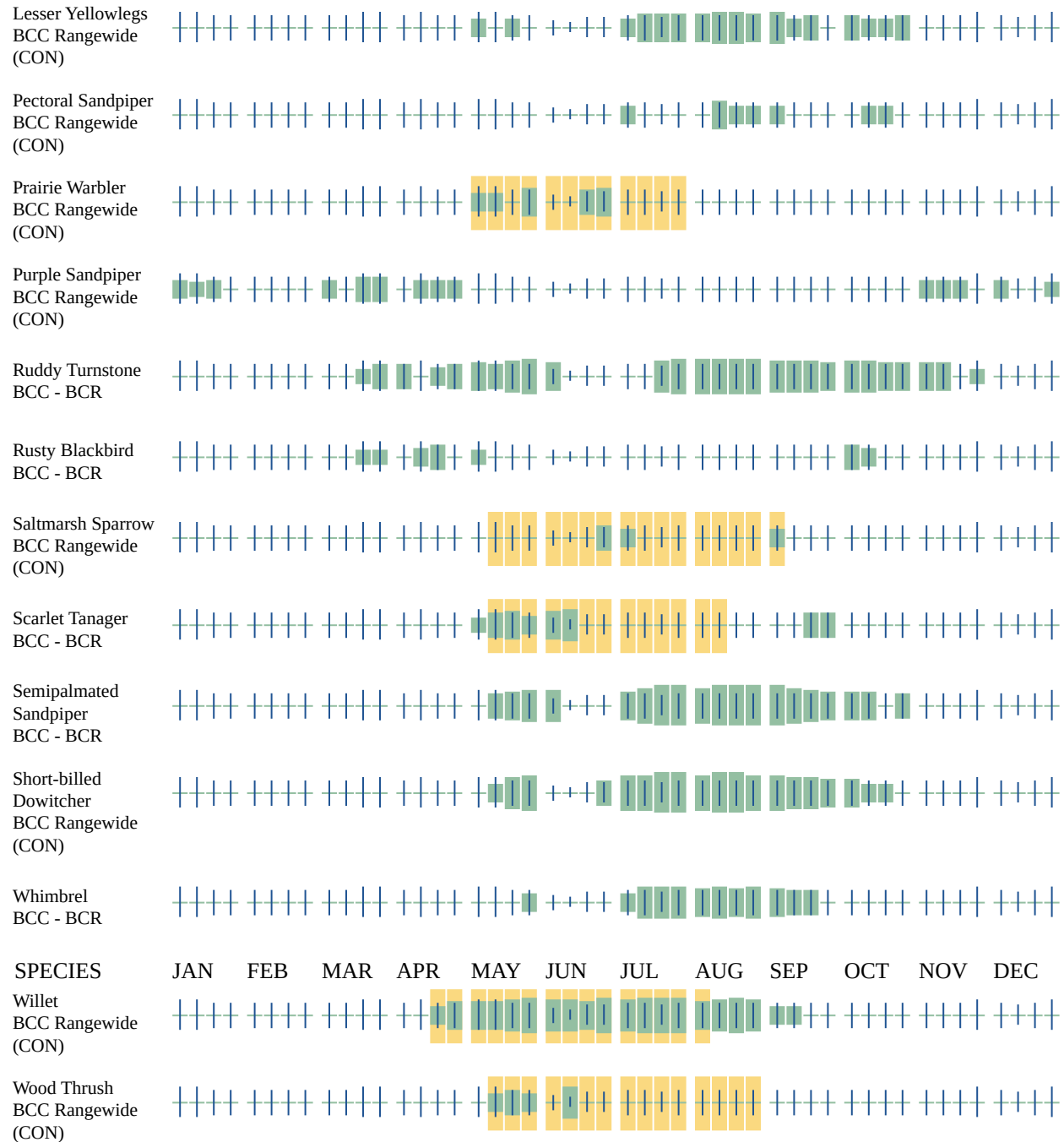
Survey Effort (|)

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (—)

A week is marked as having no data if there were no survey events for that week.





Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

WETLANDS

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER EMERGENT WETLAND

- PEM1B

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1E

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Ethan Chadwick
Address: 300 Southborough Drive
City: South Portland
State: ME
Zip: 04116
Email: echadwick@gorrillpalmer.com
Phone: 2075955195

Endangered Species Act Review

DETERMINATION KEY

Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key

Release date: November 7, 2024

You completed the latest version of this key, published November 7, 2024, and reached a determination of not applicable for species or critical habitats covered by the key.

This determination key (key) is intended to streamline review of projects for potential effects to the northern long-eared bat (*Myotis septentrionalis*; NLEB) and the proposed tricolored bat (*Perimyotis subflavus*; TCB). This key is designed as a tool to help Federal agencies and other project proponents decide if their proposed action has the potential to adversely affect the northern long-eared bat or jeopardize the continued existence of the proposed tricolored bat and covers certain routine and predictable projects for which predetermined consultation outcomes are feasible.

This key will replace the NLEB Rangewide Key in order to provide for the addition of TCB to the key. Letters provided through use of the NLEB Rangewide Key will still be valid, but the key will no longer be available to users. If a project needs to be reassessed, please use the updated NLEB and TCB Rangewide Key.

Federal agencies must consult with U.S. Fish and Wildlife Service under section 7(a)(2) of the Endangered Species Act (ESA) when an action may affect a listed species. TCB is proposed for listing as endangered under the ESA, but not yet listed. For actions that may affect a proposed species, agencies cannot consult, but they can confer under the authority of section 7(a)(4) of the ESA. Such conferences can follow the procedures for a consultation and be adopted as such if and when the proposed species is listed. Should the TCB be listed, agencies must review projects that are not yet complete, or projects with ongoing effects within the TCB range that previously received a NE or NLAA determination from the key to confirm that the determination is still accurate.

Some projects may be outside the scope of this key. Activities that fall outside the scope of this key will require additional evaluation and/or consultation outside of the IPaC application; please contact the appropriate Ecological Service Field Office if you have questions.

The link below provides the information used to support the standing analyses and key.

<https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis>

If your project qualifies for use of this key, you will be prompted to answer questions about your project to help you evaluate its effects on the northern long-eared bat and/or tricolored bat. Three outcomes are possible:

- 1) If your completed review indicates a "No Effect" (NE) for northern long-eared bat and tricolored bat, and you have made separate "No Effect" determinations for all other species and critical habitats, if any, on your Official Species List, print your IPaC output letter for your files to document your compliance with the Endangered Species Act.
- 2) For Federal projects with a "Not Likely to Adversely Affect" determination, our concurrence becomes valid if you do not hear otherwise after a 15-day review period, as specified in your letter.
- 3) If your output letter indicates additional coordination with the appropriate Ecological Services Field Office is necessary (i.e., you get a "May Affect" determination" without a concurrence that adverse effects are not likely), you will be provided additional guidance on contacting the Service to continue ESA coordination outside of this key; ESA compliance cannot be concluded using the key for "May Affect" determinations.

Please note that only one assisted key may be completed per species for each project. Please carefully review the descriptions of all available keys to select the most appropriate key for your project. For instance, federal transportation projects with potential effects to listed bats may be advised to complete the key entitled, FHWA, FRA, FTA Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bat. Finally, be advised that this key is intended to assist the user in evaluating the effects of their actions on northern long-eared bat and/or tricolored bat. It does not authorize any activities that are otherwise prohibited by the Endangered Species Act (e.g., for wildlife: import/export, Interstate or foreign commerce, possession of illegally taken wildlife, etc.; for plants: import/export, reduce to possession, malicious destruction on Federal lands, commercial sale, etc.) or other Federal or state statutes.

Species covered by this key

This key covers the following species expected to occur in this project area:

Tricolored Bat *Perimyotis subflavus*

The following species, also covered by this key, are not expected to occur in this project area:

Critical habitats covered by this key

This key covers the critical habitats for the following species expected to occur in this project area:

None

For more information about this determination key, including a list of all potential questions, refer to the [detailed overview](#).

Qualification interview

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed bats or any other listed species?

Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

☒ No

2. Is the action area wholly within Zone 2 of the year-round active area for northern long-eared bat and/or tricolored bat?

☒ Automatically answered

No

3. Does the action area intersect Zone 1 of the year-round active area for northern long-eared bat and/or tricolored bat?

☒ Automatically answered

No

4. Does any component of the action involve leasing, construction or operation of wind turbines? Answer 'yes' if the activities considered are conducted with the intention of gathering survey information to inform the leasing, construction, or operation of wind turbines.

Note: For federal actions (Action means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas.

Examples include, but are not limited to:

- (a) actions intended to conserve listed species or their habitat;
- (b) the promulgation of regulations;
- (c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or
- (d) actions directly or indirectly causing modifications to the land, water, or air.

50 CFR 402.02 "Action" .), answer 'yes' if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

☒ No

5. Is the proposed action (A federal action means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to:

- (a) actions intended to conserve listed species or their habitat;
- (b) the promulgation of regulations;
- (c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or
- (d) actions directly or indirectly causing modifications to the land, water, or air.

50 CFR 402.02 "Action".) authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

☒ No

6. [Semantic] Is the action area located within 0.5 miles of a known bat hibernaculum?

Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

☒ Automatically answered

No

7. Does the action area contain any winter roosts or caves (or associated sinkholes, fissures (A narrow opening or crack of considerable length and depth usually occurring from some breaking or parting;), or other karst (An irregular limestone region with sinkholes,

underground streams, and caverns.) features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating bats?

☒ No

8. Does the action area contain (1) talus (A slope formed especially by an accumulation of rock debris or rock debris at the base of a cliff.) or (2) anthropogenic or naturally formed rock shelters or crevices in rocky outcrops, rock faces or cliffs?

☒ No

9. Will the action cause effects to a bridge?

Note: Covered bridges should be considered as bridges in this question.

☒ No

10. Will the action result in effects to a culvert or tunnel at any time of year?

☒ No

11. Are trees present within 1000 feet of the action area?

Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: <https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines>.

☒ Yes

12. Does the action include the intentional exclusion of bats from a building or structure?

Note: Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats or tricolored bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local Ecological Services Field Office to help assess whether northern long-eared bats or tricolored bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators

Association bats”). Also see the White-Nose Syndrome Response Team's guide for bat control in structures.

☒ Yes

Your project may result in purposeful take. Your local U.S. Fish and Wildlife Services Ecological Services Field Office may help assess whether northern long-eared bats or tricolored bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term “National Wildlife Control Operators Association bats”). Also see the White-Nose Syndrome Response Team’s guide for bat control in structures. To find the local office for your project, open the “Project Home” or “Regulatory Review” page for your project in IPaC and look for “Local Office” in the upper right-hand part of the page.

If you no longer wish to use this key for your project, you can delete your evaluation.



STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
353 WATER STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041



March 20, 2025

Ethan Chadwick
Gorrill Palmer
300 Southborough Drive, Suite 200
South Portland, ME 04106

RE: Information Request - 641 Main Street, Development, Biddeford Project ID 8736-10099

Dear Ethan:

Per your request received on December 4, 2024, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information sources for known locations of Endangered, Threatened, and Special Concern (Rare) species; designated Essential and Significant Wildlife Habitats; inland fisheries and aquatic habitats; and other protected natural resource concerns within the vicinity of the **641 Main Street, Development, Biddeford** project, pursuant to MDIFW's authority. MDIFW understands the project proposes two residential buildings, a parking lot, and associated stormwater facilities. For the purposes of this review, MDIFW presumes tree clearing would occur.

Our Department has not mapped any Essential Habitats that would be affected by this project.

ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

Bat Species

Of the eight species of bats that occur in Maine, four species are afforded protection under Maines Endangered Species Act (MESA, 12 M.R.S 12801 et. seq.): little brown bat (State Endangered), northern long-eared bat (State Endangered), eastern small-footed bat (State Threatened), and tri-colored bat (State Threatened). The four remaining bat species are designated as Species of Special Concern: big brown bat, red bat, hoary bat, and silver-haired bat. While a comprehensive statewide inventory for bats has not been completed, based on historical evidence it is likely that several of these species occur within the project area during spring/fall migration, the summer breeding season, and/or for overwintering. However, our Department does not anticipate significant impacts to any of the bat species as a result of this project.

Blanding's Turtle

Blanding's turtles, a State Endangered species, have been documented in the vicinity of the proposed project area. In Maine, Blanding's turtles are found most frequently in vernal pools, acidic wetlands and larger marsh complexes, within blocks of forested habitat. They also use small streams, shrub swamps, wet meadows, bogs, and forested swamps. Development activity that compromises riparian integrity or migration permeability among seasonally critical wetlands

March 20, 2025

Letter to Ethan Chadwick, Gorrill Palmer

Comments RE: 641 Main Street, Development, Biddeford

can lead to degradation of habitat quality and potential loss of local populations. Additionally, development projects that lead to significant increases in local traffic volume will likely lead to increased roadkill and possible extirpation of the local population. However, based on MDIFW's review of site conditions, we anticipate minimal impacts to this species as a result of project activities.

SIGNIFICANT WILDLIFE HABITAT

Significant Vernal Pools

At this time MDIFW Significant Wildlife Habitat (SWH) maps indicate no known presence of Significant Vernal Pools (SVPs) in the project search area. However, a comprehensive statewide inventory for Significant Vernal Pools has not been completed. SVPs are not included on MDIFW maps until project areas have been surveyed using approved methods and the survey results confirmed. Therefore, their absence from resource maps is not necessarily indicative of an absence on the ground. If any tree clearing is proposed, we recommend that surveys for vernal pools be conducted within the project boundary by qualified wetland scientists prior to final project design to determine whether there are Significant Vernal Pools present in the area. These surveys should extend up to 250 feet beyond the anticipated project footprint because of potential performance standard requirements for off-site Significant Vernal Pools, assuming such pools are located on land owned or controlled by the applicant. Once surveys are completed, survey forms should be submitted to our Department for review well before the submission of any necessary permits. MDIFW will need to review and verify any vernal pool data prior to final determination of significance.

AQUATIC RESOURCES

Fish Habitat

We recommend that 100-foot undisturbed vegetated buffers be maintained along streams. Buffers should be measured from the edge of stream or associated fringe and floodplain wetlands. Maintaining and enhancing buffers along streams is critical to the protection of water temperatures, water quality, natural inputs of coarse woody debris, and various forms of aquatic life necessary to support conditions required by many fish species. Stream crossings should be avoided, but if a stream crossing is necessary, or an existing crossing needs to be modified, it should be designed to provide full fish passage. Small streams, including intermittent streams, can provide crucial rearing habitat, cold water for thermal refugia, and abundant food for juvenile salmonids on a seasonal basis and undersized crossings may inhibit these functions. Generally, GMDIFW recommends that all new, modified, and replacement stream crossings be sized to span at least 1.2 times the bankfull width of the stream. In addition, we generally recommend that stream crossings be open bottomed (i.e., natural bottom), although embedded structures which are backfilled with representative streambed material have been shown to be effective in not only providing habitat connectivity for fish but also for other aquatic organisms. Construction Best Management Practices should be closely followed to avoid erosion, sedimentation, alteration of stream flow, and other impacts as eroding soils from construction activities can travel significant distances as well as transport other pollutants resulting in direct

March 20, 2025

Letter to Ethan Chadwick, Gorrill Palmer

Comments RE: 641 Main Street, Development, Biddeford

impacts to fisheries and aquatic habitat. In addition, we recommend that any necessary instream work occur between July 15 and October 1.

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance, we recommend additional consultation with the municipality, and other state resource and regulatory agencies including the Maine Natural Areas Program and the Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance. For information on federally listed species, contact the U.S. Fish and Wildlife Service's Maine Field Office (207-469-7300, mainefieldoffice@fws.gov).

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

A handwritten signature in black ink, appearing to read "Andrew Wood", written in a cursive style.

Andrew Wood

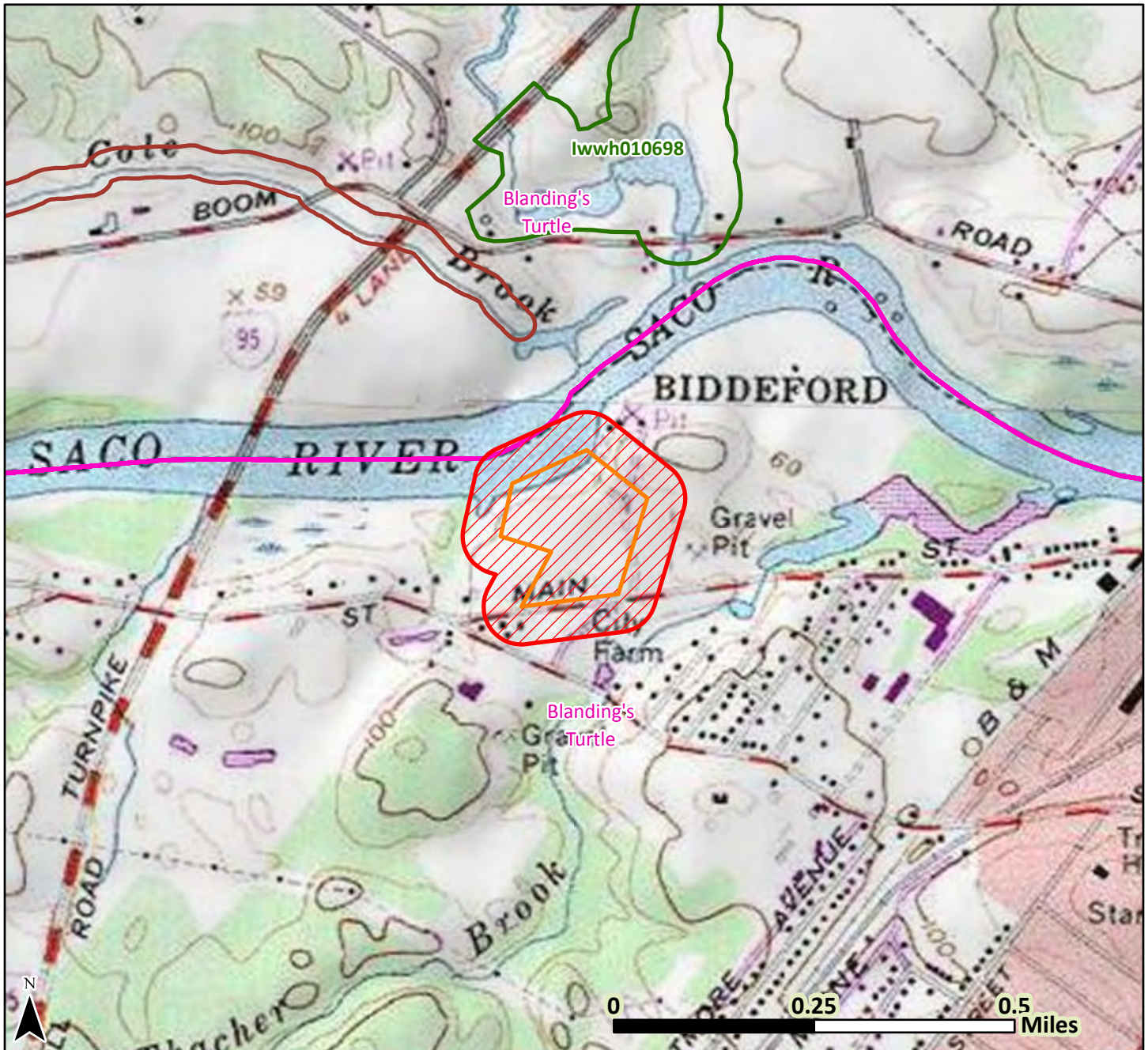
Environmental Review Coordinator



Maine Department of Inland Fisheries and Wildlife
Project Area Review of Fish and Wildlife Observations and Priority Habitats

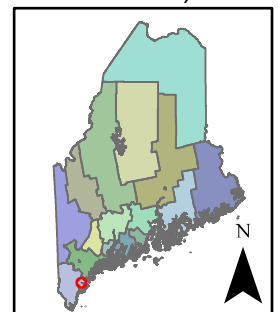
641 Main Street, Development, Biddeford

Project ID 8736, Version ID 10099



- | | |
|-------------------|------------------------------|
| County Boundary | E, T, & SC Species |
| Township Boundary | Inland Waterfowl/Wading Bird |
| Project Footprint | Special Concern Fish |
| Search Area | |

Date: 12/11/2024
Projection:
UTM Zone 19N, NAD83



Legend only lists resources visible in the map; see response letter for all resources that were evaluated.



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

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

December 17, 2024

Ethan Chadwick
Gorrill Palmer
300 Southborough Drive Suite 200
South Portland, ME 04106

Via email: echadwick@gorillpalmer.com

Re: Rare and exemplary botanical features in proximity to: #4323, Residential Development, 641 Main Street, Biddeford, Maine

Dear Ethan Chadwick:

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received December 4, 2024 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Biddeford, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

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

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

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

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



PHONE: (207) 287-8044
WWW.MAINE.GOV/DACF/MNAP

The Maine Natural Areas Program (MNAP) is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. MNAP welcomes coordination with individuals or organizations proposing environmental alteration or conducting environmental assessments. If, however, data provided by MNAP are to be published in any form, the Program should be informed at the outset and credited as the source.

The Maine Natural Areas Program has instituted a fee structure of \$75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for \$150.00 for two hours of our services.

Thank you for using MNAP in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Lisa St. Hilaire

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

**Rare and Exemplary Botanical Features within 4 miles of
Project: #4323, Residential Development, 641 Main Street, Biddeford, Maine**

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Atlantic White Cedar						
	SC	S2	G4	2017-07-26	3	Forested wetland
Atlantic White Cedar Bog						
		S1	G3G4	2017-07-26	3	
Beach Plum						
	E	S1	G4	1933-06-21	9	Rocky coastal (non-forested, upland)
	E	S1	G4	1932-09	12	Rocky coastal (non-forested, upland)
Brackish Tidal Marsh						
		S3	GNR	2009-07-29	1	
Button Sedge						
	SC	S2	G5	1880-09-06	2	
	SC	S2	G5	2000-08-15	3	
	SC	S2	G5	2017-07-26	5	
Clothed Sedge						
	E	S1	G5	2006-06-07	7	Dry barrens (partly forested, upland)
	E	S1	G5	2006-06-16	8	Dry barrens (partly forested, upland)
Creeping Spike-moss						
	E	S2	G5	1920-07-30	6	Open wetland, not coastal nor rivershore (non-forested,
Estuary Bur-marigold						
	SC	S3	G4	2009-07-30	35	Tidal wetland (non-forested, wetland)
Freshwater Tidal Marsh						
		S2	G4?	2009-07-30	1	
Horned Pondweed						
	SC	S2	G5	1907-08-18	10	Tidal wetland (non-forested, wetland)

Horned Pondweed						
	SC	S2	G5	2000-08-28	15	Tidal wetland (non-forested, wetland)
	SC	S2	G5	2007-07-05	19	Tidal wetland (non-forested, wetland)
Lilaeopsis						
	SC	S2	G5	2012-10-21	10	Tidal wetland (non-forested, wetland)
	SC	S2	G5	2007-07-05	11	Tidal wetland (non-forested, wetland)
Long's Bulrush						
	T	S2	G3	2017-07-26	10	Open wetland, not coastal nor rivershore (non-forested,
Long-spined Sandbur						
	PE	SH	G5	1984	1	Rocky coastal (non-forested, upland)
Mudwort						
	SC	S3	G5	2009-07-30	35	Tidal wetland (non-forested, wetland)
Pale Green Orchis						
	SC	S2	G4?T4Q	2008-06-27	52	Non-tidal rivershore (non-forested, seasonally wet),Open
	SC	S2	G4?T4Q	2008-06-27	53	Non-tidal rivershore (non-forested, seasonally wet),Open
	SC	S2	G4?T4Q	2008-06-27	54	Non-tidal rivershore (non-forested, seasonally wet),Open
Parker's Pipewort						
	SC	S3	G3	2017-08-31	33	Tidal wetland (non-forested, wetland)
Pendulous Bulrush						
	SC	S2	G5	2023-08-22	8	Open wetland, not coastal nor rivershore (non-forested,
Pitch Pine Bog						
		S2	G3G5	2017-07-26	4	
		S2	G3G5	2015-09-29	20	
Pitch Pine Woodland						
		S3	G2	2016-08-09	30	
Pocket Swamp						
		S2	G5	2020-06-12	18	
		S2	G5	2020-06-12	33	
Pygmyweed						

Pygmyweed						
	SC	S2S3	G5	2009-07-29	25	Open water (non-forested, wetland)
	SC	S2S3	G5	2007-07-05	28	Open water (non-forested, wetland)
Raised Level Bog Ecosystem						
		S4	GNR	2017-07-26	3	
Red Maple Swamp						
		S5	G3G5	2007-06-05	17	
Salt-hay Saltmarsh						
		S3	G5	2010-10-14	12	
Saltmarsh False-foxglove						
	SC	S3	G5	1982	9	Tidal wetland (non-forested, wetland)
	SC	S3	G5	1982	12	Tidal wetland (non-forested, wetland)
Schreber's Wood-aster						
	PE	SX	G4	1894-09	1	Rocky coastal (non-forested, upland)
Small Reed Grass						
	SC	S3	G5	2000-08-15	12	Old field/roadside (non-forested, wetland or upland)
Smooth Winterberry Holly						
	SC	S3	G5	2018-09-15	24	Forested wetland
	SC	S3	G5	2004	36	Forested wetland
	SC	S3	G5	2020-6-12	39	Forested wetland
Southern Slender Ladies'-tresses						
	PE	SH	G5T4T5	1918-08-27	1	Dry barrens (partly forested, upland)
Spongy-leaved Arrowhead						
	SC	S3	G5T4	2012-10-21	42	Tidal wetland (non-forested, wetland)
Stiff Arrowhead						
	SC	S2	G5	2006-06-16	15	Tidal wetland (non-forested, wetland)
Sweet Pepper-bush						
	SC	S2	G5	1917-09	9	Hardwood to mixed forest (forest, upland),Forested
Tidal Marsh Estuary Ecosystem						

Tidal Marsh Estuary Ecosystem					
	S3	GNR	2010-10-14	4	
Water Pimpernel					
SC	S3	G5	2012-10-21	26	Tidal wetland (non-forested, wetland)
Yellow Wild Indigo					
PE	SH	G5	1960-06-21	2	Dry barrens (partly forested, upland),Hardwood to mixed

Date Exported: 2024-12-17 12:12

Conservation Status Ranks

State and Global Ranks: This ranking system facilitates a quick assessment of a species' or habitat type's rarity and is the primary tool used to develop conservation, protection, and restoration priorities for individual species and natural habitat types. Each species or habitat is assigned both a state (S) and global (G) rank on a scale of critically imperiled (1) to secure (5). Factors such as range extent, the number of occurrences, intensity of threats, etc., contribute to the assignment of state and global ranks. The definitions for state and global ranks are comparable but applied at different geographic scales; something that is state imperiled may be globally secure.

The information supporting these ranks is developed and maintained by the Maine Natural Areas Program (state ranks) and NatureServe (global ranks).

Rank	Definition
S1 G1	Critically Imperiled – At very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.
S2 G2	Imperiled – At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
S3 G3	Vulnerable – At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
S4 G4	Apparently Secure – At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
S5 G5	Secure – At very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
SX GX	Presumed Extinct – Not located despite intensive searches and virtually no likelihood of rediscovery.
SH GH	Possibly Extinct – Known from only historical occurrences but still some hope of rediscovery.
S#S# G#G#	Range Rank – A numeric range rank (e.g., S2S3 or S1S3) is used to indicate any range of uncertainty about the status of the species or ecosystem.
SU GU	Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
GNR SNR	Unranked – Global or subnational conservation status not yet assessed.
SNA GNA	Not Applicable – A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities (e.g., non-native species or ecosystems).
Qualifier	Definition
S#? G#?	Inexact Numeric Rank – Denotes inexact numeric rank.
Q	Questionable taxonomy that may reduce conservation priority – Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable. The “Q” modifier is only used at a global level.
T#	Intraspecific Taxon (trinomial) – The status of intraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank.

State Status: Endangered and Threatened are legal status designations authorized by statute. Please refer to MRSA Title 12, §544 and §544-B.

Status	Definition
E	Endangered – Any native plant species in danger of extinction throughout all or a significant portion of its range within the State or Federally listed as Endangered.
T	Threatened – Any native plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range in the State or Federally listed as Threatened.
SC	Special Concern – A native plant species that is rare in the State, but not rare enough to be considered Threatened or Endangered.
PE	Potentially Extirpated – A native plant species that has not been documented in the State in over 20 years, or loss of the last known occurrence.

Element Occurrence (EO) Ranks: Quality assessments that designate viability of a population or integrity of habitat. These ranks are based on size, condition, and landscape context. Range ranks (e.g., AB, BC) and uncertainty ranks (e.g., B?) are allowed. The Maine Natural Areas Program tracks all occurrences of rare plants and natural communities/ecosystems (S1-S3) as well as exemplary common natural community types (S4-S5 with EO ranks A/B).

Rank	Definition
A	Excellent – Excellent estimated viability/ecological integrity.
B	Good – Good estimated viability/ecological integrity.
C	Fair – Fair estimated viability/ecological integrity.
D	Poor – Poor estimated viability/ecological integrity.
E	Extant – Verified extant, but viability/ecological integrity not assessed.
H	Historical – Lack of field information within past 20 years verifying continued existence of the occurrence, but not enough to document extirpation.
X	Extirpated – Documented loss of population/destruction of habitat.
U	Unrankable – Occurrence unable to be ranked due to lack of sufficient information (e.g., possible mistaken identification).
NR	Not Ranked – An occurrence rank has not been assigned.

Visit the Maine Natural Areas Program website for more information
<http://www.maine.gov/dacf/mnap>





JANET T. MILLS
GOVERNOR

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

KIRK F. MOHNEY
DIRECTOR

February 12, 2025

Mr. Ethan Chadwick
Gorrill-Palmer
300 Southborough Dr
Suite 200
South Portland, ME 04106

Project: MHPC #2164-24 Forest Green Apartments; 641 Main St
Proposed Residential Development
Town: Machias, ME

Dear Mr. Chadwick:

In response to your recent request, I have reviewed the information received January 28, 2025 to continue consultation on the above referenced project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended.

Based on the information submitted, I have concluded that there will be no historic properties (architectural or archaeological) affected by this proposed undertaking, as defined by Section 106.

If you have any questions regarding consultation, please contact Megan M. Rideout of this office at, megan.m.rideout@maine.gov.

Sincerely,

Kirk F. Mohney
State Historic Preservation Officer

Tribal Historic Preservation Office
Passamaquoddy Tribe
PO Box 159 Princeton, Me. 04668
207-214-4051

April 1, 2025

GP – Ethan
300 Southborough Drive, Suite 200 | South
Portland, ME 04106

Re: Residential Development - Main Street and South Street in Biddeford.

Dear Ethan ;

The Passamaquoddy THPO has reviewed the following list regarding the historic properties and significant religious and cultural properties in accordance with NHPA, NEPA, AIRFA, NAGPRA, ARPA, Executive Order 13007 Indian Sacred Sites, Executive Order 13175 Consultation and Coordination with Indian Tribal Governments, and Executive Order 12898 Environmental Justice.

The items listed above will not have an impact with Passamaquoddy cultural concerns, if any artifacts are uncovered or human remains, please contact this office. If development is within 200 feet of river may require an archeologist survey.

Sincerely;

Donald Soctomah
THPO
Soctomah@gmail.com

Re: Historical Site Information Request

From Isaac St John <istjohn@maliseets.com>

Date Thu 4/24/2025 5:25 PM

To Ethan Chadwick <echadwick@gorrillpalmer.com>

 1 attachment (23 KB)

Outlook-qsfvkdqq.dat;

Good afternoon,

We do not have an immediate concern with your project or project site, and do not currently have the resources to fully investigate same. Should any human remains, archaeological properties or other items of historical importance be unearthed while working on this project, we recommend that you stop your project and report your findings to the appropriate authorities including the Houlton Band of Maliseet Indians.

Thank you,

Isaac St. John
Tribal Historic Preservation Officer
Houlton Band of Maliseet Indians
88 Bell Road
Littleton, ME 04730

From: Ethan Chadwick <echadwick@gorrillpalmer.com>

Sent: Friday, February 21, 2025 1:43 PM

To: 'istjohn@maliseets.com' <istjohn@maliseets.com>

Cc: Andrew J. Kurmin <AKurmin@gorrillpalmer.com>

Subject: Historical Site Information Request

Good Afternoon, Mr. St. John,

Please find the attached letter regarding a property in Biddeford, Maine. A location map is included for your reference. Physical copies of these documents will only be sent through the mail at your request.

Please do not hesitate to contact me with any questions or concerns.

Ethan Chadwick | Design Engineer

February 21, 2025

Attn: Jenny Gaenzle
Mi'kmaq Nation
7 Northern Road
Presque Isle, ME 04769

**Subject: Presence of Historic, Archaeological or Tribal Resources
Parkview Court
Biddeford, Maine**

Dear Ms. Gaenzle,

Gorrill Palmer has been retained to prepare plans and permit applications for the proposed residential development on a 11.0-acre lot with the development drive located approximately 570 feet away the intersection of Main Street and South Street in Biddeford. The project site is shown on the attached Location Map. At this time, the applicant is proposing the development of two new buildings, associated parking lot, utility infrastructure, and stormwater facilities.

To aid in the design, and as part of the permit applications, Gorrill Palmer requests information from the Aroostook Band of Mi'kmaqs relative to the presence of any nearby historic, archaeological, or tribal resources.

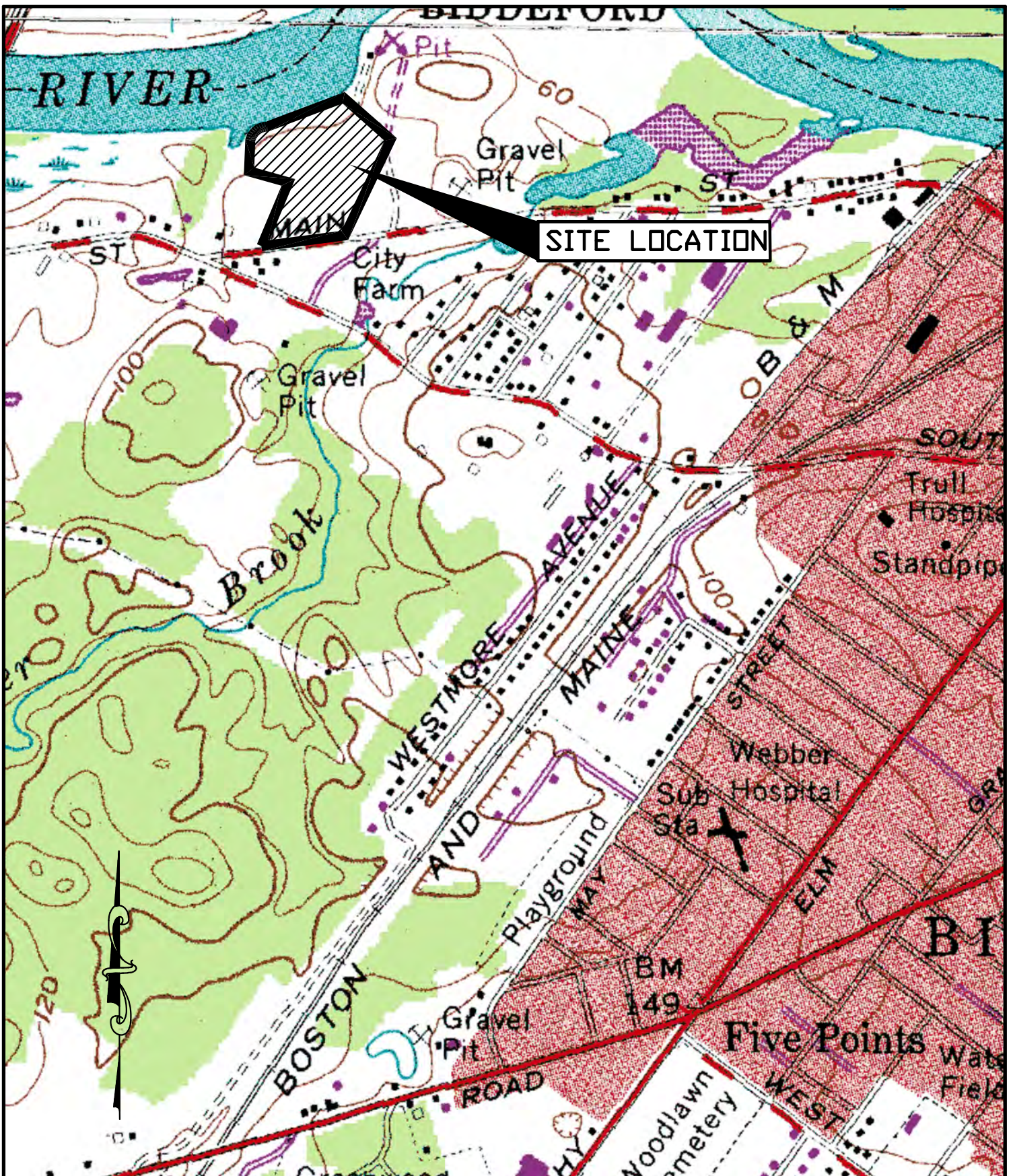
Thank you for your consideration. If you have any questions regarding the proposed project, please contact our office.

Sincerely,

Gorrill Palmer



Ethan Chadwick, EI
Design Engineer
Phone: (207) 772-2515
echadwick@gorrillpalmer.com



U.S.G.S. Location Map
 Forest Green Apartments Expansion - Biddeford, Maine
 U.S.G.S. Biddeford, State-7.5 Minute Series (Topographic)

Design: EJC	Date: NOV. 2024
Draft: EJC	Job No.: 4323
Checked: AJK	Scale: NTS
File Name: 4323-LOCATION MAP.dwg	



Gorrill Palmer, an LJB Engineering Company
 GorrillPalmer.com
 (207) 772-2515
 300 Southborough Drive - Suite 200
 South Portland, ME 04106

Figure

1

February 21, 2025

Attn: Mr. Chris Sockalexis, THPO
Penobscot Nation
12 Wabanaki Way
Indian Island, ME 04468

**Subject: Presence of Historic, Archaeological or Tribal Resources
Parkview Court
Biddeford, Maine**

Dear Mr. Sockalexis,

Gorrill Palmer has been retained to prepare plans and permit applications for the proposed residential development on a 11.0-acre lot with the development drive located approximately 570 feet away the intersection of Main Street and South Street in Biddeford. The project site is shown on the attached Location Map. At this time, the applicant is proposing the development of two new buildings, associated parking lot, utility infrastructure, and stormwater facilities.

To aid in the design, and as part of the permit applications, Gorrill Palmer requests information from the Penobscot Nation relative to the presence of any nearby historic, archaeological, or tribal resources.

Thank you for your consideration. If you have any questions regarding the proposed project, please contact our office.

Sincerely,

Gorrill Palmer



Ethan Chadwick, EI
Design Engineer
Phone: (207) 772-2515
echadwick@gorrillpalmer.com



STRUCTURAL



FALL PROTECTION
SAFETY



TRANSPORTATION



SITE DESIGN



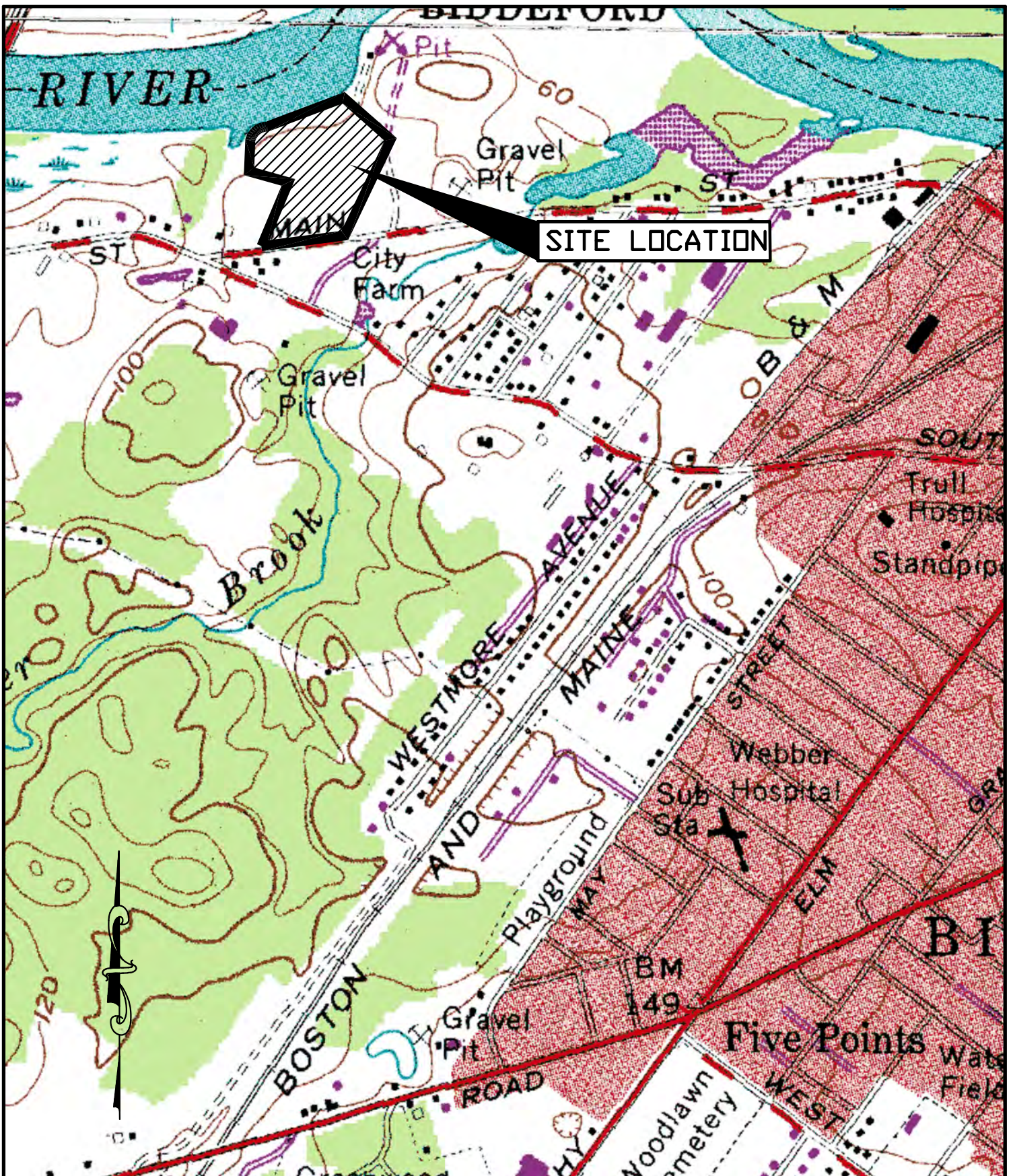
SURVEY



WATER
RESOURCES



TECHNOLOGY
Page 244 of 726



U.S.G.S. Location Map
 Forest Green Apartments Expansion - Biddeford, Maine
 U.S.G.S. Biddeford, State-7.5 Minute Series (Topographic)

Design: EJC	Date: NOV. 2024
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File Name: 4323-LOCATION MAP.dwg	



Gorrill Palmer, an LJB Engineering Company
 GorrillPalmer.com
 (207) 772-2515
 300 Southborough Drive - Suite 200
 South Portland, ME 04106

Figure

1

ATTACHMENT 11

PERFORMANCE GUARANTEE

City of Biddeford, Maine

COST ESTIMATE WORKSHEET



OWNER/APPLICANT:

Bateman Partners, LLC

PROJECT NAME:

1 Parkview Court - Forest Green Expansion

	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
1	Clearing and Grubbing	Acre	1.25	\$10,000.00	\$12,500.00
2	Erosion/Sediment Control	Lump Sum	1	\$10,000.00	\$10,000.00
3	Site Stabilization	Lump Sum	1	\$5,000.00	\$5,000.00
4	Sanitary Sewer				
	Manholes	Each	2	\$6,000.00	\$12,000.00
	8" Main	Linear Foot	472	\$80.00	\$37,760.00
5	Water Main				
	Main	Linear Foot	475	\$100.00	\$47,500.00
	6" Fire Service	Linear Foot	50	\$90.00	\$4,500.00
	2" Domestic Service	Linear Foot	50	\$20.00	\$1,000.00
6	Electric				
	Underground Utility Trench	Linear Foot	115	\$40.00	\$4,600.00
	Conduit/Wiring	Linear Foot	400	\$20.00	\$8,000.00
	Transformer Bases	Each	1	\$7,500.00	\$7,500.00
7	Storm Drainage				
	3' x 2' Pipe Arch Culvert	Linear Foot	257	\$95.00	\$24,415.00
	6" SD Pipe	Linear Foot	63	\$50.00	\$3,150.00
	Dog House Structure	Each	2	\$8,500.00	\$17,000.00
9	Excavate and Grade Subgrade	Cubic Yard	4200	\$15.00	\$63,000.00
10	Roadways/ Parking Area				
	Subbase Gravel	Cubic Yard	1390	\$25.00	\$34,750.00
	Base/Finish Gravel	Cubic Yard	310	\$30.00	\$9,300.00
	Base Paving	Ton	305	\$115.00	\$35,075.00
	Finish Paving	Ton	195	\$135.00	\$26,325.00
11	Sidewalks				
	Subbase Gravel	Cubic Yard	55	\$30.00	\$1,650.00
	Base/Finish Gravel	Cubic Yard	20	\$35.00	\$700.00
	Base Paving	Ton	15	\$115.00	\$1,725.00
	Finish Paving	Ton	15	\$135.00	\$2,025.00
13	Curbing	Linear Foot	650	\$20.00	\$13,000.00
13	Pavement Striping	Linear Foot	1670	\$1.50	\$2,505.00
14	Fencing	Linear Foot	350	\$20.00	\$7,000.00
15	Silt Fence	Linear Foot	1100	\$2.50	\$2,750.00
16	Loam and Seed	1,000 Square Feet	25	\$500.00	\$12,500.00
17	Riprap	Cubic Yard	55	\$120.00	\$6,600.00
18	Landscaping	Lump Sum	1	\$10,000.00	\$10,000.00
19	Reinforced Turf	Square Foot	2610	\$5.00	\$13,050.00
20	Clean Up	Lump Sum	1	\$5,000.00	\$5,000.00
21	As Builts	Lump Sum	1	\$1,000.00	\$1,000.00

COST ESTIMATE TOTAL:

\$442,880.00

150% of TOTAL:

\$664,320.00

FOR OFFICE USE ONLY

EROSION CONTROL/SITE STABILIZATION BOND (IF APPLICABLE):

City of Biddeford, Maine

COST ESTIMATE WORKSHEET

PERFORMANCE GUARANTEE REQUIRED:

Name:

Signature:

Date:

PLAN SET

PLAN SET

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PROJECT PARCEL SITE
BIDDEFORD ASSESSOR'S
PARCEL & LOT NUMBERS

PARECEL

LOT

32

1

Applicant:

BATEMAN PARTNERS
470 FORE STREET, SUITE 400
PORTLAND, ME 04101
ATTN: NATHAN BATEMAN

Y.C.R.D.

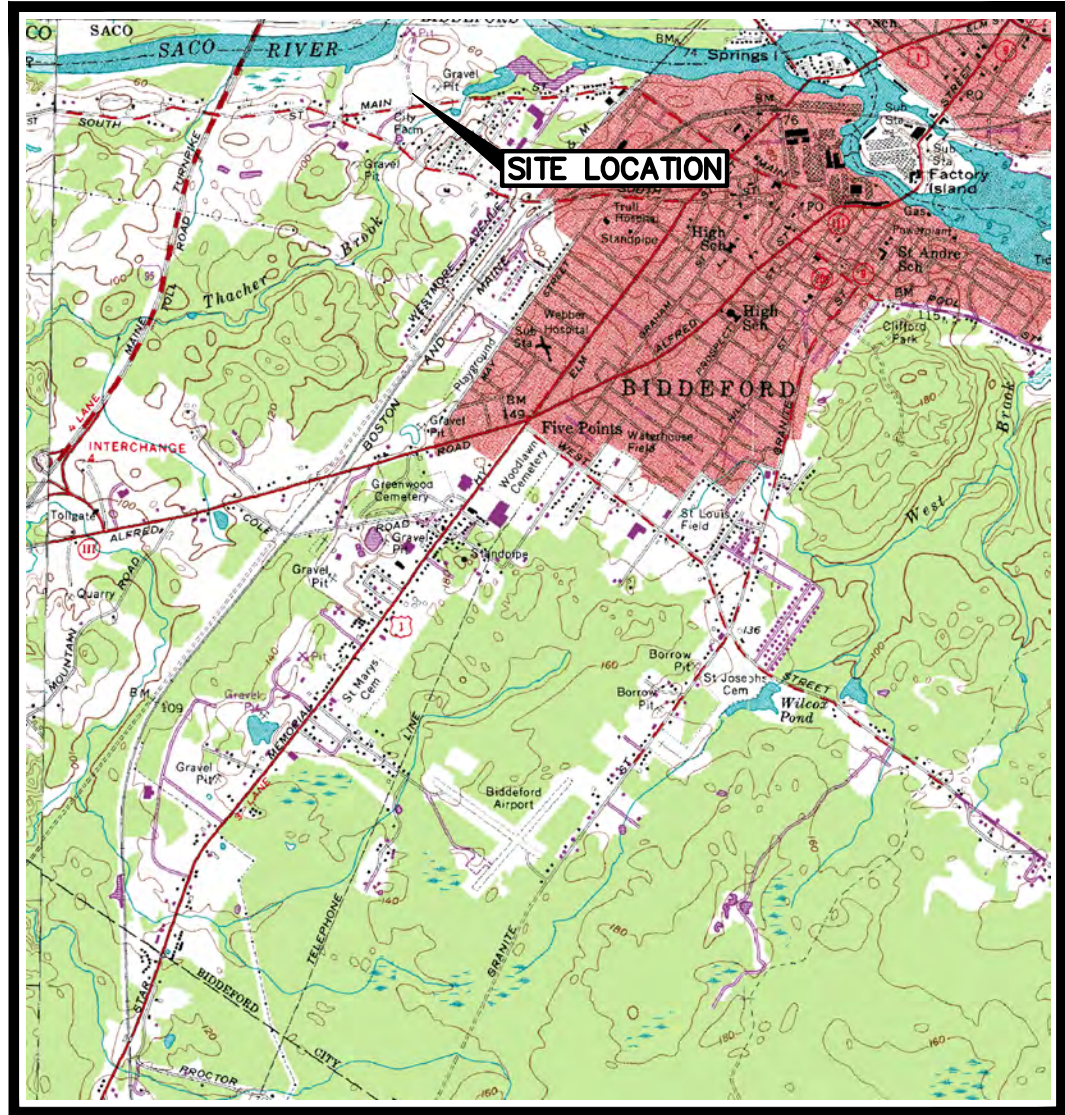
BOOK 15854 PAGE 978

FOREST GREEN
APARTMENT EXPANSION
PARK VIEW COURT
BIDDEFORD, MAINE

PREPARED BY:



Gorrill Palmer, an LJB Engineering Company
GorrillPalmer.com
(207) 772-2515
300 Southborough Drive - Suite 200
South Portland, ME 04106



LOCATION MAP
N.T.S.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	BUILDING	
	RIGHT OF WAY	
	PROPERTY LINE	
	BUILDING SETBACK	
	ZONE LINE	
	WETLAND BOUNDARY	
	GUIDE RAIL	
	EDGE OF PAVEMENT	
	EDGE OF GRAVEL DRIVE	
	GRADING CONTOUR LINE	
	SPOT ELEVATION	
	TREELINE	
	TREES & HEDGES	
	POLE WITH LIGHT FIXTURE(S)	
	UTILITY POLE	
	FREESTANDING SIGN	
	PAINTED DIRECTIONAL TRAFFIC ARROW	
	OVERHEAD ELECTRIC/TELEPHONE	
	UNDERGROUND ELECTRIC/TELEPHONE	
	WATER LINE	
	STORM DRAIN LINE	
	CULVERT	
	HYDRANT	
	WATER GATE VALVE	
	WATER SHUT OFF VALVE	
	MANHOLE	
	CATCH BASIN	
	TEST PIT	
	IRON ROD (SET)	
	IRON ROD (FOUND)	
	MONUMENT	
	RIPRAP	
	SILT FENCE - PERIMETER	
	STONE SEDIMENT BARRIER	
	FENCE	
	WELL	

GENERAL NOTES

- GENERAL NOTES**
1. TOPOGRAPHIC DATA BOUNDARY SURVEY AND EXISTING CONDITIONS WERE PREPARED BY OWEN HASKELL, OF FALMOUTH, MAINE IN DECEMBER OF 2024.
 2. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR THE ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
 3. MAINTENANCE OF EROSION CONTROL MEASURES IS OF PARAMOUNT IMPORTANCE TO THE OWNER AND THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL EROSION CONTROL MEASURES SHOWN ON THE PLANS. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY BY ON-SITE INSPECTIONS OF THE OWNER, THE CITY OF BIDDEFORD OR THEIR REPRESENTATIVES AT NO ADDITIONAL COST TO THE OWNER.
 4. ALL MATERIAL SCHEDULES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL PREPARE HIS OWN MATERIAL SCHEDULES BASED UPON HIS PLAN REVIEW. ALL SCHEDULES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ORDERING MATERIALS OR PERFORMING WORK.
 5. ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS AND CITY OF BIDDEFORD SPECIFICATIONS.

PERMITTING NOTES

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF A SITE PLAN APPROVAL FROM THE CITY OF BIDDEFORD WHICH WILL BE MADE A PART OF THE CONTRACT BID DOCUMENTS. THE CONSTRUCTION WILL BE COVERED BY THE CITY OF BIDDEFORD LAND USE CODE WHICH IS AVAILABLE FOR VIEWING AT THE OFFICE OF THE ENGINEER OR THE MUNICIPAL OFFICE.
2. THE CONTRACTOR SHALL REVIEW THE ABOVE REFERENCED PERMITS PRIOR TO SUBMITTING A BID FOR THIS PROJECT, AND INCLUDE COSTS AS NECESSARY TO COMPLY WITH THE CONDITIONS OF THESE PERMITS.

LAYOUT NOTES

1. ALL DIMENSIONING, UNLESS NOTED OTHERWISE, IS TO THE FACE OF CURB.
2. OFFSETS TO CATCH BASINS AND MANHOLES ARE TO THE CENTER OF THE FRAME.
3. PIPE LENGTH EQUALS THE CENTER TO CENTER DISTANCES BETWEEN CATCH BASINS AND/OR MANHOLES MINUS ONE-HALF OF THE DIAMETER OF EACH CATCH BASIN OR MANHOLE.
4. PROPERTY LINE AND R.O.W. MONUMENTS SHALL NOT BE DISTURBED BY CONSTRUCTION. IF DISTURBED, THEY SHALL BE RESET TO THEIR ORIGINAL LOCATIONS AT THE CONTRACTOR'S EXPENSE, BY A MAINE LICENSED LAND SURVEYOR.
5. PROPOSED RIGHT OF WAY MONUMENTS AND PROPERTY LINE PINS SHALL BE INSTALLED UNDER THE DIRECTION OF A MAINE LICENSED LAND SURVEYOR.

REQUIRED WAIVERS/VARIANCES FOR
MAJOR SITE PLAN APPLICATION:

-

UTILITY NOTES

1. THE LOCATION OF THE PROPOSED UNDERGROUND ELECTRICAL SERVICE IS APPROXIMATE AND THE CONTRACTOR SHALL COORDINATE THE EXACT LOCATION WITH CENTRAL MAINE POWER COMPANY.
2. TEST PITS AT ALL UTILITY CROSSINGS SHALL BE COMPLETED TWO WEEKS IN ADVANCE OF THE START OF CONSTRUCTION OR ORDERING OF MATERIALS. TEST PIT INFORMATION SHALL BE PROMPTLY PROVIDED TO ENGINEER FOR REVIEW.

GRADING AND DRAINAGE NOTES

1. UNLESS OTHERWISE NOTED, ALL STORM DRAIN PIPE SHALL BE IN ACCORDANCE WITH MDT SPECIFICATIONS SECTION 603-- PIPE CULVERTS AND STORM DRAINS. LATEST REVISION WITH THE EXCEPTION THAT THE ONLY ACCEPTABLE TYPES OF PIPE ARE AS FOLLOWS:

REINFORCED CONCRETE PIPE, CLASS III
POLYVINYL-CHLORIDE (PVC) PIPE
SMOOTH BORE POLYETHYLENE - ADS OR HANCOR
2. TOPSOIL STRIPPED IN AREAS OF CONSTRUCTION THAT IS SUITABLE FOR REUSE AS LOAM SHALL BE STOCKPILED ON SITE AT A LOCATION TO BE DESIGNATED BY THE OWNER. UNSUITABLE SOIL SHALL BE SEPARATED, REMOVED AND DISPOSED OF AT AN APPROVED DISPOSAL LOCATION OFF SITE.
3. THE CONTRACTOR SHALL ANTICIPATE THAT GROUNDWATER WILL BE ENCOUNTERED DURING CONSTRUCTION AND SHALL INCLUDE SUFFICIENT COSTS WITHIN THEIR BID TO PROVIDE DEWATERING AS NECESSARY. NO SEPARATE PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR DEWATERING.

EROSION CONTROL NOTES

1. LAND DISTURBING ACTIVITIES SHALL BE ACCOMPLISHED IN A MANNER AND SEQUENCE THAT CAUSES THE LEAST PRACTICAL DISTURBANCE OF THE SITE.
2. PRIOR TO BEGINNING ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL THE SILT SACKS.
3. ALL GROUND AREAS DISTURBED FOR CONSTRUCTION WILL BE GRADED, LOAMED AND SEEDED AS SOON AS POSSIBLE. PERMANENT SEED MIXTURE SHALL CONFORM TO THE SEEDING PLAN CONTAINED IN THE EROSION CONTROL REPORT PREPARED FOR THIS PROJECT.
4. PRIOR TO PAVING, THE CONTRACTOR SHALL FLUSH SILT FROM ALL STORM DRAIN LINES.
5. ALL STORM DRAIN INLETS & OUTLETS ARE TO RECEIVE RIPRAP PROTECTION APRONS DURING CONSTRUCTION.
6. ALL CATCH BASINS WITH OUTLET PIPES 15" DIAMETER OR LESS SHALL BE PROVIDED WITH OUTLET HOOD (SNOUT) PER DETAIL.
7. THE MAINTENANCE SCHEDULE FOR THE CATCH BASIN SEDIMENT SUMPS IS AS FOLLOWS:
THESE DEVICES SHALL BE INSPECTED IN APRIL AND OCTOBER OF EACH YEAR. ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE CATCH BASIN WHEN THE DEPTH OF THE SEDIMENT IS GREATER THAN ONE FOOT. THE SEDIMENT WILL BE REMOVED FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.
8. THE CONTRACTOR IS CAUTIONED THAT FAILURE TO COMPLY WITH THE SEQUENCE OF CONSTRUCTION, EROSION/SEDIMENT CONTROL PLAN, AND OTHER PERMIT REQUIREMENTS BASED UPON ANY THIRD PARTY REVIEW (ie MDEP) MAY RESULT IN MONETARY PENALTIES. THE CONTRACTOR SHALL BE ASSESSED ALL SUCH PENALTIES AT NO COST TO THE OWNER OR PERMITTEE.
9. ALL NON-PAVED AREAS DISTURBED DURING CONSTRUCTION SHALL BE LOAMED AND SEEDED, UNLESS OTHERWISE DIRECTED BY THE OWNER.
10. ALL DISTURBED AREAS ARE TO RECEIVE A MINIMUM OF 4" OF TOPSOIL PRIOR TO PERMANENT SEEDING.

LAND COVER CALCULATIONS			
	EXISTING*	PROPOSED*	NET INCREASE
LIMITS OF DISTURBANCE IN SQUARE FEET AND ACRES	221,279 SF (5.08 ACRES)	288,625 SF (6.63 ACRES)	67,346 SF (1.55 ACRES)
PERVIOUS LAND COVER SQUARE FOOTAGE, EXISTING AND PROPOSED	165,359 SF (3.80 ACRES)	190,233 SF (4.37 ACRES)	24,874 SF (0.57 ACRES)
IMPERVIOUS LAND COVER SQUARE FOOTAGE (PAVEMENT/GRAVEL) EXISTING AND PROPOSED	32,736 SF (0.75 ACRES)	54,663 SF (1.25 ACRES)	21,927 SF (0.50 ACRES)
BUILDING ROOF SQUARE FOOTAGE, EXISTING AND PROPOSED	25,353 SF (0.58 ACRES)	45,898 SF (1.05 ACRES)	20,545 SF (0.47 ACRES)

* EXCLUDES AREAS WITHIN PARK VIEW COURT RIGHT-OF-WAY.

CITY OF BIDDEFORD PLANNING BOARD
SITE PLAN APPROVAL

CHAIRMAN _____

DATE _____

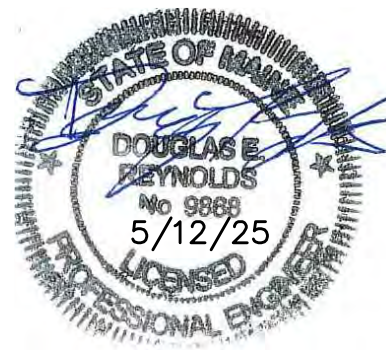
COVER SHEET SUBMITTAL REQUIREMENTS	
F-ZONE INFORMATION:	RESIDENTIAL 3 (R3)
F-SHORELAND ZONE INFORMATION:	LIMITED RESIDENTIAL (LR)
G-EXISTING USE:	RESIDENTIAL
H-PROPOSED USE:	RESIDENTIAL
J-WATERSHED:	SACO RIVER
K-WITHIN THE MS4 URBANIZED AREA	YES
L-NATURAL RESOURCES (STREMS, WETLANDS, ETC) LOCATED ON-SITE OR ADJACENT TO THE PROPERTY	YES
M-WITHIN THE 100-YEAR FLOOD ZONE	YES
N-PUBLIC ROAD PROPOSED	NO
O-PRIVATE ROAD PROPOSED	NO
P-PUBLIC SEWER CONNECTION	YES
Q-PUBLIC STORM DRAIN CONNECTION	NO

PERMITS

TYPE OF PERMIT	GOVERNING BODY	STATUS
MAJOR SITE PLAN APPLICATION	CITY OF BIDDEFORD 205 MAIN STREET BIDDEFORD, MAINE 04005 (207) 571-0700	SUBMITTED: -
PETITION FOR REDISTRICTING	SACO RIVER CORRIDOR COMMISSION 81 MAPLE STREET P.O. BOX 283 CORNISH, MAINE 04020	RECEIVED
NRPA TIER II PERMIT STORMWATER PBR	MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION 312 CANCO ROAD PORTLAND, MAINE 04103 (207) 822-6300	ANTICIPATED SUBMITTAL: MAY 2025

CALL BEFORE YOU DIG
1-888-344-7233

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PERMITTING PURPOSES AND SHALL
NOT BE USED FOR CONSTRUCTION.



Rev.	Date	Revision

LOCAL PRELIMINARY PLAN SUBMISSION	5/12/25	DER
NRPA APPLICATION SUBMISSION	5/12/25	DER
SACO RIVER CORRIDOR SUBMISSION	5/7/25	DER
LOCAL SKETCH PLAN SUBMISSION	4/16/25	DER
Issued For	Date	By

Design: EC	Draft: CG	Date: JUNE 2024
Checked: DER	Scale: NTS	Job No.: 4323
File Name: 4323-COVER.dwg		
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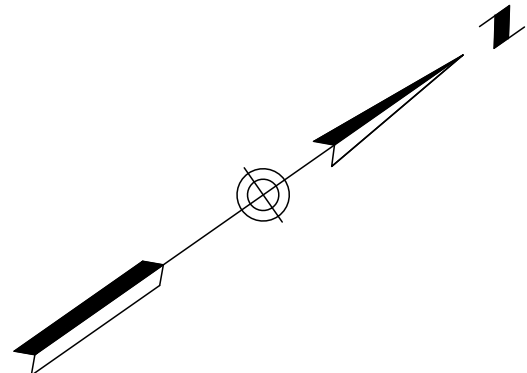


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Drawing Name:	Cover Sheet, General Notes, & Legend
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.

C001



PARK VIEW COURT RIGHT OF WAY LINE & CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	159.00'	124.69'	121.52'	N13°40'56"E	44°55'57"
C2	25.00'	39.64'	35.62'	N09°16'53"W	90°51'21"
C3	75.00'	176.71'	138.58'	S77°12'01"E	134°59'47"
C4	50.00'	39.27'	38.27'	S32°12'08"E	45°00'00"
C5	75.00'	118.93'	106.86'	S09°16'53"E	90°51'21"
C6	109.00'	85.49'	83.31'	S13°40'56"W	44°55'57"

LINE	BEARING	DISTANCE
L1	N08°47'03"W	66.57'
L2	N36°09'07"E	130.89'
L3	N54°42'08"W	410.00'
L4	N35°17'52"E	75.00'
L5	S09°42'08"E	89.64'
L6	S54°42'08"E	183.23'
L7	S36°09'07"W	130.89'
L8	S08°47'03"E	66.80'

TAX MAP 32 LOT 1-1
N/F
RICHARD J. & SHARON
J. ROUSSELLE
3631/310

AREA =
442,014 S.F. ±
10.15 ACRES ±
(EXCLUDING PARK VIEW
COURT RIGHT OF WAY)

SMH RM=60.11
INV. OUT=55.96

RM=59.40
15"OMP INV. IN(A)=54.37
15"OMP INV. IN(B)=54.75
15"OMP INV. OUT=54.58

RM=60.73
15"RPP INV. IN=56.29
15"OMP INV. IN=56.18
15"OMP INV. OUT=54.74
BENCHMARK: BONNET
BOLT HYDRANT
ELEVATION=63.48

RM=60.76
15"RPP INV. IN=56.39
10"CI INV.=54.12
10"CI INV.=53.90

RM=61.36
10"CI INV.=54.12
10"CI INV.=53.90

RM=60.70
15"RPP INV. IN=55.80
15"RPP INV. OUT=55.64

RM=59.28
INV. OUT=57.08

RM=60.70
15"RPP INV. IN=55.80
15"RPP INV. OUT=55.64

RM=61.36
10"CI INV.=54.12
10"CI INV.=53.90

RM=60.70
15"RPP INV. IN=55.80
15"RPP INV. OUT=55.64

RM=59.28
INV. OUT=57.08

RM=60.70
15"RPP INV. IN=55.80
15"RPP INV. OUT=55.64

RM=61.36
10"CI INV.=54.12
10"CI INV.=53.90

RM=60.70
15"RPP INV. IN=55.80
15"RPP INV. OUT=55.64

RM=59.28
INV. OUT=57.08

RM=60.70
15"RPP INV. IN=55.80
15"RPP INV. OUT=55.64

GENERAL NOTES

- OWNER OF RECORD: FOREST GREEN ASSOCIATES, LTD.
P.O. BOX 759, SACO, ME 04072
TAX MAP 32 LOT 1
Y.C.R.D. BOOK 15854 PAGE 978
- BEARINGS ARE BASED ON STATE PLANE COORDINATE SYSTEM, MAINE WEST ZONE, NAD83 PER GNSS OBSERVATION.
- ELEVATIONS ARE BASED ON NAVD88 PER GNSS OBSERVATION.
- THE PROPERTY IS LOCATED IN TOWN OF BIDDEFORD, ME IN PARTIALLY IN THE R3 RESIDENTIAL ZONE AND PARTIALLY IN THE LIMITED RESIDENTIAL ZONE.
- BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS PARTIALLY IN ZONE X, ZONE A, ZONE AE AND ZONE OF 0.2% ANNUAL CHANCE FLOOD HAZARD OF THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 230145 0145 G, WHICH BEARS AN EFFECTIVE DATE OF JULY 17, 2024.
- WETLAND DELINEATION AND LOCATIONS PROVIDED BY FLYCATCHER.
- BOUNDARY LINES SHOWN ARE TAKEN FROM PLAN REFERENCE 1.

PLAN REFERENCES

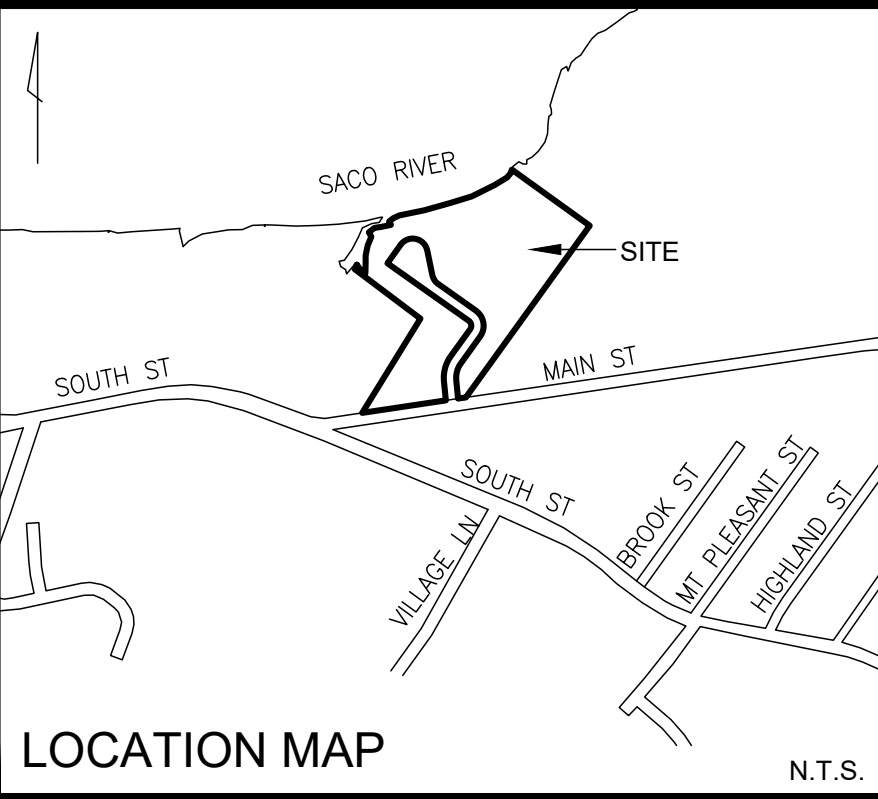
- "PLAN OF PROPERTY IN BIDDEFORD, MAINE MADE FOR BIDDEFORD ASSOCIATES "FOREST GREEN APARTMENTS" OCTOBER 9, 1974 REVISED NOV. 12, 1974 BY H.J. & E.C. JORDAN SURVEYORS.
- "ALTA/ACSM LAND TITLE SURVEY (MSHA-RP-029), 1-6 PARK VIEW COURT, BIDDEFORD, MAINE, OWNER: BIDDEFORD ASSOCIATES, PREPARED FOR PHOENIX MANAGEMENT CO." DECEMBER 7, 2009 BY NORTHEAST CIVIL SOLUTIONS.
- "AS-BUILT SURVEY FOR FOREST GREEN LAND OF BIDDEFORD ASSOCIATES ON MAIN STREET IN BIDDEFORD, MAINE" DATED 11/29/1976 RECORDED IN PLAN BOOK 105, PAGE 47.

UTILITY NOTE

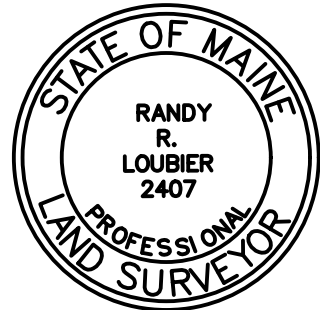
THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. CALL 1-888-DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION. DUE TO OSHA CONFINED SPACE REQUIREMENTS, ALL INVERTS AND PIPE SIZES MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION.

LEGEND

- IRON PIPE OR ROD FOUND
- UTILITY POLE
- MANHOLE
- ELECTRIC METER
- SIGN
- CATCH BASIN
- HYDRANT
- WATER VALVE OR SHUTOFF
- DECIDUOUS TREE
- WETLAND
- FENCE
- EDGE OF WETLAND
- CURB
- OVERHEAD WIRES
- WATER LINE
- GAS LINE
- STORM DRAIN
- SANITARY SEWER
- 1' CONTOUR
- WOODS LINE
- IRON PIPE/ROD FOUND CONCRETE



SCALE: 1" = 40'



RANDY R. LOUBIER, PLS #2407

Topographic Survey

At

Park View Court, Biddeford, Maine

Made for

Gorrill Palmer

300 Southborough Dr., South Portland, ME

OWEN HASKELL, INC.

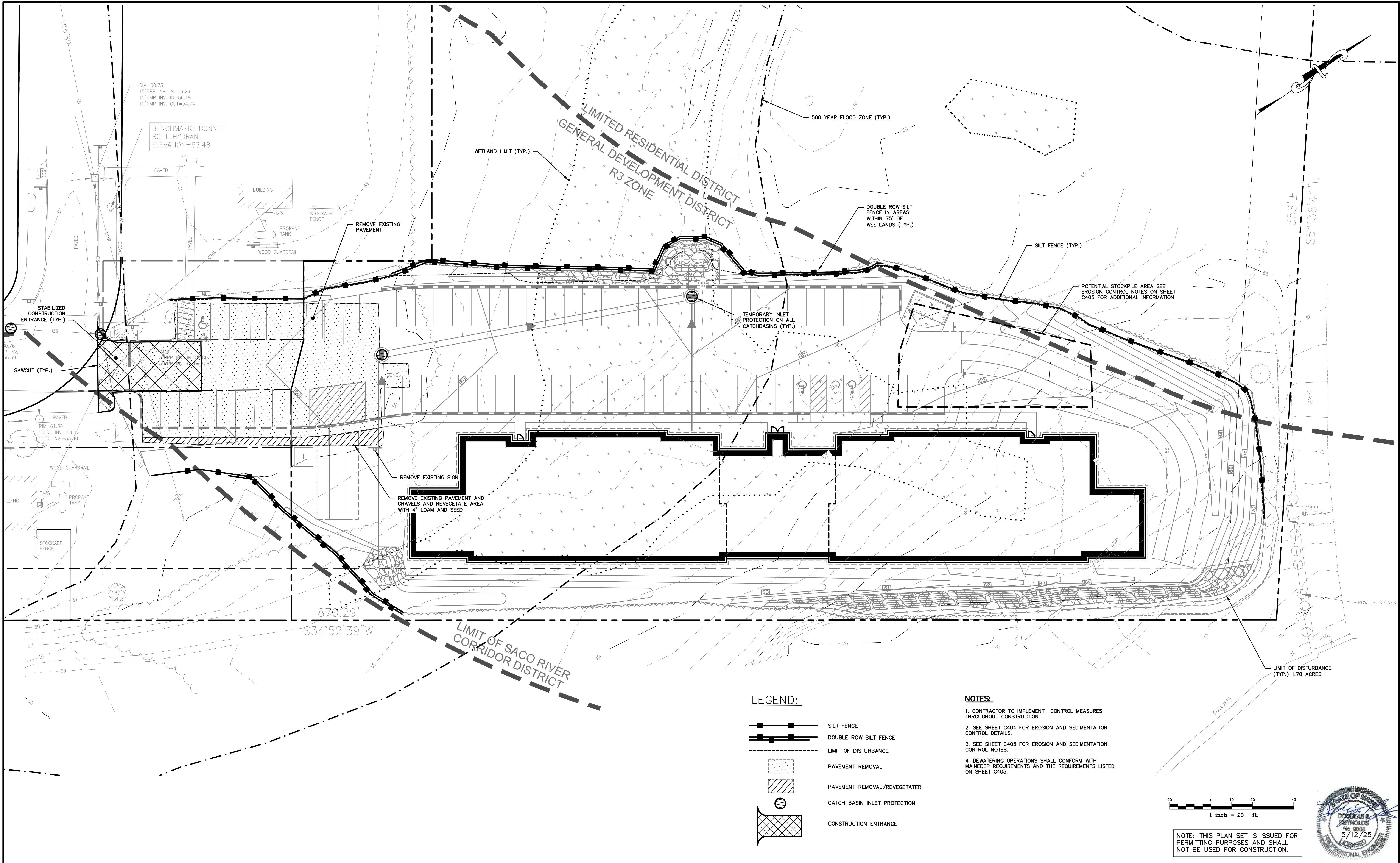
PROFESSIONAL LAND SURVEYORS

390 US ROUTE 1, UNIT 10, FALMOUTH, ME 04105 TEL. 207-774-0424

DRAWN BY: JLW DATE: JAN. 5, 2025 JOB NO. 2024-295 B-Y

CHECKED BY: RRL SCALE: 1" = 40' DRWG. NO. 1

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Design: EC	Draft: CG	Date: JUNE 2024
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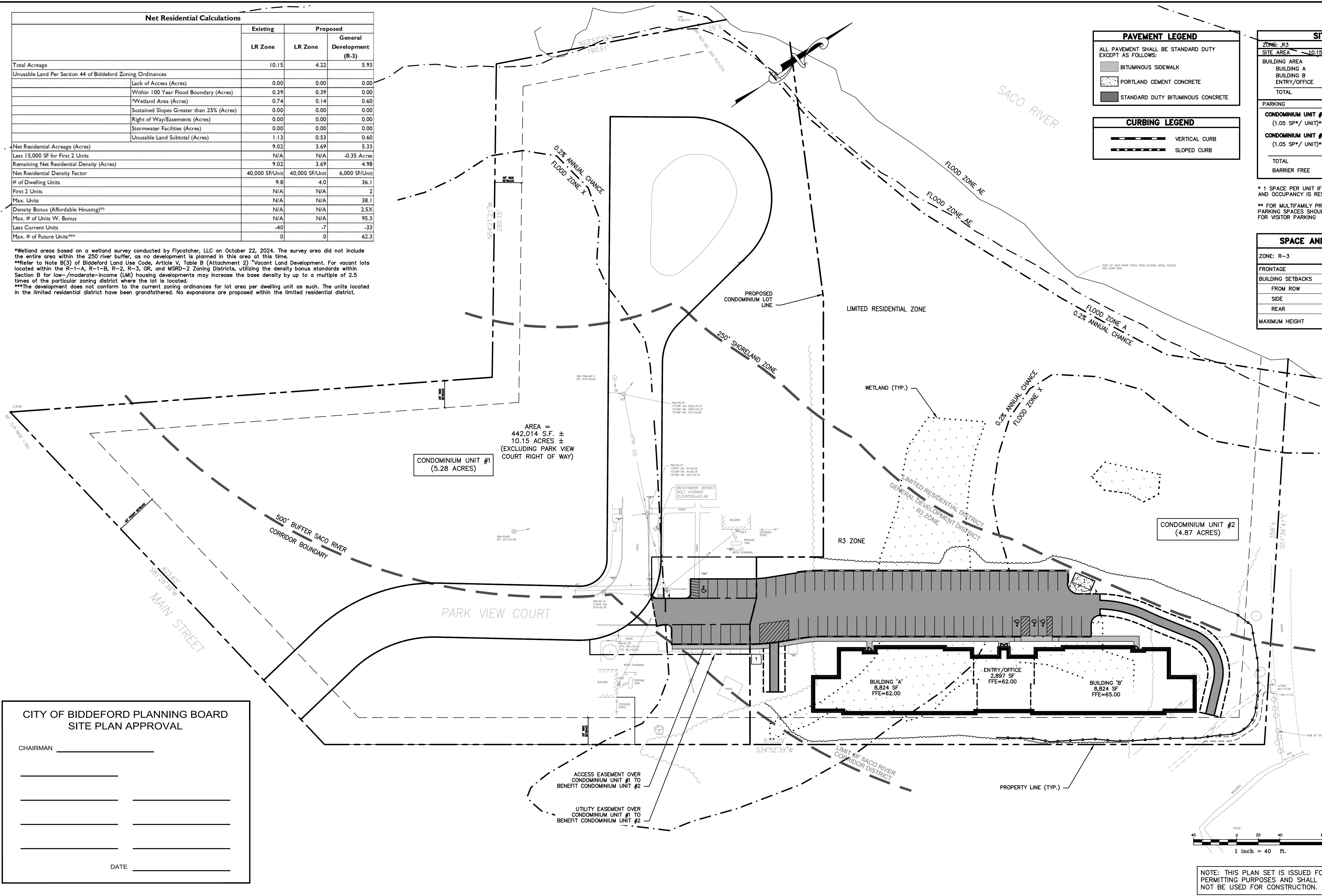
Drawing Name:	Site Demolition and Erosion Control Plan
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.	C002
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Net Residential Calculations			
	Existing	Proposed	
	LR Zone	LR Zone	General Development (R-3)
Total Acreage	10.15	4.22	5.93
Unusable Land Per Section 44 of Biddeford Zoning Ordinances			
Lack of Access (Acres)	0.00	0.00	0.00
Within 100 Year Flood Boundary (Acres)	0.39	0.39	0.00
*Wetland Area (Acres)	0.74	0.14	0.60
Sustained Slopes Greater than 25% (Acres)	0.00	0.00	0.00
Right of Way/Easements (Acres)	0.00	0.00	0.00
Stormwater Facilities (Acres)	0.00	0.00	0.00
Unusable Land Subtotal (Acres)	1.13	0.53	0.60
Net Residential Acreage (Acres)	9.02	3.69	5.33
Less 15,000 SF for First 2 Units	N/A	N/A	-0.35 Acres
Remaining Net Residential Density (Acres)	9.02	3.69	4.98
Net Residential Density Factor	40,000 SF/Unit	40,000 SF/Unit	6,000 SF/Unit
# of Dwelling Units	9.8	4.0	36.1
First 2 Units	N/A	N/A	2
Max. Units	N/A	N/A	38.1
Density Bonus (Affordable Housing)**	N/A	N/A	2.5X
Max. # of Units W/ Bonus	N/A	N/A	95.3
Less Current Units	-40	-7	-33
Max. # of Future Units***	0	0	62.3

*Wetland areas based on a wetland survey conducted by Flycatcher, LLC on October 22, 2024. The survey area did not include the entire area within the 250' river buffer, as no development is planned in this area at this time.
**Refer to Note B(3) of Biddeford Land Use Code, Article V, Table B (Attachment 2) "Vacant Land Development. For vacant lots located within the R-1-A, R-1-B, R-2, R-3, OR, and MSO-2 Zoning Districts, utilizing the density bonus standards within Section B for low-/moderate-income (LMI) housing developments may increase the base density by up to a multiple of 2.5 times of the particular zoning district where the lot is located.
***The development does not conform to the current zoning ordinances for lot area per dwelling unit as such. The units located in the limited residential district have been grandfathered. No expansions are proposed within the limited residential district.



CITY OF BIDDEFORD PLANNING BOARD SITE PLAN APPROVAL

CHAIRMAN _____

DATE _____

Rev.	Date	Revision

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SACO RIVER CORRIDOR SUBMISSION	5/7/25	DER
LOCAL SKETCH PLAN SUBMISSION	4/16/25	DER
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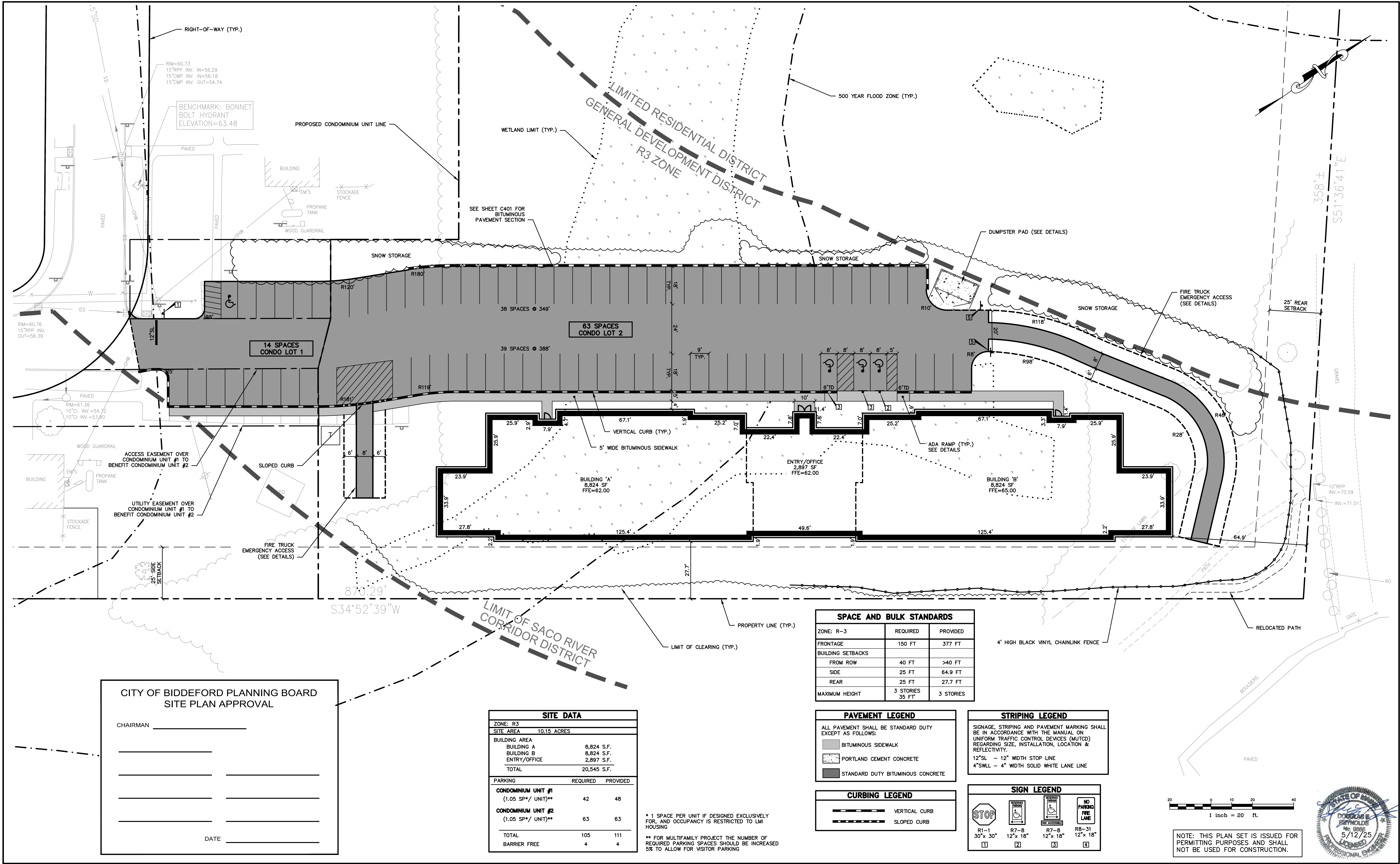


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Drawing Name:	Subdivision Plan
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.	C100
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CITY OF BIDDEFORD PLANNING BOARD
SITE PLAN APPROVAL

CHAIRMAN _____

DATE _____

SITE DATA			
ZONE: R-3			
SITE AREA: 10.15 ACRES			
BUILDING AREA			
BUILDING A	8,824 S.F.		
BUILDING B	8,824 S.F.		
ENTRY/OFFICE	2,897 S.F.		
TOTAL	20,545 S.F.		
PARKING			
	REQUIRED	PROVIDED	
CONDOMINIUM UNIT #1 (1.05 SP*/ UNIT)**	42	48	
CONDOMINIUM UNIT #2 (1.05 SP*/ UNIT)**	63	63	
TOTAL	105	111	
BARRIER FREE	4	4	

* 1 SPACE PER UNIT IF DESIGNED EXCLUSIVELY FOR, AND OCCUPANCY IS RESTRICTED TO LMI HOUSING

** FOR MULTIFAMILY PROJECT THE NUMBER OF REQUIRED PARKING SPACES SHOULD BE INCREASED 5% TO ALLOW FOR VISITOR PARKING

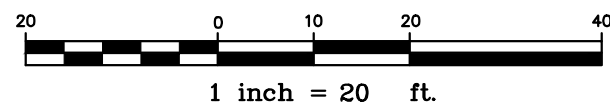
SPACE AND BULK STANDARDS		
ZONE: R-3	REQUIRED	PROVIDED
FRONTAGE	150 FT	377 FT
BUILDING SETBACKS		
FROM ROW	40 FT	>40 FT
SIDE	25 FT	64.9 FT
REAR	25 FT	27.7 FT
MAXIMUM HEIGHT	3 STORIES 35 FT	3 STORIES

PAVEMENT LEGEND	
ALL PAVEMENT SHALL BE STANDARD DUTY EXCEPT AS FOLLOWS:	
	BITUMINOUS SIDEWALK
	PORTLAND CEMENT CONCRETE
	STANDARD DUTY BITUMINOUS CONCRETE

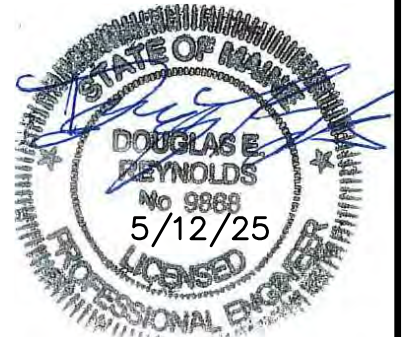
CURBING LEGEND	
	VERTICAL CURB
	SLOPED CURB

STRIPING LEGEND	
SIGNAGE, STRIPING AND PAVEMENT MARKING SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) REGARDING SIZE, INSTALLATION, LOCATION & REFLECTIVITY.	
12"SL - 12" WIDTH STOP LINE	
4"SWL - 4" WIDTH SOLID WHITE LANE LINE	

SIGN LEGEND			
R1-1 30" x 30"	R7-8 12" x 18"	R7-8 12" x 18"	R8-31 12" x 18"
1	2	3	4



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NRPA APPLICATION SUBMISSION	5/12/25	DER
SACO RIVER CORRIDOR SUBMISSION	5/7/25	DER
LOCAL SKETCH PLAN SUBMISSION	4/16/25	DER
Issued For	Date	By

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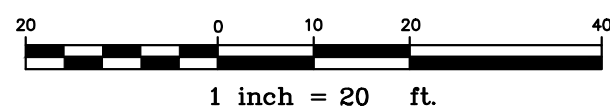
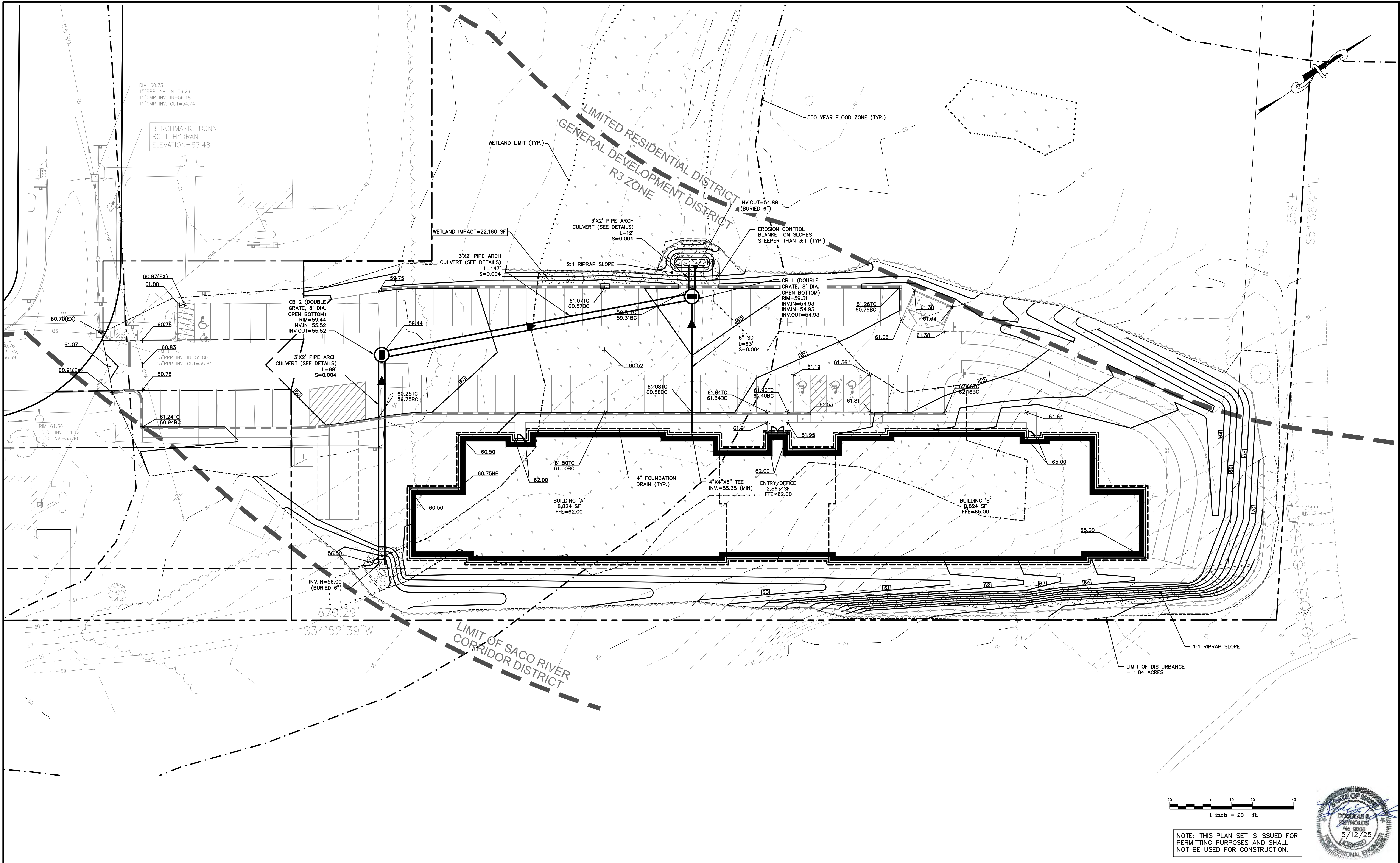


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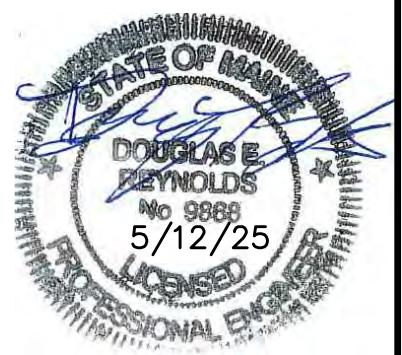
Drawing Name:	Site Plan
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.
C101

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LOCAL SKETCH PLAN SUBMISSION	4/16/25	DER
Issued For	Date	By

Design: EC	Draft: CG	Date: JUNE 2024
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File Name: 4323-GRADE.dwg		
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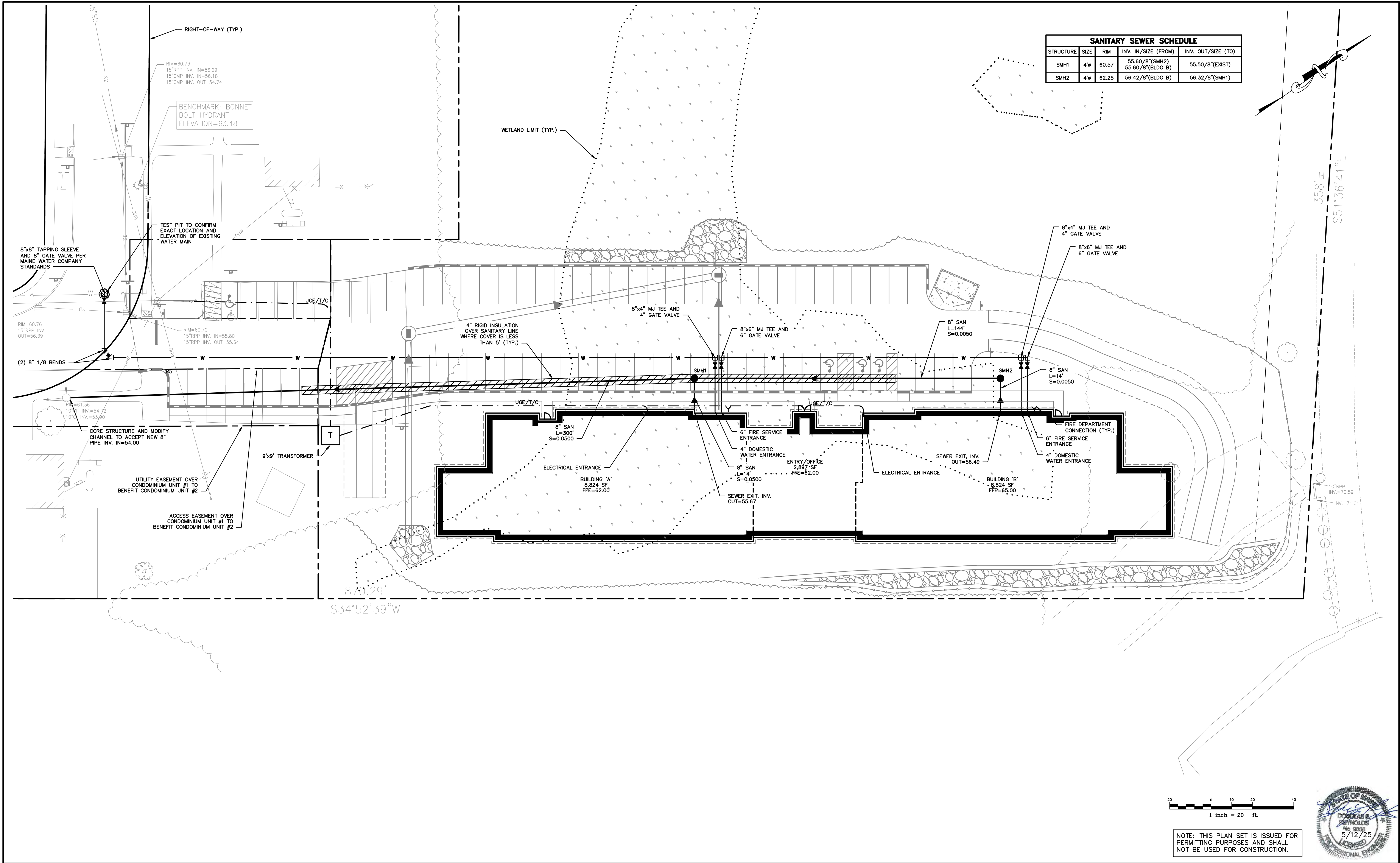


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Drawing Name:	Grading and Drainage Plan
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.
C102

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Rev.	Date	Revision

LOCAL PRELIMINARY PLAN SUBMISSION	5/12/25	DER
NRPA APPLICATION SUBMISSION	5/12/25	DER
SACO RIVER CORRIDOR SUBMISSION	5/7/25	DER
LOCAL SKETCH PLAN SUBMISSION	4/16/25	DER
Issued For	Date	By

Design: EC	Draft: CG	Date: JUNE 2024
Checked: DER	Scale: 1"=20'	Job No.: 4323
File Name: 4323-UTILITY.dwg		
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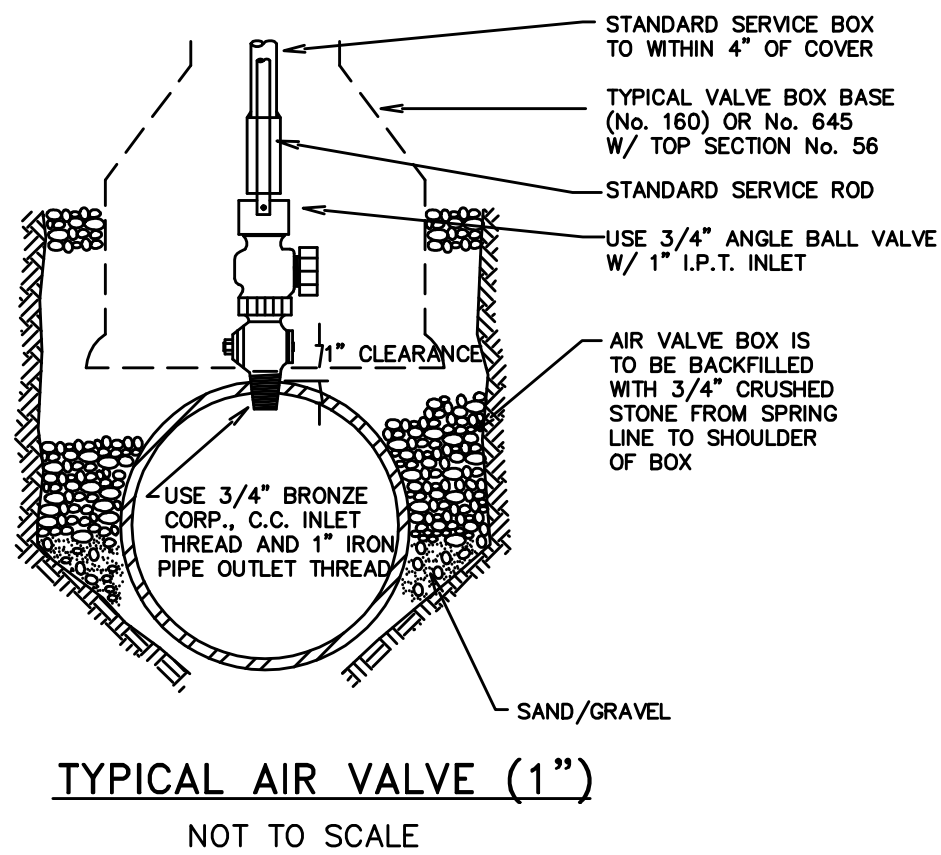


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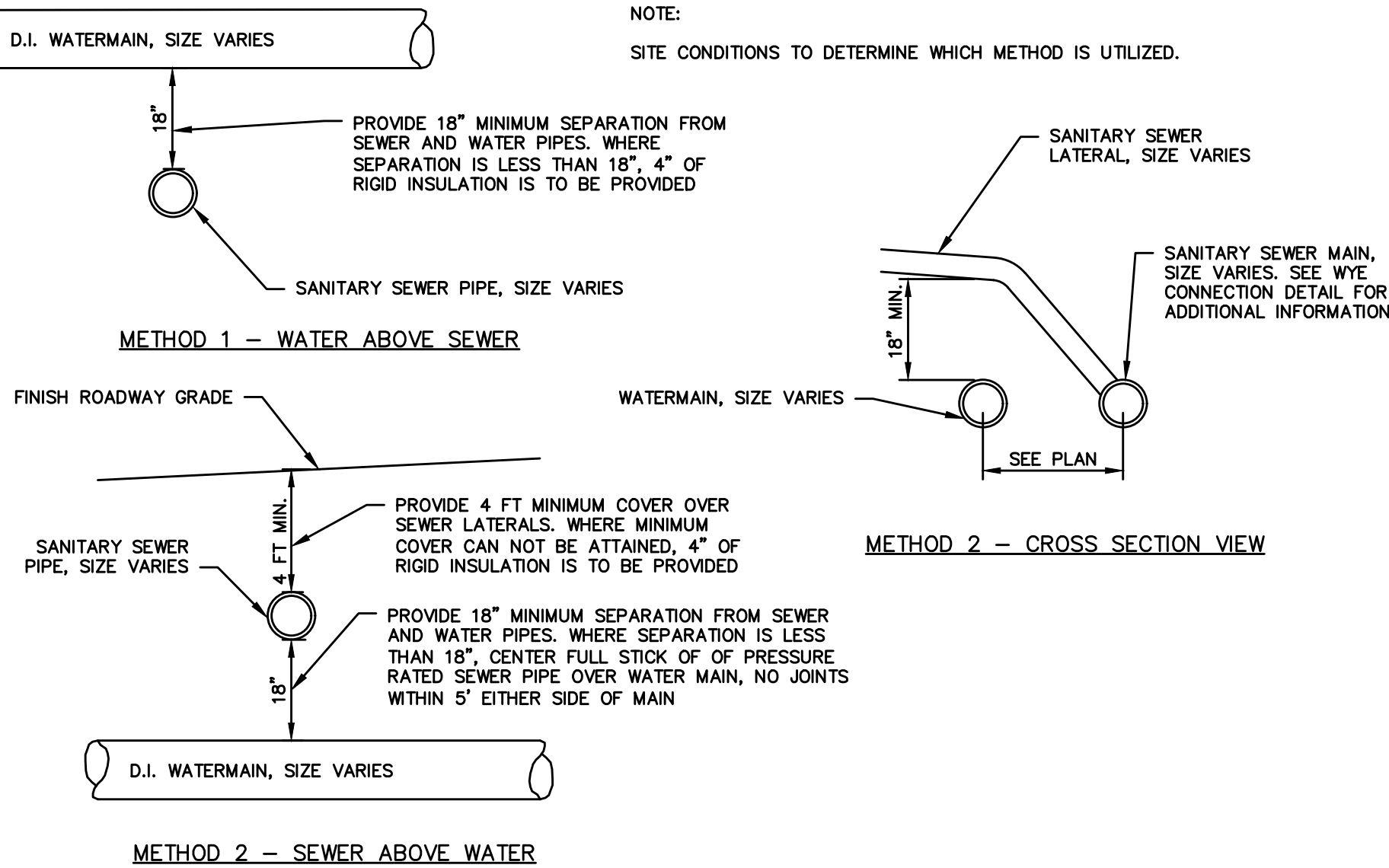
Drawing Name:	Utility Plan
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.	C103
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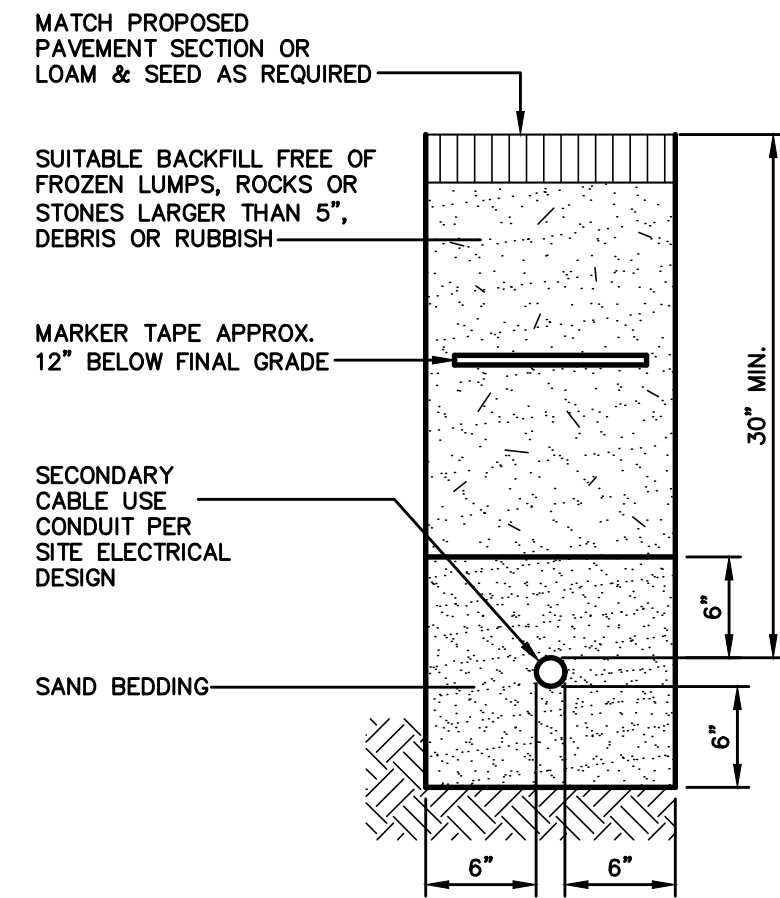
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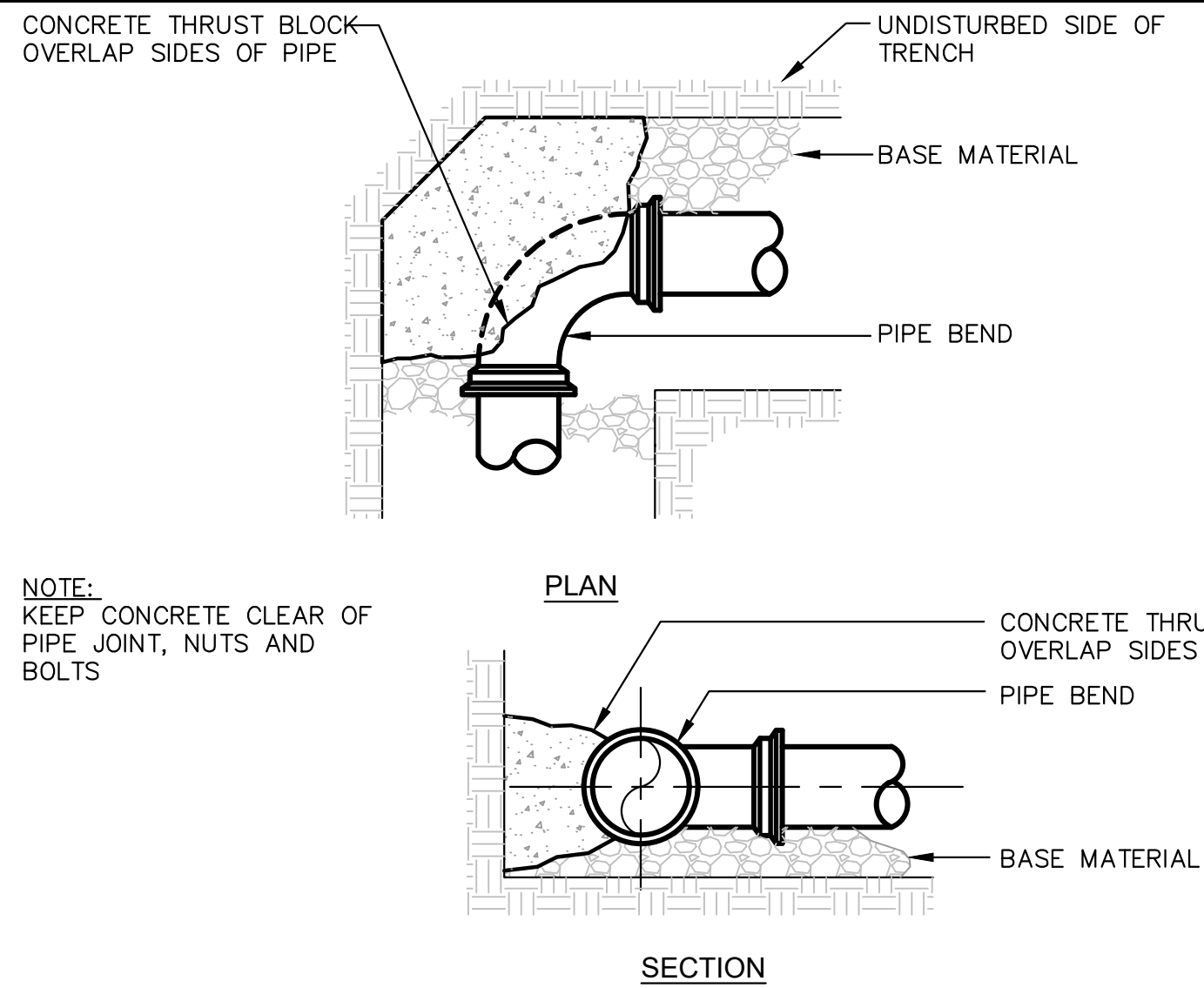
TYPICAL AIR VALVE (1")
NOT TO SCALE



TYPICAL SEWER AND WATERMAIN CROSSING
N.T.S.



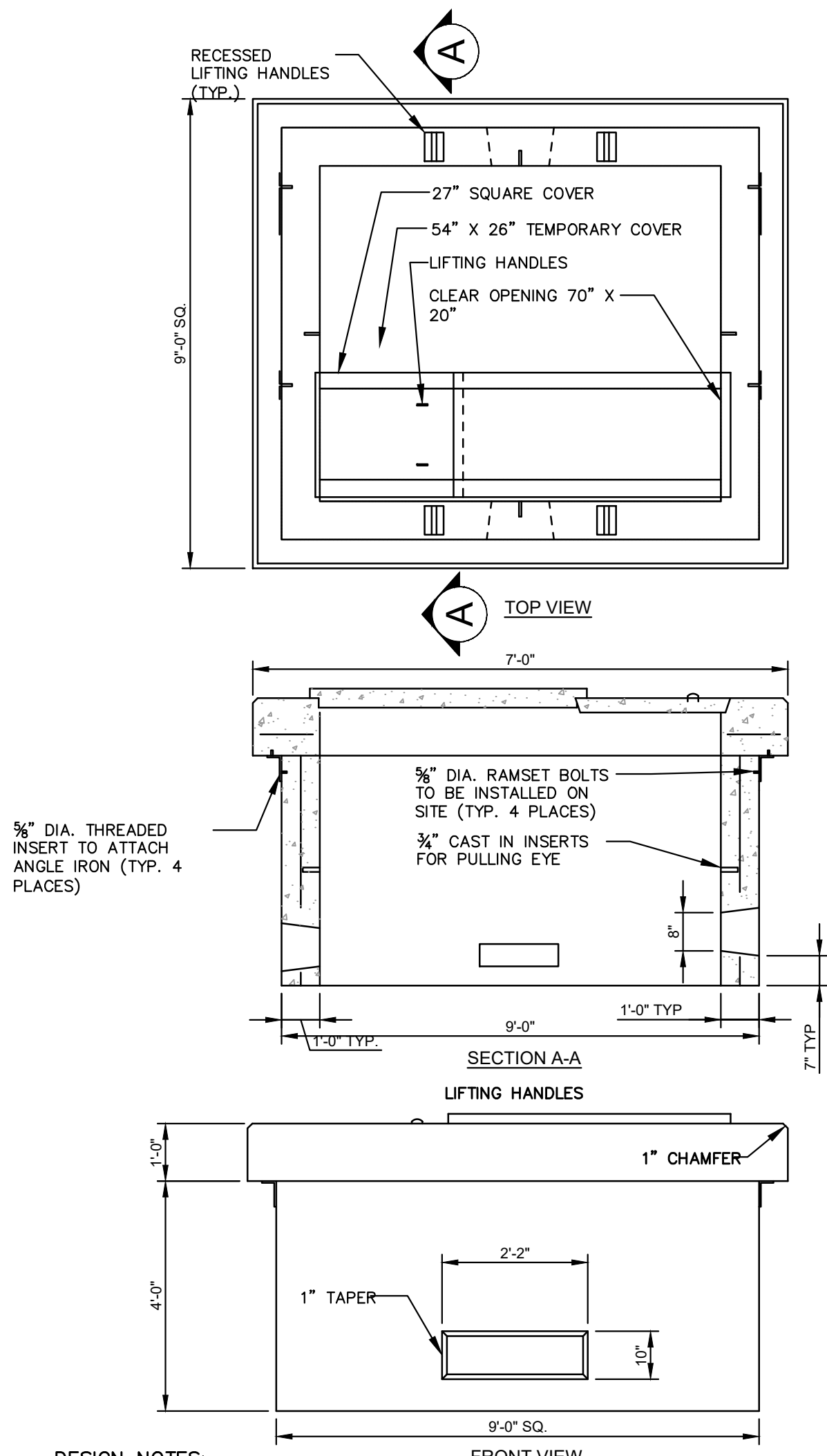
SECONDARY ELECTRICAL TRENCH
NOT TO SCALE



THRUST/RETAINER GLAND SCHEDULE		
1/4 BEND	(45°)	THRUST BLOCK W/ GRIPRING™

- THE ABOVE SCHEDULE IS SUBJECT TO THE APPROVAL OF THE ON-SITE INSPECTOR DUE TO SOILS AND WORKING PRESSURES IN THE AREA.
- NOTES:
- THE MAINE WATER DISTRICT MAY HAVE INSPECTION FEES AND REQUIRE OBSERVATION OF ALL PIPING INSTALLATION BEFORE BURIAL. REFER TO SPECIFICATIONS.
 - FOR WATER MAIN LAYOUT SEE DRAWING C-4.0
 - FOR WATER MAIN TRENCH DETAILS SEE DRAWING C402
 - REFER TO SPECIFICATIONS FOR TESTING AND CHLORINATION REQUIREMENTS.
 - ALL HYDRANTS AND VALVES TO BE EPOXY COATED, NUTS & BOLTS TO BE STAINLESS STEEL.
 - SERVICE RODS FOR DOMESTIC SERVICE OR AIR VALVES TO BE STAINLESS STEEL.

THRUST BLOCK PLACEMENT ON BENDS
NOT TO SCALE



- DESIGN NOTES:
- CONCRETE 4,000 PSI AT 28 DAYS.
 - REINFORCING #4 BARS AT 6" O.C. EACH WAY.
 - DUCT OPENINGS SHOWN ARE TYPICAL AND CAN BE MODIFIED PER REQUEST.
 - CENTRAL MAINE POWER COMPANY SPECIFICATION.
 - TEMPORARY COVER HAS (2) 3/8" THREADED LIFTING INSERTS CAST IN.

NOTE: CONFIRM TRANSFORMER PAD SIZES WITH OWNER AND ELECTRICAL DESIGNER. SITE WORK CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING THE TRANSFORMER PAD.

TRANSFORMER PAD
N.T.S.

SCHEDULE OF TRENCH BACKFILL		
TYPE OF PIPE	EMBEDMENT MATERIAL	SELECT BACKFILL
CMP DUCTILE IRON RCP	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
PVC-SDR 35 HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL
PERFORATED PVC-SDR35 HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE

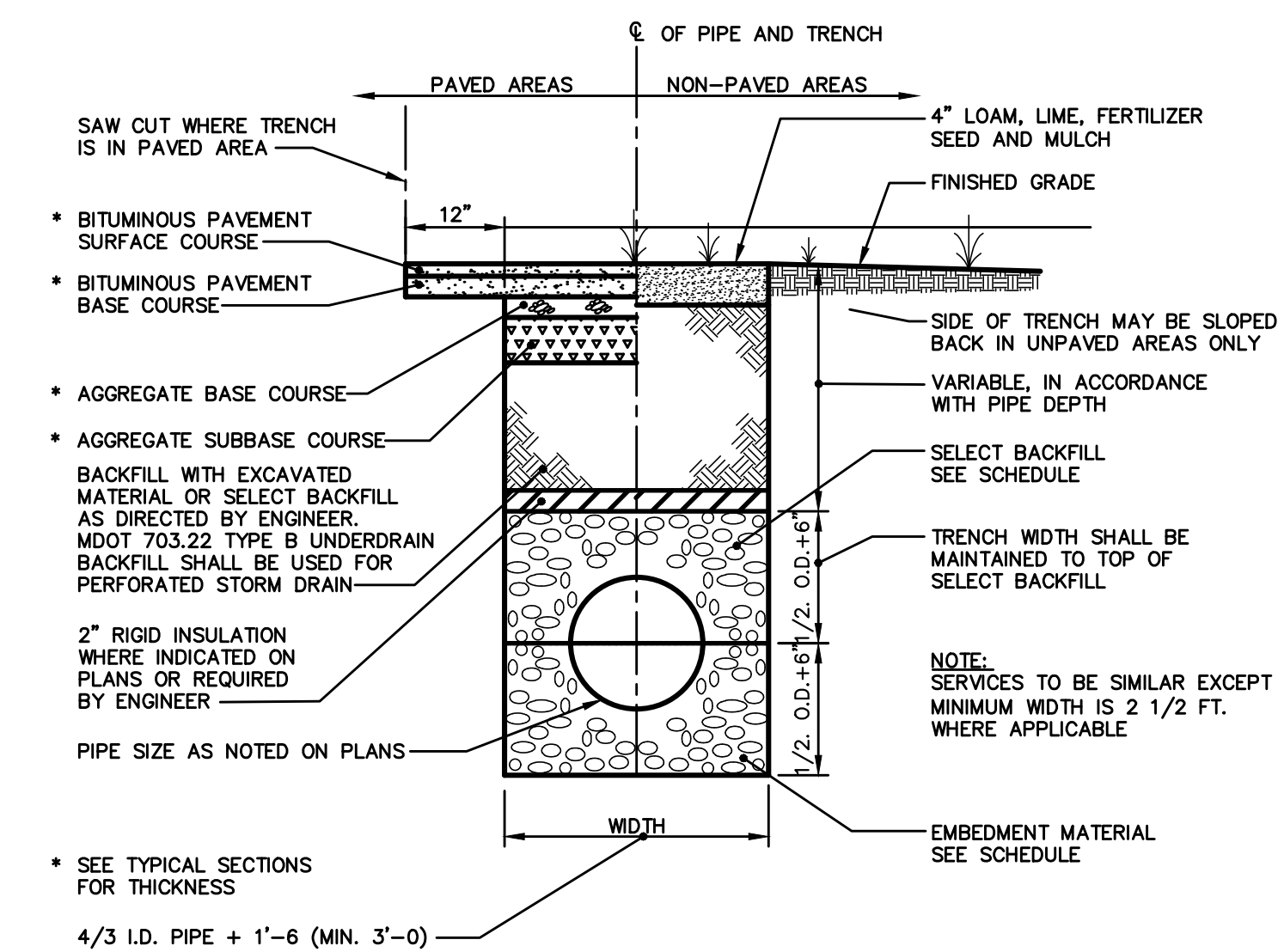
- NOTE:
- BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
 - INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES, 12" BELOW FINISH GRADE.

- (1) COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2" RIGID INSULATION.

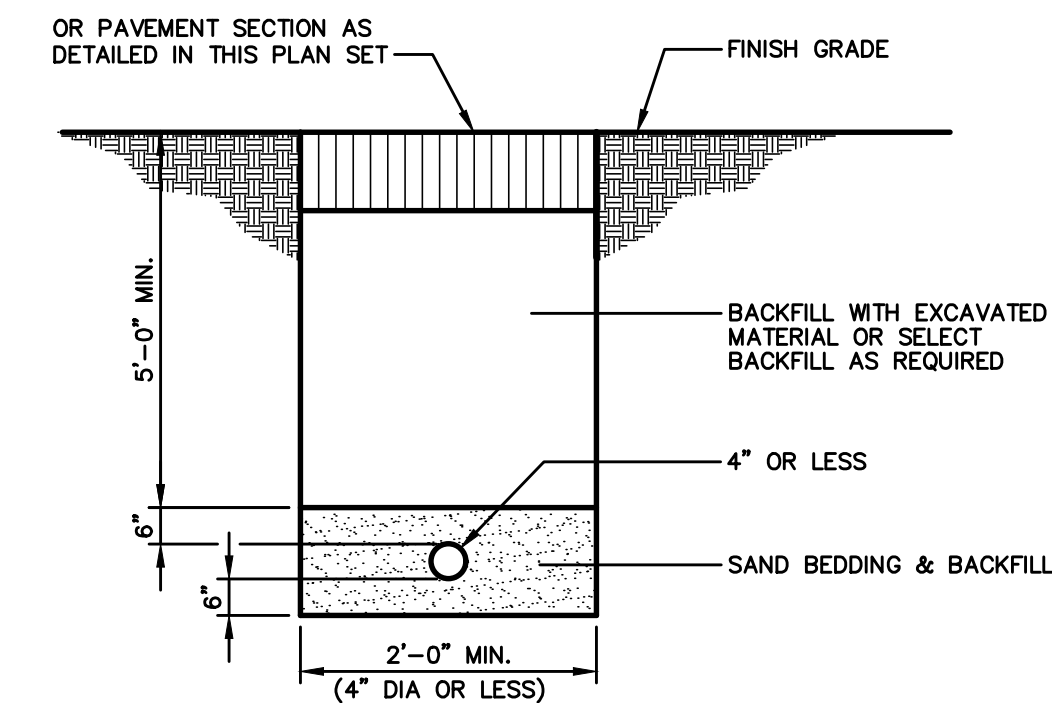
1. THE BEARING SURFACE OF THE THRUST BLOCK SHALL BE THE SURFACE AREA OF THE THRUST BLOCK WHICH IS CAST AGAINST THE TRENCH WALL. THE BEARING SURFACE SHALL NOT EXCEED THE FOLLOWING LOADINGS:
- | IN-SITU CONDITION | ALLOWABLE |
|--------------------------|-----------|
| BEDROCK | 3,000 psf |
| SAND OR OUTWASH DEPOSITS | 1,500 psf |
| OTHER SOILS | 1,000 psf |
- THE THRUST SHALL BE COMPUTED ON THE BASIS OF 150 psi x THE CROSS SECTIONAL AREA OF THE PIPE. FOR EXAMPLE, A THRUST BLOCK FOR A 1/4 BEND ON AN 8" WATER MAIN BEARING AGAINST CLAY WOULD REQUIRE A BEARING SURFACE OF 7.5 s.f.
- $$150 \text{ psi} \times 50 \text{ sq. in.} = 7.5 \text{ s.f.}$$
- 1,000 psf
2. INSTALL POLY BARRIER BETWEEN PIPE AND ALL THRUST BLOCKS.
3. ANY WORK RELATED TO WATER PIPING OR DETAILS SHALL BE IN ACCORDANCE WITH THE MAINE WATER COMPANY SPECIFICATIONS.

THRUST BLOCK NOTES

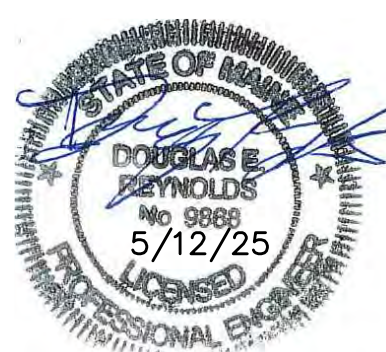
MINIMUM COVER	PIPE
2'-0"	DRAIN (1)
5'-5"	WATER
5'-0"	SEWER



TRENCH SECTION
N.T.S.



WATER SERVICE TRENCH SECTION
NOT TO SCALE



NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

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Issued For	Date	By

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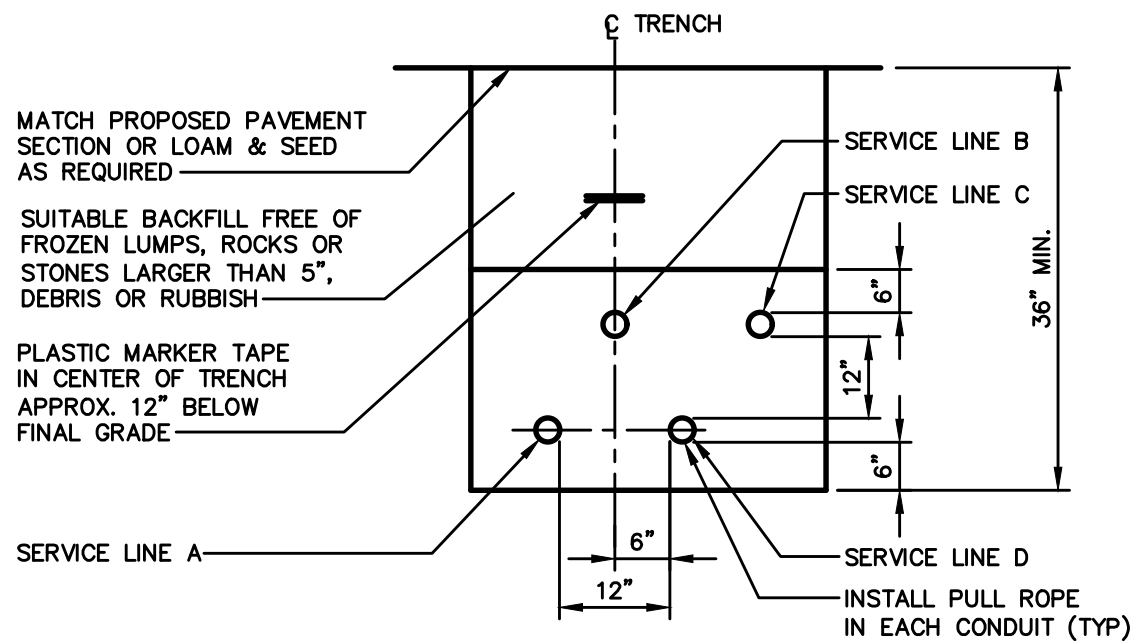
Drawing Name:	Utility Details
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.
C402

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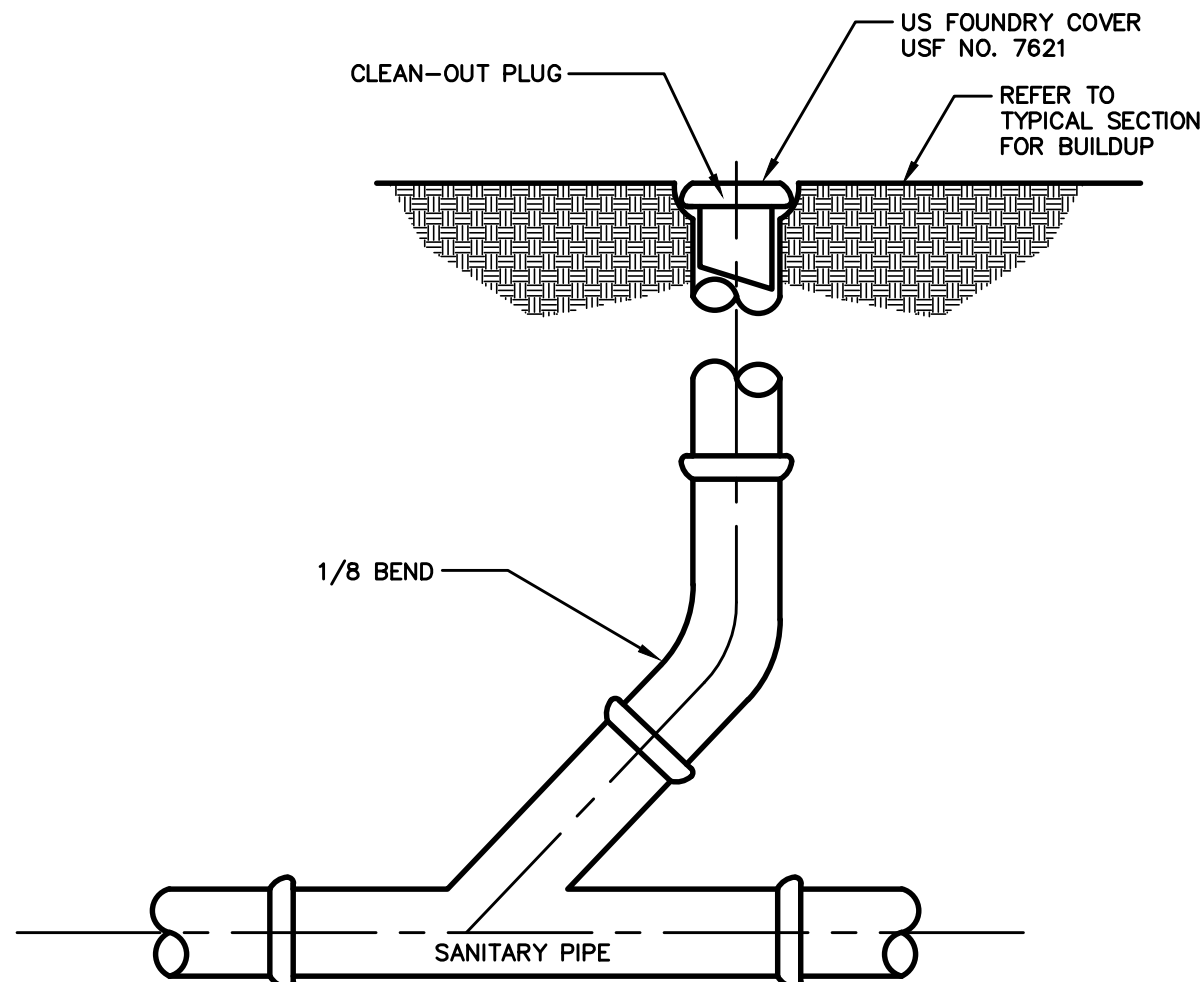
CONDUIT TYPE SCHEDULE				
SERVICE	CONDUIT SIZE	GRASS & PAVED AREAS	UTILITY	REMARKS
A	2-5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE
B	2-4"	SCHEDULE 40	TELEPHONE	SEE NOTE
C	2-4"	SCHEDULE 40	CABLE	SEE NOTE
D	2-4"	SCHEDULE 40 PVC ELECTRICAL GRADE	SPARES	SEE NOTE

NOTE:
ONE CONDUIT CAPPED FOR SPARE, PROVIDE GALVANIZED STEEL LONG SWEEP AT RISER POLE AND EXTEND GALVANIZED CONDUIT TO 10" ABOVE GRADE AT POLE WITH STAND-OFF BRACKETS.



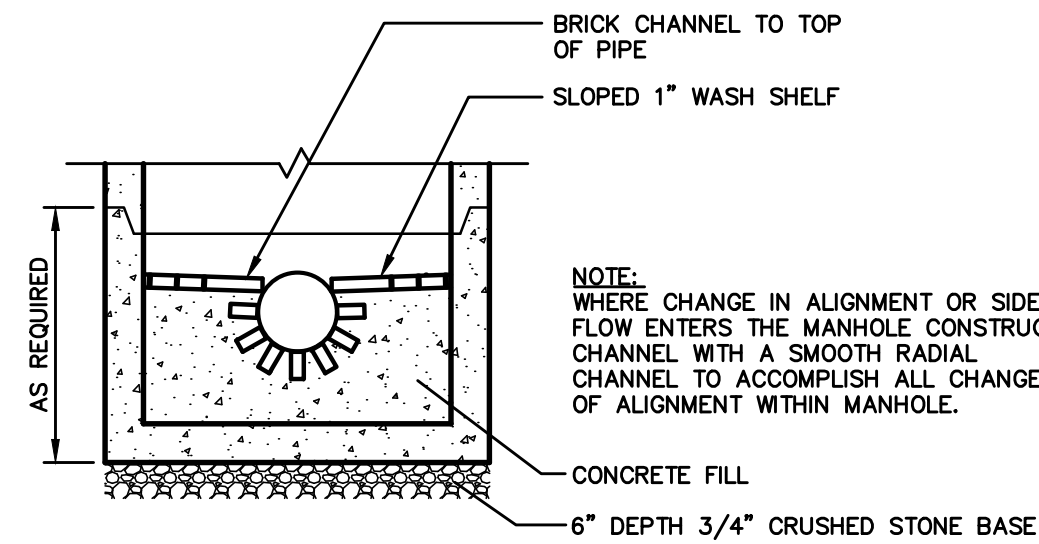
UTILITY TRENCH – PRIMARY AND SECONDARY POWER, TELEPHONE, AND CABLE

NOT TO SCALE



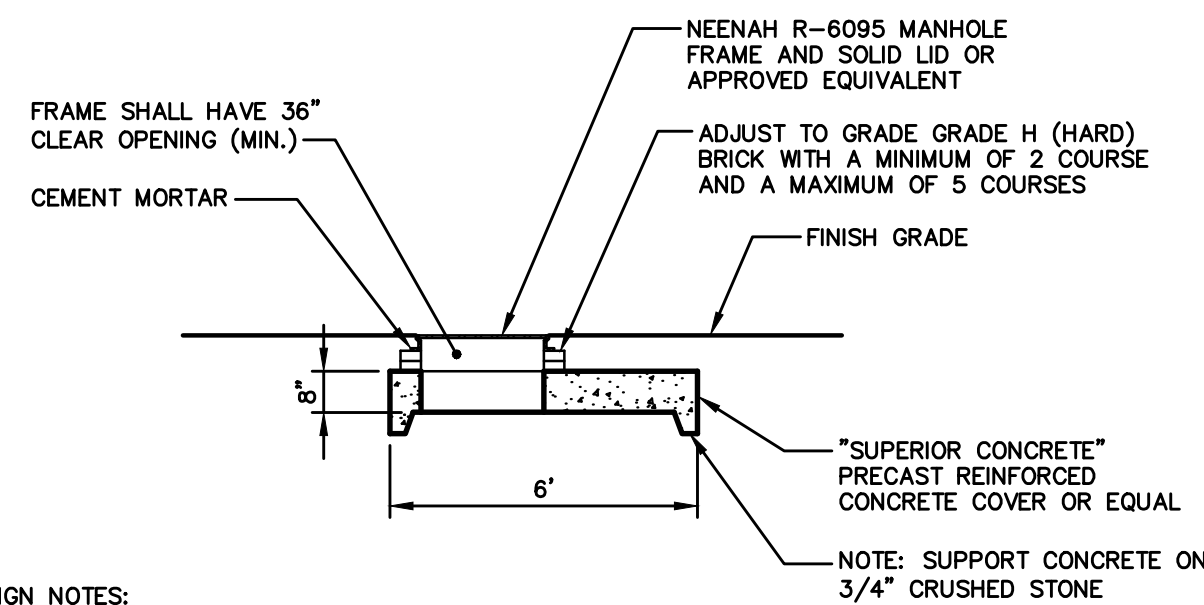
CLEANOUT

NOT TO SCALE



SANITARY SEWER MANHOLE BRICK CHANNEL INSTALLATION

NOT TO SCALE



DESIGN NOTES:

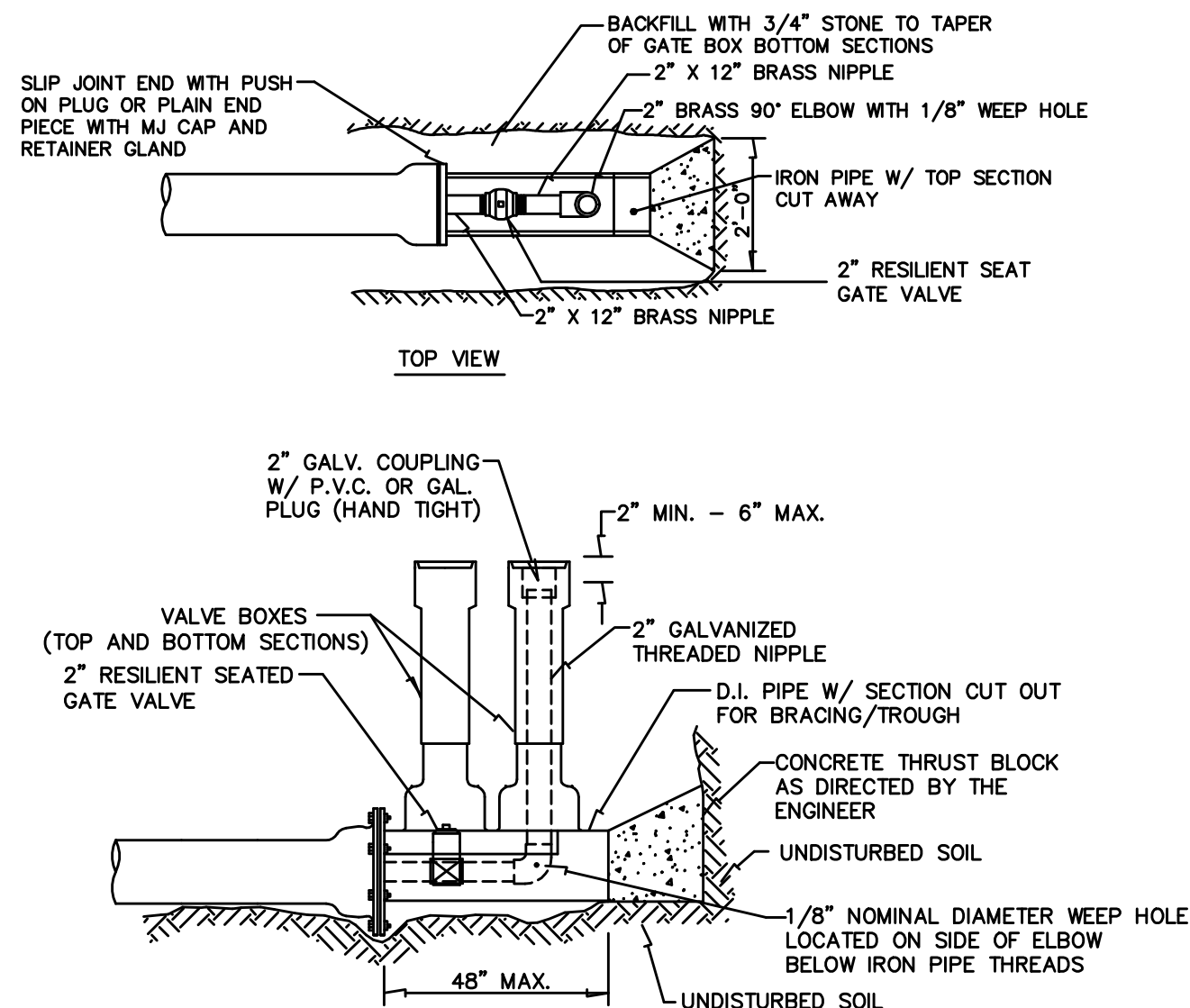
- ALL CONCRETE TO HAVE A MINIMUM OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
- CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
- REINFORCE TO 0.12 IN SQ./LF.

NOTE:

- USE FLAT TOP FOR GEOTHERMAL VAULT ACCESS MANHOLE COVER.

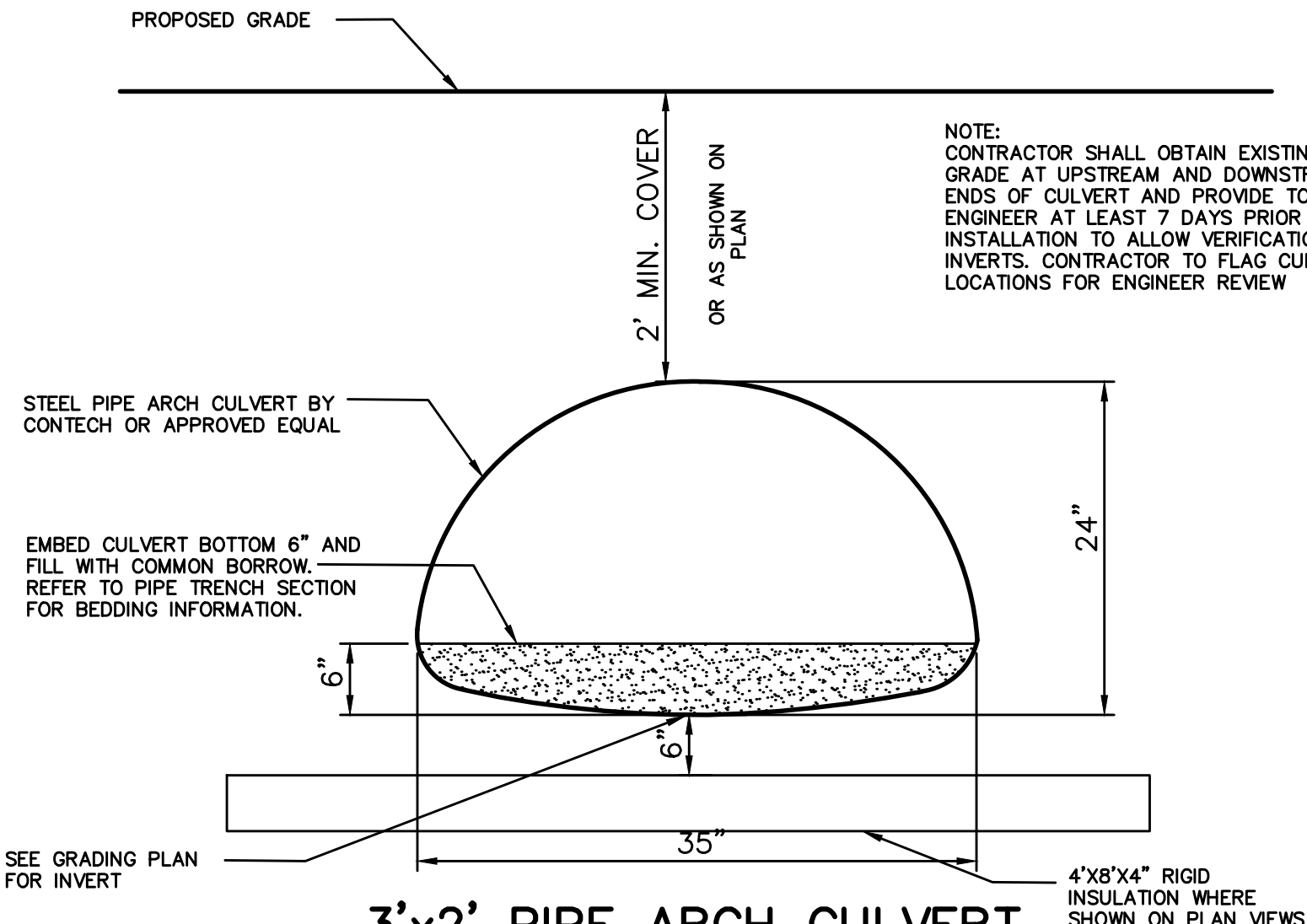
LARGE DIAMETER FLAT TOP DETAIL

NOT TO SCALE



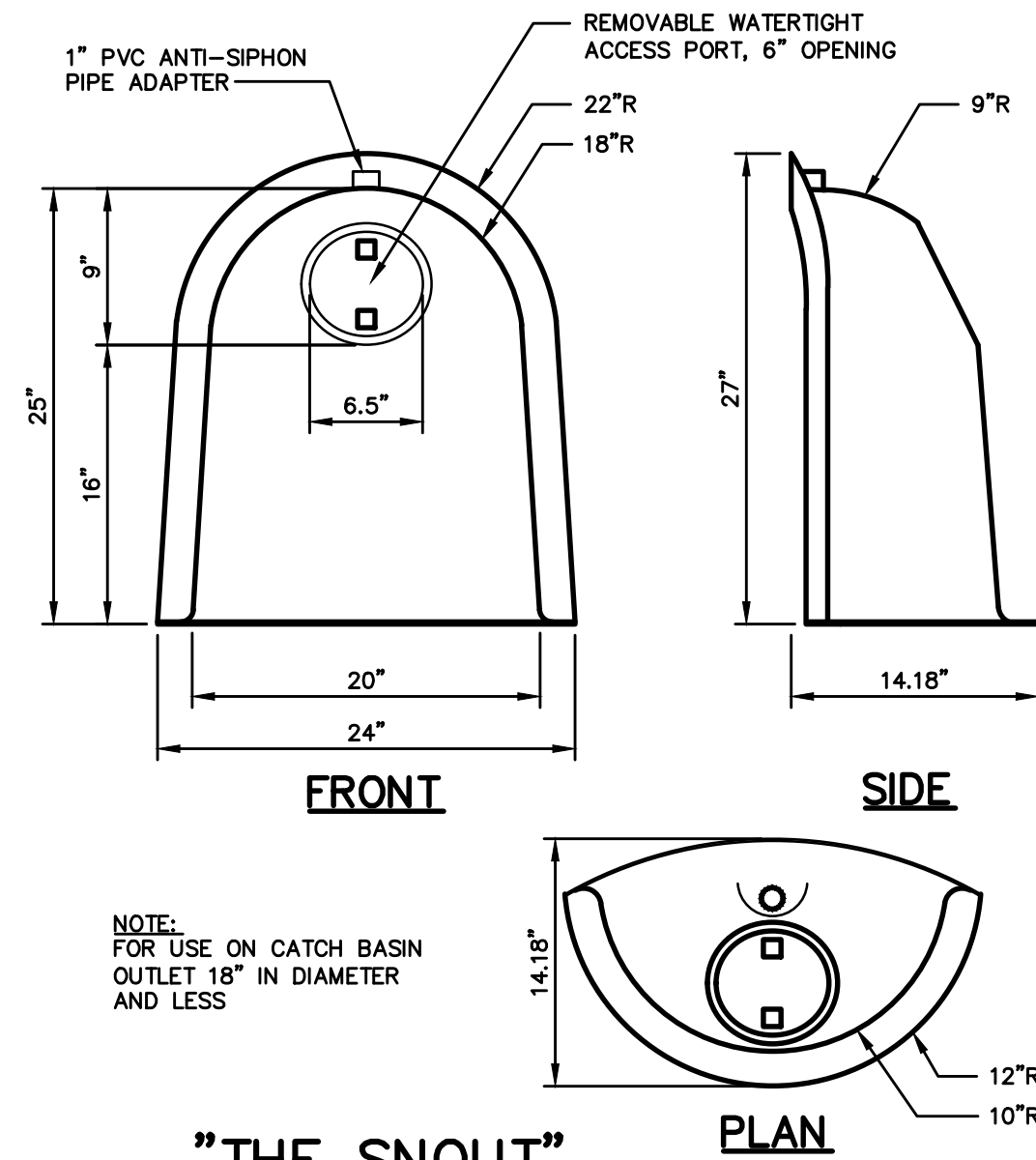
STANDARD 2" BLOW OFF

NOT TO SCALE



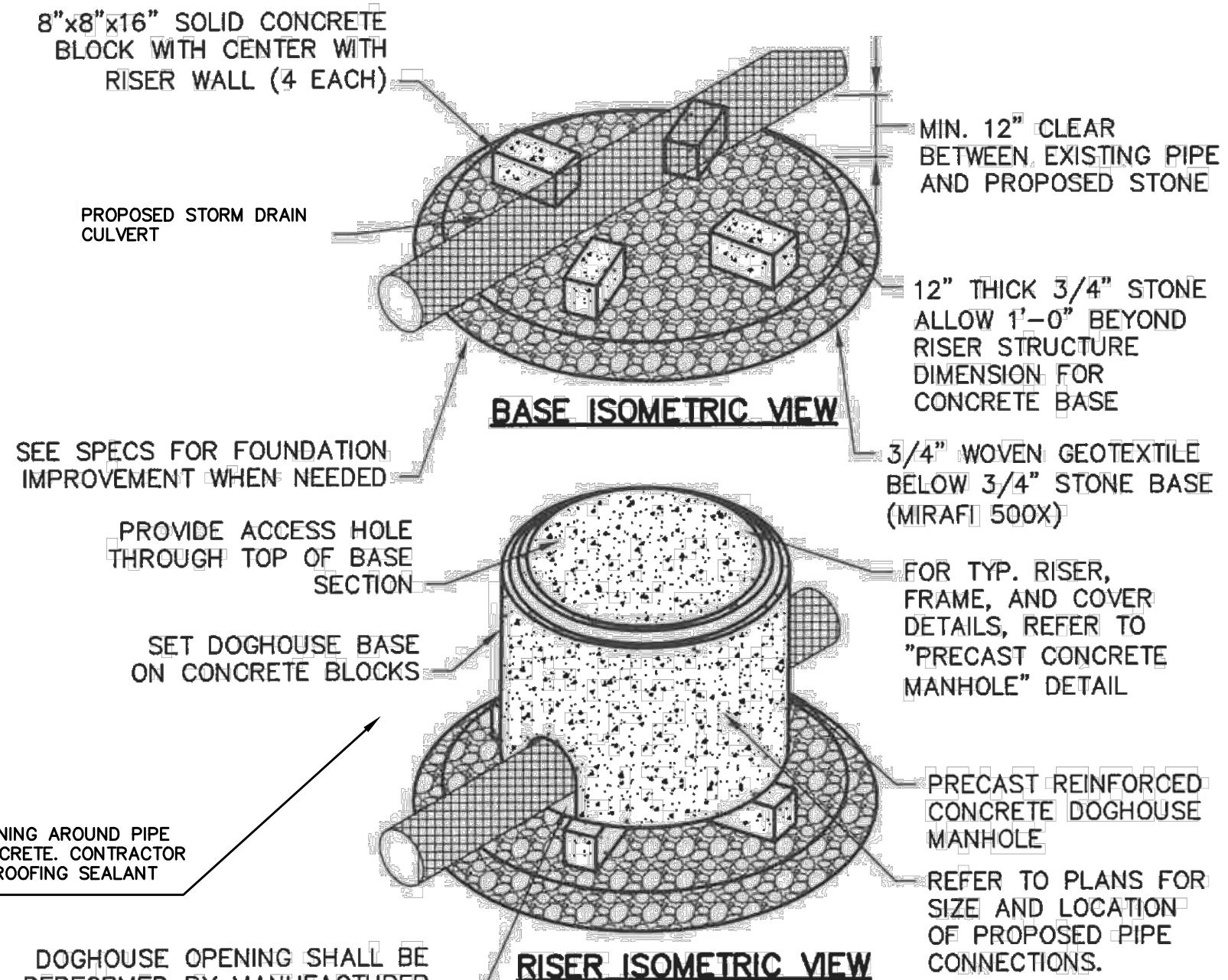
3'x2' PIPE ARCH CULVERT

NOT TO SCALE



"THE SNOOT"

NOT TO SCALE



FILL DOGHOUSE OPENING AROUND PIPE WITH 3,000 PSI CONCRETE. CONTRACTOR TO APPLY WATER PROOFING SEALANT AT JOINT.

DOGHOUSE OPENING SHALL BE PERFORMED BY MANUFACTURER OR SAWCUT TO FIT PIPE OUTSIDE DIAMETER PLUS 6"

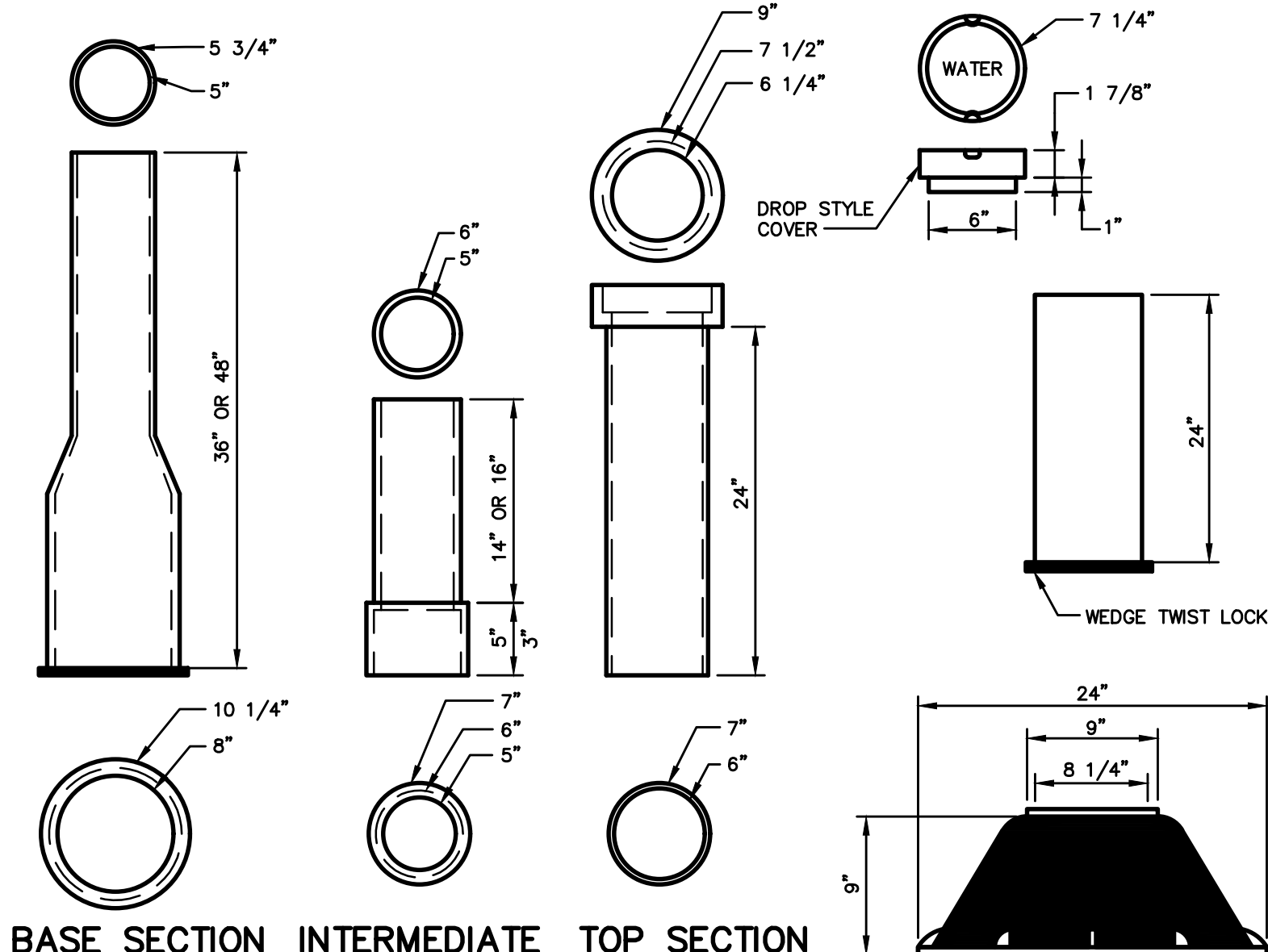
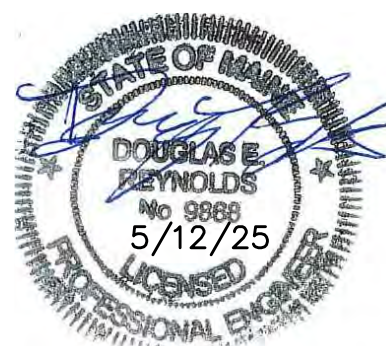
NOTE:

- ALL CONCRETE SHALL HAVE A MINIMUM OF 5,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
- DESIGN LOAD FOR H-20 WHEEL LOAD.

OPEN BOTTOM CATCH BASIN

NOT TO SCALE

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

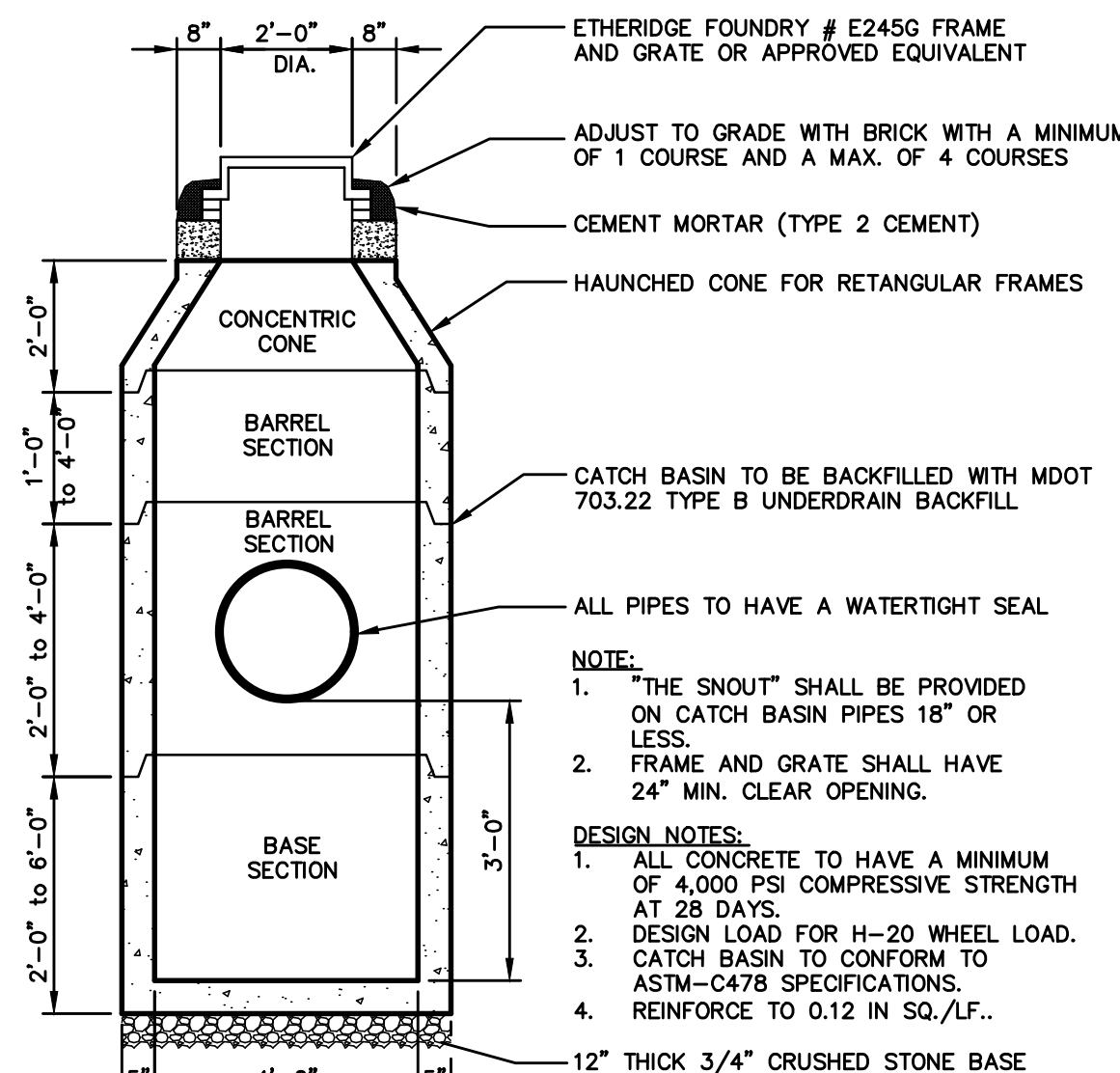


BASE SECTION #645 INTERMEDIATE SECTION #58 TOP SECTION #56

NOTE:
BUFFALO VALVE BOXES
NUMBERS ARE FOR 5.25"

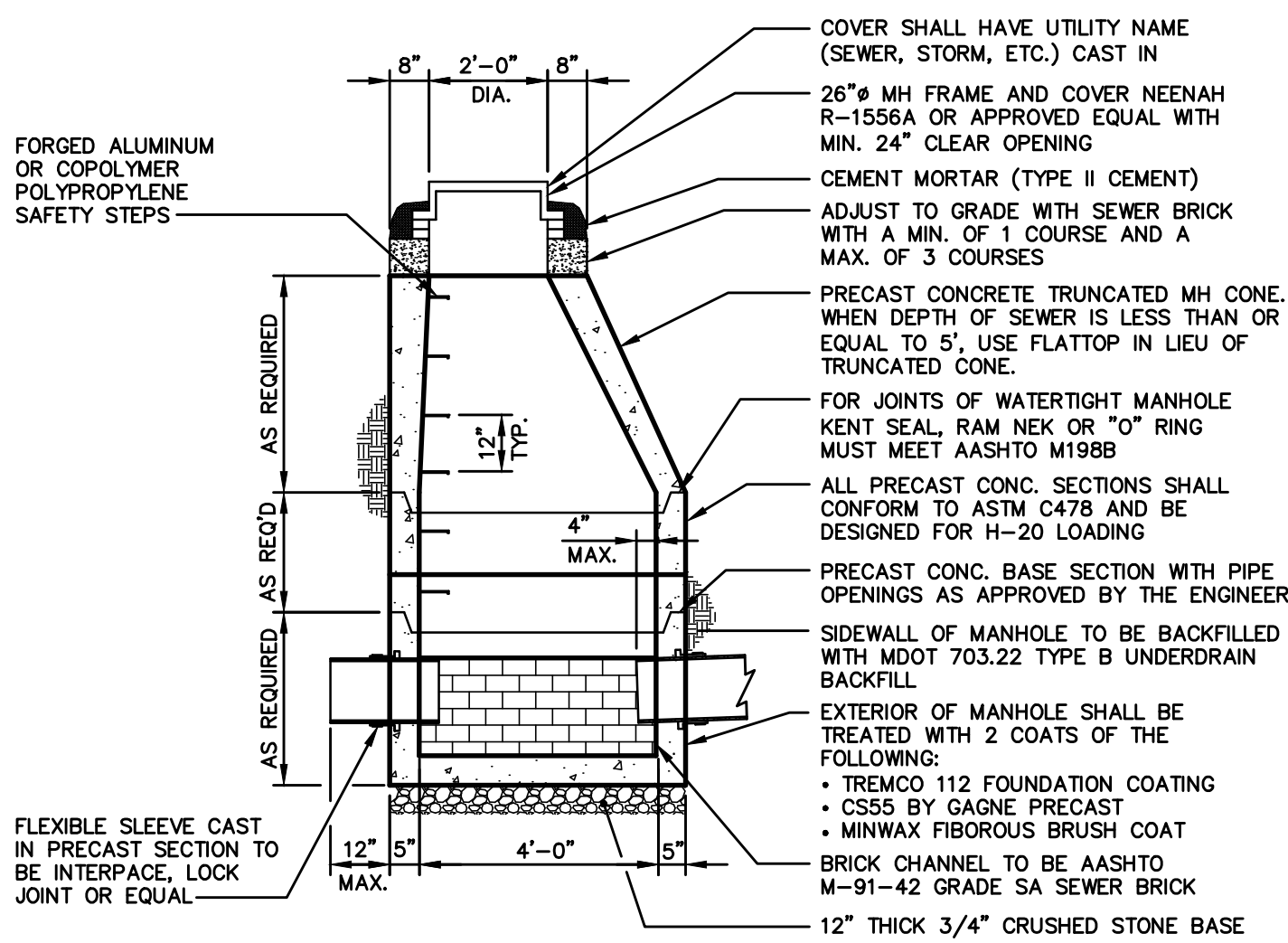
TYPICAL VALVE BOXES

NOT TO SCALE



4'-0" PRECAST CATCH BASIN

NOT TO SCALE



4'-0" PRECAST SEWER MANHOLE AND DRAIN MANHOLE

NOT TO SCALE

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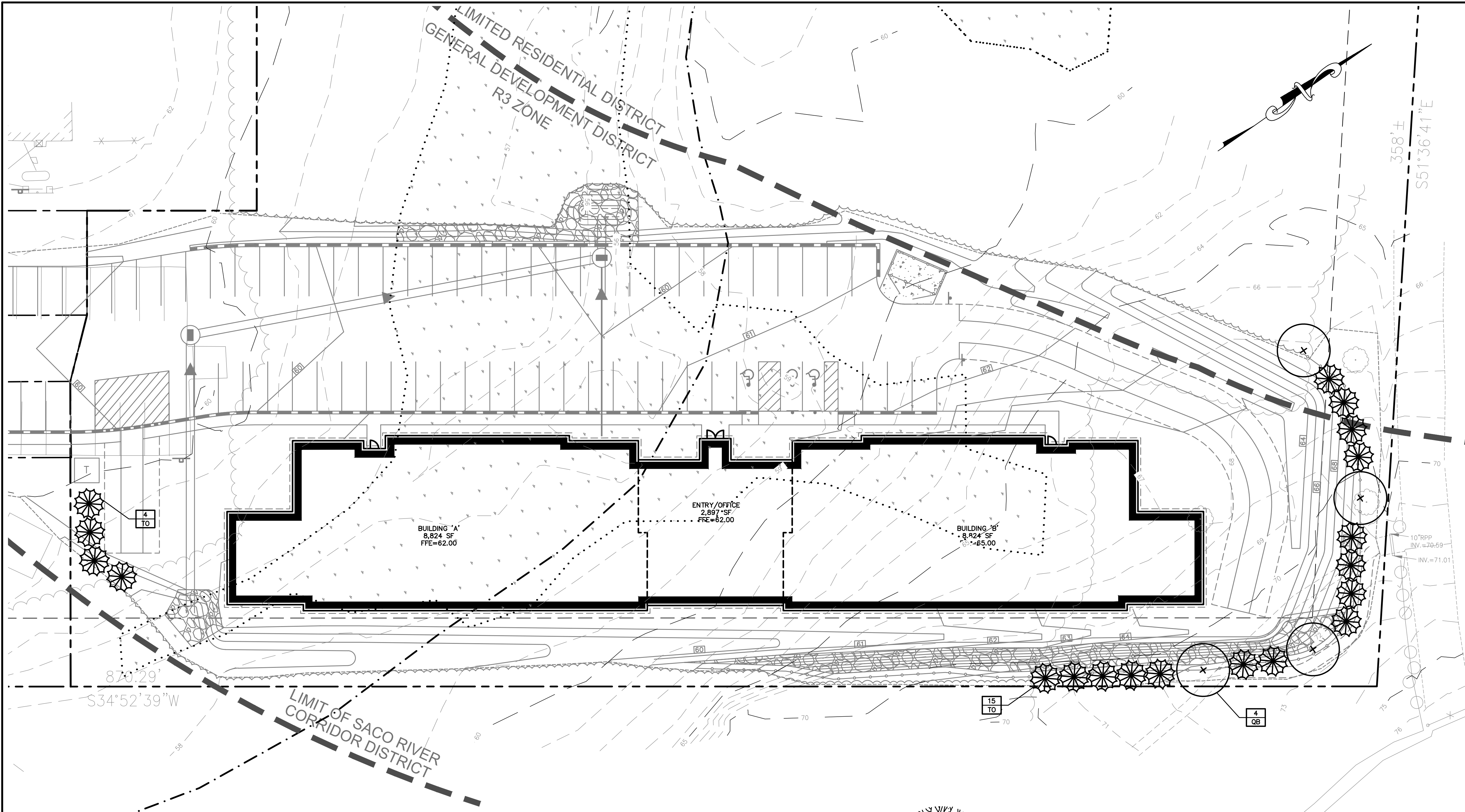


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Drawing Name:	Utility & Drainage Details
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.	C403
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GENERAL PLANTING NOTES

1. CALL DIG-SAFE (1-888-344-7233) PRIOR TO BEGINNING WORK. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO OWNER.
2. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH ALL SITE CONDITIONS PRIOR TO CONSTRUCTION BIDDING.
3. DO NOT SCALE FROM DRAWINGS. ANY OMISSIONS IN DIMENSIONING SHALL BE REPORTED IMMEDIATELY TO THE LANDSCAPE ARCHITECT. ANY DISCREPANCIES BETWEEN DRAWINGS, PLANT QUANTITIES, DETAILS, NOTES AND SPECIFICATIONS SHALL BE IMMEDIATELY REPORTED TO THE LANDSCAPE ARCHITECT FOR FURTHER DIRECTION AND RESOLUTION BEFORE ANY ADDITIONAL WORK PROCEEDS.
4. PROVIDE SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING CONDITIONS.
5. CONTRACTOR SHALL FURNISH AND PLACE 12 INCHES OF LOAM IN ALL SHRUB BEDS, 30 INCHES IN ALL TREE PITS, AND 6 INCHES UNDER ALL TURF AREAS. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
6. ALL PLANT MATERIAL INSTALLED SHALL MEET THE SPECIFICATIONS OF "AMERICAN STANDARDS FOR NURSERY STOCK BY THE AMERICAN ASSOCIATION OF NURSERYMEN".
7. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
8. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING STAKING OR GUYING WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE FROM THE OWNER.
9. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
10. EXISTING TREES TO BE PRESERVED SHALL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
11. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY, OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT (AND MUNICIPAL AUTHORITY, IF APPLICABLE) PRIOR TO INSTALLATION ON SITE.
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR GROUND COVER AND PERENNIAL BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
13. DAMAGE TO EXISTING SITE IMPROVEMENTS DURING INSTALLATION OF LANDSCAPE MATERIAL SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR.
14. CONTRACTOR SHALL COORDINATE INSPECTION OF PLANT MATERIAL AND LOCATIONS WITH PROJECT LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. ALL PLANT MATERIAL SHALL BE ON-SITE AND PLACED BEFORE INSPECTION CAN BE COMPLETED. A MINIMUM OF 48 HOUR NOTIFICATION SHALL BE REQUIRED.
15. MAINTENANCE REQUIREMENTS: PRUNE DEAD OR DAMAGED BRANCHES, MAINTAIN GUY POSTS AND WATER AS REQUIRED UNTIL PROJECT COMPLETION AND ACCEPTANCE BY OWNER.
16. WATERING: ALL PLANTINGS SHALL BE THOROUGHLY WATERED UPON INSTALLATION, AND THEN WEEKLY WHENEVER ANY DRY SPELLS OCCUR, UNTIL ACCEPTANCE BY OWNER.
17. LANDSCAPE CONTRACTOR OR PLANT SUPPLIER SHALL GUARANTEE PLANTS AND PROVIDE REPLACEMENTS FOR TWO YEARS FROM INSTALLATION.
18. CONTRACTOR SHALL PLACE 3" SHREDDED BARK MULCH AROUND SHRUB BEDS AND TREE PITS.

PLANT LIST				
KEY	BOTANICAL NAME	COMMON NAME	SIZE	QTY
TREES				
TO	THUJA OCCIDENTALIS 'NIGRA'	DARK AMERICAN ARBORVITAE	7'-8' HGT.	19
QB	QUERCUS BICOLOR	SWAMP WHITE OAK	2-1/2" CAL.	4

GENERAL PLANTING NOTES:

DIG HOLE AT LEAST 2 TIMES THE WIDTH OF ROOT BALL AND AS DEEP AS THE ROOT BALL (NO DEEPER). SET ROOT BALL CENTERED, WITH ROOT FLARE AT GROUND LEVEL. CORRECT HOLE DEPTH AS NEEDED. NOTE: MANY BALLED & BURLAPPED PLANTS HAVE SOIL PILED AROUND THE ROOT FLARE WHICH SHOULD BE REMOVED PRIOR TO PLANTING.

FOR DECIDUOUS AND NEEDLED EVERGREEN TREES AND SHRUBS 1 FULL WHEELBARROW EXISTING SOIL, 2 SHOVELS PEAT, 1 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL. FOR BROAD-LEAVED EVERGREENS AND RELATED ERICACEAE PLANTS, 1 FULL WHEELBARROW EXISTING SOIL, 3-4 SHOVELS PEAT, 1 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL OF LOW pH (RECOMMENDATIONS ARE FOR ACCEPTABLE PLANTING AREAS).

CONTAINER GROWN STOCK:
REMOVE ALL CONTAINERS AND GENTLY COMB OUT ROOTS TO ELIMINATE CIRCLING ROOTS. PRUNE DAMAGED ROOTS AS NEEDED.

BACKFILL 2/3 OF HOLE WITH AMENDED SOIL THEN FILL HOLE WITH WATER, LET DRAIN, REPEAT WATER AND DRAIN. BACK FILL TO FINISH GRADE, TAMP GENTLY, AND CREATE EARTH SAUCER. WATER THOROUGHLY ONCE AGAIN TO REMOVE REMAINING AIR POCKETS.

2" x 2" OR 2 1/2" DIAMETER STAKES WITH 2 #12 GAUGE WIRES ENCASED IN 2-PLY REINFORCED RUBBER HOSE 1/2" DIAMETER OR CHAINLOCK AS APPROVED BY LANDSCAPE ARCHITECT. 2 STAKES LOCATED 180° APART (STAKES SHALL BE FIRMLY SET TO PROVIDE NECESSARY TENSION). STAKES TO BE REMOVED AFTER ONE YEAR TIME.

BLACK MULCH IN PLANTING BEDS

REMOVE PLASTIC BURLAP AND FIBER OR PEAT POT. REMOVE NATURAL FIBER BURLAP FROM AT LEAST THE TOP 1/2 OF ROOTBALL, OR MORE IF THE ROOTBALL IS FIRM. REMOVE TOP 1/2 OF WIRE BASKET.

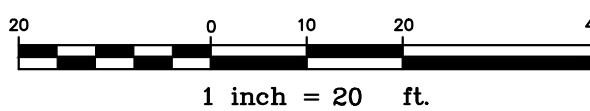
EARTH SAUCER (3" HT.)

SOIL MIX-SEE NOTE ABOVE AND BELOW

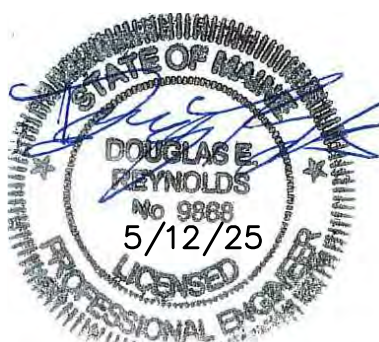
UNDISTURBED SUBGRADE

TREE AND SHRUB PLANTING DETAIL

NOT TO SCALE



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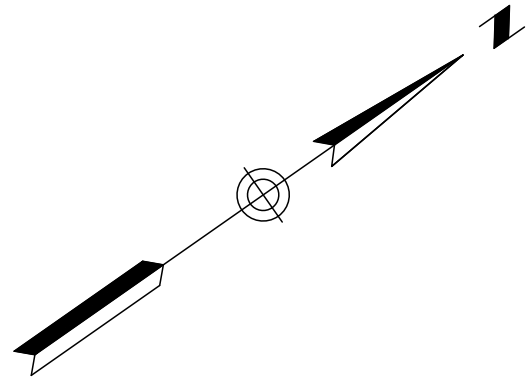
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Drawing Name:	Landscaping Plan
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.

L100

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PARK VIEW COURT RIGHT OF WAY LINE & CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	159.00'	124.69'	121.52'	N13°40'56"E	44°55'57"
C2	25.00'	39.64'	35.62'	N09°16'53"W	90°51'21"
C3	75.00'	176.71'	138.58'	S77°12'01"E	134°59'47"
C4	50.00'	39.27'	38.27'	S32°12'08"E	45°00'00"
C5	75.00'	118.93'	106.86'	S09°16'53"E	90°51'21"
C6	109.00'	85.49'	83.31'	S13°40'56"W	44°55'57"

LINE	BEARING	DISTANCE
L1	N08°47'03"W	66.57'
L2	N36°09'07"E	130.89'
L3	N54°42'08"W	410.00'
L4	N35°17'52"E	75.00'
L5	S09°42'08"E	89.64'
L6	S54°42'08"E	183.23'
L7	S36°09'07"W	130.89'
L8	S08°47'03"E	66.80'

TAX MAP 32 LOT 1-1
N/F
RICHARD J. & SHARON
J. ROUSSELLE
3631/310

AREA =
442,014 S.F. ±
10.15 ACRES ±
(EXCLUDING PARK VIEW
COURT RIGHT OF WAY)

SMH RM=60.11
INV. OUT=55.96

RM=59.40
15"OMP INV. IN(A)=54.37
15"OMP INV. IN(B)=54.75
15"OMP INV. OUT=54.58

RM=60.73
15"RPP INV. IN=56.29
15"OMP INV. IN=56.18
15"OMP INV. OUT=54.74

BENCHMARK: BONNET
BOLT HYDRANT
ELEVATION=63.48

RM=59.28
INV. OUT=57.08

RM=60.76
15"RPP INV. OUT=56.39

RM=61.36
10"CI INV.=54.12
10"CI INV.=53.90

RM=60.70
15"RPP INV. IN=55.80
15"RPP INV. OUT=55.64

GENERAL NOTES

- OWNER OF RECORD: FOREST GREEN ASSOCIATES, LTD.
P.O. BOX 759, SACO, ME 04072
TAX MAP 32 LOT 1
Y.C.R.D. BOOK 15854 PAGE 978
- BEARINGS ARE BASED ON STATE PLANE COORDINATE SYSTEM, MAINE WEST ZONE, NAD83 PER GNSS OBSERVATION.
- ELEVATIONS ARE BASED ON NAVD88 PER GNSS OBSERVATION.
- THE PROPERTY IS LOCATED IN TOWN OF BIDDEFORD, ME IN PARTIALLY IN THE R3 RESIDENTIAL ZONE AND PARTIALLY IN THE LIMITED RESIDENTIAL ZONE.
- BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS PARTIALLY IN ZONE X, ZONE A, ZONE AE AND ZONE OF 0.2% ANNUAL CHANCE FLOOD HAZARD OF THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 230145 0145 G, WHICH BEARS AN EFFECTIVE DATE OF JULY 17, 2024.
- WETLAND DELINEATION AND LOCATIONS PROVIDED BY FLYCATCHER.
- BOUNDARY LINES SHOWN ARE TAKEN FROM PLAN REFERENCE 1.

PLAN REFERENCES

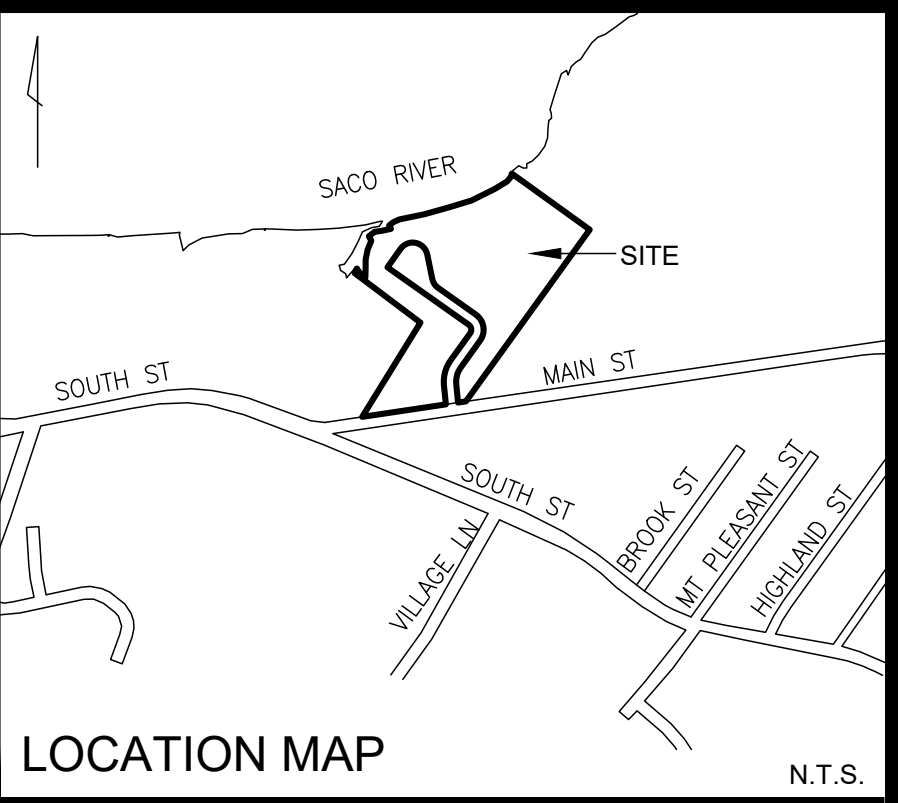
- "PLAN OF PROPERTY IN BIDDEFORD, MAINE MADE FOR BIDDEFORD ASSOCIATES "FOREST GREEN APARTMENTS" OCTOBER 9, 1974 REVISED NOV. 12, 1974 BY H.J. & E.C. JORDAN SURVEYORS.
- "ALTA/ACSM LAND TITLE SURVEY (MSHA-RUP-029), 1-6 PARK VIEW COURT, BIDDEFORD, MAINE, OWNER: BIDDEFORD ASSOCIATES, PREPARED FOR PHOENIX MANAGEMENT CO." DECEMBER 7, 2009 BY NORTHEAST CIVIL SOLUTIONS.
- "AS-BUILT SURVEY FOR FOREST GREEN LAND OF BIDDEFORD ASSOCIATES ON MAIN STREET IN BIDDEFORD, MAINE" DATED 11/29/1976 RECORDED IN PLAN BOOK 105, PAGE 47.

UTILITY NOTE

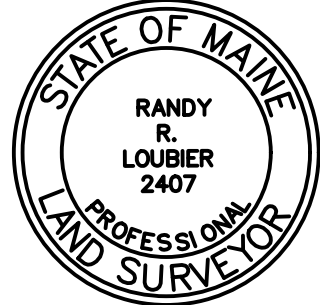
THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. CALL 1-888-DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION. DUE TO OSHA CONFINED SPACE REQUIREMENTS, ALL INVERTS AND PIPE SIZES MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION.

LEGEND

- IRON PIPE OR ROD FOUND
- UTILITY POLE
- MANHOLE
- ELECTRIC METER
- SIGN
- CATCH BASIN
- HYDRANT
- WATER VALVE OR SHUTOFF
- DECIDUOUS TREE
- WETLAND
- FENCE
- EDGE OF WETLAND
- CURB
- OVERHEAD WIRES
- WATER LINE
- GAS LINE
- STORM DRAIN
- SANITARY SEWER
- 1' CONTOUR
- WOODS LINE
- IRON PIPE/ROD FOUND CONCRETE



SCALE: 1" = 40'



Randy R. Loubier, PLS #2407

Topographic Survey

At

Park View Court, Biddeford, Maine

Made for

Gorrill Palmer

300 Southborough Dr., South Portland, ME

OWEN HASKELL, INC.

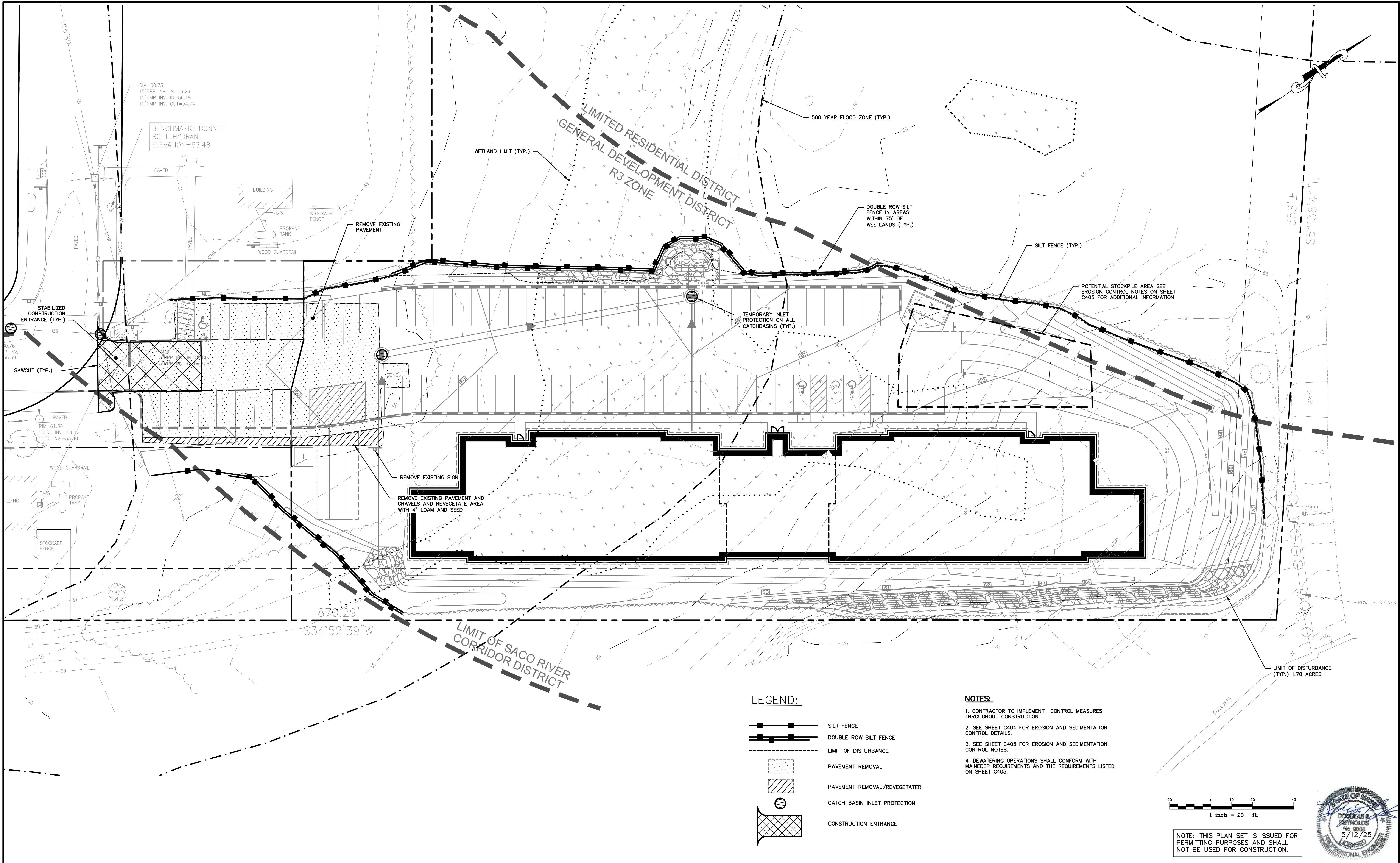
PROFESSIONAL LAND SURVEYORS

390 US ROUTE 1, UNIT 10, FALMOUTH, ME 04105 TEL. 207-774-0424

DRAWN BY: JLW DATE: JAN. 5, 2025 JOB NO. 2024-295 B-Y

CHECKED BY: RRL SCALE: 1" = 40' DRWG. NO. 1

U:\Bateman Partners\4323-Bateman Partners - Forest Green Apts Expansion - Biddeford\Z - CAD\DWG\4323-DEMO EROS.dwg 5/12/2025 2:55 PM



Rev.	Date	Revision

LOCAL PRELIMINARY PLAN SUBMISSION	5/12/25	DER
NRPA APPLICATION SUBMISSION	5/12/25	DER
SACO RIVER CORRIDOR SUBMISSION	5/7/25	DER
LOCAL SKETCH PLAN SUBMISSION	4/16/25	DER
Issued For	Date	By

Design: EC	Draft: CG	Date: JUNE 2024
Checked: DER	Scale: 1"=20'	Job No.: 4323
File Name: 4323-DEMO EROS.dwg		
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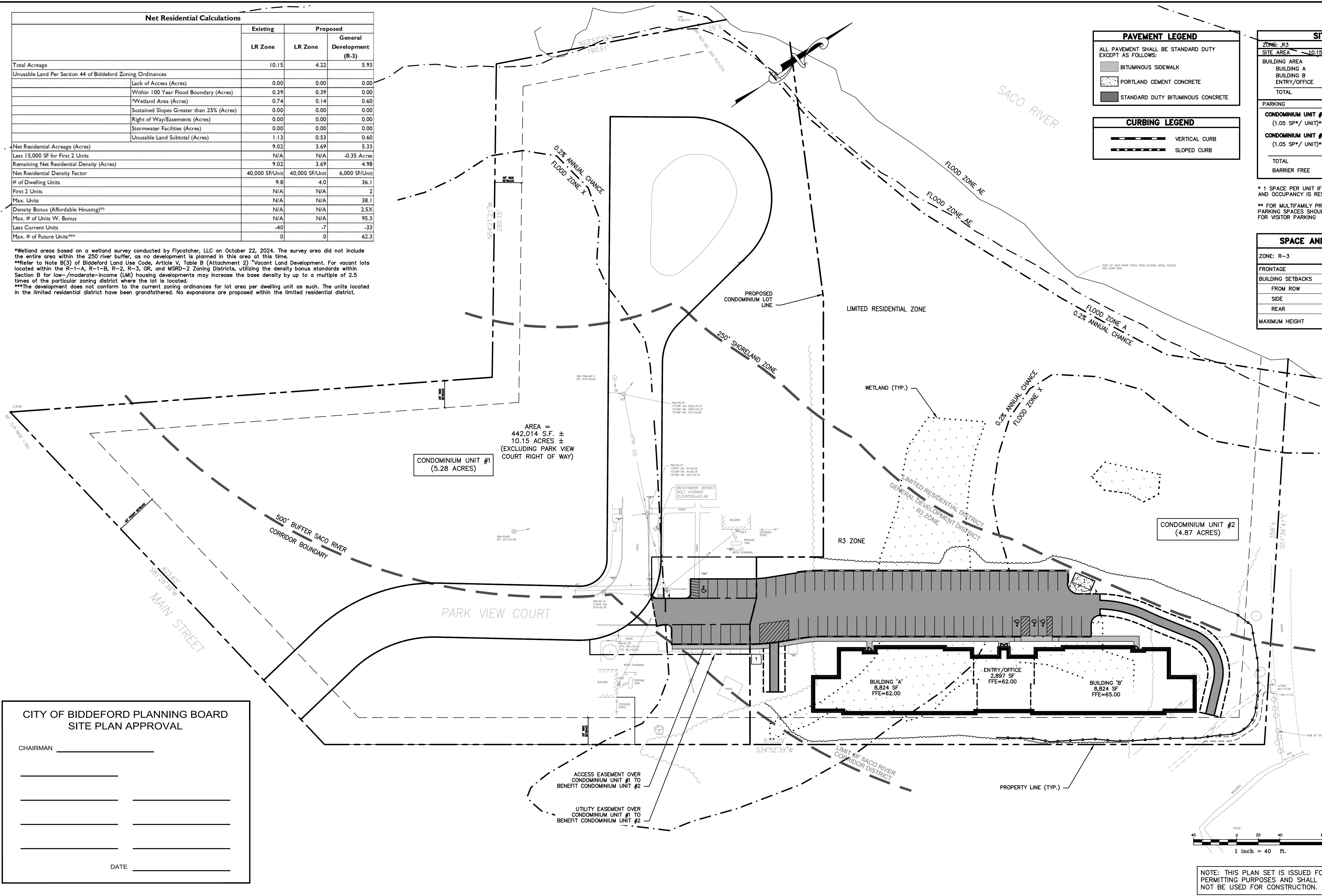
Drawing Name:	Site Demolition and Erosion Control Plan
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.	C002
-------------	------

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Net Residential Calculations			
	Existing	Proposed	
	LR Zone	LR Zone	General Development (R-3)
Total Acreage	10.15	4.22	5.93
Unusable Land Per Section 44 of Biddeford Zoning Ordinances			
Lack of Access (Acres)	0.00	0.00	0.00
Within 100 Year Flood Boundary (Acres)	0.39	0.39	0.00
*Wetland Area (Acres)	0.74	0.14	0.60
Sustained Slopes Greater than 25% (Acres)	0.00	0.00	0.00
Right of Way/Easements (Acres)	0.00	0.00	0.00
Stormwater Facilities (Acres)	0.00	0.00	0.00
Unusable Land Subtotal (Acres)	1.13	0.53	0.60
Net Residential Acreage (Acres)	9.02	3.69	5.33
Less 15,000 SF for First 2 Units	N/A	N/A	-0.35 Acres
Remaining Net Residential Density (Acres)	9.02	3.69	4.98
Net Residential Density Factor	40,000 SF/Unit	40,000 SF/Unit	6,000 SF/Unit
# of Dwelling Units	9.8	4.0	36.1
First 2 Units	N/A	N/A	2
Max. Units	N/A	N/A	38.1
Density Bonus (Affordable Housing)**	N/A	N/A	2.5X
Max. # of Units W. Bonus	N/A	N/A	95.3
Less Current Units	-40	-7	-33
Max. # of Future Units***	0	0	62.3

*Wetland areas based on a wetland survey conducted by Flycatcher, LLC on October 22, 2024. The survey area did not include the entire area within the 250' river buffer, as no development is planned in this area at this time.
**Refer to Note B(3) of Biddeford Land Use Code, Article V, Table B (Attachment 2) "Vacant Land Development. For vacant lots located within the R-1-A, R-1-B, R-2, R-3, OR, and MSO-2 Zoning Districts, utilizing the density bonus standards within Section B for low-/moderate-income (LMI) housing developments may increase the base density by up to a multiple of 2.5 times of the particular zoning district where the lot is located.
***The development does not conform to the current zoning ordinances for lot area per dwelling unit as such. The units located in the limited residential district have been grandfathered. No expansions are proposed within the limited residential district.



CITY OF BIDDEFORD PLANNING BOARD
SITE PLAN APPROVAL

CHAIRMAN _____

DATE _____

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Issued For	Date	By

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File Name: 4323-SP.dwg		
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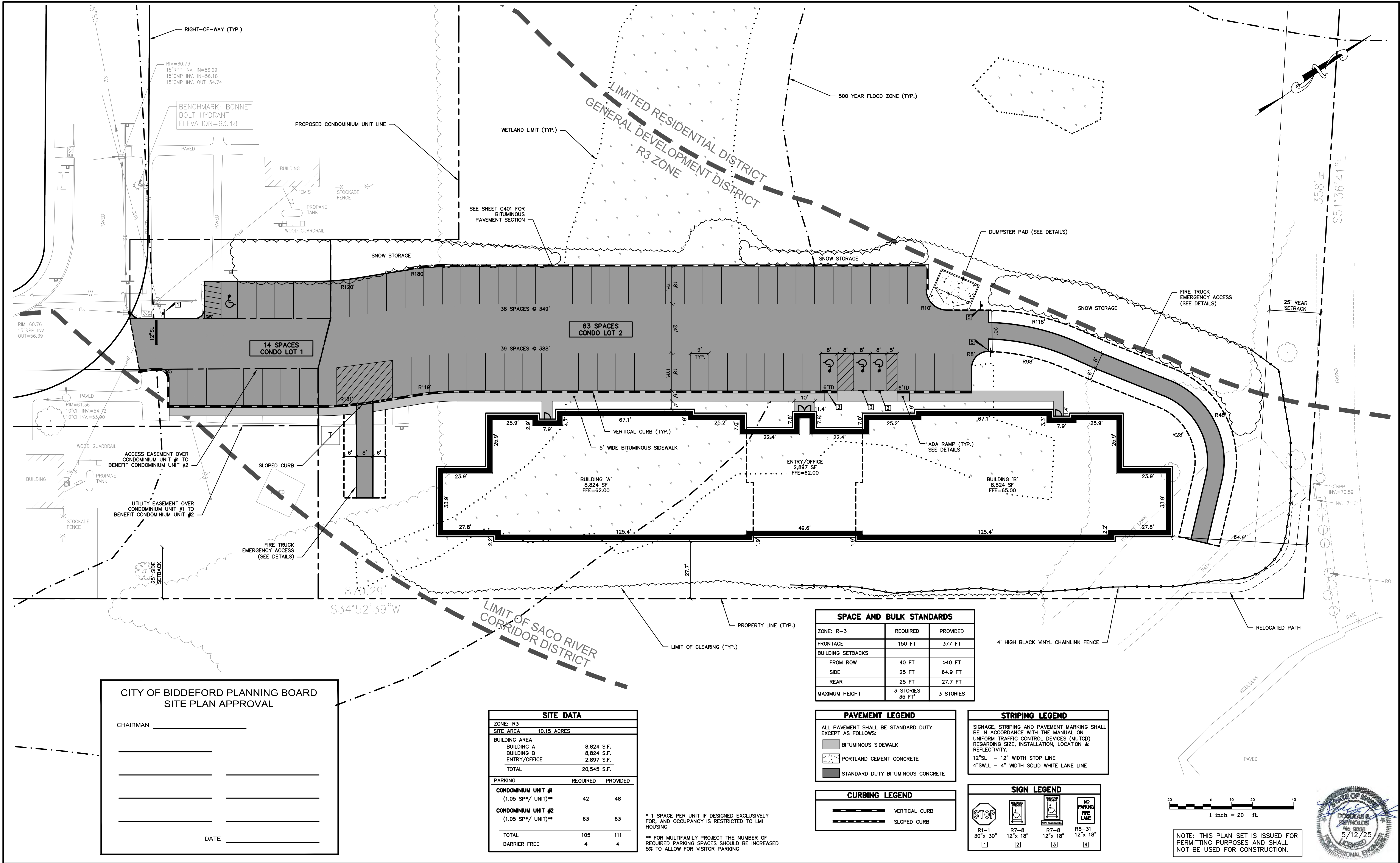


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Drawing Name:	Subdivision Plan
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.	C100
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Design: EC	Draft: CG	Date: JUNE 2024
Checked: DER	Scale: 1"=20'	Job No.: 4323
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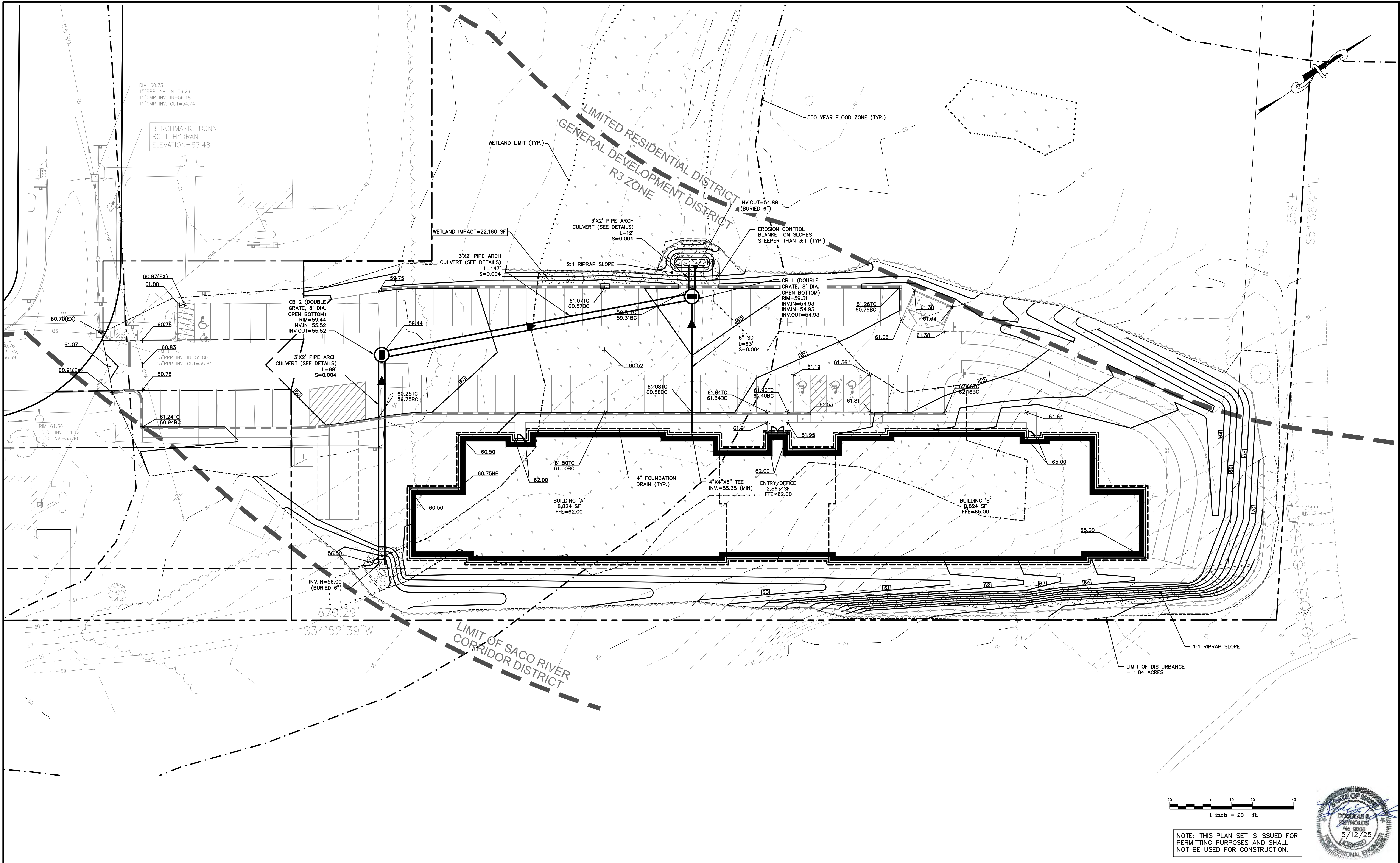


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Drawing Name:	Site Plan
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.	C101
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Rev.	Date	Revision

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SACO RIVER CORRIDOR SUBMISSION	5/7/25	DER
LOCAL SKETCH PLAN SUBMISSION	4/16/25	DER
Issued For	Date	By

Design: EC	Draft: CG	Date: JUNE 2024
Checked: DER	Scale: 1"=20'	Job No.: 4323
File Name: 4323-GRADE.dwg		
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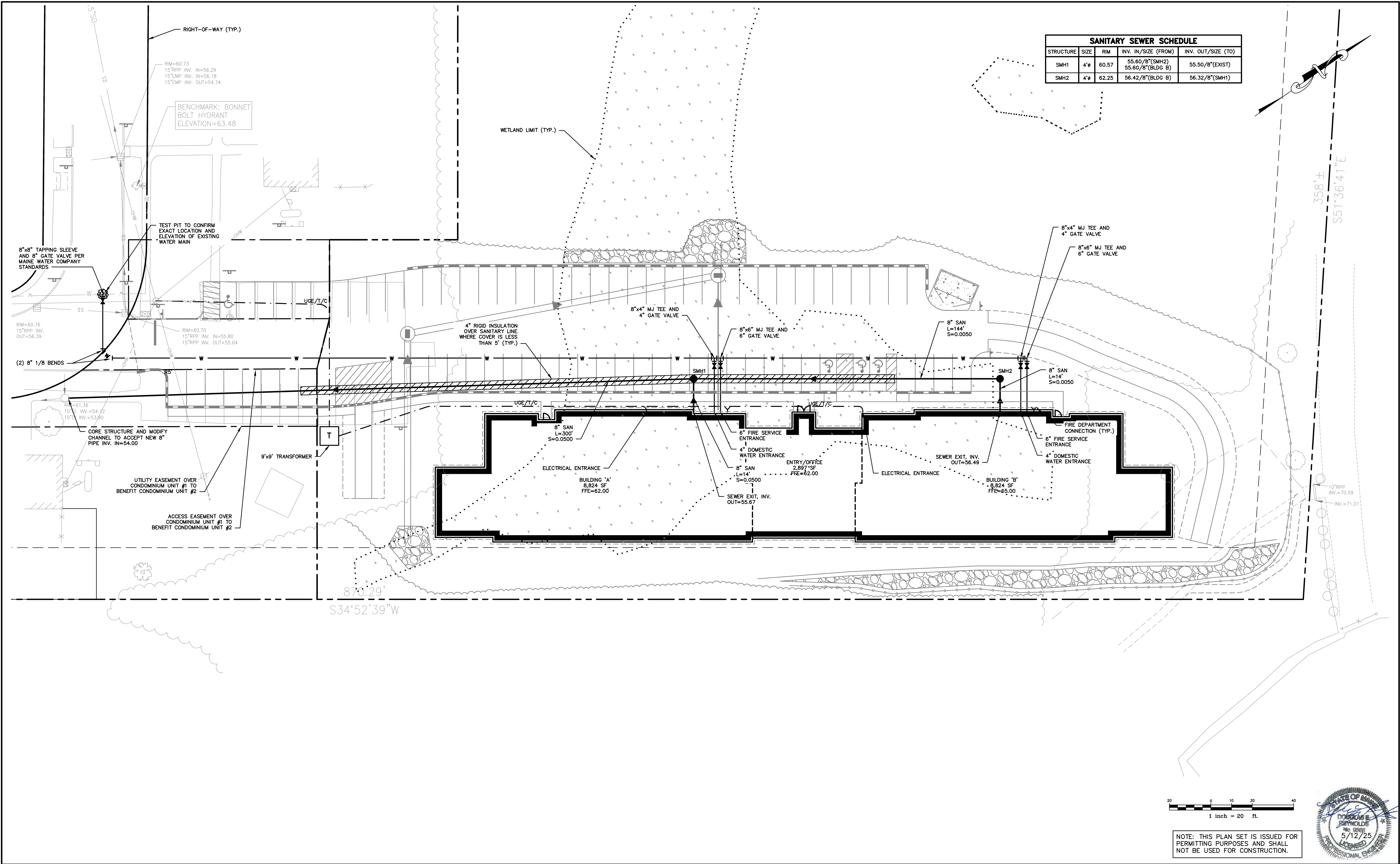


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Drawing Name:	Grading and Drainage Plan
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.
C102

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Rev.	Date	Revision

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NRPA APPLICATION SUBMISSION	5/12/25	DER
SACO RIVER CORRIDOR SUBMISSION	5/7/25	DER
LOCAL SKETCH PLAN SUBMISSION	4/16/25	DER
Issued For	Date	By

Design: EC	Draft: CG	Date: JUNE 2024
Checked: DER	Scale: 1"=20'	Job No.: 4323
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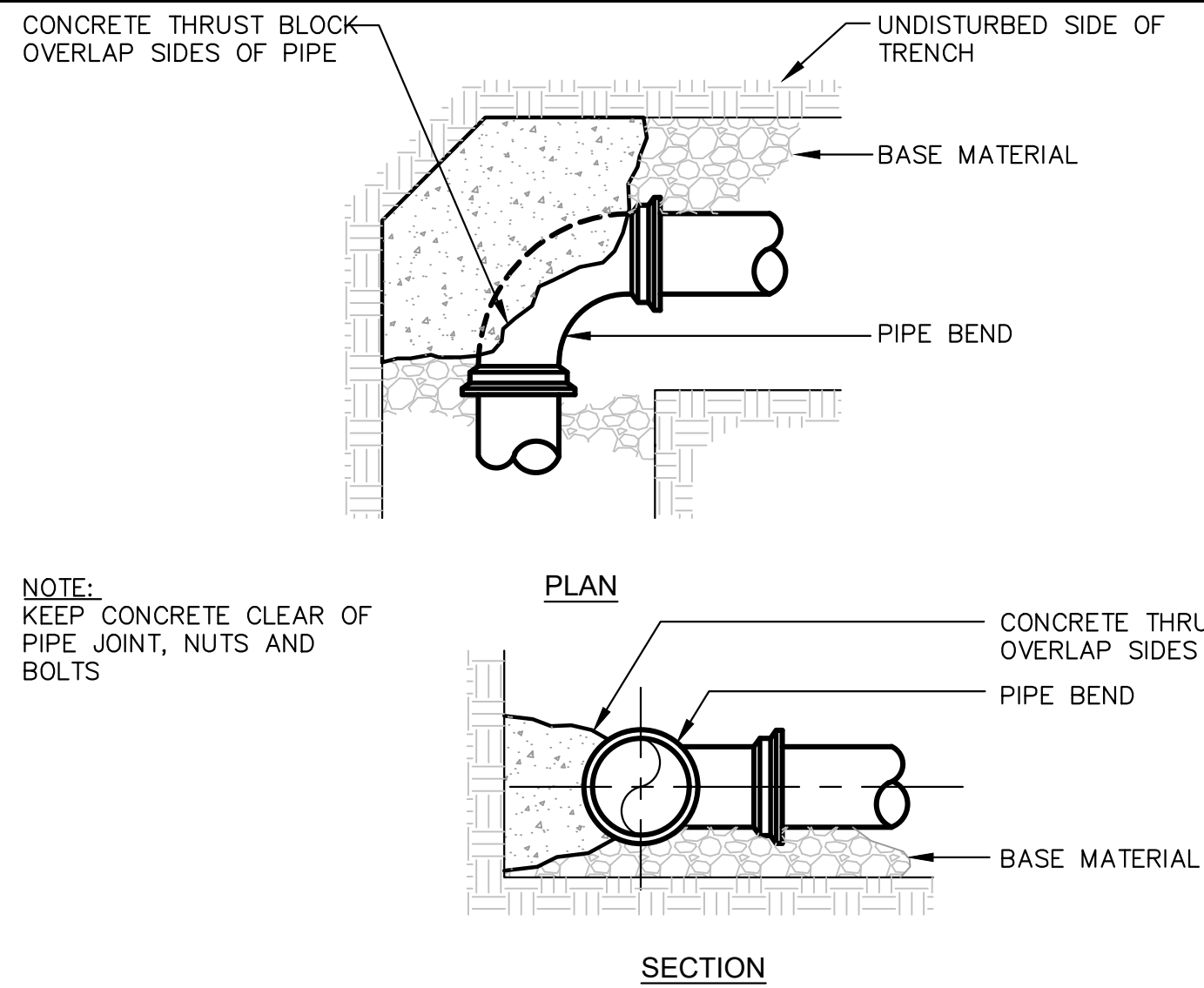
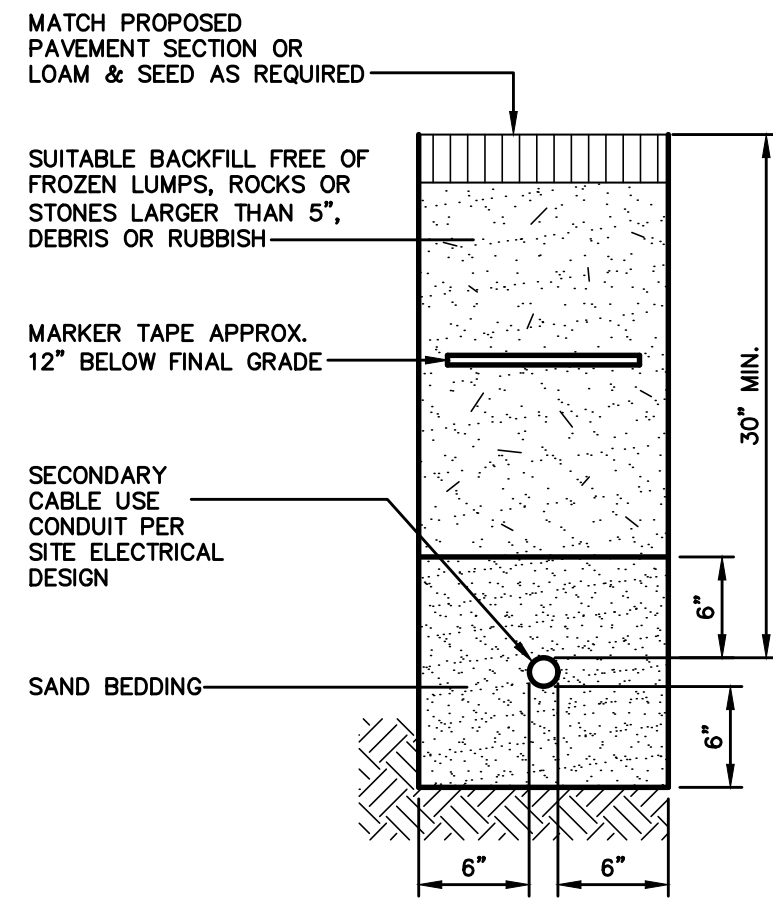
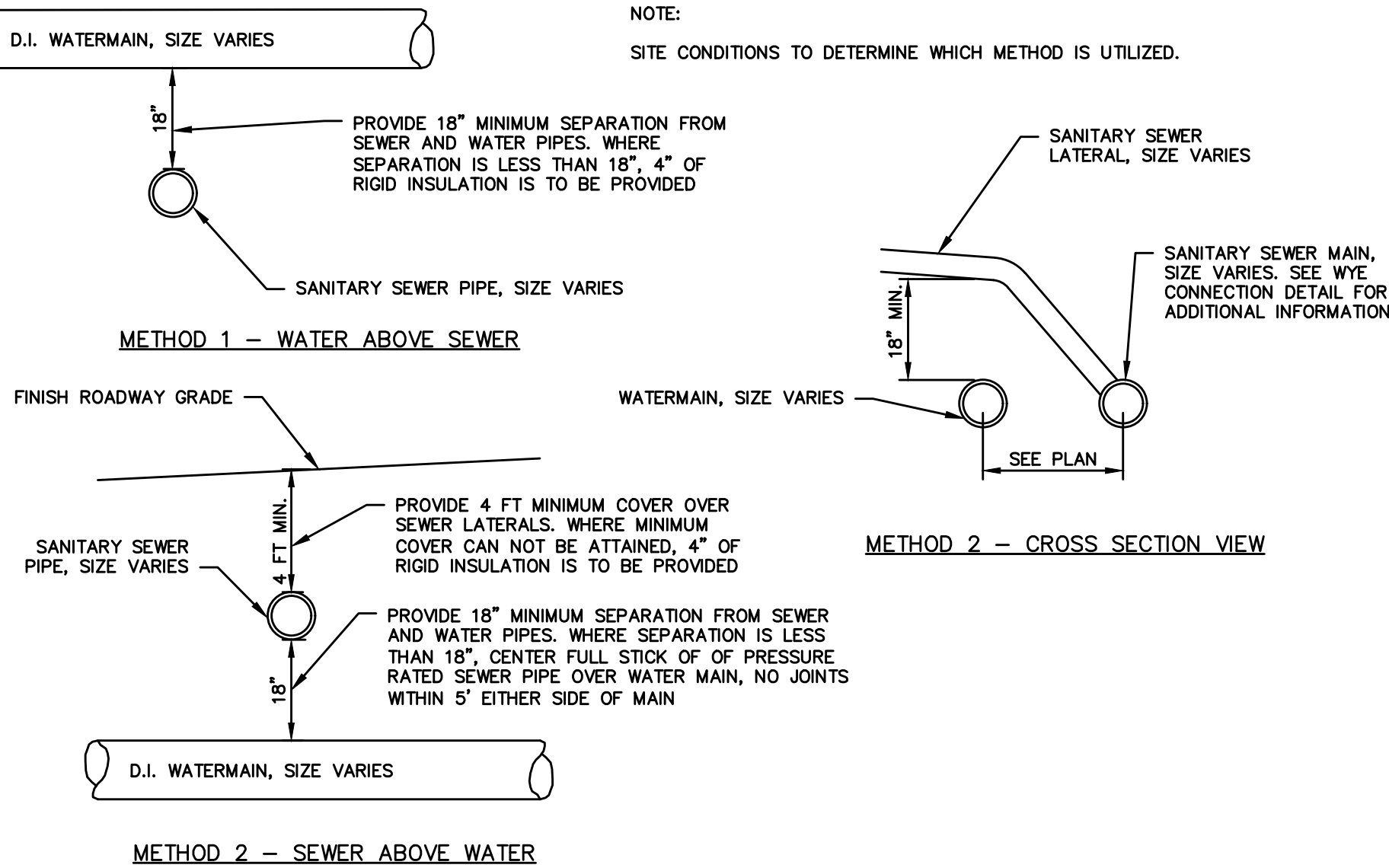
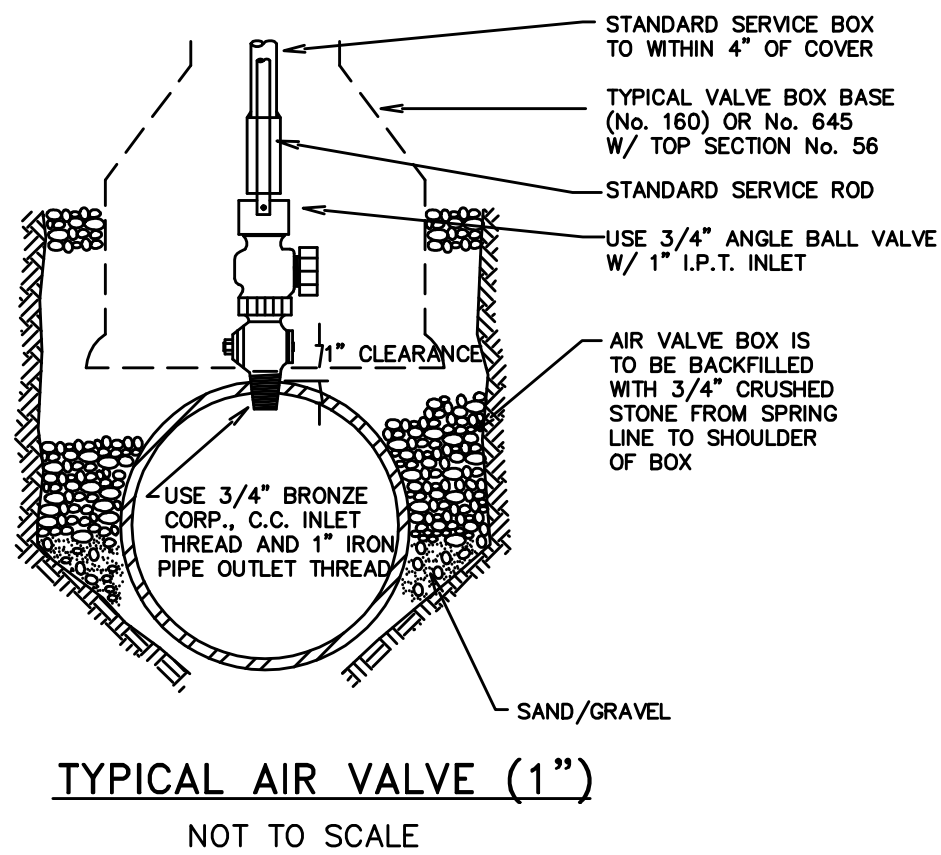


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Drawing Name:	Utility Plan
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.	C103
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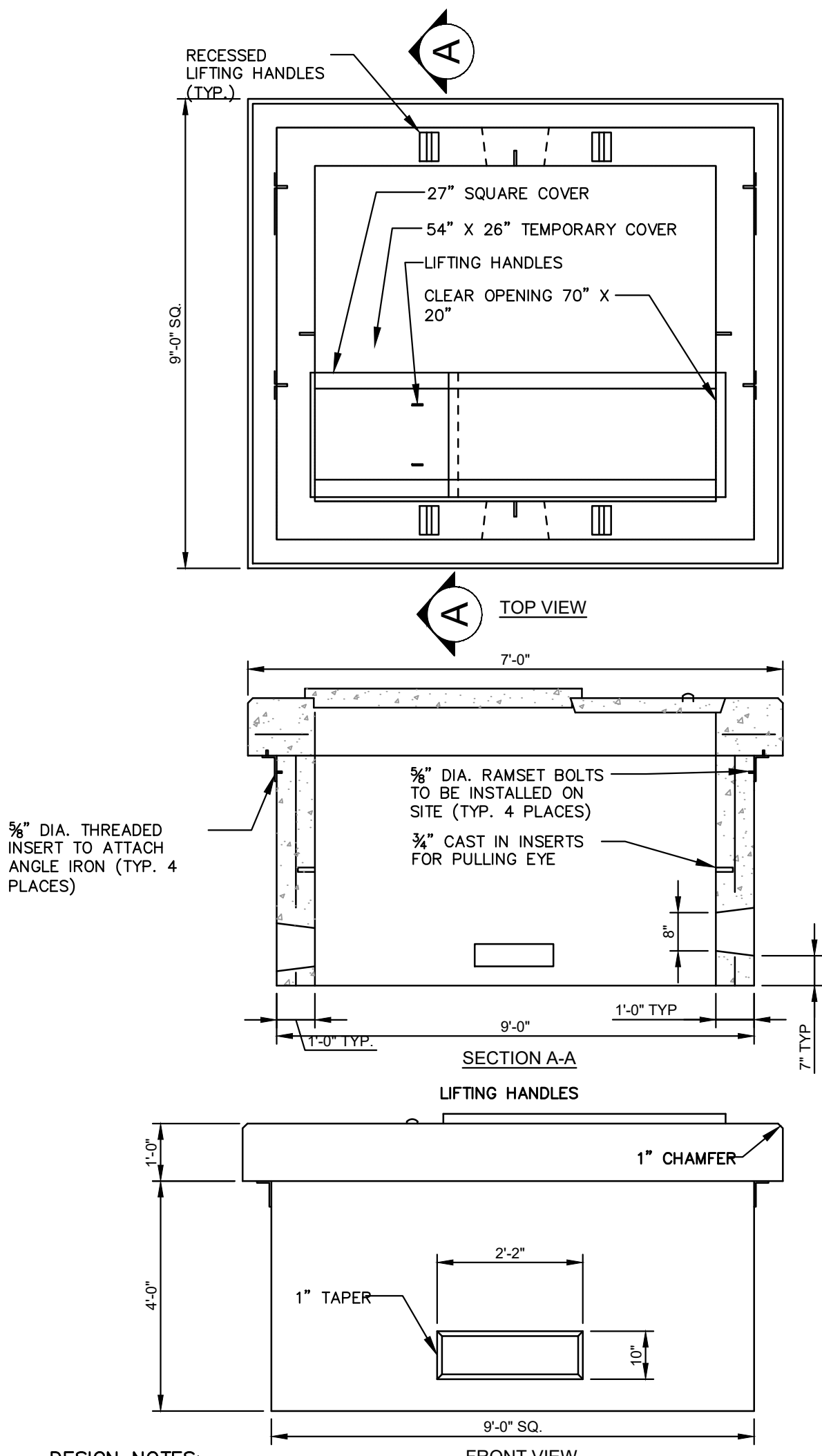


THRUST/RETAINER GLAND SCHEDULE		
1/4 BEND	(45°)	THRUST BLOCK W/ GRIPRING™

- THE ABOVE SCHEDULE IS SUBJECT TO THE APPROVAL OF THE ON-SITE INSPECTOR DUE TO SOILS AND WORKING PRESSURES IN THE AREA.
- NOTES:
- THE MAINE WATER DISTRICT MAY HAVE INSPECTION FEES AND REQUIRE OBSERVATION OF ALL PIPING INSTALLATION BEFORE BURIAL. REFER TO SPECIFICATIONS.
 - FOR WATER MAIN LAYOUT SEE DRAWING C-4.0
 - FOR WATER MAIN TRENCH DETAILS SEE DRAWING C402
 - REFER TO SPECIFICATIONS FOR TESTING AND CHLORINATION REQUIREMENTS.
 - ALL HYDRANTS AND VALVES TO BE EPOXY COATED, NUTS & BOLTS TO BE STAINLESS STEEL.
 - SERVICE RODS FOR DOMESTIC SERVICE OR AIR VALVES TO BE STAINLESS STEEL.

THRUST BLOCK PLACEMENT ON BENDS

NOT TO SCALE



- DESIGN NOTES:
- CONCRETE 4,000 PSI AT 28 DAYS.
 - REINFORCING #4 BARS AT 6" O.C. EACH WAY.
 - DUCT OPENINGS SHOWN ARE TYPICAL AND CAN BE MODIFIED PER REQUEST.
 - CENTRAL MAINE POWER COMPANY SPECIFICATION.
 - TEMPORARY COVER HAS (2) 3/8" THREADED LIFTING INSERTS CAST IN.

NOTE: CONFIRM TRANSFORMER PAD SIZES WITH OWNER AND ELECTRICAL DESIGNER. SITE WORK CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING THE TRANSFORMER PAD.

TRANSFORMER PAD

N.T.S.

SCHEDULE OF TRENCH BACKFILL		
TYPE OF PIPE	EMBEDMENT MATERIAL	SELECT BACKFILL
CMP DUCTILE IRON RCP	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
PVC-SDR 35 HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL
PERFORATED PVC-SDR35 HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE

- NOTE:
- BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
 - INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES, 12" BELOW FINISH GRADE.

- (1) COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2" RIGID INSULATION.

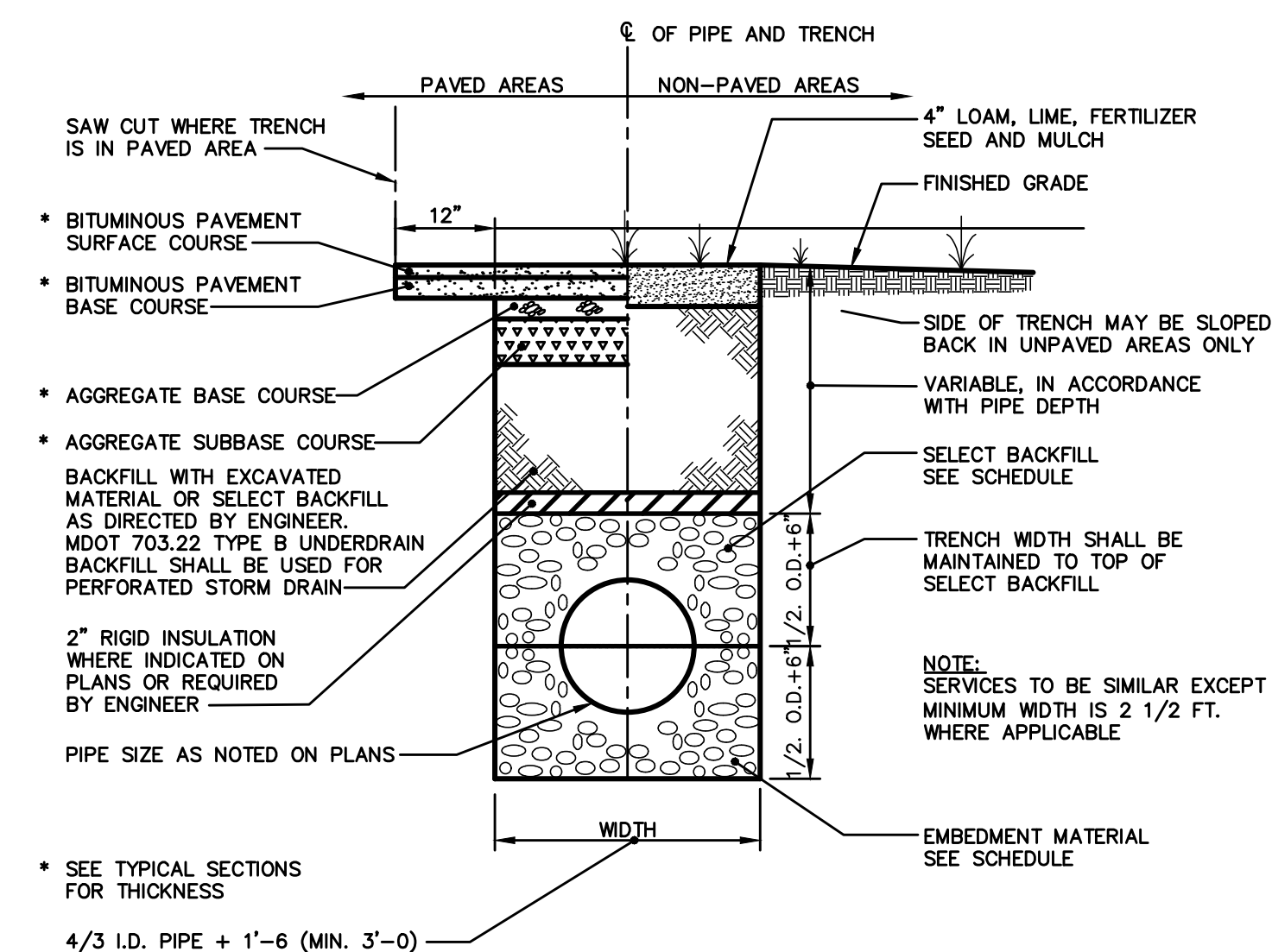
1. THE BEARING SURFACE OF THE THRUST BLOCK SHALL BE THE SURFACE AREA OF THE THRUST BLOCK WHICH IS CAST AGAINST THE TRENCH WALL. THE BEARING SURFACE SHALL NOT EXCEED THE FOLLOWING LOADINGS:
- | IN-SITU CONDITION | ALLOWABLE |
|--------------------------|-----------|
| BEDROCK | 3,000 psf |
| SAND OR OUTWASH DEPOSITS | 1,500 psf |
| OTHER SOILS | 1,000 psf |
- THE THRUST SHALL BE COMPUTED ON THE BASIS OF 150 psi x THE CROSS SECTIONAL AREA OF THE PIPE. FOR EXAMPLE, A THRUST BLOCK FOR A 1/4 BEND ON AN 8" WATER MAIN BEARING AGAINST CLAY WOULD REQUIRE A BEARING SURFACE OF 7.5 s.f.
- $$150 \text{ psi} \times 50 \text{ sq. in.} = 7.5 \text{ s.f.}$$
- 1,000 psf

1,000 psf

2. INSTALL POLY BARRIER BETWEEN PIPE AND ALL THRUST BLOCKS.
3. ANY WORK RELATED TO WATER PIPING OR DETAILS SHALL BE IN ACCORDANCE WITH THE MAINE WATER COMPANY SPECIFICATIONS.

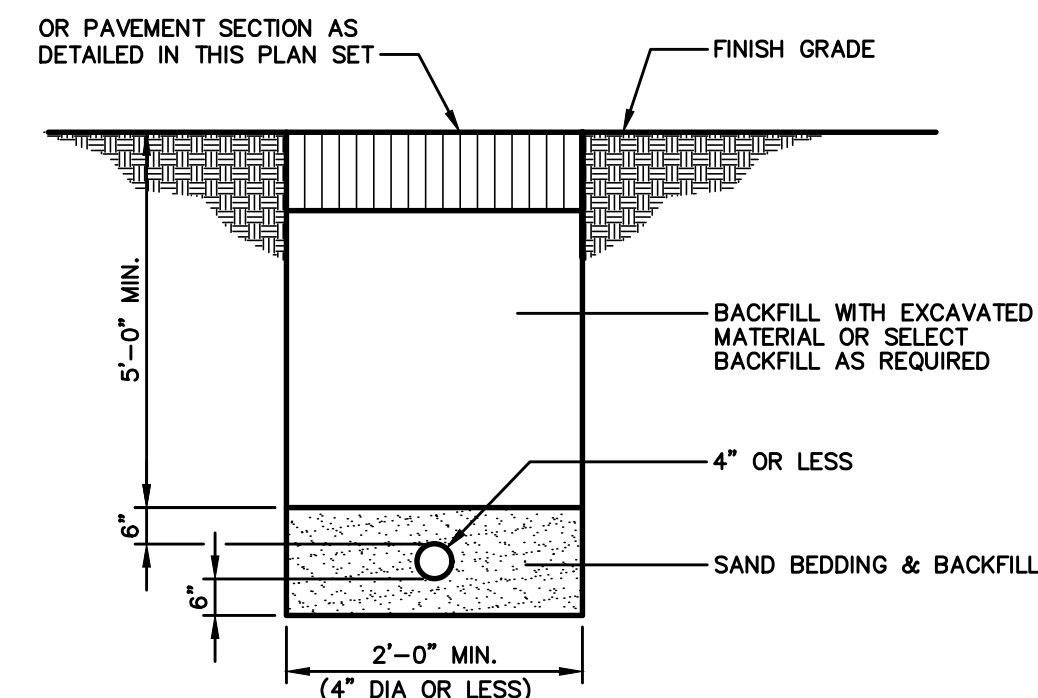
THRUST BLOCK NOTES

MINIMUM COVER	PIPE
2'-0"	DRAIN (1)
5'-5"	WATER
5'-0"	SEWER



TRENCH SECTION

N.T.S.

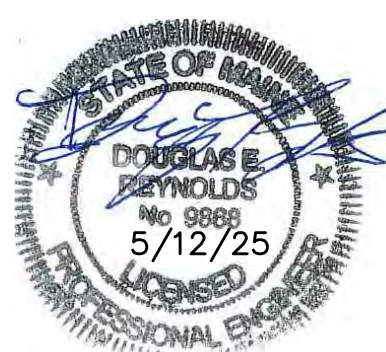


SEE NOTE 3 IN THRUST BLOCK NOTES DETAIL

WATER SERVICE TRENCH SECTION

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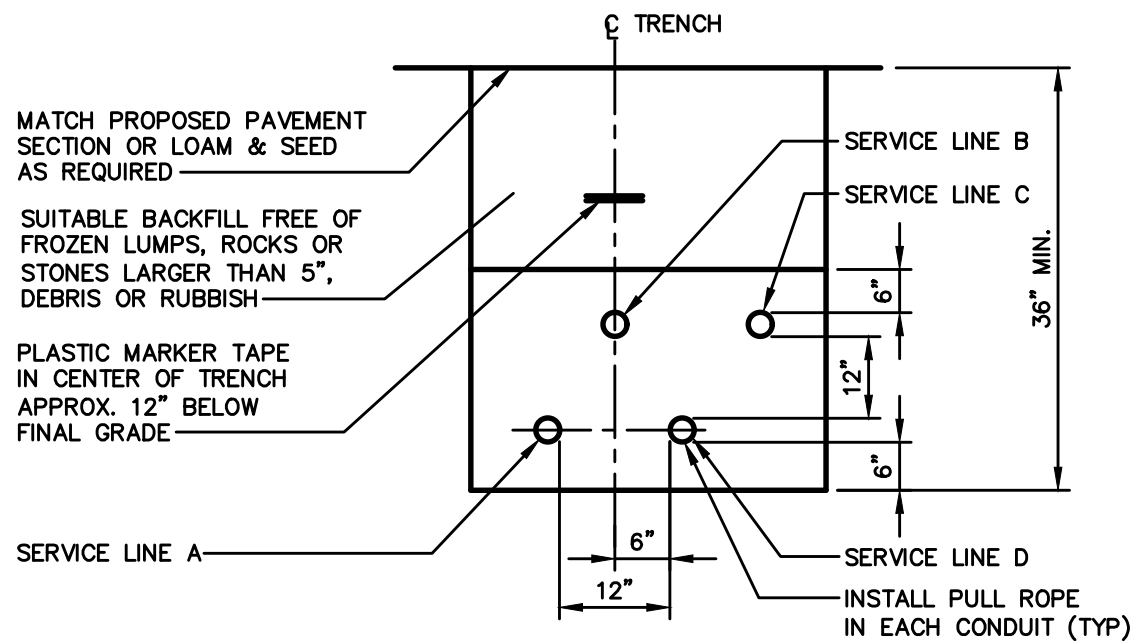
Utility Details	
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.
C402

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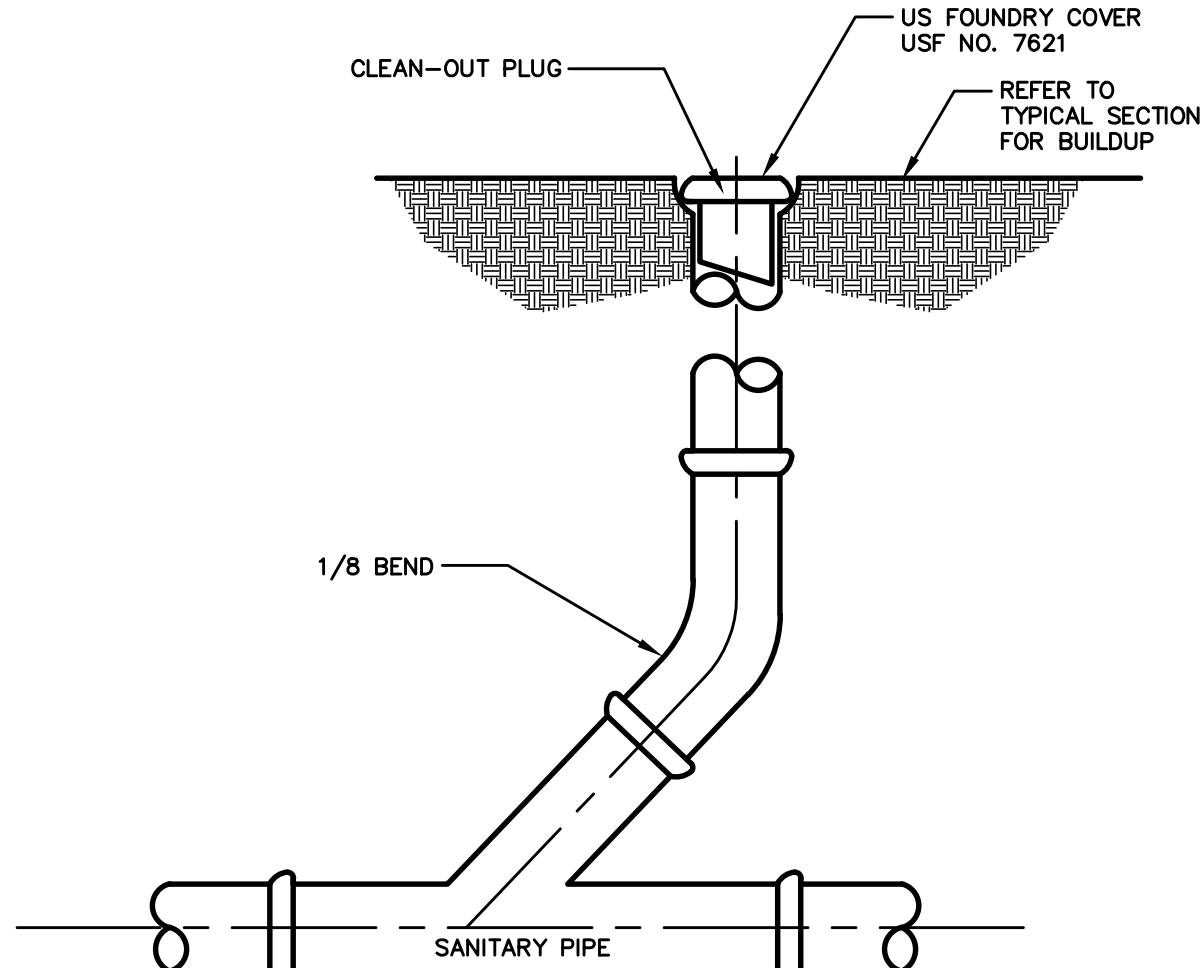
CONDUIT TYPE SCHEDULE				
SERVICE	CONDUIT SIZE	GRASS & PAVED AREAS	UTILITY	REMARKS
A	2-5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE
B	2-4"	SCHEDULE 40	TELEPHONE	SEE NOTE
C	2-4"	SCHEDULE 40	CABLE	SEE NOTE
D	2-4"	SCHEDULE 40 PVC ELECTRICAL GRADE	SPARES	SEE NOTE

NOTE:
ONE CONDUIT CAPPED FOR SPARE, PROVIDE GALVANIZED STEEL LONG SWEEP AT RISER POLE AND EXTEND GALVANIZED CONDUIT TO 10" ABOVE GRADE AT POLE WITH STAND-OFF BRACKETS.



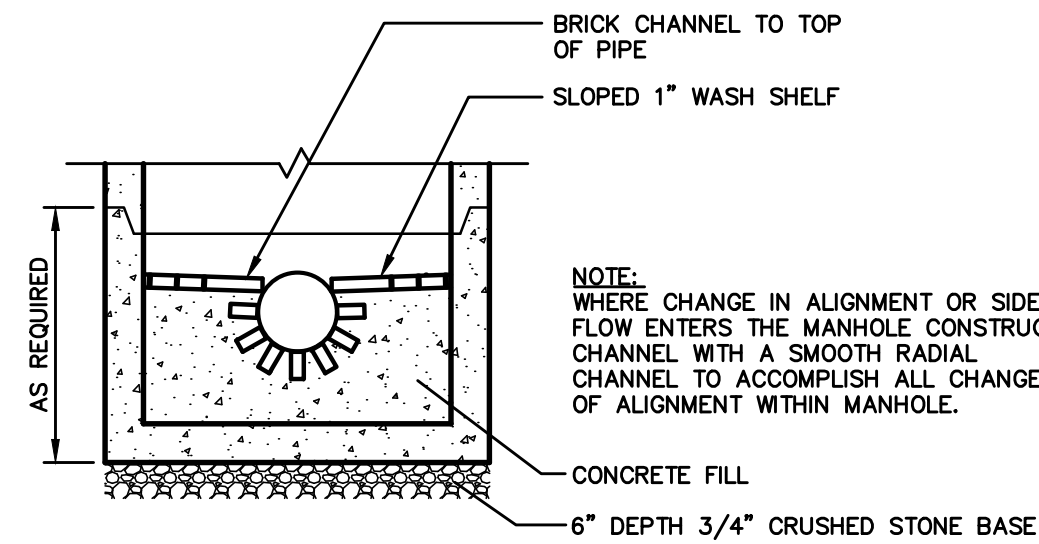
UTILITY TRENCH – PRIMARY AND SECONDARY POWER, TELEPHONE, AND CABLE

NOT TO SCALE



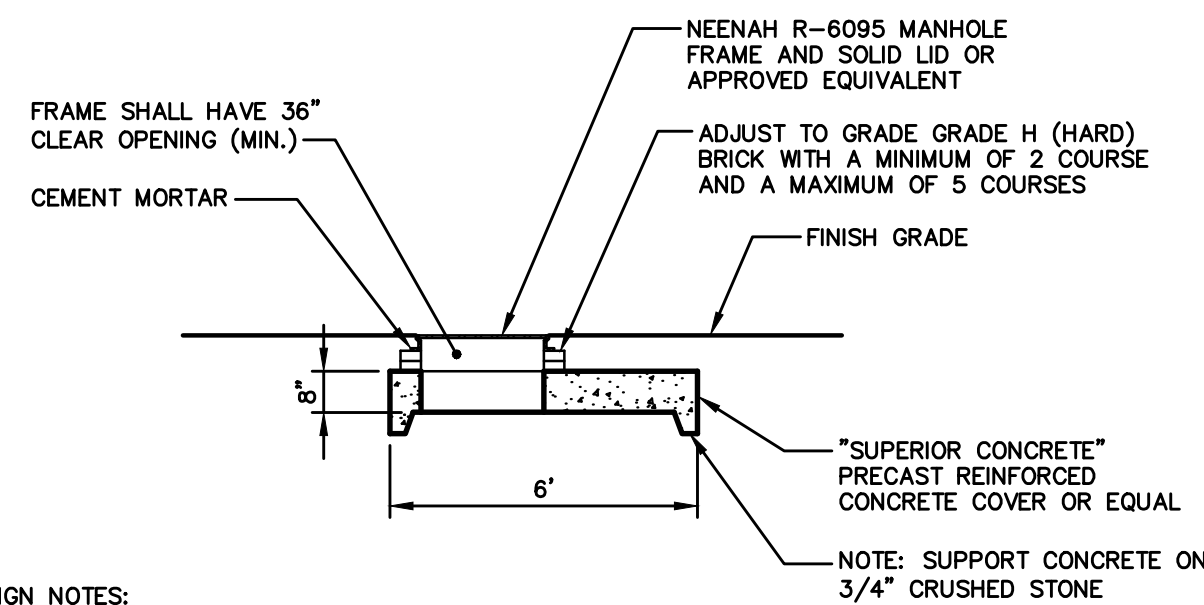
CLEANOUT

NOT TO SCALE



SANITARY SEWER MANHOLE BRICK CHANNEL INSTALLATION

NOT TO SCALE



DESIGN NOTES:

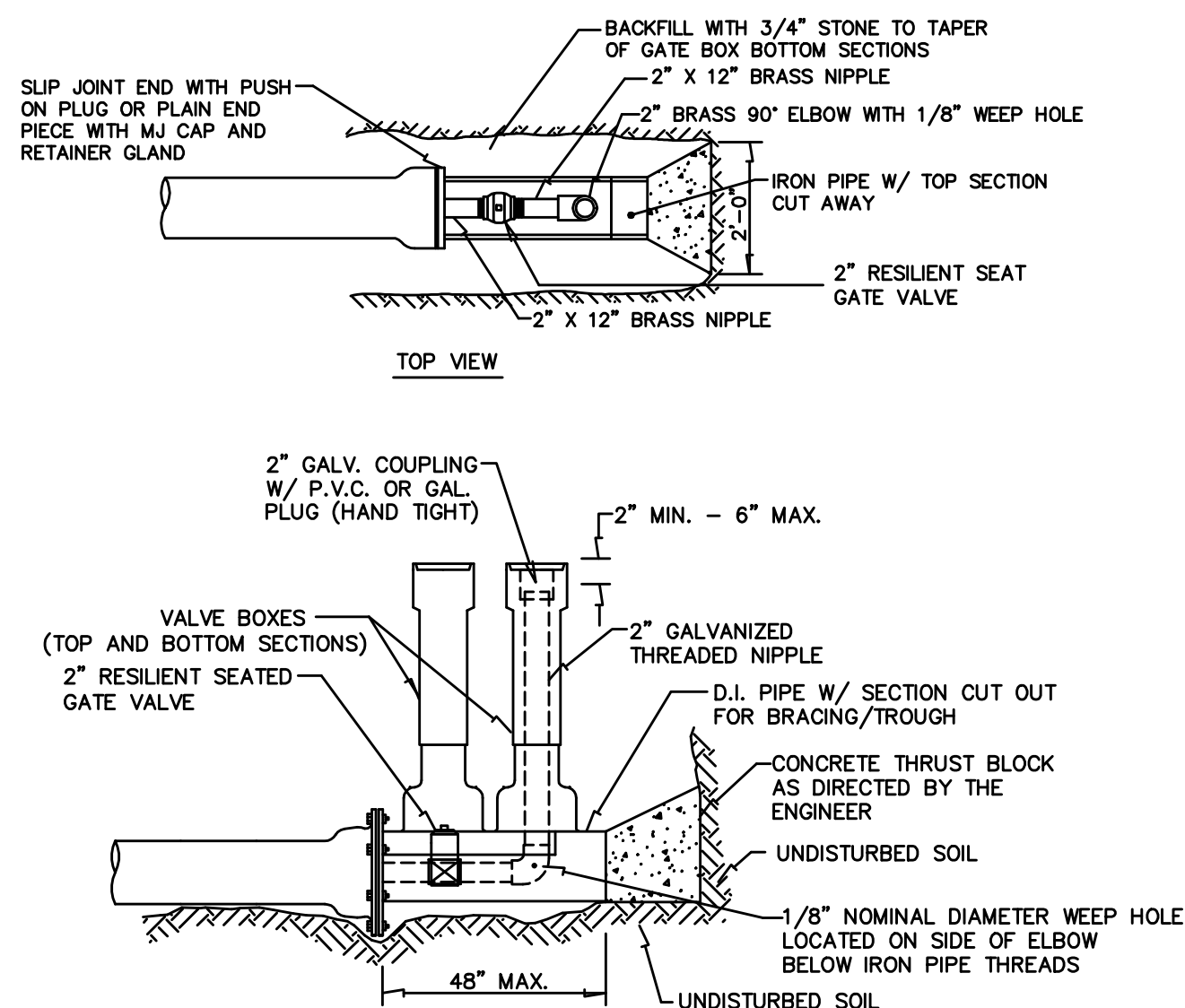
- ALL CONCRETE TO HAVE A MINIMUM OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
- CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
- REINFORCE TO 0.12 IN SQ./LF.

NOTE:

- USE FLAT TOP FOR GEOTHERMAL VAULT ACCESS MANHOLE COVER.

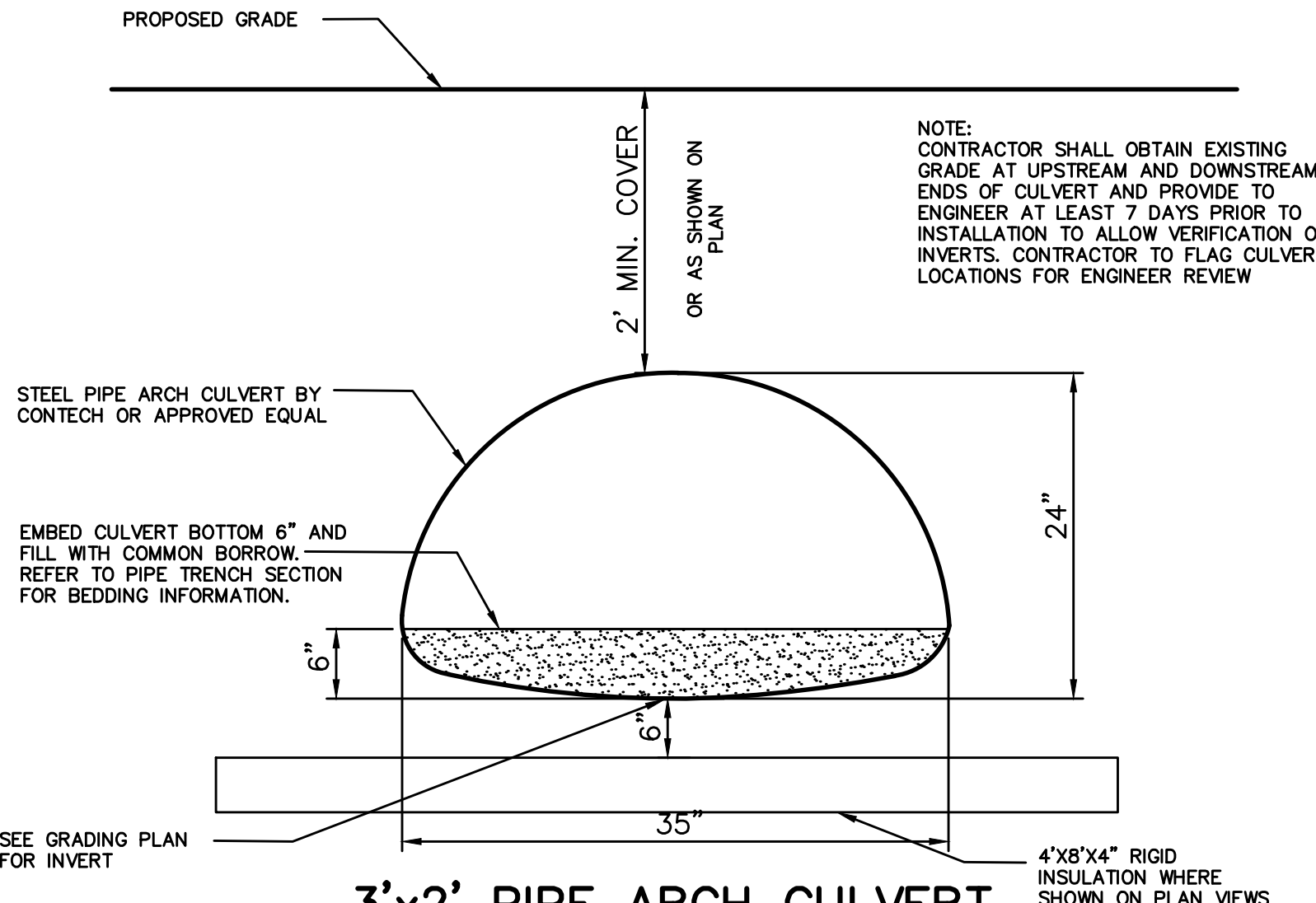
LARGE DIAMETER FLAT TOP DETAIL

NOT TO SCALE



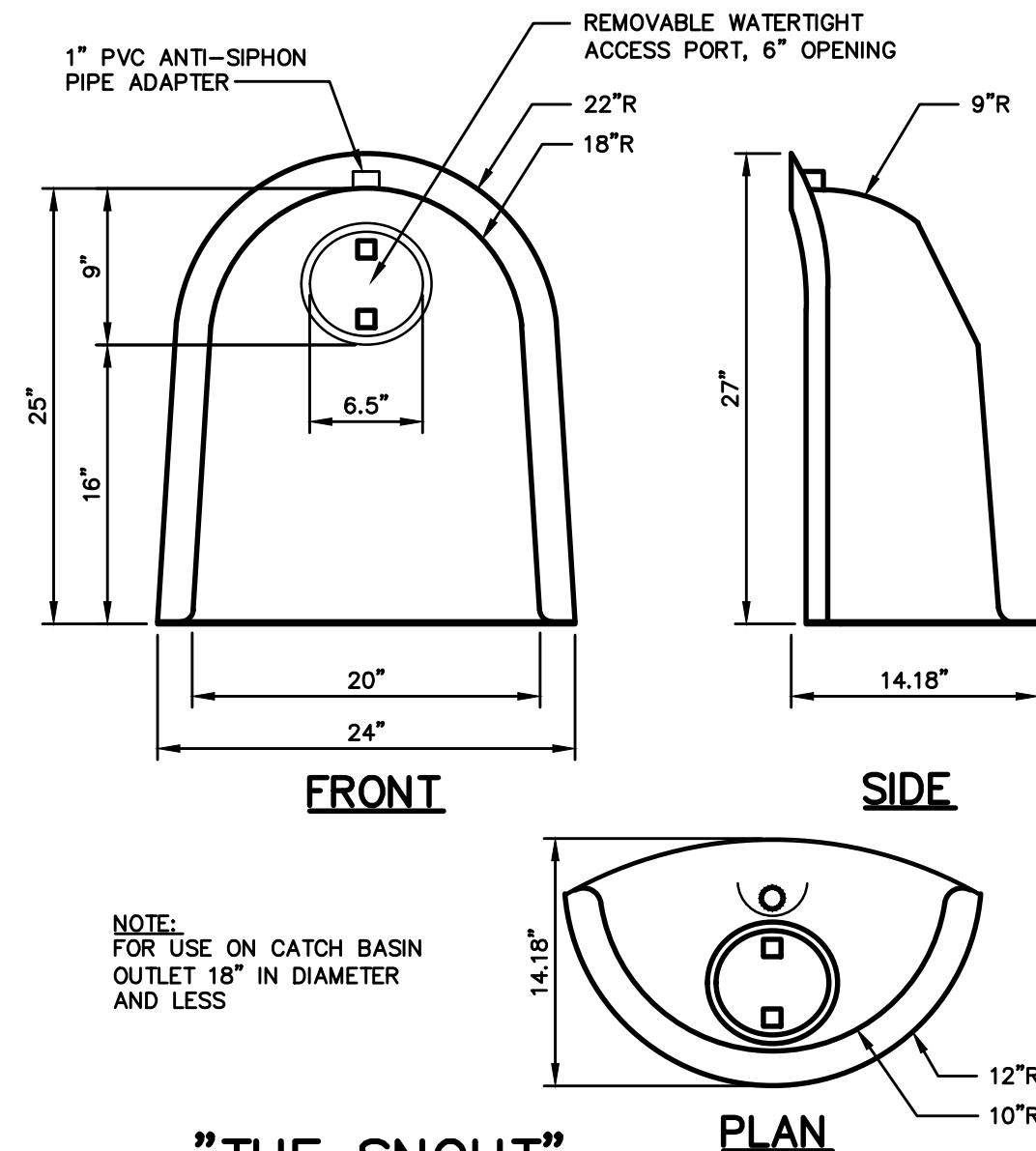
STANDARD 2" BLOW OFF

NOT TO SCALE



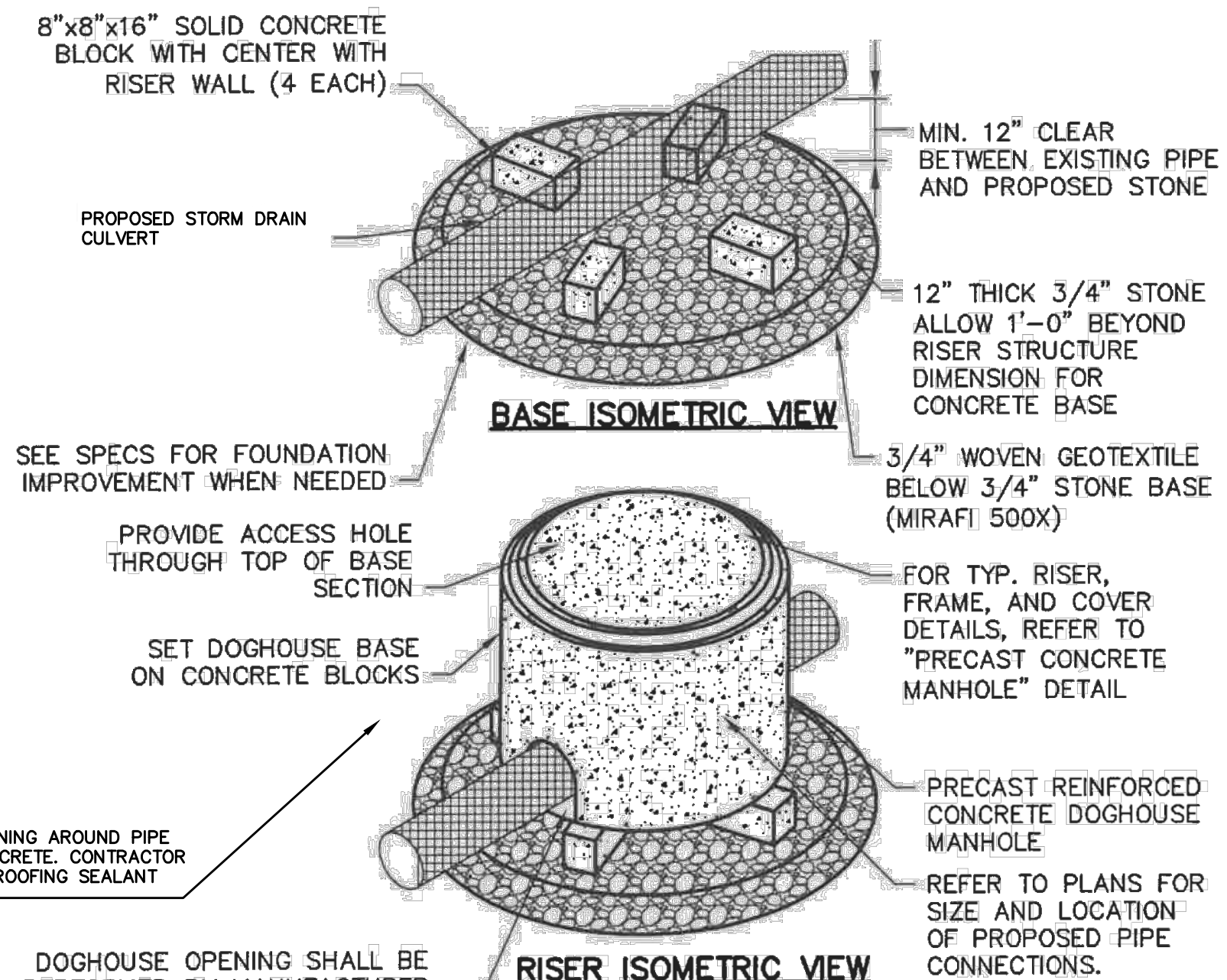
3'x2' PIPE ARCH CULVERT

NOT TO SCALE



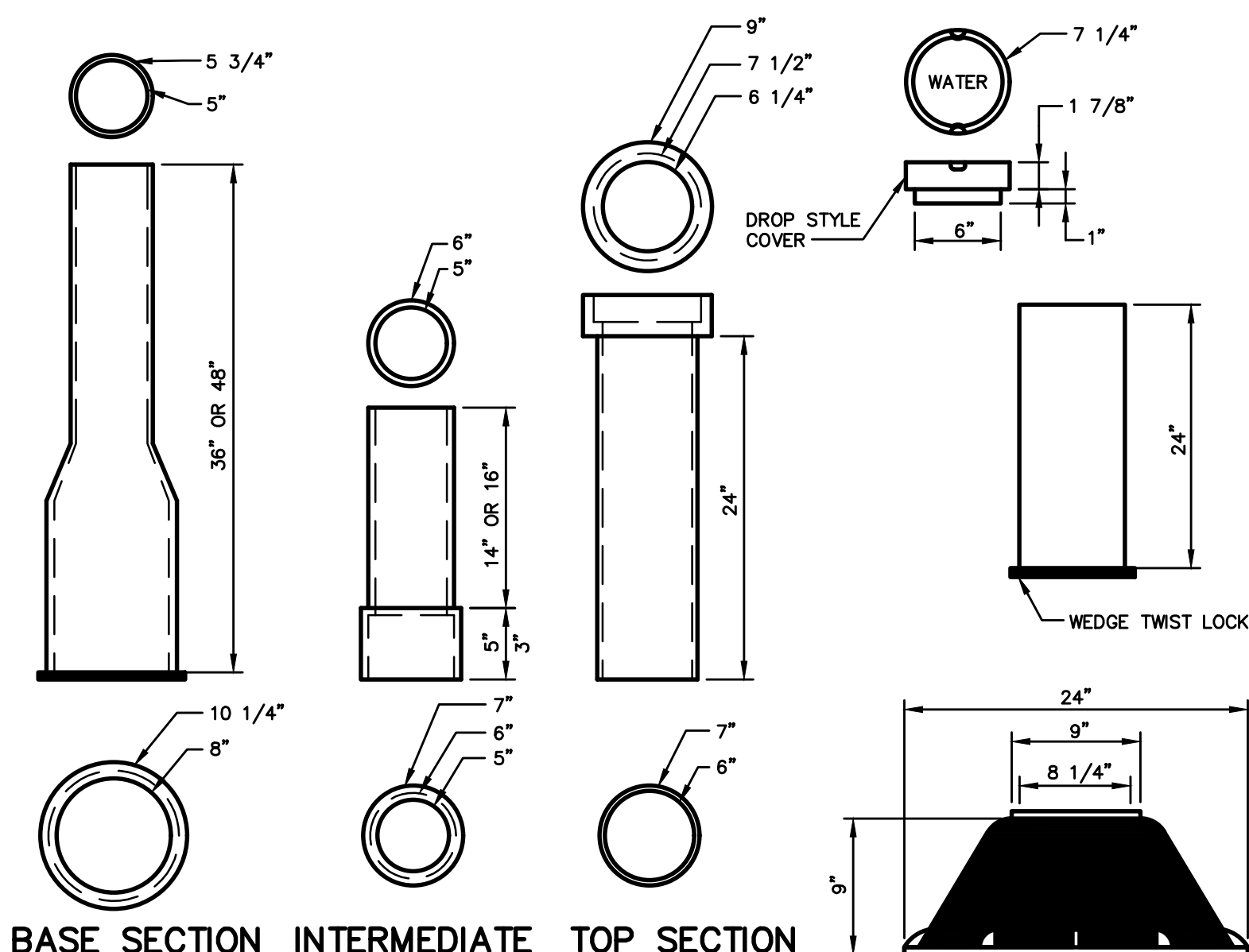
"THE SNOOT"

NOT TO SCALE



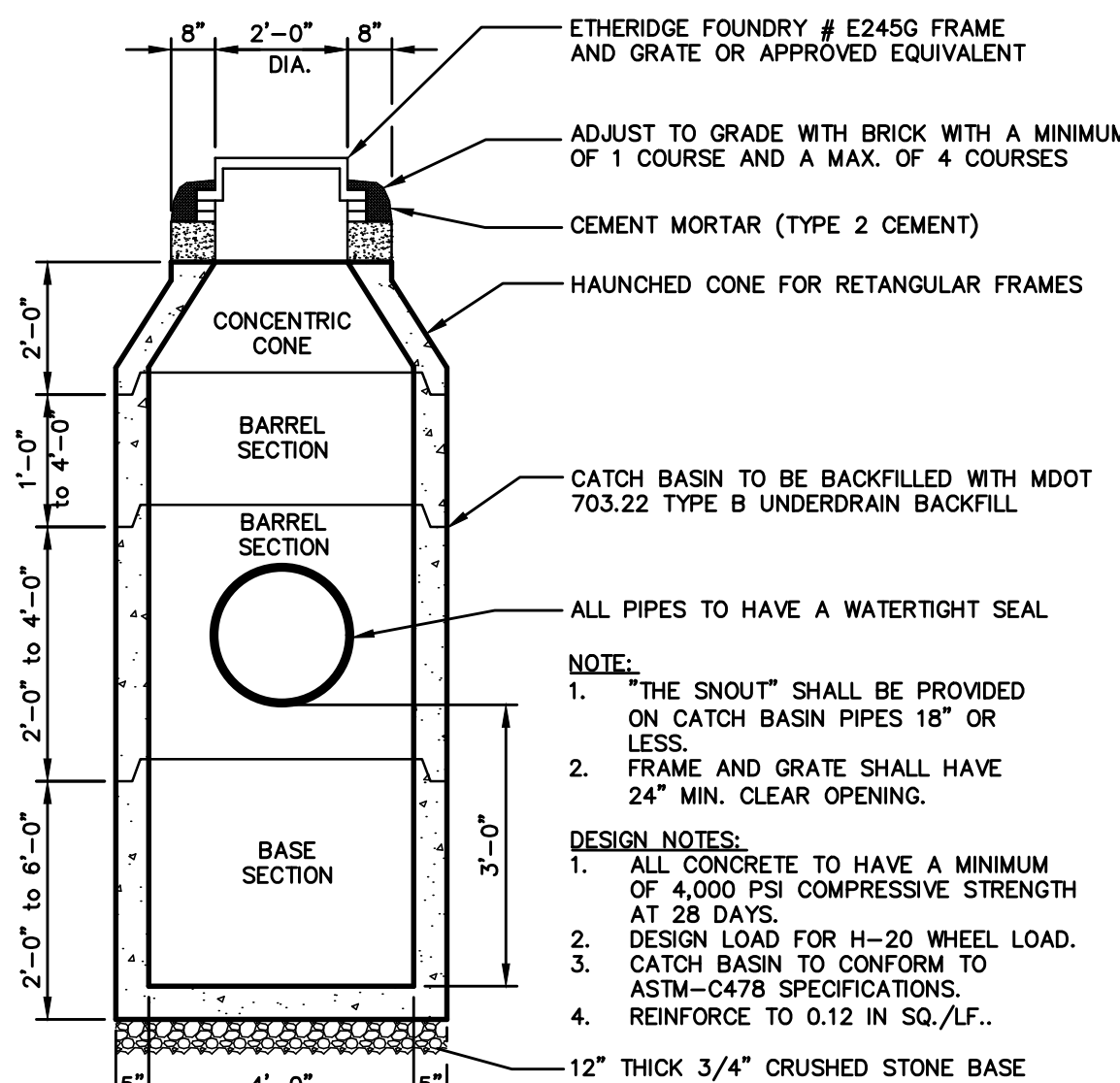
OPEN BOTTOM CATCH BASIN

NOT TO SCALE



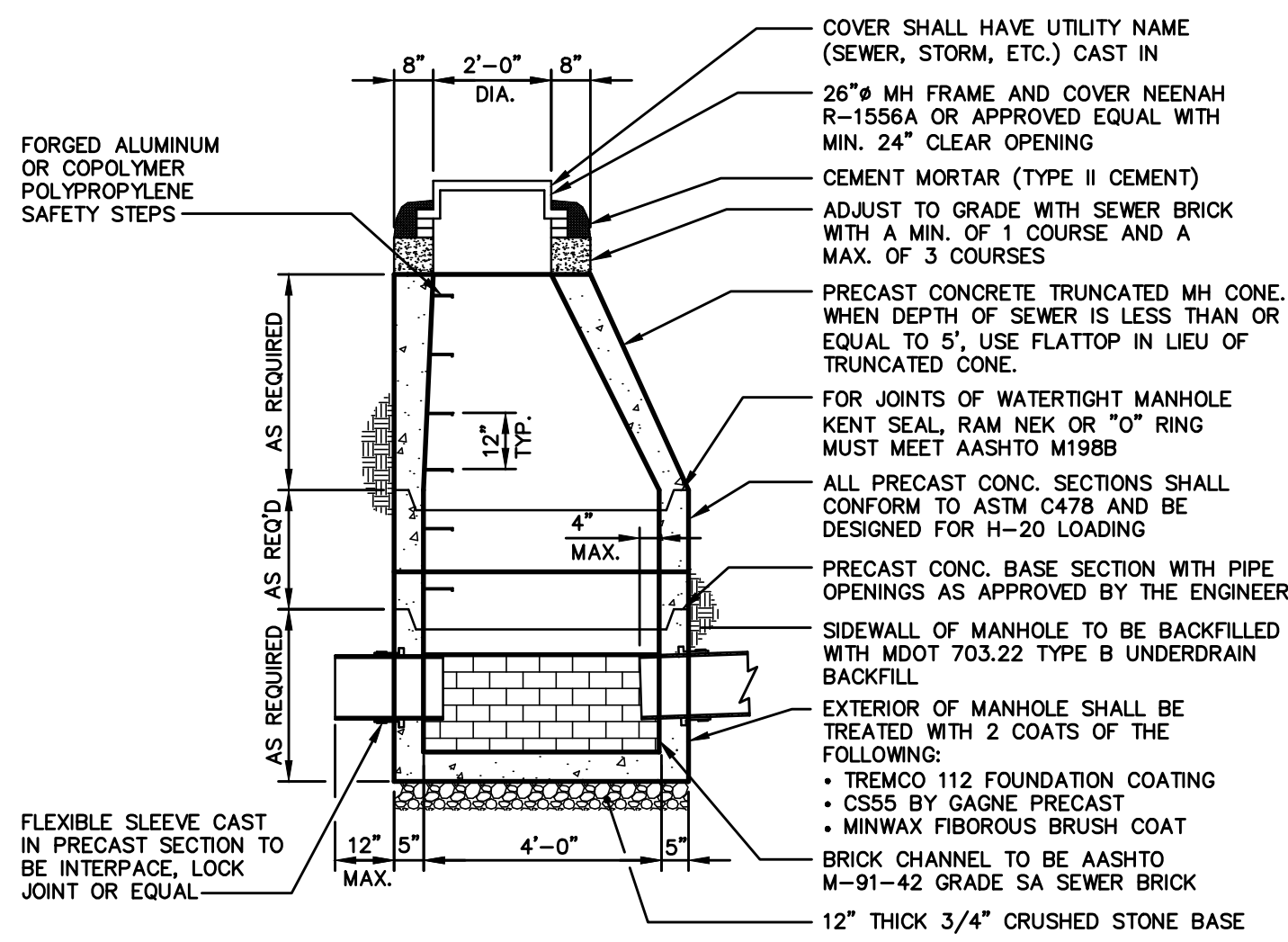
TYPICAL VALVE BOXES

NOT TO SCALE



4'-0" PRECAST CATCH BASIN

NOT TO SCALE



4'-0" PRECAST SEWER MANHOLE AND DRAIN MANHOLE

NOT TO SCALE

NOTE:

- ALL CONCRETE SHALL HAVE A MINIMUM OF 5,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
- DESIGN LOAD FOR H-20 WHEEL LOAD.



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File Name: 4323-DETAILS.dwg		
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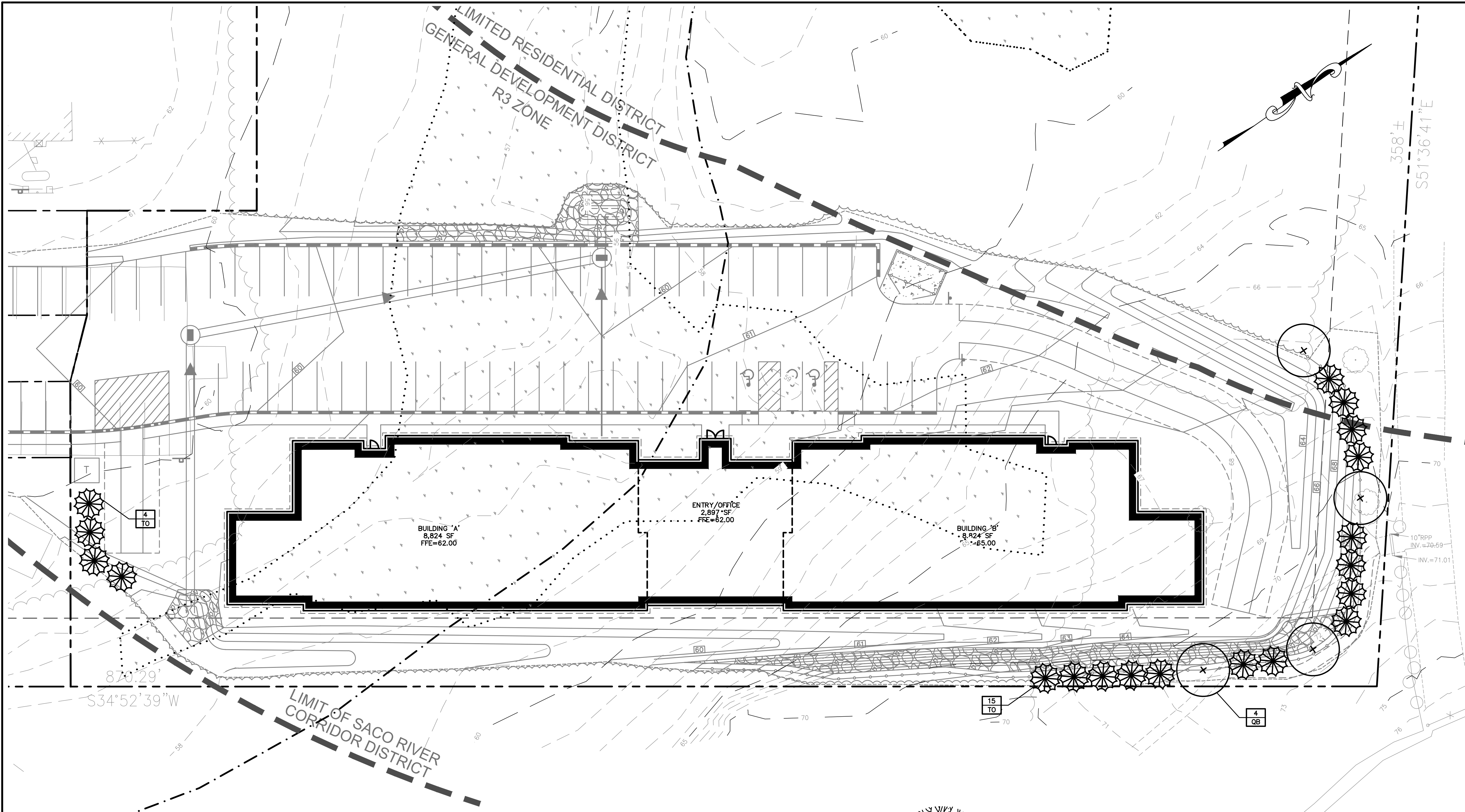


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www.gorrillpalmer.com
207.772.2515
300 Southborough Drive - Suite 200
South Portland, ME 04106

Drawing Name:	Utility & Drainage Details
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.	C403
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U:\Bateman Partners\4323_Bateman Partners - Forest Green Apts Expansion - Biddeford\2 - CAD\DWG\4323-LANDSCAPE.dwg 5/12/2025 2:56 PM



GENERAL PLANTING NOTES

1. CALL DIG-SAFE (1-888-344-7233) PRIOR TO BEGINNING WORK. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO OWNER.
2. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH ALL SITE CONDITIONS PRIOR TO CONSTRUCTION BIDDING.
3. DO NOT SCALE FROM DRAWINGS. ANY OMISSIONS IN DIMENSIONING SHALL BE REPORTED IMMEDIATELY TO THE LANDSCAPE ARCHITECT. ANY DISCREPANCIES BETWEEN DRAWINGS, PLANT QUANTITIES, DETAILS, NOTES AND SPECIFICATIONS SHALL BE IMMEDIATELY REPORTED TO THE LANDSCAPE ARCHITECT FOR FURTHER DIRECTION AND RESOLUTION BEFORE ANY ADDITIONAL WORK PROCEEDS.
4. PROVIDE SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING CONDITIONS.
5. CONTRACTOR SHALL FURNISH AND PLACE 12 INCHES OF LOAM IN ALL SHRUB BEDS, 30 INCHES IN ALL TREE PITS, AND 6 INCHES UNDER ALL TURF AREAS. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
6. ALL PLANT MATERIAL INSTALLED SHALL MEET THE SPECIFICATIONS OF "AMERICAN STANDARDS FOR NURSERY STOCK BY THE AMERICAN ASSOCIATION OF NURSERYMEN".
7. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
8. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING STAKING OR GUYING WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE FROM THE OWNER.
9. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
10. EXISTING TREES TO BE PRESERVED SHALL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
11. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY, OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT (AND MUNICIPAL AUTHORITY, IF APPLICABLE) PRIOR TO INSTALLATION ON SITE.
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR GROUND COVER AND PERENNIAL BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
13. DAMAGE TO EXISTING SITE IMPROVEMENTS DURING INSTALLATION OF LANDSCAPE MATERIAL SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR.
14. CONTRACTOR SHALL COORDINATE INSPECTION OF PLANT MATERIAL AND LOCATIONS WITH PROJECT LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. ALL PLANT MATERIAL SHALL BE ON-SITE AND PLACED BEFORE INSPECTION CAN BE COMPLETED. A MINIMUM OF 48 HOUR NOTIFICATION SHALL BE REQUIRED.
15. MAINTENANCE REQUIREMENTS: PRUNE DEAD OR DAMAGED BRANCHES, MAINTAIN GUY POSTS AND WATER AS REQUIRED UNTIL PROJECT COMPLETION AND ACCEPTANCE BY OWNER.
16. WATERING: ALL PLANTINGS SHALL BE THOROUGHLY WATERED UPON INSTALLATION, AND THEN WEEKLY WHENEVER ANY DRY SPELLS OCCUR, UNTIL ACCEPTANCE BY OWNER.
17. LANDSCAPE CONTRACTOR OR PLANT SUPPLIER SHALL GUARANTEE PLANTS AND PROVIDE REPLACEMENTS FOR TWO YEARS FROM INSTALLATION.
18. CONTRACTOR SHALL PLACE 3" SHREDDED BARK MULCH AROUND SHRUB BEDS AND TREE PITS.

PLANT LIST				
KEY	BOTANICAL NAME	COMMON NAME	SIZE	QTY
TREES				
TO	THUJA OCCIDENTALIS 'NIGRA'	DARK AMERICAN ARBORVITAE	7'-8' HGT.	19
QB	QUERCUS BICOLOR	SWAMP WHITE OAK	2-1/2" CAL.	4

GENERAL PLANTING NOTES:

DIG HOLE AT LEAST 2 TIMES THE WIDTH OF ROOT BALL AND AS DEEP AS THE ROOT BALL (NO DEEPER). SET ROOT BALL CENTERED, WITH ROOT FLARE AT GROUND LEVEL. CORRECT HOLE DEPTH AS NEEDED. NOTE: MANY BALLED & BURLAPPED PLANTS HAVE SOIL PILED AROUND THE ROOT FLARE WHICH SHOULD BE REMOVED PRIOR TO PLANTING.

FOR DECIDUOUS AND NEEDLED EVERGREEN TREES AND SHRUBS 1 FULL WHEELBARROW EXISTING SOIL, 2 SHOVELS PEAT, 1 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL. FOR BROAD-LEAVED EVERGREENS AND RELATED ERICACEAE PLANTS, 1 FULL WHEELBARROW EXISTING SOIL, 3-4 SHOVELS PEAT, 1 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL OF LOW pH (RECOMMENDATIONS ARE FOR ACCEPTABLE PLANTING AREAS).

CONTAINER GROWN STOCK:
REMOVE ALL CONTAINERS AND GENTLY COMB OUT ROOTS TO ELIMINATE CIRCLING ROOTS. PRUNE DAMAGED ROOTS AS NEEDED.

BACKFILL 2/3 OF HOLE WITH AMENDED SOIL THEN FILL HOLE WITH WATER, LET DRAIN, REPEAT WATER AND DRAIN. BACK FILL TO FINISH GRADE, TAMP GENTLY, AND CREATE EARTH SAUCER. WATER THOROUGHLY ONCE AGAIN TO REMOVE REMAINING AIR POCKETS.

2" x 2" OR 2 1/2" DIAMETER STAKES WITH 2 #12 GAUGE WIRES ENCASED IN 2-PLY REINFORCED RUBBER HOSE 1/2" DIAMETER OR CHAINLOCK AS APPROVED BY LANDSCAPE ARCHITECT. 2 STAKES LOCATED 180° APART (STAKES SHALL BE FIRMLY SET TO PROVIDE NECESSARY TENSION). STAKES TO BE REMOVED AFTER ONE YEAR TIME.

BLACK MULCH IN PLANTING BEDS

REMOVE PLASTIC BURLAP AND FIBER OR PEAT POT. REMOVE NATURAL FIBER BURLAP FROM AT LEAST THE TOP 1/2 OF ROOTBALL, OR MORE IF THE ROOTBALL IS FIRM. REMOVE TOP 1/2 OF WIRE BASKET.

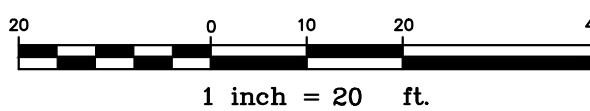
EARTH SAUCER (3" HT.)

SOIL MIX-SEE NOTE ABOVE AND BELOW

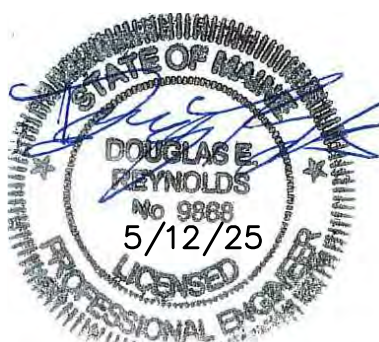
UNDISTURBED SUBGRADE

TREE AND SHRUB PLANTING DETAIL

NOT TO SCALE



NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.



Rev.	Date	Revision

LOCAL PRELIMINARY PLAN SUBMISSION	5/12/25	DER
NRPA APPLICATION SUBMISSION	5/12/25	DER
SACO RIVER CORRIDOR SUBMISSION	5/7/25	DER
LOCAL SKETCH PLAN SUBMISSION	4/16/25	DER
Issued For	Date	By

Design: EC	Draft: CG	Date: JUNE 2024
Checked: DER	Scale: 1"=20'	Job No.: 4323
File Name: 4323-LANDSCAPE.dwg		
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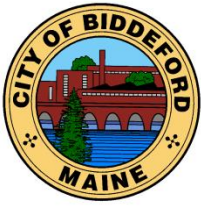


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South Portland, ME 04106

Drawing Name:	Landscaping Plan
Project:	Forest Green Apartment Expansion 1 Park View Court, Biddeford, Maine
Client:	Bateman Partners 470 Fore St., Suite 400, Portland ME 04101

Drawing No.

L100



CITY OF BIDDEFORD

Planning and Development Department

David C.M. Galbraith
Deputy Director/City Planner
205 Main Street
P.O. Box 586
Biddeford, ME 04005
(207) 284-9115

David.Galbraith@biddefordmaine.org

PLANNING BOARD STAFF REPORT

TO: Chair Plotkin and Members of the Biddeford Planning Board

FROM: David C.M. Galbraith, Deputy Director/City Planner

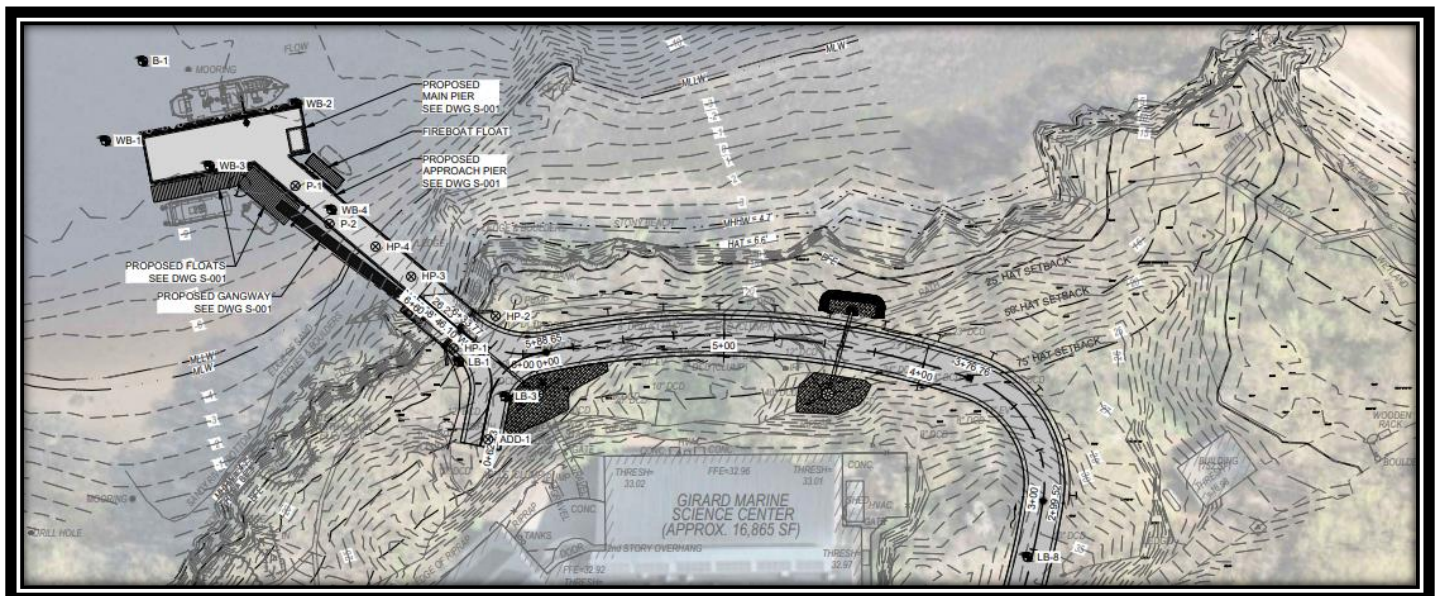
DATE: May 13, 2025

RE: **2024.34 Sketch Plan – Site Plan and Shoreland Zoning Review for the University of New England (UNE) / Proposed Construction of a Marine Science Center Research Pier to be located at 11 Hills Beach Road (Map #52, Lot 4) located in the City's Institutional (IN) Zoning District.**

MEETING DATE: May 21, 2025, at 6:00 PM

1. INTRODUCTION

Tom Saucier, PE of Site Design Associates, is representing the University of New England (UNE) who is applying for Sketch Site Plan Review within the Shoreland Zoning District. The University of New England (UNE) proposes to construct a new pier on the Saco River adjacent to the Girard Marine Science Center (GMSC) to support research and educational programming. The project has been in development for more than 10 years and has gone through extensive planning and alternatives analysis in arriving at the design that is being proposed.



RE: Case # 2024.34 Sketch Plan – Site Plan and Shoreland Zoning Review for the University of New England (UNE) / Proposed Construction of a Marine Science Center Research Pier to be located at 11 Hills Beach Road (Map #52, Lot 4) located in the City’s Institutional (IN) Zoning District.

MEETING DATE: May 21, 2025, at 6:00 PM

It should be noted that the Planning Department received the formal application for this project on April 16, 2025. However, the case # that was assigned to this project was in 2024 (Case # 2024.34) as that is when the Planning Department started receiving comments from the public on this application, and we wanted to make certain that any and all correspondence related to this matter be saved within the public record.

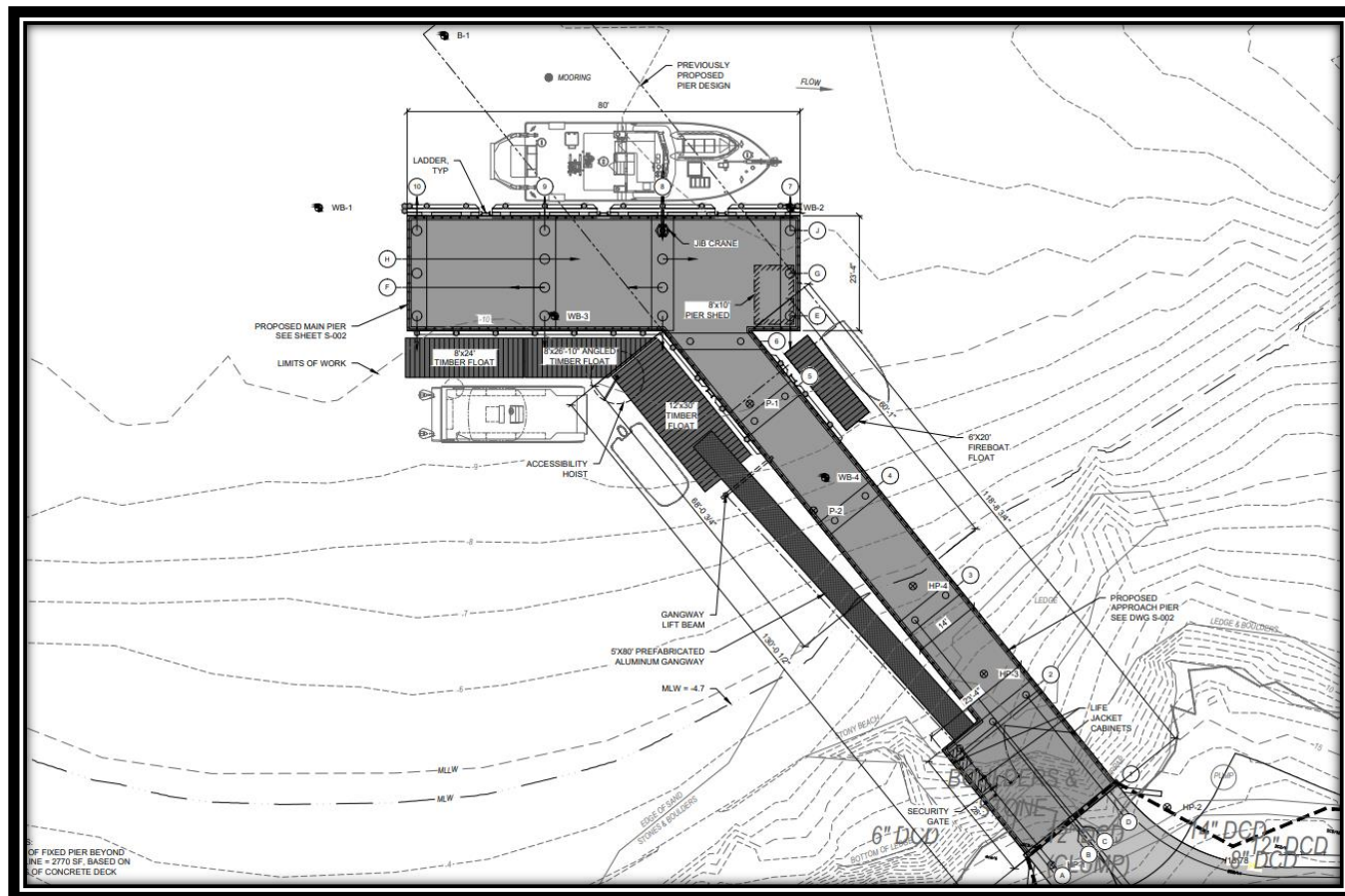


University of New England (UNE) – proposed Marine Science Center Research Pier

The University of New England (UNE) campus is located along the Saco River in Biddeford, ME. The Marine Science Center is located on the waterfront at the easterly end of campus approximately opposite Camp Ellis in Saco. To support MSC research activities, UNE proposes to construct a pier from the shore adjacent to the MSC into the Saco River to provide an all-tide access facility for small and shallow draft vessels (skiffs, landing craft, up to approximately 3-foot draft), with tidally-restricted access for larger vessels.

RE: Case # 2024.34 Sketch Plan – Site Plan and Shoreland Zoning Review for the University of New England (UNE) / Proposed Construction of a Marine Science Center Research Pier to be located at 11 Hills Beach Road (Map #52, Lot 4) located in the City’s Institutional (IN) Zoning District.

MEETING DATE: May 21, 2025, at 6:00 PM



Marine Science Center Research Pier Detail

The proposed facility includes the following:

1. A pile supported pier structure extending from shore into the Saco River. The proposed pier includes an approximately 130-foot-long approach section extending from shore and an 80-foot-long pier head section oriented roughly parallel to the direction of flow in the river. The pier consists of a concrete superstructure on steel pipe piles, with timber fender piles for vessel berthing and floating docks, and a pile supported gangway lifting beam to allow the gangway ramp to be temporarily removed from the water. Site 7 (Preferred) Stormwater Management Report UNE Marine Science Center Pier September 2023, Revision B. April 2025 GEI Consultants, Inc.
2. A floating dock system consisting of one 8-foot by 24-foot float, one 8-foot by 26-foot 10-inch float, and one 12-foot by 30-foot gangway landing float to provide alltide vessel access for UNE’s vessels on the west side of the pier, and a single 6-foot by 20-foot floating dock to provide a tie-up location for the City of Biddeford Fire Boat on the east side of the pier.
3. An 80-foot by 5-foot gangway, to provide ADA compliant access to the float system.

RE: Case # 2024.34 Sketch Plan – Site Plan and Shoreland Zoning Review for the University of New England (UNE) / Proposed Construction of a Marine Science Center Research Pier to be located at 11 Hills Beach Road (Map #52, Lot 4) located in the City’s Institutional (IN) Zoning District.

MEETING DATE: May 21, 2025, at 6:00 PM

4. An upland access road connecting the existing road at the MSC to the proposed pier, including associated site grading, drainage, and stormwater management features.

These proposed improvements will result in a total increase in impervious area totaling 0.249 acres. The increase in impervious area will be managed by the two bioretention filter cells to the north of the Girard Marine Science Center. Runoff will be conveyed to the bioretention filter cells via proposed vegetated swales along the low side of the superelevated access road. The bioretention filter cells will slowly release captured stormwater via underground pipe into the Saco River/Atlantic Ocean.

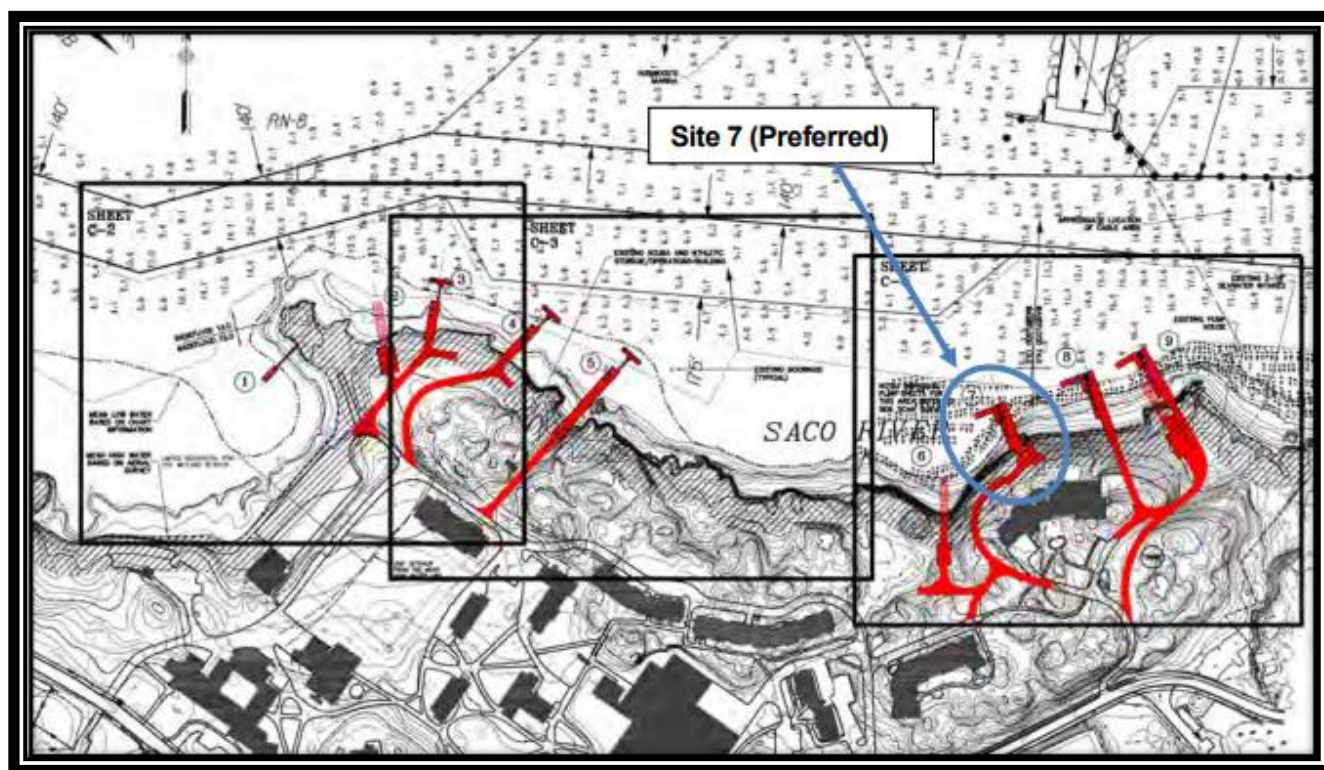


Fig. 1 – Alternative Sites Evaluated in 2008-2010 Study

As outlined in their project narrative, multiple locations for the pier were evaluated Alternative locations “for more than 10 years and has gone through extensive planning and alternatives analysis in arriving at the design that is proposed”.

The University’s consultants (Daniel Bannon, P.E., CFM and Barney Baker, P.E. or GEI Consultants) concluded their alternate pier locations and concluded that:

“GEI has reviewed the concerns raised by the Saco and Biddeford Harbormasters and evaluated their impact on the proposed design, reviewed the history of planning that led to the current design location and layout, and reviewed the potential advantages and disadvantages offered by the suggested alternative pier location. While we respectfully value the input and suggestions for a layout alternative, it is our opinion that the proposed design represents the preferred balance of project requirements and site constraints. Compared to the suggested

RE: Case # 2024.34 Sketch Plan – Site Plan and Shoreland Zoning Review for the University of New England (UNE) / Proposed Construction of a Marine Science Center Research Pier to be located at 11 Hills Beach Road (Map #52, Lot 4) located in the City’s Institutional (IN) Zoning District.

MEETING DATE: May 21, 2025, at 6:00 PM

alternative, the proposed design achieves adequate water depth, provides safe navigation, results in a structure of smaller overall dimensions with less coastal wetland impact, does not appear to be subject to significant sediment deposition, and locates the pier in a location that is less exposed to current and icing impacts. For these reasons, GEI recommends that the current design and pier location be maintained”.

After completing the pier feasibility study and identifying Site 7 as the preferred pier location, UNE undertook additional effort in 2015-2016 to study alternative pier layouts that would address the functional and vessel needs of the marine science curriculum as well as the site exposure, berthing conditions, access requirements, and associated site impacts. During this work, numerous alternative pier layouts were considered. Alternate locations evaluated water depth, exposure to currents, location relative to river sediment deposition, exposure to icing, and impacts to moorings.

2. PROJECT DATA/INFORMATION

1.	Applicant:	University of New England 11 Hills Beach Road Biddeford, ME
2.	Owner of Property:	University of New England 11 Hills Beach Road Biddeford, ME
3.	Agent:	Tom Saucier, P.E. Site Design Associates 23 Whitney Way Topsham, ME 04086
4.	Surveyor:	Tom Saucier, P.E. Site Design Associates 23 Whitney Way Topsham, ME 04086
5.	Project Location:	11 Hills Beach Road
6.	Project Tax Map #/Lot #:	Tax Map 52 Lot 4
7.	Lot Size:	49.9-acres
8.	Base Zoning:	Institutional (IN)
9.	Overlay Zoning:	Shoreland Zoning
10.	Existing Use:	Saco River
11.	Proposed Use:	Marine Research Pier
12.	Approvals Required:	Site Plan and Shoreland Review
13.	Uses in the Vicinity:	University
14.	Waivers Needed:	None at this time
18.	Waivers Granted:	N/A
22.	Other Non-City Permits Required:	N/A
23.	LDR Attachment A: Fees Paid:	Yes
25.	Planning Board Review History: Sketch Plan Review - May 21, 2025	

3. REVIEW PROCESS

RE: Case # 2024.34 Sketch Plan – Site Plan and Shoreland Zoning Review for the University of New England (UNE) / Proposed Construction of a Marine Science Center Research Pier to be located at 11 Hills Beach Road (Map #52, Lot 4) located in the City’s Institutional (IN) Zoning District.

MEETING DATE: May 21, 2025, at 6:00 PM

Per City ordinance, this application is subject to Site Plan (Land Development Regulations, Article XI) review and Shoreland Zoning (approval by the Planning Board).

- Saco River Corridor Commission (SRCC) – Approval 9-13-2024 Attached pages # 282-287
- Department of Environmental Protection (MDEP), Findings of Fact (FOF) and Order Pages # 288-295, dated April 11, 2025.
- U.S. Army Corps of Engineers, New England District, dated March 28, 2025. Pages # 296-298
- Maine Historic Preservation Commission, Dated May 15, 2023.
- City of Biddeford letter from Former City Manager (James Bennett) regarding a “Notice to Proceed with External Reviews” / compliance with City Code 74-35, subsections (c) items 1-10, dated August 19, 2025, Pages #302-303.
- Not Received: Evidence that the following Native American tribes have been notified of the Applicant’s intended project:
 - Aroostook Band of Micmac
 - Passamaquoddy Tribe of Indians: Pleasant Point; Indian Township
 - Houlton Band of Maliseet Indians
 - Penobscot Indian Nation

4. Departmental Review Comments:

A. Planning:

- 1) The Preliminary Application shall include copies of the required notification letters provided to the various Native American Tribes listed above in Section 3.
- 2) The application lists two (2) project waivers being sought. The application didn’t include a narrative or rationale for Staff or the Board to evaluate the requested waivers. This information shall be included in the Preliminary application package.

B. Code Enforcement:

1. No comments / concerns at this time.

C. Engineering / Public Works:

1. No comments at this time.

D. Police Department:

1. No comments / concerns at this time.

E. Fire Department:

1. No comments / concerns at this time.

F. Traffic Peer Review:

1. Not Applicable.

G. Engineering Peer Review:

1. No comments at this time.

RE: Case # 2024.34 Sketch Plan – Site Plan and Shoreland Zoning Review for the University of New England (UNE) / Proposed Construction of a Marine Science Center Research Pier to be located at 11 Hills Beach Road (Map #52, Lot 4) located in the City’s Institutional (IN) Zoning District.

MEETING DATE: May 21, 2025, at 6:00 PM

5. STAFF REVIEW

APPLICATION COMPLETENESS: This Application is for a “Sketch Plan” review and in addition to Planning Board review and approval of the project, it also requires approval from:

A. ZONING:

The subject property is located within the City’s Institutional (IN) zoning district where a university research dock is a permitted use.

B. REVIEW STANDARDS:

The major site details being proposed, such as the research dock, access roadway, and landscaped areas have been designed by the Applicant. The submitted application has been in the design process for approximately 10 years, so the “sketch plan” application is very detailed so the plan being reviewed the Board is what is proposed to be constructed on the property. Staff find that the application satisfies the City’s Shoreland Zoning Ordinance and Site Plan criteria.

C. WAIVERS:

The Applicants are seeking two waivers, namely:

- 1) Article XI.II. Section 5.B.1.a.
“The rate of post-development runoff shall not exceed that of predevelopment. Details of catch basins, drainage pipes and retention/detention ponds shall be provided as needed with the application. All detail sheets shall bear the seal and signature of a professional engineer, licensed in the State of Maine”.
- 2) Article XI.II. Section 5.B.1.e.3. (Slopes steeper than 2:1 in ledge)
“No slope shall be created which results in a slope of more than two feet horizontal to one foot vertical unless proper retaining walls are proposed”.

The application lists the above as requested waivers, but the application didn’t include rational for Staff or the Board to support the requested waivers. This information shall be included in the Preliminary application package.

6. SAMPLE MOTIONS:

The Application before the Board is a “Sketch Plan” so no formal vote is required. However, the Board should provide the Applicant with direction regarding any items that should be included in the formal Preliminary Application.

Date: **5/14/2025**

Project No.: **22061G**

To: **David Galbraith, City Planner**
Adi Iriqat, Assistant Planner

From: **Christine Rinehart, PE**
Nate Edwards, PE
Owen Chaplain, PE

Subject: **2024.34, UNE Research Pier, Shoreland and Site Plan Review**

As requested by the City of Biddeford, Wright-Pierce has reviewed the Shoreland Zoning and Site Plan Application for a proposed research pier and floats at the University of New England campus. The proposed pier is located at the confluence of the Saco River and Atlantic Ocean at 11 Beach Hill Road in Biddeford, Maine (Map 52, Lot 4) and is located in the Institutional (IN) zone and Limited Residential District of the Shoreland Zone. The proposed pier is pile-supported pier structure extending into the Saco River. The pier consists of a concrete superstructure on steel pipe piles, with timber fender piles for vessel berthing and floating docks, and a pile supported gangway lifting beam to allow the gangway ramp to be temporarily removed from the water. A floating dock system is also proposed with a gangway to provide ADA compliant access. An upland access road to the pier is also proposed. **Our review was limited to the access road connecting the existing road at Marine Science Center to the proposed pier, including site grading, drainage, and stormwater management features.**

Documents Reviewed by Wright-Pierce

- Shoreland and Site Plan Application, Research Pier, 11 Hills Beach Road, City of Biddeford, Maine, prepared by Site Design Associates for University of New England, dated April 16, 2025.
- University of New England Marine Science Research Pier, 11 Hills Beach Road, Biddeford, Maine, Civil Plans, prepared by GEI Consultants, Inc., issued for permitting, dated April 16, 2025.
- General Permit Response Letter, prepared by U.S. Army Corps of Engineers, New England District, dated March 28, 2025.

Review Comments

Applicant should provide written responses to review comments recommending clarification or further information to be provided by the Applicant.

Staff Review Committee (SRC) Comments/City Coordination Items

1. **The Fire Department has expressed that the length of the turnaround does not meet their needs of a 70-foot-long turnaround at the end of the access road. The provided turnaround is approximately 40 feet long.**
2. **Access road width has been increased to 20 feet, as requested by the Fire Department.**
3. **Additional coordination items for the City are indicated within the Review Comments below in red font.**

Checklist

Limited information was provided by the Applicant on the checklist. Applicant should fully complete the checklist for the next submission, including column D (list drawing sheet number where information is provided) and column

E (reason not provided/comment). See comments on attached Site Plan & Subdivision Application Drawing Checklist. Note that comments in the checklist have not been included in the review comments below.

Code of Ordinances

Chapter 74 Waterways

1. **Section 74-35 Construction of Wharf, Pier, or Landing Regulated states that new piers require permission from the Harbormaster.**
2. **Section 74-36 Floats requires permission from the Harbormaster for floats that are an integral part of a pier.**

Land Development Regulations, Article VI Performance Standards

Section 26 Erosion Control

1. What erosion and sedimentation controls will be utilized for the construction of the pier abutment and pier? A turbidity curtain detail is included and assumed to be used for the pier but the location of this is not shown in plan view.
2. A stabilized construction entrance, silt fence, biodegradable stabilization matting, and plunge pool are proposed for the construction of the proposed access road.

Section 50 Preservation of Landscape/Natural Vegetation

1. A revegetation plan has been submitted showing tree, shrub, and perennial plantings within the shoreland zone and upland areas. The plan has been reviewed and approved by the Saco River Corridor Commission.

Section 61 Stormwater Management

1. The Inspection and Maintenance Plan of Stormwater Management Facilities includes a recertification requirement, which includes a five-year recertification to Maine DEP. This reference should be removed, since there is no DEP Stormwater permit.
2. See Land Development Regulations, Article XI Site Plan Review, comments 1-5 below. A waiver of Section 61.A.1-2 will also be required.

Section 70 Wildlife Preservation

1. Subsection A. states that any project involving parcels of land of greater than five acres, or any portion of a larger parcel greater than five acres, shall be required to conduct a wildlife study by a certified wildlife biologist. This provision may be waived, if a letter from the Maine Department of Inland Fisheries and Wildlife (MDIFW) indicates there are no significant habitat areas involved in the project area or abutting adjacent land. The Maine DEP Natural Resource Protection Act (NRPA) permit states that "according to the Department's Geologic Information System (GIS) database there are no mapped Essential or Significant Wildlife Habitats at the site. The Maine Department of Inland Fisheries and Wildlife (MDIFW) reviewed the proposed project and stated that the project is located adjacent to but outside of Tidal Waterfowl and Wading Bird Habitat (TWWH), a designated significant wildlife habitat. MDIFW stated that minimal impacts to piping plover and Blanding's turtle habitat are anticipated and provided general recommendations including minimizing vegetation removal and soil disturbance, and that time spent in the water should be minimized to the greatest extent practicable." Given the supporting information in the NRPA permit, we believe this requirement is met.

Land Development Regulations, Article XI Site Plan Review

1. **The applicant has requested a waiver of Article XI.II Section 5.B.1 to allow a small increase in peak stormwater runoff rates.** The applicant has stated they are requesting this waiver since stormwater discharges directly to a

tidal receiving water and there will be no impact on a downgradient storm system. Since there's only a small increase in peak runoff rate and Chapter 500 does allow for a waiver of this requirement for sites discharging to coastal wetlands/ivers, **we recommend granting this waiver.**

2. Bioretention systems are proposed to provide stormwater treatment. 76% of the new impervious area and 72% of the new developed area are treated, which meets the Maine DEP General Standard water quality treatment requirements for linear developments.
3. The Grading and Drainage Plan and HydroCAD model refers to the stormwater treatment practices as Bioretention Filter Cells; however, the details for the stormwater practices refer to them as Grassed Underdrained Soil Filters. All notations should be updated to be consistent between plan, details, and model.
4. A detail should be included in the plans for the 3' diameter catch basin with beehive grate.
5. The 3' diameter catch basins are modeled with 18" horizontal orifices (beehive grates). The Grassed Underdrained Soil Filter detail and Grading and Drainage Plan show the beehive grate as the entire catch basin diameter. Please clarify what size the grate is and update the plans and model as needed.
6. The applicant has requested a waiver of Article XI.II Section 5.B.1.e.3 to allow for slopes steeper than 2:1 because of ledge. 1:1 vegetated reinforced slopes are proposed where there is no ledge and 1:10 max slopes are proposed where there is ledge.
 - a. Has the ledge cut been reviewed by a geotechnical engineer for stability?
 - b. Additional information about the vegetated reinforced slopes is needed. A 1:1 slope is steep and difficult to vegetate, even with matting. The slope detail on C-013 shows horizontal lines into the slope that are not labeled. Are these additional stabilization measures?
 - c. Article XIV, 15.H.4 also prohibits road and driveway banks to be steeper than 2:1, and a waiver would be needed based on the proposed slopes.
7. North arrow provided on C-006 is incorrect and should be reoriented.
8. Proposed spot grades along access road do not match proposed contours or vertical profile. For example, see Sta. 4+00. All proposed elevations should correlate between plan view, profile view, cross sections.
9. The Typical Section provided on sheet C-008 shows the 1:1 embankment starting behind the proposed guardrail. However, Plan View (C-006/007) shows the 1:1 embankment starting in front of the guardrail. The typical section and plan view should correlate. Additionally, an adequate guardrail "shelf" should be provided behind the guardrail posts for support.
10. Vertical curve data is only partially shown in the access road profile (C-006/007). Adjust viewports so all data is legible.
11. Proposed pipes missing from access road profile (C-006/007) and storm drain callouts/leader lines pointing to incorrect location. Clarify where storm drain pipes are in profile.

Land Development Regulations, Article XII Floodplain Management Ordinance

1. Applicant should provide comments about how the pier and shed comply with Article XII Floodplain Management Ordinance requirements and specifically Section R, Coastal Floodplains. Please be sure to include how pier, shed, and utility elevation were selected and if sea level rise was considered.

Land Development Regulations, Article XIV Shoreland Zoning Ordinance

1. Article XIV, 15.H.1 requires roads and driveways within the shoreland zone to be set back at least 100 feet, horizontal distance, from the normal high-water line of a great pond classified GPA or a river that flows to a great pond classified GPA, and 75 feet, horizontal distance, from the normal high-water line of other water bodies, tributary streams, or the upland edge of a wetland unless no reasonable alternative exists as determined by the Planning Board. However, Section 15.H.1 does not apply to roads or driveways that provide access to

permitted structures and facilities located nearer to the shoreline due to operational necessity. Since the pier is a permanent structure with operational necessity to the shoreline and the access road is providing access to the pier, we believe the proposed access road is allowed by the Ordinance.

2. The pier is proposed in the Institutional (IN) zone and Limited Residential (LR) shoreland zoning overlay district. An 8'x10' shed is also proposed on the pier to store life jackets, tools, and research equipment and is stated to be an operational necessity. Although the Shoreland Zoning Ordinance does not allow structures within 75' of the normal high-water line in the Limited Residential overlay district, the setbacks do not apply to structures that are an operational necessity for direct water access. Based on the information provided, we believe the proposed structure is allowed by the Ordinance.
3. The cover letter for the application indicates the plan was reviewed by the National Marine Fisheries Service. Have review comments from the National Marine Fisheries Service been provided to the City?

Additional Comments

1. A submerged lands lease or easement is required for structures, such as piers, located on publicly-owned submerged lands. Has a submerged lands lease or easement been secured for the project through the Maine Department of Agriculture, Conservation & Forestry, Bureau of Parks and Lands?

CITY OF BIDDEFORD - SITE PLAN & SUBDIVISION APPLICATION DRAWING CHECKLIST

LAST REVISED: 11/26/2024

CHECKLIST DIRECTIONS:

1. The following checklist must be completely filled out by the applicant and included on all preliminary and final Site Plan & Subdivision submittals. No checklist is required for sketch submittals.
2. Applicant to confirm all of the items listed are included within the submittal. Any missing items must have adequate reasoning to justify their absence.
3. City to review applicant's submittal and checklist responses. Projects missing substantial submittal information with non-acceptable reasoning will be rejected and required to resubmit.
4. Items in **BLACK** are required for 'Preliminary' approval & 'Final' approval.
5. Items in **BLUE** are only required for 'Final' approval.

SUBMITTAL INFORMATION - TO BE FILLED OUT BY APPLICANT	
Project Name:	University of New England - Research Pier
Planning Board # (if available):	
Applicant Name/Info:	University of New England
Submittal #/Type (Prelim/Final):	Preliminary/Final
Submittal Date:	15-Apr-25

SUBMITTAL REQUIREMENT		APPLICANT RESPONSE			CITY REVIEW RESPONSE	
ITEM NUMBE R	DESCRIPTION	INFORMATION PROVIDED (YES/NO)	LIST DRAWING SHEET NUMBER WHERE INFORMATION IS PROVIDED	REASON NOT PROVIDED/COMMENT	ACCEPTABLE (YES/NO-REVISE & RESUBMIT)	COMMENT
1	GENERAL PLAN REQUIREMENTS	YES				
A	Drawing specific legends (linetypes, hatches, etc.)	YES				
B	Individual drawing layer control should be utilized: freeze/thawing, changing lineweights, and screening (i.e. screen existing layers on a proposed plan, freeze topography and underground utilities on a proposed site plan)	YES				
C	North arrows, standard engineering scale viewports, scale bars, dated revision blocks	YES				
D	All drawings and surveys must be in the following coordinate systems: NAD83 Maine State Plane West (Horizontal) and NAVD88 (Vertical)	YES				
E	Drawings need to be designed, signed & sealed by a Maine licensed professional engineer (PE); all boundary survey data needs to be performed by a licensed professional land surveyor (PLS)	YES				
2	COVER SHEET	YES				
A	Project Name & Property Address	YES				
B	Project Team Contact Information (Owner, Engineer, Contractor, etc.)	YES				
C	Site Location Map	YES				
D	Sheet Set List of Drawings	YES				
E	Tax Map and Lot ID	YES				
F	Zoning & Shoreland Zone Information	YES				
G	Existing Use Description	YES				
H	Proposed Use Description	YES				
I	Required Waiver/Variances (Yes/No); if yes, plan must clearly list waivers/variances requesting	YES				
J	Name of Drainage Watershed	YES				
K	Within the MS4 Urbanized Area (Yes/No)	YES				
L	Natural resources (streams, wetlands, etc.) located on-site or adjacent to the property (Yes/No)	YES				
M	Within the 100-year Flood Zone (Yes/No)	YES				
N	Public Road Proposed (Yes/No)	NO				
O	Private Road Proposed (Yes/No)	YES				
P	Public Sewer Connection (Yes/No)	YES	EXISTING			
Q	Public Storm Drain Connection (Yes/No)	NO				
R	Limits of Disturbance in square feet and acres	YES				
S	Pervious Land Cover square footage, existing and proposed	YES				
T	Impervious Land Cover square footage (Pavement/Gravel), existing and proposed	YES				
U	Building Roof square footage, existing and proposed	YES				
V	Assigned Planning Board Number	N/A				
W	Estimated cut/fill earthwork volumes. If disturbing within the Flood Zone, a separate set of earthwork volumes required (overall site vs. within flood zone)	YES				
3	EXISTING CONDITIONS PLAN	YES				
A	Horizontal & Vertical Datums annotated (NAD83 & NAVD88)	YES				
B	Property & Right-of-Way Lines	YES				
C	Boundary line information (bearings, distances, etc.)	YES				
D	Property pin and monumentation locations	YES				
E	Existing easements with proper ownership identified	YES				
F	Road Names & Individual Lot Labels (Map, Lot, Owner, Acreage)	YES				
G	Location of any Natural Resources and their respective buffers (wetlands, streams, etc.)	YES				
H	100-year Flood Zone Limits & Elevation	YES				
I	Existing contours with adequate contour labelling; minimum 1' contour interval	YES				
J	Existing building FFEs annotated	YES				
K	Spot elevations for all tie-in locations (curb cuts, property line)	YES				
L	Existing buildings & structures	YES				
M	Existing pavement areas & number of parking spaces	YES				
N	Existing ADA ramp geometry, detectable warning plates, and ADA parking spaces	YES				
O	Existing site features (sidewalks, retaining walls, curbing, lightpoles, guide rails, dumpsters, fencing)	YES				
P	Existing signage and striping	YES				
Q	Existing underground utility locations (storm, sewer, force main, water, gas, elec, tele)	YES				
R	Existing above-ground utility locations (manholes, catch basins, utility poles, hydrants, transformers, riprap)	YES				
S	Rim, invert in, invert out, pipe size, cardinal direction (N, E, S, W) information for any existing utility infrastructure being tied into (upstream/downstream/outfalls)	YES				

	T	Existing tree lines, street trees, free-standing trees (12" or larger diameter at breast height), and vegetation	YES			
	U	Location of any borings, drinking wells, and monitoring wells	YES			
4		SITE DEMOLITION & EROSION CONTROL (E&SC) PLAN	YES			
	A	Limits-of-disturbance outlined and acreage annotated	YES			
	B	Location of any Natural Resources and their respective buffers (wetlands, streams, etc.)	YES			
	C	100-year Flood Zone Limits	YES			
	D	Callout existing site features to be demolished/removed/replaced	YES			
	E	Callout existing utilities to be demolished/removed/abandoned-in-place	YES			
	F	Hatch existing buildings and pavement to be removed	YES			
	G	Construction Entrance location(s)	YES			
	H	Perimeter E&SC control location(s) (i.e. silt fence, erosion berm mix)	YES			
	I	Stockpile and staging area(s) identified (with proper perimeter control)	YES			
	J	Inlet protection location(s)	YES			
	K	Note requiring contractor to implement dust control measures throughout construction	YES			
	L	Note requiring contractor to pave utility trenches within right-of-way within 3 days of excavation or prior to any rain event	N/A			
	M	If groundwater expected, show dewatering/silt bag location(s); show temporary pumping routing	NO			
	N	If large development is proposed with an extensive underground stormwater conveyance network, identify how SWM infrastructure and BMPs will be protected during construction and if sediment traps/basins are needed	N/A			
5		SITE PLAN/SUBDIVISION PLAN	YES			
	A	Partial Site Plans needed for any viewport scale greater than 1"=20'	YES			
	B	Existing property and right-of-way lines	YES			
	C	Proposed subdivision lot lines and labels	YES			
	D	Required Zoning Setbacks shown with dimensions and annotation	YES			
	E	Bulk requirement summary table (zoning/parking calculations)	YES			
	F	Location of any Natural Resources and their respective buffers (wetlands, streams, etc.)	YES			
	G	100-year Flood Zone Limits	YES			
	H	Proposed building outlines, door entrances and loading docks	YES			
	I	Proposed building labels	YES			
	J	Proposed road & sidewalk extents; provide clear annotation if roads will be public or private	YES			
	K	Proposed parking and accessible parking locations; annotate parking space counts	YES			
	L	Proposed signage, parking striping, and traffic striping	YES			
	M	Detailed ADA ramp geometry, detectable warning surfaces, and ADA parking striping/signage; existing & proposed	YES			
	N	Proposed site features (i.e. curbing, walls, fencing, guiderail, fire hydrant, transformers, light pole locations)	YES			
	O	Proposed landscaping; detailed landscaping design should be shown on separate plans	YES			
	P	Designated snow storage areas	YES			
	Q	Proposed dumpster locations and trash removal access	YES			
	R	Linear dimensions of all drive aisles, sidewalk widths, parking spaces, loading docks	YES			
	S	Radial dimensions for all curbs, landscaped islands, sidewalks	YES			
	T	Public/private road centerline stationing shown, labelled every 0+50' with curve data	YES			
	U	If Private Road is proposed, final recorded plans must clearly note that proposed private roads will not be submitted in the future for public acceptance	YES			
	V	If Private Road is proposed, final recorded plans must clearly note that the City is not responsible for any maintenance, repair, plowing, or trash removal of proposed private roads	YES			
	W	Planning Board signature block for final recording	YES			
6		GRADING PLAN	YES			
	A	Partial Grading Plans needed for any viewport greater than 1"=20'	YES			
	B	Limits-of-disturbance outlined and acreage annotated	YES			
	C	Proposed Building Labels with Individual Finished Floor Elevations (FFE's)	YES			
	D	Existing contours with adequate contour labelling, screened; minimum 1' contour interval	YES			
	E	Proposed contours with adequate contour labelling; minimum 1' contour interval	YES			
	F	Detailed grading for all ditches, swales, outfalls, and riprap	YES			
	G	All proposed contours tie-into existing contours at limits-of-disturbance outline	YES			
	H	Existing spot elevations for all asphalt, curb, and SWM BMP tie-in locations	YES			
	I	Location of any Natural Resources and their respective buffers (wetlands, streams, etc.)	YES			
	J	100-year Flood Zone Limits	YES			
	K	Proposed spot elevations for all important roadway geometric points (including but not limited to: parking/drive aisles, building corners/entrances, retaining walls, loading docks, EOP/curblines)	YES			
	L	Proposed spot elevations for all ADA ramp/landing/parking stall geometry points	N/A	No new ADA proposed		
	M	Proposed % slope arrows for all ADA parking spaces and sidewalks	N/A	No new parking proposed		
	N	Proposed longitudinal % slope arrows for drainage ditch centerlines	YES			
	O	Proposed % slope arrows for roads, parking areas, and landscape tie-in areas	YES			
	P	Estimated cut/fill earthwork volumes. If disturbing within the Flood Zone, a separate set of earthwork volumes required (overall site vs. within flood zone)	YES			
7		ROAD PROFILES (if public/private road proposed)	YES			
	A	Existing surface; dashed and screened	YES			
	B	Proposed surface; continuous and bold	YES			

	C	Road design speed must be clearly identified	YES			
	D	Corresponding centerline stationing and curve data annotation	YES			
	E	All vertical curves must identify the proposed 'K' values and confirm they meet the minimum design speed thresholds listed in AASHTO's Green Book Tables 3-35 & 3-37	YES			
	F	Clear annotation if proposed road will be public or private	YES			
	G	If Private Road is proposed, plans must clearly note that proposed private roads will not be submitted in the future for public acceptance	YES			
	H	If Private Road is proposed, plans must clearly note that the City is not responsible for any maintenance, repair, plowing, or trash removal of proposed private roads	YES			
8	UTILITY PLAN					
	A	Existing underground utility locations; screened (storm, sewer, force main, water, gas, electric, telecom)	YES			
	B	Existing above-ground utility locations; screened (manholes, catch basins, utility poles, hydrants, riprap)	YES			
	C	Rim, invert in, invert out, pipe size, cardinal direction (N, E, S, W) information for any existing utility infrastructure being tied into (upstream/downstream/outfalls)	YES			
	D	Proposed underground utility locations; bold (storm, sewer, force main, water, gas, electric, telecom, lighting)	YES			
	E	Proposed above-ground utility locations; bold (manholes, catch basins, utility poles, hydrants, transformers, riprap)	YES			
	F	Proposed storm culverts, outfalls, and riprap locations and sizes	YES			
	G	Storm/sewer structure labels must include: rim, inverts in, inverts out, pipe sizes, cardinal directions (N, E, S, W)	YES			
	H	Storm/sewer pipe labels must include: linear footage, pipe size, material, slope	YES			
	I	Flow directional arrows for storm & sewer pipes	NO	Flow direction can be determined by analyzing inverts		
	J	Proposed & existing site features shown that could conflict with proposed utilities (trees, signs, lightpoles, bollards, foundations, guiderails)	YES			
	K	All storm drains must be sized to convey the 25-year storm	YES			
	L	Sewer force main sizes and invert elevations	NO	No Force main proposed		
	M	Sewer pump station locations, model, rim, inverts, pipe sizes, cardinal directions (N,E,S,W); additional details and hydraulic calculations required for any Public pump station proposed.	NO	No pump stations proposed		
	N	Locations, sizes, and elevations of any: grease traps, oil-water separators, septic systems, drinking wells	NO	None proposed		
	O	Proposed water sizes labelled	NO	None proposed		
9	UTILITY PROFILES					
	A	Utility profiles required for all gravity storm drain and sewer pipes proposed: within the right-of-way, within private or public roads, for non-driveway culverts, and for any public infrastructure tie-ins	NO			
	B	Existing surface; dashed and screened	NO			
	C	Proposed surface; continuous and bold	NO			
	D	Storm/sewer structure labels must include: rim, inverts in, inverts out, pipe sizes, cardinal directions (N, E, S, W)	NO			
	E	Storm/sewer pipe labels must include: linear footage, pipe size, material, slope	YES			
	F	Existing and proposed gravity pipe crossings shown; sizes labelled and depths/clearance annotated	YES	No pipe crossings proposed		
	G	Existing and proposed electric/water/telecom/gas crossings shown at approximate depths; sizes labelled and depths/clearance annotated	YES	None proposed		
10	DETAILS					
	A	Road section detail, including pavement/gravel depths & cross slopes	YES			
	B	Sidewalk, paver, crosswalk, and any other pavement section details	N/A	None proposed		
	C	Pavement sawcut & shi lap details	YES			
	D	Utility trench/backfill detail	YES			
	E	All site feature details; curbing, retaining walls, fencing, guiderails, dumpsters, etc.	YES			
	F	Signage, striping, and ADA details	N/A	None proposed		
	G	E&S notes and details	YES			
	H	Utility structure details (manholes, cleanouts, fittings, handholes, transformer pads, hydrants)	YES			
	I	Storm outfall & riprap details	YES			
	J	Drainage ditch cross section identifying minimum depth, minimum bed width, and maximum side slopes	NO			
	K	Pump station, grease trap, oil-water separator, septic, drinking well details	N/A	None proposed		
	L	Conduit section details	N/A	None proposed		
11	LANDSCAPING, LIGHTING & PHOTOMETRIC PLANS					
	A	As required by ordinance; at a minimum: locations, counts, lighting models, and landscaping species must be identified	YES	Revegetation plan provided		
	B	Landscaping & lighting details	YES	Revegetation plan provided		
12	DOCUMENTS/REPORTS/CALCULATIONS					

A	On initial preliminary submittal applications, applicant must submit a development review and inspection fee. Applicant to coordinate fee amount with City Planner prior to submittal. This fee will be drawn against to cover the following type of services throughout the project life cycle (and may require replenishing): i. 3rd Party City Peer-Review ii. Site Inspections during the permitting process iii. Erosion & Sediment Control Inspections during construction iv. Right-of-Way Inspections during construction v. Site Punchlist/As-Built Inspections post-construction	To be determined				
B	Stormwater Management Report, including: 1. Predevelopment & Post-development Drainage Area Maps, including: a. Subdrainage areas delineated and labeled b. Points of Interest/Analysis shown and labeled c. Hatching for different land cover areas (impervious, pervious, gravel) within each applicable USDA soil boundary d. Time of concentration (Tc) paths & durations e. Four City-standardized stormwater summary tables 2. If any SWM water quality BMP or detention facility is proposed, hydrologic model exports/hydrographs must be submitted for the for the 2, 10, 25, & 100-year storm frequencies 3. Sizing calculations for any SWM water quality BMP or detention facility 4. A stormwater maintenance manual for any proposed SWM water quality BMP or detention facility, including: a. Annual maintenance requirements b. Annual inspection requirements by a licensed PE; noting that all inspection reports/logs need to be submitted to the Engineering Department by March 1st each following year, identifying what on-going maintenance has occurred and what remedial repairs are needed c. Signed Property Owner Agreement: including the current property owner’s contact information and signature; it must be noted that all stormwater BMP maintenance requirements are linked to the property for perpetuity and transfer to any new ownership	Yes				
C	An approved ‘Sewer Ability-to-Serve Letter’ from the Engineering Department: i. Applicant to submit proposed sewer flow calculations per Maine’s Subsurface Wastewater Disposal Rules, Chapter 241, Section 4 (Tables 4A & 4C)	N/A	No new buildings/sewer conveyance proposed			
D	A Performance Guarantee Cost Estimate utilizing Planning’s template	YES				
E	For any Site Location of Development (SLODA) project, the applicant's submittal must mimic a formal submittal to DEP. Submit must abide to DEP's SLODA application and include DEP's SLODA Submittal Checklist (Form D)	N/A				
F	25-year hydraulic calculations for all storm conveyance infrastructure (pipes, culverts, drainage ditches); starting tailwater conditions/documentation must be clearly identified	YES				
K	Public sewer pump station sizing calculations and maintenance plan	N/A	No pump stations proposed			
M	Grease trap sizing calculations	N/A	No grease traps proposed			
N	Homeowner Association (HOA) agreement for any private road serving two (2) lots or more	N/A	No HOA			
O	Summary list & copy of any required DOT/DEP/USACE permits & approvals	YES				

CITY OF BIDDEFORD, MAINE

**SHORELAND AND SITE PLAN REVIEW
APPLICATION**

Project:
RESEARCH PIER

Applicant:

UNIVERSITY OF NEW ENGLAND
11 HILLS BEACH ROAD
BIDDEFORD, MAINE 04005

April 16, 2025

Prepared by:

Site Design Associates
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Topsham, Maine 04086
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Site Design Associates

Consulting Engineering and Land Planning

April 16, 2025

David Galbraith, City Planner
City of Biddeford
P.O. Box 586
205 Main Street
Biddeford, ME 04005

**RE: University of New England
Proposed Research Pier**

Dear David and Planning Board Members:

University of New England is pleased to submit the enclosed application for site plan review and shoreland permits for a proposed research pier and floats at 11 Hills Beach Road in Biddeford. Enclosed are 10 copies of the site plan, and the following information submitted electronically per the direction from your office:

- City Application
- Letter of Agent Authorization
- Site Plan Drawing Checklist
- Location Map
- Deed
- Letter of Financial Capacity
- Stormwater Management Report
- Alternatives Analysis and Memo
- ACOE, DEP, and SRCC Permits
- Letter from the Maine Historic Preservation Commission clearing the project
- Notice to Proceed with external reviews from the city
- Typical shed photo
- Light fixture cuts
- Drawing Set

We understand the planning office will calculate the application fee after the application is submitted.

The project is located in the city Institutional (IN) zone and the Limited Residential District shoreland zone. The project was included on the most recent version of the city approved campus master plan.

The Biddeford Campus of the University of New England (UNE), Maine's largest private university, is positioned on the confluence of the Saco River and the Atlantic Ocean. This location, along with state-of-the-art research facilities and world-class faculty, has recently earned UNE's marine programs rankings among the top 10 nationally from *Biology Explorer*, *College Choice*, and *College Magazine*. To expand UNE's unique

experiential learning and research opportunities in the marine ecosystem, the University is proposing the construction of a permanent pier which will serve as a four-season research deployment facility directly adjacent to the Arthur P. Girard Marine Science Center (GMSC) on its Biddeford campus

UNE's School of Marine and Environmental Programs, housed in the GMSC, is the academic home of 325 undergraduate and graduate students who are studying marine science, marine policy and management, as well as a wide variety of interdisciplinary fields, including marine ecosystems, conservation, restoration, business, sustainable fisheries and ecological aquaculture, social-ecological systems, and marine sustainability science. Additionally, two programs provide pathways from undergraduate to graduate degrees in Marine Sciences and Maritime Law (a 3+3 partnership with Maine Law).

Three things distinguish UNE's marine programs. The first is the oceanfront location on its core undergraduate campus, which provides direct access to the Gulf of Maine. The second is the multitude of research opportunities available to students starting as early as their first year of undergraduate studies. And the third is how the marine research done by UNE students and faculty directly impacts the people of Maine and beyond.

However, all three of these key assets are limited by the lack of year-round access to the ocean. ***The planned pier will allow students and faculty to be on the water throughout the year, thereby greatly enhancing UNE's groundbreaking research into critical problems facing Maine.***

The jewel of UNE's marine programs is Ram Island, UNE's private one-acre living laboratory two miles from campus in Saco Bay, which was gifted to the University in 2014. The island, which houses a fieldwork station and an experimental kelp farm, provides unparalleled research and field study opportunities for students and faculty. It also creates the potential to develop research partnerships that focus on critical issues facing Maine, making Ram Island home to coastal zone investigations of climate change, marine geology, invasive species, marine mammal ecology and interactions with fisheries and marine aquaculture.

Despite its prime location with direct access to the ocean, UNE currently has floating docks that are removed seasonally, precluding access to Ram Island and other areas of the Gulf of Maine in the critical winter and spring months. Construction of a permanent pier at UNE's Girard Marine Science Center will allow for dynamic, year-round, ocean-going research activities, facilitating scientific and practical exchanges with local, regional, and national marine researchers and industry partners. Additionally, the deep-water access would expand UNE's ability to serve as a collaboration hub for coastal marine and deep-water science and industry. As good stewards of the environment and our coastal neighbors, UNE is committed to ensuring that the planned structure fully adheres to local, state, and federal regulations.

Investment in UNE's marine programs is good for Maine taxpayers. With the Gulf of Maine warming faster than almost any other body of water on the planet, marine research

afforded by year-round access to the water will allow UNE to gather critical data to guide Maine's response to climate change. These expanded research opportunities will likewise enhance UNE's ability to ensure that its students graduate with the curiosity and experience to both ask and answer the important questions that will inform to the data-driven decisions impacting the expanding fields of aquaculture, fisheries, marine law and policy, marine business and entrepreneurship, ocean food systems, and related fields.

In order to determine the optimum location for the pier, an extensive alternatives analysis and studies were undertaken. This was not only for due diligence, but was required by the state and federal regulators. The regulators concluded that this exhaustive analysis was satisfactory to establish the proposed pier location. A copy of the alternatives analysis is included as Attachment 8.

The proposed facility includes the following:

1. A pile supported pier structure extending from shore into the Saco River. The proposed pier includes an approximately 130-foot long approach section extending from shore and an 80-foot long pier head section oriented roughly parallel to the direction of flow in the river. The pier consists of a concrete superstructure on steel pipe piles, with timber fender piles for vessel berthing and floating docks, and a pile supported gangway lifting beam to allow the gangway ramp to be temporarily removed from the water.
2. A floating dock system consisting of one 8-foot by 24-foot float, one 8-foot by 26-foot 10-inch float, and one 12-foot by 30-foot gangway landing float to provide all-tide vessel access for UNE's vessels on the west side of the pier, and a single 6-foot by 20-foot floating dock to provide a tie-up location for the City of Biddeford Fire Boat on the east side of the pier.
3. An 80-foot by 5-foot gangway to provide ADA compliant access to the float system.
4. An upland access road connecting the existing road at the MSC to the proposed pier, including associated site grading, drainage, and stormwater management features.

The proposed activities are described in detail in the following sections.

Pier Structure

The proposed vehicle rated pier is supported by twenty-five concrete filled steel pipe piles and a concrete abutment which connects the pier to the proposed access road. All of the piles are located beyond the Highest Annual Tide (HAT) line, while the abutment is located shoreward of the HAT line. Fourteen, 24-inch diameter steel piles support the pier head portion of the structure and eleven, 16-inch diameter steel piles support the pier approach. The seven piles at the first three pile bents at the pier approach will be socketed to ledge due to a limited soil layer above the ledge surface at these locations. The remaining piles will be driven to ledge but do not require socketing given the sufficient

depth of overburden soils. The piles support precast concrete pile caps which support precast concrete deck planks that form the pier deck surface.

The pier includes thirty, 12-inch diameter timber fender piles to provide for vessel berthing at the main face of the pier and to restrain the floating dock system. All new fender piles will be untreated timber, greenheart species. A gangway lifting beam is proposed to lift the gangway out of the water during float maintenance or in advance of severe weather. The lifting beam is supported by a steel column anchored to the pier on one side and a 10.75-inch diameter concrete filled steel pipe pile on the other.

Floating Dock System

The proposed floating dock system includes four floating docks. The three timber floats on the west side of the pier are new, while the single float on the east side of the pier is an existing float that will be relocated from UNE's facility that is located upstream of the proposed pier (note that this facility is proposed to be demolished). The new floats consist of an 8-foot by 24-foot float, an 8-foot by 26-foot 10-inch angled float, and a 12-foot by 30-foot gangway landing float. All new floats will be located on the west side of the pier approach at the south side of the pier head. The existing float is 6-feet by 20-feet and will be located on the east side of the pier approach at the south side of the pier head to provide a tie-up location for the City of Biddeford Fire Boat. The new floats are accessed by the proposed gangway or a fixed ladder, and the fireboat float is accessed solely by a fixed ladder. All the floating docks are located beyond the MLLW line and will be restrained and guided by the timber fender piles. The floats will allow vessels to tie up to the pier at any time during the tide cycle. The depths of water at the floats are adequate to meet UNE's needs.

Gangway

The 80-foot by 5-foot gangway provides ADA compliant access to the new floating dock system on the west side of the pier. The gangway connects to the pier near the beginning of the pier approach and lands on the 12-foot by 30-foot floating dock. The total indirect impact from the gangway is 357 square feet (this area excludes the portion of the gangway located above the floating dock).

Pier Building

One pier building, an 8 ft x 10 ft shed, is proposed to be located at the southeast corner of the pier head. This structure will provide storage for small equipment used by MSC staff, as well as an indoor protected location to house certain utility features such as electrical service panels.

Access Drive

Vehicular and pedestrian access to the pier will be provided by a new 20 ft wide access road that will extend from the existing GMSC access road and parking area, around the east side of the GMSC building, and to the end of the pier approach. A turnaround area is

provided adjacent to the pier approach to allow for vehicles up to and including fire trucks accessing the pier to turn around and drive forward to exit the access road. There is no parking proposed adjacent to the pier. All vehicles will use the existing parking spaces adjacent to the GMSC building. The new road will provide construction access for the project, which will help to limit the amount of work performed from the water and allow more staging to be achieved from land. The upland work will include stormwater management features that have been designed to meet Maine DEP Chapter 500 standards.

The following addresses Site Plan Approval/ Site Design Criteria and Shoreland Zoning Land Use standards for piers.

Site Plan Approval/Site Design Criteria

1. Drainage

A Stormwater Management Report is attached. The report submitted demonstrates compliance with Maine Department of Environmental Protection (DEP) Basic and General standards. The project will include bioretention filters designed to DEP BMP standards for enhancement of stormwater runoff quality.

A waiver of Article XI.II.Section 5.B.1. is required for an increase in the rate of runoff. This waiver has historically been granted by the planning board for projects located on the UNE parcel that are directly tributary to tidal receiving waters, which will be the case for this project. There will be no impact on the capacity of a receiving downgradient storm system. The bioretention filters will provide stormwater quality enhancement and cooling of runoff, as well as a level of stormwater detention. Level spreaders will be utilized to evenly distribute runoff from the bioretention filters into sheet flow. Although an increase in the rate of runoff is shown at two point locations on the drainage plans, the reality is that the stormwater runoff from the subcatchments is distributed over a wide area.

2. Utilities

Power will be fed underground to the pier from the Girard Marine Science Center.

3. Parking

There will be no formal dedicated parking associated with the project.

4. Structural Layout and Design

a) Design of Buildings

An 8 ft x 10 ft shed is proposed on the pier. A photo in attachment 12 shows a rendering of the shed; a wood frame structure, with weather resistant siding, and a metal roof.

b) Setbacks

The research pier is sited in conformance with all setback requirements.

c) Fire Protection & Safety

Based on input from the fire department, the road width was increased to 20 ft per NFPA standards. The turnaround meets the city required dimensional standards and has been modelled to accommodate fire apparatus.

d) Landscaping

The revegetation plan has been developed to meet the City of Biddeford's Shoreland Zoning requirements as well as to preserve a visual buffer for the access drive to minimize visibility from the water to the greatest extent possible, while achieving the required clearing and considering functional requirements such as snow plowing at the turnaround. The revegetation plan also meets requirements of the Saco River Corridor Commission (SRCC) who has issued a permit for the project.

Revegetation Plan

The revegetation plan, drawing C-15, is intended to meet the city of Biddeford's shoreland zoning requirements. Details are as follows:

- 49 trees are being removed with 21 of those within the 50-foot HAT setback
- Approximately 5,850 SF of understory duff later and low growth vegetation (predominantly non-native invasive honeysuckle) is being disturbed within 50 feet of the HAT.
- 5 tree species are proposed in approximate equal quantities with the evergreen trees located between the road shoulder grading and the top of embankment where they are anticipated to fit under the remaining mature forest canopy, and between existing trees and ledge. Field verification during construction will be required to ensure final plant locations are feasible if shallow ledge or significant remaining tree root stock is present.
- 3 shrubs (2 evergreen and 1 deciduous) are proposed to plant at the toe of the road embankment as well as in areas around the turnaround where fitting larger trees will be challenging given limited space and the need to maintain an area for plowed snow.
- Deciduous trees are spread throughout the area.
- The bioretention cells will be filled with a mix of wet, drought and salt tolerant shrubs and perennials which are shown on the plan as a hatched area. The notes on the plan and drawing C-16 plant schedule describe the random pattern mixing of these plants throughout the bio retention cells.

- All other disturbed areas will be planted with a native roadside mix of perennial grasses and flowers. It is recommended that this area be mowed once a year in the fall to maintain the mix of plants. If mowed more often, it will revert to mostly lawn grasses.
 - Mature plant sizes are listed on the plant list to give a sense of the amount of screening that may occur over time.
- e) Service, Storage, and Utility Areas
Not applicable
- f) Paving, Parking, and Storage Areas
No paving, parking, or storage is located within the side or rear setback of the property, nor within the front setback of the property.
- g) Handicapped Accessibility
The pier is designed to meet ADA requirements.
- h) Loading Facilities
Not applicable.
- i) Parking, Loading, and Protective Buffers
The non-vegetated area of the land being developed will be less than 75% and a minimum of 25% of the land area being developed either remains in its natural state or consists of landscape and lawn areas.
- j) Open Space
Not applicable.
- k) External Lighting
An electrical site plan is included in the drawing set which shows the site lighting. Full cut off fixtures will be utilized and lighting will be the minimum necessary for safety and functionality.
- l) Signs
Not applicable.
- m) Historic and Archeological Resources.
See attachment 10 for a letter from the Maine Historic Preservation Commission clearing the project.

Shoreland Zoning Land Use Standards

The project will comply with the applicable standards of Article XIV. Section 15.C.

- Access from shore will be developed on soils appropriate for the use. A detailed erosion control plan has been prepared for the project.

4/16/2025

- The location does not interfere with existing beach areas.
- The facility has been located to minimize adverse effects on fisheries. The plan was reviewed by the National Marine Fisheries Service.
- The facility size is the minimum necessary to carry out current and future research activities, and is consistent with the surrounding character and uses of the area, including the Camp Ellis pier on the opposite side of the river.
- An 8 ft x 10 ft shed for storage of life jackets, tools, research equipment is proposed on the pier, and is an operational necessity. The shed will not exceed 20 ft in height.

We are in hopes the planning board will find that the proposal is consistent with city regulations and approval standards. We look forward to meeting with the planning board at the next available meeting.

If you have any questions or comments, please contact me.

Sincerely,
Site Design Associates



Tom Saucier, P.E.
President

cc: Andrew Philippe, RA, NCARB, Director for Campus Planning

Attachment 1
Formal Site Plan Review Application

**City of Biddeford – Planning Department****Planning Board Application**

P.O. Box 586, 205 Main Street Biddeford, Maine 04005
207-284-9115

Type of Application:

☒ Shoreland Zoning Permit ☒ Site Plan Review (Please include checklist) ___ Extraction
___ Conditional Use Permit ___ Subdivision (Please include Checklist) ___ Private Way
___ Other: _____

Applicant Information:

Name: University of New England
Mailing Address: 11 Hills Beach Road Biddeford, Maine
Telephone: 207-602-2365
Email: aphilippe@une.edu

What is your legal interest in the property?

☒ Owner ___ Potential Buyer with Contract ___ Lease/Rental Agreement

Owner's Information:

Name: Applicant
Mailing Address: _____
Telephone: _____
Email: _____

Agent's Information:

Name: Tom Saucier, P.E. Site design Associates
Mailing Address: 23 Whitney Way Topsham, Maine 04086
Telephone: 207-449-4275
Email: tsaucier@sitedesignassociates.biz

Engineer/Surveyor's Information:

Name: Agent
Mailing Address: _____
Telephone: _____
Email: _____

Project Location and Lot Information:

Street Address: 11 Hills Beach Road Drainage Watershed: Tidal portion of Saco River
Tax Map: 52 Lot: 4
Current Zoning: IN Shoreland Zoning: Limited Residential
Size of Lot: 49.9 (x)acres ()s.f. Lot Frontage: 1,489 ft +/-
Existing Use of Property: University use - Girard Marine Science Center

Property currently serviced by:

☒ City Road ___ Public Sewer ☒ Public Water ___ Public Trash
___ Private Road ___ Septic System ___ Private Well ☒ Private Hauler

Slope Conditions in Area of Construction (if applicable):

___ Flat (0-3% slope) ___ Rolling (3-8% slope) ☒ Hilly (8-15% slope) ☒ Steep (15%+ Slope)

Are there any wetlands or waterbodies on the site? ☒ (Yes) ___ (No) if yes attach information

Is the project within the 100-year floodplain? ___ (Yes) ☒ (No) if yes attach information

Do you plan to bring fill onto the lot? ☒ (Yes) ___ (No) If yes attach information

Description of proposed use of property:

Project/Proposed Use:

University use - Research Pier

Property to be Serviced by:

☒ City Road ☐ Public Sewer ☒ Public Water ☐ Public Trash
☐ Private Road ☐ Septic System ☐ Private Well ☒ Private Hauler

Limits of Disturbance: 0.5 (☒)acres (☐)s.f.

Net change in impervious cover: 0.249 (☒)acres (☐)s.f.

Is this project part of a larger project? ☐ (Yes) ☒ (No)

Is the project proposing a new Private or Public Road? ☐ (Yes, Private) ☐ (Yes, Public) ☒ (No)

Is this project within the Urbanized Area/MS4 (see [City Drainage Map](#)) ☒ (Yes) ☐ (No)

Is the project proposing any Stormwater facilities/BMPs? ☒ (Yes) ☐ (No)

Will a Traffic Movement Permit (TMP) be required?: ☐ (Yes) ☒ (No)

☒ If in a Shoreland Zone:

Percent of residential lot coverage (Max 20%): N/A

Percent of structure expansion (Max 30%): N/A

☐ **If Subdivision Review, number of lots proposed:** _____

☐ **If a Private Way is proposed, number of lots served:** _____

If Site Plan Review, you must provide the following information:

Total new square feet footprint of structure: _____

Total new square feet paving/parking: 10,850 +/-

Waiver Requests (attach details):

1. Article XI.II.Section 5.B.1.a. - See cover letter
2. Article XI.II. Section 5.B.1.e.3. - Slopes steeper than 2:1 in ledge
3. _____
4. _____
5. _____

Required Submittal Attachments:

A. Letters of Approval

- ☒ Fire Department – Contact Chief or Deputy Chief – 282-9986 (Request sent; previously revised plans
☐ Ability to Serve for Water Service – Maine Water – 282-1543 in response to BFD comments.)
☐ Ability to Serve for Sewer Service – Engineering Department – Tom Milligan 284-9118
☐ Police Department – e-911 Road Name Designation – Contact Joanne Fisk 282-5127
☐ Ability to Serve for Electrical Service-CMP-1-866-225-4200
☒ Letter to Planning Board describing project, Waiver requests, proposed improvements,
addressing permit requirements, etc.

B. Photographs of Site.

C. Architectural renderings/drawings of proposed buildings, as required.

D. Engineering Plans, as required.

E. Stormwater Management Report, as required.

Fees (Due at time of Submission):

- \$75 Nonrefundable Administration Fee is required for every application.
- Refer to “Attachment A Fees and Charges” of the Land Development Regulations for more information. Consult with Planning Staff if you have questions.

Required Signatures:

By signing this application, as the foresaid applicant or authorized agent:

- I certify that I have read and completely understand the application;
- I certify that the information contained in this application and its attachments are true and correct;
- I understand that all information provided on this form and all other documents submitted as part of my proposal is a matter of public record;
- I understand that copies of this information may be supplied upon request to an interested party.
- I understand that additional funds may be required through the course of the review for special studies, legal review costs, and/or engineering review.
- I understand that by submitting an application I am not guaranteed a place on any particular agenda. I further understand that the City Planner will place me on an agenda for review when the application is deemed substantially complete.

Will the proposed project cause 1 acre or more of site disturbance? __ (Yes) x (No)

- If Yes, applicant is responsible for any required Maine Construction General Permits and shall comply with the requirements of DEP Chapter 500 Stormwater Regulations, as they apply.

Signature of Applicant: _____

Date

4/15/25

Signature of Property Owner: _____

Date

4/15/25

DIGITAL SUBMITTAL REQUIREMENTS FOR ALL SUBMITTALS:

- A) PDF OF SIGNED APPLICATION
- B) PDFs OF ALL DRAWING SETS AND OTHER REQUIRED SUBMITTAL ATTACHMENTS NOTED ABOVE

HARD-COPY SUBMITTAL REQUIREMENTS FOR PLANNING BOARD APPLICATIONS:

- A) SEVEN (7) FULL-SIZE PAPER COPIES OF DRAWING SETS

DIGITAL SUBMITTAL REQUIREMENTS FOR FINAL APPROVAL:

- A) INDIVIDUALLY NAMED PDFs OF EACH DRAWING (NOT A COMBINED PDF SET)
 - Individual Drawing PDF Naming Format: 'PROJECT/SHEETSET NAME_INDIVIDUAL DRAWING NAME.pdf'
- B) PDF COPIES OF ALL PERMIT APPROVALS, APPLICATIONS, REPORTS, NARRATIVES, LETTERS, ETC.
- C) FINAL CAD REFERENCE FILES IN DWG FORMAT (SURVEY & PROPOSED DESIGN LINEWORK)
 - All drawings & CAD reference files must be to-scale and within the following coordinate systems:
 - MAINE STATE PLANE WEST NAD83 (Horizontal Datum) & NAVD88 (Vertical Datum)

HARD-COPY SUBMITTAL REQUIREMENTS FOR FINAL APPROVAL:

- A) THREE (3) FULL-SIZE PAPER COPIES OF INDIVIDUAL DRAWINGS REQUIRING BOARD SIGNATURE
- B) ONE (1) FULL-SIZE PAPER COPY OF ENTIRE DRAWING SET FOR ENGINEERING RECORDS

PLEASE CONFIRM WITH PLANNING STAFF FOR CLARIFICATION

Attachment 2
Letter of Agent Authorization



UNIVERSITY OF
NEW ENGLAND

Biddeford Campus
11 Hills Beach Road
Biddeford, ME 04005
(207) 283-0171 T

Portland Campus
716 Stevens Avenue
Portland, ME 04103
(207) 797-7261 T

May 29, 2023

Mr. Tom Saucier
Site Design Associates
23 Whitney Way
Topsham, Maine 04086

TO WHOM IT MAY CONCERN:

This letter authorizes Tom Saucier, Site Design Associates, to serve as an agent for University of New England for the purpose of permitting the proposed installation of a research pier and float on its Biddeford campus.

Sincerely,

A handwritten signature in black ink that reads "alan thibeault". The signature is written in a cursive, lowercase style with a large, sweeping flourish at the end.

Alan Thibeault
Vice president for University Operations

Attachment 3
Site Plan Checklist

CHECKLIST DIRECTIONS:

1. The following checklist must be completely filled out by the applicant and included on all preliminary and final Site Plan & Subdivision submittals. No checklist is required for sketch submittals.
2. Applicant to confirm all of the items listed are included within the submittal. Any missing items must have adequate reasoning to justify their absence.
3. City to review applicant's submittal and checklist responses. Projects missing substantial submittal information with non-acceptable reasoningwill be rejected and required to resubmit.
4. Items in **BLACK** are required for 'Preliminary' approval & 'Final' approval.
5. Items in **BLUE** are only required for 'Final' approval.

SUBMITTAL INFORMATION - TO BE FILLED OUT BY APPLICANT	
Project Name:	University of New England - Research Pier
Planning Board # (if available):	
Applicant Name/Info:	University of New England
Submittal #/Type (Prelim/Final):	Preliminary/Final
Submittal Date:	15-Apr-25

SUBMITTAL REQUIREMENT		APPLICANT RESPONSE			CITY REVIEW RESPONSE	
ITEM NUMBER	DESCRIPTION	INFORMATION PROVIDED (YES/NO)	LIST DRAWING SHEET NUMBER WHERE INFORMATION IS PROVIDED	REASON NOT PROVIDED/COMMENT	ACCEPTABLE (YES/NO-REVISE & RESUBMIT)	COMMENT
1	GENERAL PLAN REQUIREMENTS	YES				
A	Drawing specific legends (linetypes, hatches, etc.)	YES				
B	Individual drawing layer control should be utilized: freeze/thawing, changing lineweights, and screening (i.e. screen existing layers on a proposed plan, freeze topography and underground utilities on a proposed site plan)	YES				
C	North arrows, standard engineering scale viewports, scale bars, dated revision blocks	YES				
D	All drawings and surveys must be in the following coordinate systems: NAD83 Maine State Plane West (Horizontal) and NAVD88 (Vertical)	YES				
E	Drawings need to be designed, signed & sealed by a Maine licensed professional engineer (PE); all boundary survey data needs to be performed by a licensed professional land surveyor (PLS)	YES				
2	COVER SHEET	YES				
A	Project Name & Property Address	YES				
B	Project Team Contact Information (Owner, Engineer, Contractor, etc.)	YES				
C	Site Location Map	YES				
D	Sheet Set List of Drawings	YES				
E	Tax Map and Lot ID	YES				
F	Zoning & Shoreland Zone Information	YES				
G	Existing Use Description	YES				
H	Proposed Use Description	YES				
I	Required Waiver/Variances (Yes/No); if yes, plan must clearly list waivers/variances requesting	YES				
J	Name of Drainage Watershed	YES				
K	Within the MS4 Urbanized Area (Yes/No)	YES				
L	Natural resources (streams, wetlands, etc.) located on-site or adjacent to the property (Yes/No)	YES				
M	Within the 100-year Flood Zone (Yes/No)	YES				
N	Public Road Proposed (Yes/No)	NO				
O	Private Road Proposed (Yes/No)	YES				
P	Public Sewer Connection (Yes/No)	YES	EXISTING			
Q	Public Storm Drain Connection (Yes/No)	NO				
R	Limits of Disturbance in square feet and acres	YES				
S	Pervious Land Cover square footage, existing and proposed	YES				
T	Impervious Land Cover square footage (Pavement/Gravel), existing and proposed	YES				
U	Building Roof square footage, existing and proposed	YES				
V	Assigned Planning Board Number	N/A				
W	Estimated cut/fill earthwork volumes. If disturbing within the Flood Zone, a separate set of earthwork volumes required (overall site vs. within flood zone)	YES				
3	EXISTING CONDITIONS PLAN	YES				
A	Horizontal & Vertical Datums annotated (NAD83 & NAVD88)	YES				
B	Property & Right-of-Way Lines	YES				
C	Boundary line information (bearings, distances, etc.)	YES				
D	Property pin and monumentation locations	YES				
E	Existing easements with proper ownership identified	YES				
F	Road Names & Individual Lot Labels (Map, Lot, Owner, Acreage)	YES				
G	Location of any Natural Resources and their respective buffers (wetlands, streams, etc.)	YES				
H	100-year Flood Zone Limits & Elevation	YES				
I	Existing contours with adequate contour labelling; minimum 1' contour interval	YES				
J	Existing building FFEs annotated	YES				
K	Spot elevations for all tie-in locations (curb cuts, property line)	YES				
L	Existing buildings & structures	YES				
M	Existing pavement areas & number of parking spaces	YES				
N	Existing ADA ramp geometry, detectable warning plates, and ADA parking spaces	YES				
O	Existing site features (sidewalks, retaining walls, curbing, lightpoles, guide rails, dumpsters, fencing)	YES				
P	Existing signage and striping	YES				
Q	Existing underground utility locations (storm, sewer, force main, water, gas, elec, tele)	YES				
R	Existing above-ground utility locations (manholes, catch basins, utility poles, hydrants, transformers, riprap)	YES				

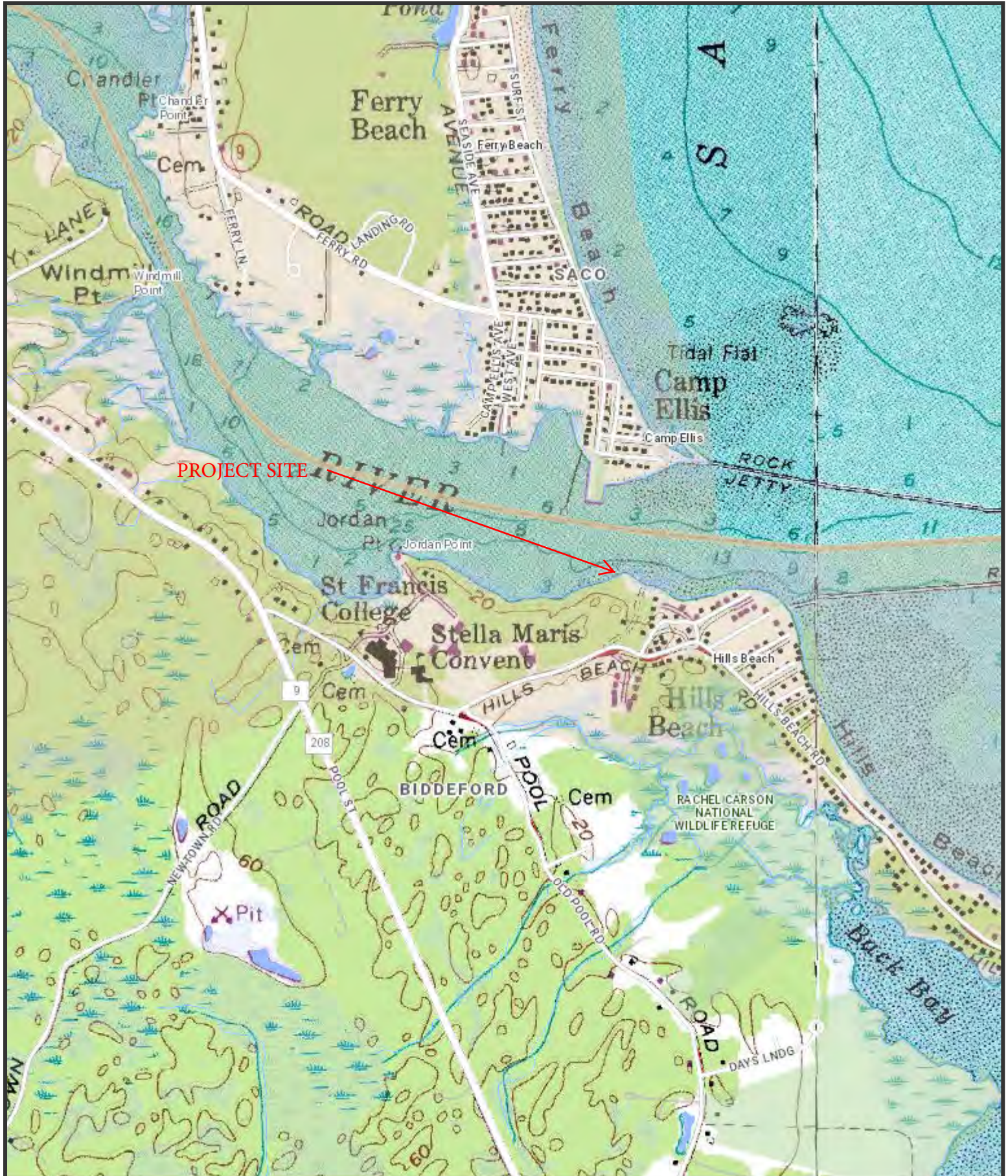
	S	Rim, invert in, invert out, pipe size, cardinal direction (N, E, S, W) information for any existing utility infrastructure being tied into (upstream/downstream/outfalls)	YES			
	T	Existing tree lines, street trees, free-standing trees (12" or larger diameter at breast height), and vegetation	YES			
	U	Location of any borings, drinking wells, and monitoring wells	YES			
4		SITE DEMOLITION & EROSION CONTROL (E&SC) PLAN	YES			
	A	Limits-of-disturbance outlined and acreage annotated	YES			
	B	Location of any Natural Resources and their respective buffers (wetlands, streams, etc.)	YES			
	C	100-year Flood Zone Limits	YES			
	D	Callout existing site features to be demolished/removed/replaced	YES			
	E	Callout existing utilities to be demolished/removed/abandoned-in-place	YES			
	F	Hatch existing buildings and pavement to be removed	YES			
	G	Construction Entrance location(s)	YES			
	H	Perimeter E&SC control location(s) (i.e. silt fence, erosion berm mix)	YES			
	I	Stockpile and staging area(s) identified (with proper perimeter control)	YES			
	J	Inlet protection location(s)	YES			
	K	Note requiring contractor to implement dust control measures throughout construction	YES			
	L	Note requiring contractor to pave utility trenches within right-of-way within 3 days of excavation or prior to any rain event	N/A			
	M	If groundwater expected, show dewatering/silt bag location(s); show temporary pumping routing	NO			
	N	If large development is proposed with an extensive underground stormwater conveyance network, identify how SWM infrastructure and BMPs will be protected during construction and if sediment traps/basins are needed	N/A			
5		SITE PLAN/SUBDIVISION PLAN	YES			
	A	Partial Site Plans needed for any viewport scale greater than 1"=20'	YES			
	B	Existing property and right-of-way lines	YES			
	C	Proposed subdivision lot lines and labels	YES			
	D	Required Zoning Setbacks shown with dimensions and annotation	YES			
	E	Bulk requirement summary table (zoning/parking calculations)	YES			
	F	Location of any Natural Resources and their respective buffers (wetlands, streams, etc.)	YES			
	G	100-year Flood Zone Limits	YES			
	H	Proposed building outlines, door entrances and loading docks	YES			
	I	Proposed building labels	YES			
	J	Proposed road & sidewalk extents; provide clear annotation if roads will be public or private	YES			
	K	Proposed parking and accessible parking locations; annotate parking space counts	YES			
	L	Proposed signage, parking striping, and traffic striping	YES			
	M	Detailed ADA ramp geometry, detectable warning surfaces, and ADA parking striping/signage; existing & proposed	YES			
	N	Proposed site features (i.e. curbing, walls, fencing, guiderail, fire hydrant, transformers, light pole locations)	YES			
	O	Proposed landscaping; detailed landscaping design should be shown on separate plans	YES			
	P	Designated snow storage areas	YES			
	Q	Proposed dumpster locations and trash removal access	YES			
	R	Linear dimensions of all drive aisles, sidewalk widths, parking spaces, loading docks	YES			
	S	Radial dimensions for all curbs, landscaped islands, sidewalks	YES			
	T	Public/private road centerline stationing shown, labelled every 0+50' with curve data	YES			
	U	If Private Road is proposed, final recorded plans must clearly note that proposed private roads will not be submitted in the future for public acceptance	YES			
	V	If Private Road is proposed, final recorded plans must clearly note that the City is not responsible for any maintenance, repair, plowing, or trash removal of proposed private roads	YES			
	W	Planning Board signature block for final recording	YES			
6		GRADING PLAN	YES			
	A	Partial Grading Plans needed for any viewport greater than 1"=20'	YES			
	B	Limits-of-disturbance outlined and acreage annotated	YES			
	C	Proposed Building Labels with Individual Finished Floor Elevations (FFE)	YES			
	D	Existing contours with adequate contour labelling, screened; minimum 1' contour interval	YES			
	E	Proposed contours with adequate contour labelling; minimum 1' contour interval	YES			
	F	Detailed grading for all ditches, swales, outfalls, and riprap	YES			
	G	All proposed contours tie-into existing contours at limits-of-disturbance outline	YES			
	H	Existing spot elevations for all asphalt, curb, and SWM BMP tie-in locations	YES			
	I	Location of any Natural Resources and their respective buffers (wetlands, streams, etc.)	YES			
	J	100-year Flood Zone Limits	YES			
	K	Proposed spot elevations for all important roadway geometric points (including but not limited to: parking/drive aisles, building corners/entrances, retaining walls, loading docks, EOP/curblines)	YES			
	L	Proposed spot elevations for all ADA ramp/landing/parking stall geometry points	N/A	No new ADA proposed		
	M	Proposed % slope arrows for all ADA parking spaces and sidewalks	N/A	No new parking proposed		
	N	Proposed longitudinal % slope arrows for drainage ditch centerlines	YES			
	O	Proposed % slope arrows for roads, parking areas, and landscape tie-in areas	YES			

	P	Estimated cut/fill earthwork volumes. If disturbing within the Flood Zone, a separate set of earthwork volumes required (overall site vs. within flood zone)	YES			
7		ROAD PROFILES (if public/private road proposed)	YES			
	A	Existing surface; dashed and screened	YES			
	B	Proposed surface; continuous and bold	YES			
	C	Road design speed must be clearly identified	YES			
	D	Corresponding centerline stationing and curve data annotation	YES			
	E	All vertical curves must identify the proposed 'K' values and confirm they meet the minimum design speed thresholds listed in AASHTO's Green Book Tables 3-35 & 3-37	YES			
	F	Clear annotation if proposed road will be public or private	YES			
	G	If Private Road is proposed, plans must clearly note that proposed private roads will not be submitted in the future for public acceptance	YES			
	H	If Private Road is proposed, plans must clearly note that the City is not responsible for any maintenance, repair, plowing, or trash removal of proposed private roads	YES			
8		UTILITY PLAN				
	A	Existing underground utility locations; screened (storm, sewer, force main, water, gas, electric, telecom)	YES			
	B	Existing above-ground utility locations; screened (manholes, catch basins, utility poles, hydrants, riprap)	YES			
	C	Rim, invert in, invert out, pipe size, cardinal direction (N, E, S, W) information for any existing utility infrastructure being tied into (upstream/downstream/outfalls)	YES			
	D	Proposed underground utility locations; bold (storm, sewer, force main, water, gas, electric, telecom, lighting)	YES			
	E	Proposed above-ground utility locations; bold (manholes, catch basins, utility poles, hydrants, transformers, riprap)	YES			
	F	Proposed storm culverts, outfalls, and riprap locations and sizes	YES			
	G	Storm/sewer structure labels must include: rim, inverts in, inverts out, pipe sizes, cardinal directions (N, E, S, W)	YES			
	H	Storm/sewer pipe labels must include: linear footage, pipe size, material, slope	YES			
	I	Flow directional arrows for storm & sewer pipes	NO	Flow direction can be determined by analyzing inverts		
	J	Proposed & existing site features shown that could conflict with proposed utilities (trees, signs, lightpoles, bollards, foundations, guiderails)	YES			
	K	All storm drains must be sized to convey the 25-year storm	YES			
	L	Sewer force main sizes and invert elevations	NO	No Force main proposed		
	M	Sewer pump station locations, model, rim, inverts, pipe sizes, cardinal directions (N,E,S,W); additional details and hydraulic calculations required for any Public pump station proposed.	NO	No pump stations proposed		
	N	Locations, sizes, and elevations of any: grease traps, oil-water separators, septic systems, drinking wells	NO	None proposed		
	O	Proposed water sizes labelled	NO	None proposed		
9		UTILITY PROFILES				
	A	Utility profiles required for all gravity storm drain and sewer pipes proposed: within the right-of-way, within private or public roads, for non-driveway culverts, and for any public infrastructure tie-ins	NO			
	B	Existing surface; dashed and screened	NO			
	C	Proposed surface; continuous and bold	NO			
	D	Storm/sewer structure labels must include: rim, inverts in, inverts out, pipe sizes, cardinal directions (N, E, S, W)	NO			
	E	Storm/sewer pipe labels must include: linear footage, pipe size, material, slope	YES			
	F	Existing and proposed gravity pipe crossings shown; sizes labelled and depths/clearance annotated	YES	No pipe crossings proposed		
	G	Existing and proposed electric/water/telecom/gas crossings shown at approximate depths; sizes labelled and depths/clearance annotated	YES	None proposed		
10		DETAILS				
	A	Road section detail, including pavement/gravel depths & cross slopes	YES			
	B	Sidewalk, paver, crosswalk, and any other pavement section details	N/A	None proposed		
	C	Pavement sawcut & shi lap details	YES			
	D	Utility trench/backfill detail	YES			
	E	All site feature details; curbing, retaining walls, fencing, guiderails, dumpsters, etc.	YES			
	F	Signage, striping, and ADA details	N/A	None proposed		
	G	E&S notes and details	YES			
	H	Utility structure details (manholes, cleanouts, fittings, handholes, transformer pads, hydrants)	YES			
	I	Storm outfall & riprap details	YES			
	J	Drainage ditch cross section identifying minimum depth, minimum bed width, and maximum side slopes	NO			
	K	Pump station, grease trap, oil-water separator, septic, drinking well details	N/A	None proposed		
	L	Conduit section details	N/A	None proposed		
11		LANDSCAPING, LIGHTING & PHOTOMETRIC PLANS				
	A	As required by ordinance; at a minimum: locations, counts, lighting models, and landscaping species must be identified	YES	Revegetation plan provided		
	B	Landscaping & lighting details	YES	Revegetation plan provided		

12	DOCUMENTS/REPORTS/CALCULATIONS					
A	On initial preliminary submittal applications, applicant must submit a development review and inspection fee. Applicant to coordinate fee amount with City Planner prior to submittal. This fee will be drawn against to cover the following type of services throughout the project life cycle (and may require replenishing): i. 3rd Party City Peer-Review ii. Site Inspections during the permitting process iii. Erosion & Sediment Control Inspections during construction iv. Right-of-Way Inspections during construction v. Site Punchlist/As-Built Inspections post-construction	To be determined				
B	Stormwater Management Report, including: 1. Predevelopment & Post-development Drainage Area Maps, including: a. Subdrainage areas delineated and labeled b. Points of Interest/Analysis shown and labeled c. Hatching for different land cover areas (impervious, pervious, gravel) within each applicable USDA soil boundary d. Time of concentration (Tc) paths & durations e. Four City-standardized stormwater summary tables 2. If any SWM water quality BMP or detention facility is proposed, hydrologic model exports/hydrographs must be submitted for the for the 2, 10, 25, & 100-year storm frequencies 3. Sizing calculations for any SWM water quality BMP or detention facility 4. A stormwater maintenance manual for any proposed SWM water quality BMP or detention facility, including: a. Annual maintenance requirements b. Annual inspection requirements by a licensed PE; noting that all inspection reports/logs need to be submitted to the Engineering Department by March 1st each following year, identifying what on-going maintenance has occurred and what remedial repairs are needed c. Signed Property Owner Agreement: including the current property owner's contact information and signature; it must be noted that all stormwater BMP maintenance requirements are linked to the property for perpetuity and transfer to any new ownership	Yes				
C	An approved 'Sewer Ability-to-Serve Letter' from the Engineering Department: i. Applicant to submit proposed sewer flow calculations per Maine's Subsurface Wastewater Disposal Rules, Chapter 241, Section 4 (Tables 4A & 4C)	N/A	No new buildings/sewer conveyance proposed			
D	A Performance Guarantee Cost Estimate utilizing Planning's template	YES				
E	For any Site Location of Development (SLODA) project, the applicant's submittal must mimic a formal submittal to DEP. Submit must abide to DEP's SLODA application and include DEP's SLODA Submittal Checklist (Form D)	N/A				
F	25-year hydraulic calculations for all storm conveyance infrastructure (pipes, culverts, drainage ditches); starting tailwater conditions/documentation must be clearly identifiec	YES				
K	Public sewer pump station sizing calculations and maintenance plan	N/A	No pump stations proposed			
M	Grease trap sizing calculations	N/A	No grease traps proposed			
N	Homeowner Association (HOA) agreement for any private road serving two (2) lots or more	N/A	No HOA			
O	Summary list & copy of any required DOT/DEP/USACE permits & approvals	YES				

Attachment 4
Location Map

RECREATIONAL PIER JORDAN POINT



The Maine Department of Transportation provides this publication for information only. Reliance upon this information is at user risk. It is subject to revision and may be incomplete depending upon changing conditions. The Department assumes no liability if injuries or damages result from this information. This map is not intended to support emergency dispatch.

0.25
Miles
1 inch = 0.28 miles

Date: 6/8/2023
Time: 3:54:08 PM

Attachment 5
Deed

Book 1484

Excepting and reserving, however, from the last parcel described a small triangular parcel of land in the rear of the premises of Charles E. Roberts which triangular lot has a base of about 50 feet in length which is an extension of the northwesterly boundary of said Roberts lot; and has an altitude of about 100 feet in length which is the northeasterly side thereof and is located in the center of a ditch long supposed to be the rear line of the Roberts lot; and which has a hypotenuse which is coincident with the rear line of said Roberts lot and is the southerly side of said triangle, being the same premises conveyed by Blanche T. Beuscher and Olga M. DeHaven to the said Kenneth A. Littlefield and Barbara A. Littlefield, by their deed of mortgage dated on the twentieth (20) day of February 1958 and recorded in York Registry of Deeds, Book 1354, Page 447, but described under the aforementioned reference only as three certain lots or parcels of land, with buildings thereon, and mentioned as being the same premises conveyed on February 20th, 1958, by Kenneth A. and Barbara A. Littlefield to Blanche T. Beuscher and Olga M. DeHaven, by Warranty Deed, Recorded Book 1362, Page 112; and that such entry was made and possession taken as aforesaid, for the avowed purpose of foreclosing said mortgage, because of a breach of the condition thereof.

Raymond E. Mealey

Madeline C. Mealey

STATE OF MAINE

COUNTY OF YORK, SS March 24, 1962 Signed and sworn to by the said Raymond E. Mealey and Madeline C. Mealey,

Before me. Maurice L. Shibbes Notary Public (L.S.)
My Commission Expires Sept. 2, 1966

Recorded according to the original received April 6, 1962 at 11h. 58m. A. M.

BL

KNOW ALL MEN BY THESE PRESENTS, THAT, COUVENT de la PRESENTATION de MARIE, a corporation organized and existing under the laws of the State of Maine and located at Biddeford, in the County of York and said State of Maine, in consideration of One Hundred Fifty Thousand Dollars (\$150,000.00) paid by THE FRANCISCAN FATHERS OF MAINE, a corporation duly organized by law and having an established place of business at 605 Pool Road, in said Biddeford, the receipt whereof it does hereby acknowledge, does hereby give, grant, bargain, sell and convey, unto the said The Franciscan Fathers of Maine, its successors or assigns, forever, the following described property:

Parcel 1

A certain lot or parcel of land, with the buildings thereon, situated in

I.R.S.
One
Hundred
and
Sixty
Five
Dollars

said Biddeford and bounded and described as follows:

BEGINNING at a point on the Northerly side of the Hill's Beach Road, so-called, in said Biddeford, said point being the Westerly corner of the land herein conveyed and being in the Southerly line of land formerly of one Finney and now of Couvent de la Presentation de Marie, and being marked by an iron stake driven into the ground; thence South eighty-two degrees eight minutes East (S 82° 08' E) two hundred fourteen and forty-six one-hundredths (214.46) feet by said Hill's Beach Road to an iron stake driven into the ground; thence North eighty-one degrees forty-two minutes East (N 81° 42' E) five hundred forty-five and five one-hundredths (545.05) feet by said Hill's Beach Road to an iron stake driven into the ground; thence South fifty degrees thirty-five minutes East (S 50° 35' E) two hundred thirty-eight and forty-seven one-hundredths (238.47) feet by said Hill's Beach Road to an iron stake driven into the ground and other land of this Grantor; thence North eighty-six degrees twenty-seven minutes East (N 86° 27' E) sixteen and ninety-one one-hundredths (16.91) feet by said other land of this Grantor to a drill hole into the ledge and land now or formerly of John J. Traynor; thence North three degrees thirty-three minutes West (N 3° 33' W) one hundred thirty-three and five tenths (133.5) feet by said land of John J. Traynor, land now or formerly of one Michael Reddy and a reserved street as shown on a plan of land of William A. Chadbourne, drawn by Z. G. Staples, July 14, 1874, and recorded in York County Registry of Deeds in Plan Book 2, Page 40, and by the stone wall to an iron stake driven into the ground at the Southwesterly corner of land now or formerly of William Libby; thence North twenty-two degrees forty-one minutes West (N 22° 41' W) one hundred twenty-eight and one-half (128½) feet by said land of William Libby, other land of this Grantor and by the stone wall to an angle in said stone wall; thence North fifty-five degrees fifty-seven minutes East (N 55° 57' E) three hundred ninety-three and nineteen one-hundredths (393.19) feet by said other land of this Grantor, by a reserved street as shown on said plan, and land now or formerly of Thomas Gallagher and by the fence and wall to an iron stake driven into the ground at the top of the bank; thence this same course to Saco River; thence Northerly, Northwesterly and Westerly by said River to an iron stake driven into the ground at a point of ledge and to said other land of this Grantor; thence South forty-one degrees East (S 41° E) three hundred thirty-nine and seven tenths (339.7) feet to an iron stake driven into the ground at the stone wall; thence South sixty-three degrees West (S 63° W) fifty-six and three tenths (56.3) feet by said stone wall to an iron stake driven into the ground; thence South sixty-nine degrees fifteen minutes West (S 69° 15' W) one hundred sixteen and one-half (116½) feet by said

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wall to an iron stake driven into the ground; thence South fifty-three degrees
 forty minutes West (S 53° 40' W) one hundred twenty-eight and five tenths
 (128.5) feet by said wall to an iron stake driven into the ground; thence South
 sixty-eight degrees nineteen minutes West (S 68° 19' W) one hundred and four
 tenths (100.4) feet by said wall to an iron stake driven into the ground; thence
 North eighty-eight degrees four minutes West (N 88° 04' W) seventy-seven and
 nine tenths (77.9) feet by said wall to an iron stake driven into the ground;
 thence South seventy-four degrees twenty-three minutes West (S 74° 23' W)
 seventy-nine and two tenths (79.2) feet by said wall to an iron stake driven
 into the ground; thence South fifty-seven degrees nineteen minutes West (S 57°
 19' W) ninety-five and one tenth (95.1) feet by said wall to an iron stake driven
 into the ground; thence South sixty-four degrees ten minutes West (S 64° 10' W)
 one hundred six and nine tenths (106.9) feet by said wall to an iron stake driven
 into the ground; thence South sixty-five degrees thirty minutes West (S 65° 30'
 W) one hundred forty-four and eight tenths (144.8) feet by said wall to the point
 of beginning. The last ten courses described being bounded by said other land
 of this Grantor. The above courses refer to the 1931 magnetic meridian.

Parcel 2

Also another certain lot of land, bounded and described as follows:

BEGINNING at an iron stake driven into the ground at the Southerly corner
 of the above described parcel and on the Northerly side of said Hill's Beach
 Road; thence North eighty-six degrees twenty-seven minutes East (N 86° 27' E)
 sixteen and ninety-one one-hundredths (16.91) feet by said above described par-
 cel to a drill hole in the ledge and land now or formerly of John J. Traynor;
 thence South three degrees thirty-three minutes East (S 3° 33' E) fifteen and
 seventy-five one-hundredths (15.75) feet by said land of Traynor to said Hill's
 Beach Road; thence North fifty degrees thirty-five minutes West (N 50° 35' W)
 twenty-three and eleven one-hundredths (23.11) feet by said road to the point
 of beginning.

Parcel 3

Also another certain lot or parcel of land, situated at Hill's Beach, so-
 called, in said Biddeford, and adjoining the first above described parcel,
 bounded and described as follows:

BEGINNING at the Northwest corner of Lot #18, on a plan of land made
 by Z. G. Staples for William A. Chadbourne, dated July 14, A. D. 1874, at land
 of the late Selucus Adams and S. S. Mitchell; thence running Southerly one hun-
 dred (100) feet to Lot #17 on said plan; thence Westerly by last named lot fifty
 (50) feet; thence North forty-eight degrees West (N 48° W) forty-eight (48) feet
 by land of said Adams; thence North fifty-one and one-half degrees East (N 51½°
 E) one hundred six (106) feet by land of said Adams and Mitchell to the place of

Book 1484

beginning, and containing about five thousand four hundred and twenty-four (5,424) square feet, being the same parcel of land as described in deed of James B. Marr and others to Caroline P. Adams, dated April 1, 1891 and recorded in York County Registry of Deeds in Book 443, Page 88.

The above described premises were conveyed to the within Grantor by Les Soeurs de la Presentation de Marie by deed of Warranty, dated September 30, 1932 and recorded in York County Registry of Deeds in Book 834, Page 87.

Parcel 4

Also another certain lot or parcel of land, together with the buildings thereon, situated in said Biddeford and known as the old Ralph Tristram Jordan place situated on the northeasterly side of the Pool Road, so-called, bounded on the southwesterly side by said Pool Road; southeasterly by the road to the beach and land formerly of Mrs. Horace Woodman; on the northeasterly side by the Saco River; and on the northwesterly side by land, now or formerly of J. B. Coolbroth.

For more particular description of the premises hereinabove last described, reference is made to decree of Supreme Judicial Court of Maine in the matter of Hanford E. Finney against claimants known and unknown dated October 3, 1919, and recorded in said York County Registry of Deeds, Book 671, Page 374.

All fixtures and articles of whatever nature permanently attached to said buildings are included in this conveyance.

TO HAVE AND TO HOLD the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said The Franciscan Fathers of Maine, its successors or assigns, to its and their use and behoof forever.

AND it does COVENANT with the said Grantee, its successors or assigns, that it is lawfully seized in fee of the premises; that they are free of all encumbrances; that it has good right to sell and convey the same to the said Grantee to hold as aforesaid; and that it shall and will Warrant and Defend the same to the said Grantee, its successors or assigns forever, against the lawful claims and demands of all persons.

IN WITNESS WHEREOF, the said Couvent de la Presentation de Marie has caused this instrument to be executed and its corporate seal affixed thereto by - - its Treasurer, thereunto duly authorized, this eighteenth day of April, in the year of our Lord one thousand nine hundred and sixty-two.

Signed, Sealed and Delivered
in Presence of

Harold D. Carroll

COUVENT de la PRESENTATION de
MARIE
(Corporate Seal)
By Sister St. Leon of Rome
Leona Lafleur
Its Treasurer, thereunto duly
authorized.

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Attachment 6
Letter of Financial Capacity



UNIVERSITY OF
NEW ENGLAND

Biddeford Campus
11 Hills Beach Road
Biddeford, ME 04005
(207) 283-0171 T

Portland Campus
716 Stevens Avenue
Portland, ME 04103
(207) 797-7261 T

April 14, 2025

To Whom It May Concern:

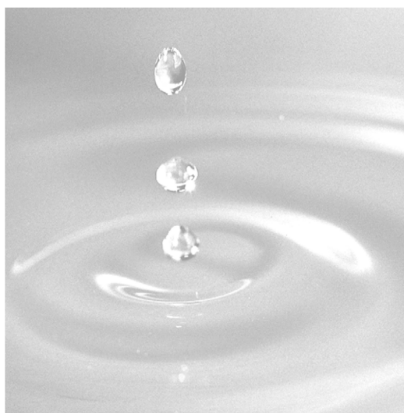
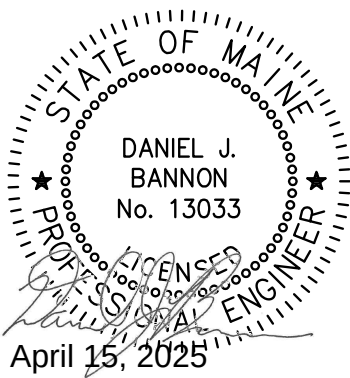
The University of New England plans to construct a research pier facility, along with an associated access road, on its Biddeford Campus. This new facility will have an estimated total project cost of \$5,500,000. The University of New England has received a federal appropriation for \$3,500,000 for this project, and another \$1,000,000 has already been received in private donations. The remainder of the project will be financed by the university.

Sincerely,

A handwritten signature in black ink, reading "Alan Thibeault", with a large, sweeping flourish above the name.

Alan Thibeault
Vice President for University Operations

Attachment 7
Stormwater Management Report



Daniel J. Bannon

B. M. McQuinn

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5.	Stormwater Management	10
6.	Conclusions	13

Appendices

- A. USDA NRCS Soil Survey Report
- B. Pre-Development HydroCAD Calculations
- C. Post-Development HydroCAD Calculations
- D. Inspection and Maintenance Plan

Drawings

- SW-01 PRE-DEVELOPMENT DRAINAGE PLAN
- SW-02 POST-DEVELOPMENT DRAINAGE PLAN
- SW-03 TREATMENT AREA PLAN

- C-001 EXISTING CONDITIONS PLAN
- C-002 DEMOLITION AND CONSTRUCTION STAGING
- C-003 SITE PLAN
- C-004 GRADING AND DRAINAGE PLAN
- C-005 EROSION CONTROL PLAN
- C-006 ACCESS ROAD PLAN AND PROFILE STA 1+00 TO MATCHLINE STA 4+00
- C-007 ACCESS ROAD PLAN AND PROFILE MATCHLINE STA 4+00 TO STA 6+60
- C-008 ACCESS ROAD TYPICAL SECTION
- C-009 ACCESS ROAD SECTIONS 2+00 TO 3+75
- C-010 ACCESS ROAD SECTIONS 4+00 TO 5+75
- C-011 SITE DETAILS I
- C-012 EROSION CONTROL NOTES
- C-013 EROSION CONTROL DETAILS I
- C-014 EROSION CONTROL DETAILS II
- C-015 REVEGETATION PLAN
- C-016 REVEGETATION NOTES, DETAILS, AND SCHEDULES

DJB:BM:bdp

B:\Working\UNIVERSITY OF NEW ENGLAND\2203703 UNE Marine Science Center Pier\06_REGULATORY\Stormwater\UNE MSC Stormwater
Report Rev. 04-15-2025.docx

1. Introduction

The University of New England (UNE) campus is located along the Saco River in Biddeford, ME. The Marine Science Center is located on the waterfront at the easterly end of campus (Fig. 1) approximately opposite Camp Ellis in Saco. To support MSC research activities, UNE proposes to construct a pier from the shore adjacent to the MSC into the Saco River to provide an all-tide access facility for small and shallow draft vessels (skiffs, landing craft, up to approximately 3-foot draft), with tidally-restricted access for larger vessels.



Fig. 1. Aerial Photo of University of New England Marine Science Center Waterfront

In 2008-2010, UNE worked with Baker Design Consultants (BDC) to undertake a concept planning study for the proposed pier. In this study, nine alternative designs were developed for water access facilities along the UNE waterfront consisting of various configurations of piers, boat ramps, and upland access and support facilities. The alternatives were evaluated on a range of criteria including technical criteria, functionality, constructability, cost and others to identify a preferred facility location. The nine alternatives evaluated through this study are shown in Fig. 2. At the conclusion of this study, Site 7 (directly in front of the Marine Science Center building) was identified as the preferred facility location to develop a new pier facility that would consist of a pile-supported pier extending from shore out into the Saco River.

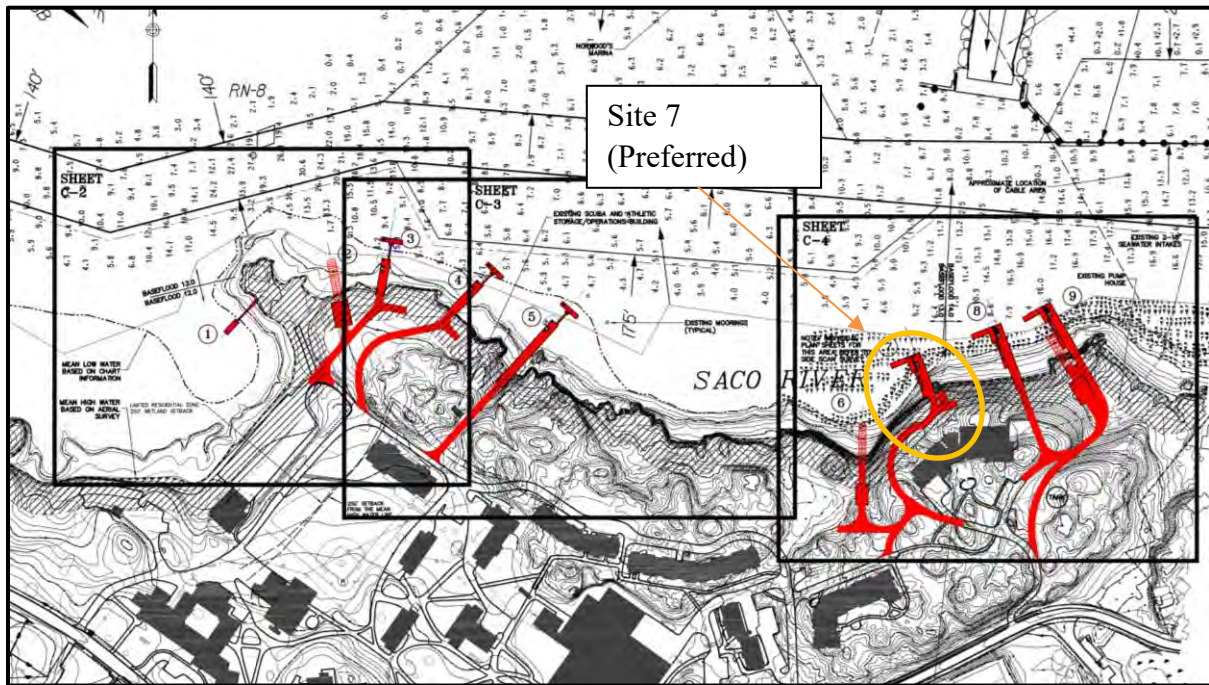


Fig. 2. Pier Location Alternatives from BDC Feasibility Study

In 2015-2016, UNE worked with BDC to undertake further design studies for a pier at the preferred location to investigate structure dimensions, orientation, rough order of magnitude costs, and impacts to coastal resources and features. As part of this evaluation, a preliminary geotechnical investigation was undertaken by GZA Geoenvironmental that included one water boring, two probes, and four test pits. At the conclusion of this phase of work, three alternative layouts were developed and reviewed with staff from UNE, the City of Biddeford, and the Saco River Corridor Commission and memorialized in a memo from BDC dated March 22, 2016.

In February 2022, UNE resumed design of the new proposed pier working with GEI Consultants to confirm conceptual layout for the pier and access road, and undertake design through 100% design and bid documents, as well as coordinate with UNE's consultant Site Design Associates for permitting of the proposed facility.

The proposed facility includes the following:

1. A pile supported pier structure extending from shore into the Saco River. The proposed pier includes an approximately 130-foot-long approach section extending from shore and an 80-foot long pier head section oriented roughly parallel to the direction of flow in the river. The pier consists of a concrete superstructure on steel pipe piles, with timber fender piles for vessel berthing and floating docks, and a pile supported gangway lifting beam to allow the gangway ramp to be temporarily removed from the water.

2. A floating dock system consisting of one 8-foot by 24-foot float, one 8-foot by 26-foot 10-inch float, and one 12-foot by 30-foot gangway landing float to provide all-tide vessel access for UNE's vessels on the west side of the pier, and a single 6-foot by 20-foot floating dock to provide a tie-up location for the City of Biddeford Fire Boat on the east side of the pier.
3. An 80-foot by 5-foot gangway to provide ADA compliant access to the float system.
4. An upland access road connecting the existing road at the MSC to the proposed pier, including associated site grading, drainage, and stormwater management features.

2. Methodology

Technical Release No. 22 (TR20) was used to calculate the existing and developed runoff from the project area. Hydrographs have been generated for the 2, 10, and 25-year frequency design storm events utilizing the NRCS Type III storm distribution and the 24-hour regional data from York County's rainfall data as required by MaineDEP. The rainfall amounts for York County are listed below:

<u>Table 1-Existing</u> 24 Hour Rainfall Frequency			
Rainfall amounts in Inches			
<i>Design Storm</i>	<i>2-Year</i>	<i>10-Year</i>	<i>25-Year</i>
	3.21	4.83	6.11

The following guidelines were utilized in the design of the site's stormwater measures and BMPs (MaineDEP Stormwater Guidelines, Chapter 500):

1. Waiver of the flooding standard. A project is eligible for a waiver from the flooding standard if it discharges to a coastal wetland, a great pond, or a major river segment. A waiver is available for a project in the watershed of a coastal wetland, a great pond, or a major river segment provide the applicant demonstrates that the project convey stormwater exclusively in sheet flow, in a manmade open channel or in a piped system directly into one of these resources.
2. The redistribution of stormwater discharges standard will be met by discharging to a level spreader. The peak stormwater flow rate to a level spreader due to runoff from a 10-year, 24-hours storm must be less than 0.25 cubic feet per second (0.25 cfs) per foot length of level spreader.
3. Project will meet the erosion and sedimentation control standards found in Maine Department of Environmental Protection Guidelines, Chapter 500, Appendix A.

3. Pre-Development Conditions

1. Land Use

Presently, the site is the location of the University of New England Girard Marine Science Center. However, the existing buildings and parking lots exist outside of the limits of this project. Runoff generated from the buildings and parking lots is conveyed via underground pipes to the south, away from the Saco River.

The proposed project limits currently consists of predominately wooded areas. The southeast corner of the site contains gravel path.

2. Topography

The site is mainly comprised of steeply sloped wooded areas with slopes near 20% for most of the site. The site mostly slopes to the north towards the Saco River/Atlantic Ocean. Per the NRCS WebSoil Survey, the site is comprised almost completely of sandy, stony soil. These sandy soils are rated as Hydrologic Group D. A copy of the Web Soil Survey can be found in the Appendices.

3. Existing Drainage Area

Presently, the runoff from the site flows via overland flow to three different points of analysis, hereafter known as DP1, DP2 and DP3, with associated drainage areas 1S, 2S and 3S, respectively. The predevelopment drainage areas are described below:

A map entitled Pre-Development Drainage Plan is included in the Appendix of this report. Additionally, the HydroCAD model and calculations can also be found in the Appendix.

Predevelopment Area 1S is the smallest of the existing drainage areas and is ± 0.460 acres which all consists of wooded areas. Runoff from Predevelopment Area 1S flows via overland flow from the rear of the Girard Marine Science Center to the northeast and directly into the Saco River/Atlantic Ocean at DP1.

Predevelopment Area 2S is ± 0.637 acres and can be found in the middle of the site. Predevelopment Area 2S consists of all wooded areas. Runoff from Predevelopment Area 2S flows via overland flow from a ledge in the middle of the site to the north to the Saco River/Atlantic Ocean at DP2.

Predevelopment Area 3S is ±1.461 acres and comprises the eastern most portion of the site. Predevelopment Areas 3S consists mostly of wooded areas and contains a gravel path leading to the lower lying wetlands and sand beaches along the Saco River/Atlantic Ocean. Runoff from Predevelopment Area 3S from the paved walkway at the Girard Marine Science Center to the northeast to the Saco River/Atlantic Ocean at DP3.

Tables 2A, 2B and 2C below list the total runoff for each Predevelopment Area:

<u>Table 2A-Predevelopment Area 1S Runoff</u>				
Rainfall amounts in cubic feet per second				
Rainfall amounts in Inches				
<i>Pre-Development Total</i>	<i>2-Year</i>	<i>10-Year</i>	<i>25-Year</i>	<i>100-Year</i>
	0.71	1.44	2.07	3.31

<u>Table 2B-Predevelopment Area 2S Runoff</u>				
Rainfall amounts in cubic feet per second				
Rainfall amounts in Inches				
<i>Pre-Development Total</i>	<i>2-Year</i>	<i>10-Year</i>	<i>25-Year</i>	<i>100-Year</i>
	0.74	1.51	2.17	3.50

<u>Table 2C-Predevelopment Area 3S Runoff</u>				
Rainfall amounts in cubic feet per second				
Rainfall amounts in Inches				
<i>Pre-Development Total</i>	<i>2-Year</i>	<i>10-Year</i>	<i>25-Year</i>	<i>100-Year</i>
	2.39	4.58	6.44	10.05

4. Post Development Conditions

1. Land Use

When fully developed, the site will contain the following improvements:

- a. A pile supported pier structure extending from shore into the Saco River. The proposed pier includes an approximately 130-foot-long approach section extending from shore and an 80-foot long pier head section oriented roughly parallel to the direction of flow in the river. The pier consists of a concrete superstructure on steel pipe piles, with timber fender piles for vessel berthing and floating docks, and a pile supported gangway lifting beam to allow the gangway ramp to be temporarily removed from the water.
- b. A floating dock system consisting of one 8-foot by 24-foot float, one 8-foot by 26-foot 10-inch float, and one 12-foot by 30-foot gangway landing float to provide all-tide vessel access for UNE's vessels on the west side of the pier, and a single 6-foot by 20-foot floating dock to provide a tie-up location for the City of Biddeford Fire Boat on the east side of the pier.
- c. An 80-foot by 5-foot gangway to provide ADA compliant access to the float system.
- d. An upland superelevated access road connecting the existing road at the MSC to the proposed pier, including associated site grading, drainage, and stormwater management features.

These improvements will result in a total increase in impervious of 0.249 acres. The increase in impervious area will be managed by the two bioretention filter cells to the north of the Girard Marine Science Center. Runoff will be conveyed to the bioretention filter cells via proposed vegetated swales along the low side of the superelevated access road.

The bioretention filter cells will slowly release captured stormwater via underground pipe into the Saco River/Atlantic Ocean.

2. Drainage Areas

The map entitled Post-Development Drainage Plan delineating all developed drainage areas can be found in the Appendix. For analysis, the site was broken up into 5 different drainage areas hereafter known as 1S, 2S, 3S, 4S, and 5S.

Post Development Area 1S contains the area that conveys runoff to the western Bioretention Filter Cell B. This area contains impervious areas from the access road and the proposed vegetated areas behind the Girard Marine Science Center. Runoff is conveyed to the Bioretention Filter Cell B via vegetated swale. Runoff captured by the bioretention filter cell will be treated and slowly released via underground pipe to the outfall under the proposed pier and into the Saco River/Atlantic Ocean near DP1.

Post Development Area 2S contains the areas to the northwest of the site that conveys runoff via over land flow from the Girard Marine Science Center to DP1. This area contains small impervious areas as it contains the northern shoulder of the access road and the transition from access road to pier. Runoff from this area will not be managed for water quality or peak rate reduction.

Post Development Area 3S contains the area that conveys runoff to the eastern Bioretention Filter Cell A. This area contains impervious area from the access road and the proposed vegetated areas behind and to the east of the Girard Marine Science Center. Runoff is conveyed to the Bioretention Filter Cell A via vegetated swale. Runoff captured by the bioretention filter cell will be treated and slowly released via underground pipe to the outfall to the north where it will run through a level spreader to further reduce peak flow rate. Runoff will leave the level spreader and reach the Saco River/Atlantic Ocean via overland flow near DP2.

Post Development Area 4S contains the area to the northeast of the site that conveys runoff via over land flow from the Girard Marine Science Center to DP2. This area contains small impervious areas as it contains the northern shoulder of the access road and the level spreader. Runoff from this area will not be managed for water quality or peak rate reduction.

Post Development Drainage Area 5S contains the area to the eastern portion of the site. This this area contains the southernmost portion of the proposed access road and the existing gravel path. Runoff from this area will be conveyed via overland flow to the Saco River/Atlantic Ocean at DP3.

5. Stormwater Management

1. Stormwater Quantity

The bioretention filter cells are proposed to reduce the peak runoff rate of the 2, 10, and 25-year storms and to treat stormwater runoff from the site in accordance with DEP standards. Since runoff from this development outlets directly to a tidal portion of a major river segment, the flooding standards can be waived by DEP, and typically are waived by the city for projects on this parcel. Despite this, efforts were made to minimize the peak runoff rate from the site. The tables below summarize the peak rate of runoff for the site:

TABLE No. 3A

Managed Total Peak Discharge Summary of the Proposed Conditions to Discharge Point DP1

Storm Event	2-Year		10-Year		25-Year		100-Year	
	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
Peak Runoff Rate (cfs)	0.71	1.02	1.44	1.85	2.07	2.54	3.31	3.88

TABLE No. 3B

Managed Total Peak Discharge Summary of the Proposed Conditions to Discharge Point DP2

Storm Event	2-Year		10-Year		25-Year		100-Year	
	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
Peak Runoff Rate (cfs)	0.74	1.24	1.51	2.31	2.17	3.22	3.50	4.98

TABLE No. 3C

Managed Total Peak Discharge Summary of the Proposed Conditions to Discharge Point DP3

Storm Event	2-Year		10-Year		25-Year		100-Year	
	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
Peak Runoff Rate (cfs)	2.39	2.23	4.58	4.26	6.44	5.99	10.05	9.35

The tables above show a relatively minor increase in the peak rate of stormwater runoff subsequent to development. The northern most outfall will discharge to a level spreader which will create sheet flow into the Saco River/Atlantic Ocean. The western most outfall will outlet through the pier concrete abutment. Because the area downgradient of the outlets is stable rock, there will be no impacts due to the minor

increase in runoff. The reality is that stormwater runoff from each of the subcatchments adjacent to the river is not a total point discharge in either the existing or proposed conditions, and is dispersed over the entire frontage along the river.

Since this development outlets directly to a major river segment/ocean, the flooding standard is typically waived by DEP (Chapter 500-Section F.3.a). The city also typically waives the need to provide detention of stormwater runoff from this parcel of UNE's property due to the tidal nature of the receiving waters. A waiver has been requested.

2. Stormwater Quality

The project proposes to treat 76% of impervious development and 72% of all new development. As discussed in the preapplication meeting, the proposed development will be treated as a linear portion of the project. For a linear project, the minimum treatment level required is 70% for impervious development and 50% of all new development. Water Quality treatment level are found in the tables below.

TABLE No. 4
Water Quality Treatment Level

Subcatchment Area	Impervious Area (SF)	Landscaped Area (SF)	Developed Area (SF)	Filter Area Required (SF)	Filter Area Provided (SF)	Water Quality Volume Required (CF)	Water Quality Volume Provided (CF)	Sediment Forebay Volume Required (CF)	Sediment Forebay Volume Provided (CF)	BMP
1S	4,917	4,915	9,832	344	854	574	200	144	115	Bioretention Filter
2S	1,238	10,250	11,488	267	-	445	-			-
3S	4,476	8,889	13,365	402	565	669	380			Bioretention Filter
4S	295	17,234	17,529	359	-	599	-			-
5S	6,273	52,906	59,179	1,372	-	2,286	-			-
Total Treated	13,071	13,804	80,203	930	-	1,549				
Total Developed Impervious Area	17,199									
Total Developed Area	111,393									
Percent Developed Area Treated	72%									
Percent Developed Impervious Area Treated	76%									

3. Erosion and Sedimentation Control

BMP's such as stabilized construction entrance, silt fence and/or filter berms of erosion control mix, riprap pipe inlet and outlet protection, turf reinforcement matting, mulch and permanent seeding will be used to prevent erosion and downstream migration of sediment during construction. The locations of temporary and permanent erosion control measures are erosion and sedimentation control notes

and details are shown on the design drawing set.

4. Inspection and Maintenance

The University of New England will be responsible for maintaining the stormwater facilities for the project. An Inspection and Maintenance Plan is included in the Appendix. The plan includes a draft of the Stormwater Drainage System Maintenance Agreement, to be finalized and recorded as a condition of approval.

6. Conclusions

The stormwater management for this project included a variety of BMPs to control both the quantity and quality of stormwater runoff. The HydroCAD calculations show a minimal increase in the stormwater runoff from the proposed site however the Stormwater Quantity requirement can be waved since this development discharges directly to a major river segment/ocean, the flooding standards can be waived (Chapter 500-Section F.3.a).

Stormwater treatment BMPs have been designed to treat stormwater runoff from more than 70% of the developed impervious area with additional treatment credit from the implementation of Low Impact Development Measures. Based on the information provided, no adverse impacts to downstream receiving bodies are anticipated.

Appendix A

NRCS Web Soil Survey Report



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **York County, Maine**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



MAP 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 1:20,000.

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: York County, Maine
Survey Area Data: Version 21, Aug 30, 2022

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

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ba	Beaches, sand	0.3	5.5%
LyC	Lyman-Rock outcrop complex, 8 to 15 percent slopes	1.7	27.7%
LyE	Lyman-Rock outcrop complex, 15 to 80 percent slopes	3.3	54.8%
UH	Urban land-Hooksan complex, 0 to 8 percent slopes	0.2	3.1%
W	Water bodies	0.5	8.9%
Totals for Area of Interest		6.1	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

York County, Maine

Ba—Beaches, sand

Map Unit Setting

National map unit symbol: 2y080
Elevation: 0 to 20 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Beaches, sandy surface: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Beaches, Sandy Surface

Setting

Landform: Back-barrier beaches, barrier beaches, beaches, shores
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Beach sand

Typical profile

C1 - 0 to 10 inches: sand

Properties and qualities

Slope: 0 to 8 percent
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Very frequent
Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 0.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: Unranked

LyC—Lyman-Rock outcrop complex, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2trqj
Elevation: 0 to 790 feet
Mean annual precipitation: 36 to 65 inches
Mean annual air temperature: 36 to 52 degrees F

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Frost-free period: 60 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Lyman, very stony, and similar soils: 62 percent

Rock outcrop: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lyman, Very Stony

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountaintop, mountainbase, side slope, crest

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 3 inches: loam

E - 3 to 5 inches: fine sandy loam

Bhs - 5 to 7 inches: loam

Bs1 - 7 to 11 inches: loam

Bs2 - 11 to 18 inches: channery loam

R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent

Surface area covered with cobbles, stones or boulders: 1.5 percent

Depth to restrictive feature: 11 to 24 inches to lithic bedrock

Drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Ecological site: F144BY701ME - Shallow Till

Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountaintop, mountainbase, side slope, crest

Down-slope shape: Convex

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Across-slope shape: Convex

Parent material: Igneous and metamorphic rock

Typical profile

R - 0 to 10 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: 0 inches to lithic bedrock

Capacity of the most limiting layer to transmit water (Ksat): Very low to very high
(0.00 to 14.17 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Ecological site: F144BY801ME - Rockland (reserved)

Hydric soil rating: Unranked

LyE—Lyman-Rock outcrop complex, 15 to 80 percent slopes

Map Unit Setting

National map unit symbol: 2trqp

Elevation: 0 to 980 feet

Mean annual precipitation: 36 to 65 inches

Mean annual air temperature: 36 to 52 degrees F

Frost-free period: 60 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Lyman, very stony, and similar soils: 60 percent

Rock outcrop: 30 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lyman, Very Stony

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountaintop, mountainflank, side slope, crest

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 3 inches: loam

E - 3 to 5 inches: fine sandy loam

Bhs - 5 to 7 inches: loam

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Bs1 - 7 to 11 inches: loam
Bs2 - 11 to 18 inches: channery loam
R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 15 to 80 percent
Surface area covered with cobbles, stones or boulders: 1.5 percent
Depth to restrictive feature: 11 to 24 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144BY701ME - Shallow Till
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop, mountainflank, side slope, crest, free face
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Igneous and metamorphic rock

Typical profile

R - 0 to 10 inches: bedrock

Properties and qualities

Slope: 15 to 80 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Very low to very high (0.00 to 14.17 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Ecological site: F144BY801ME - Rockland (reserved)
Hydric soil rating: Unranked

UH—Urban land-Hooksan complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2x111
Elevation: 0 to 50 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land, coastal: 50 percent
Hooksan and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land, Coastal

Setting

Landform: Dunes
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

M - 0 to 10 inches: cemented material

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Frequency of flooding: Rare
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Description of Hooksan

Setting

Landform: Dunes
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Side slope, base slope, crest
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Sandy eolian deposits

Typical profile

C1 - 0 to 20 inches: sand
C2 - 20 to 30 inches: sand
C3 - 30 to 64 inches: sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (14.17 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R149BY002MA - Coastal Dunes
Hydric soil rating: No

W—Water bodies

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

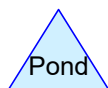
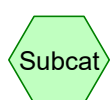
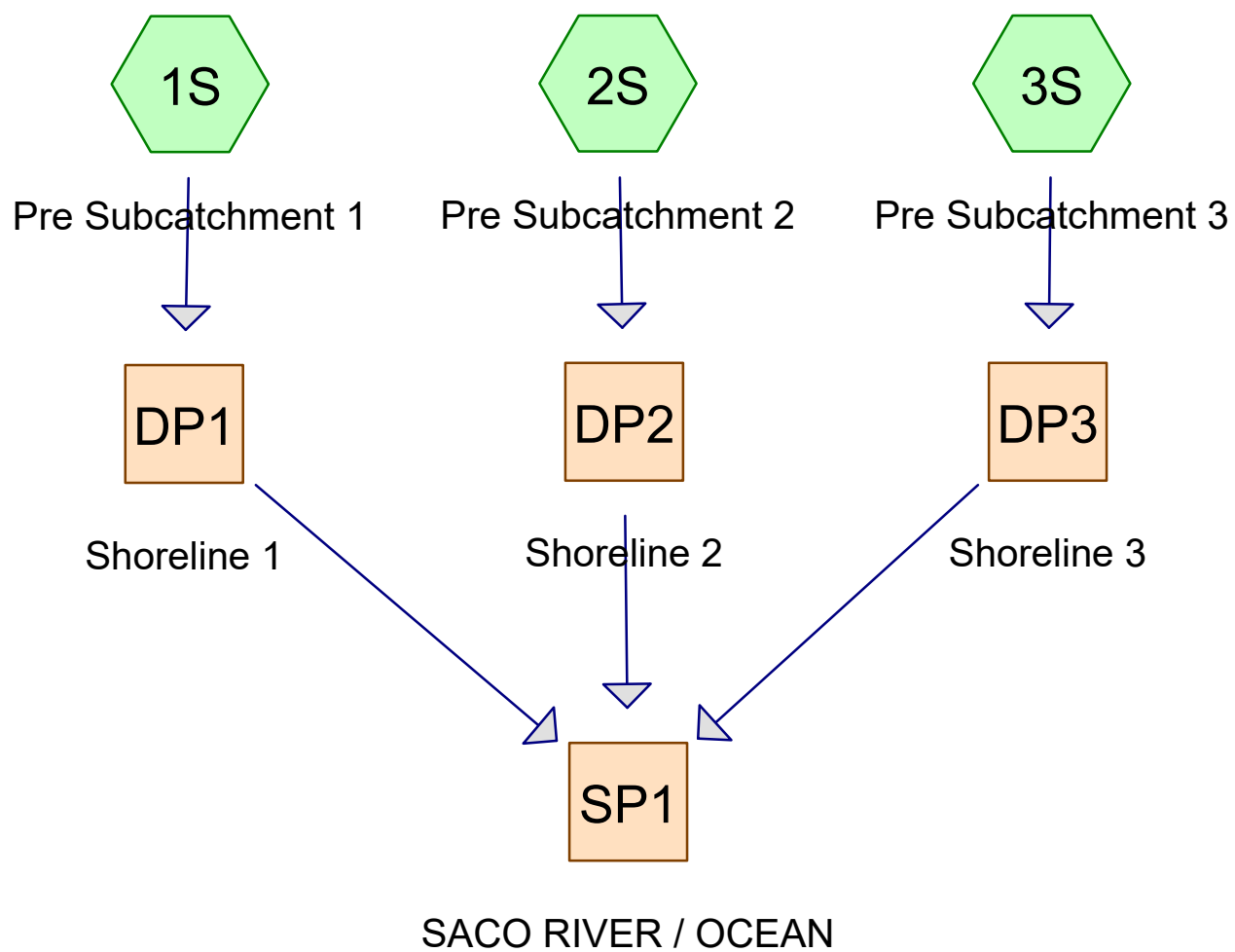
Description of Water

Setting

Landform: Hills

Appendix B

Pre Development HydroCAD Calculations



Routing Diagram for UNE-PreDrainage
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Project Notes

Defined 3 rainfall events from ME-York IDF

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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type III 24-hr		Default	24.00	1	3.30	2
2	10-yr	Type III 24-hr		Default	24.00	1	4.90	2
3	25-yr	Type III 24-hr		Default	24.00	1	6.20	2
4	100-yr	Type III 24-hr		Default	24.00	1	8.70	2

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.110	96	Gravel surface, HSG D (3S)
0.017	98	Roofs, HSG D (3S)
0.160	88	Sand Beach, HSG D (3S)
2.270	77	Woods, Good, HSG D (1S, 2S, 3S)
2.557	79	TOTAL AREA

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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	
2.557	HSG D	1S, 2S, 3S
0.000	Other	
2.557		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	0.110	0.000	0.110	Gravel surface	3S
0.000	0.000	0.000	0.017	0.000	0.017	Roofs	3S
0.000	0.000	0.000	0.160	0.000	0.160	Sand Beach	3S
0.000	0.000	0.000	2.270	0.000	2.270	Woods, Good	1S, 2S, 3S
0.000	0.000	0.000	2.557	0.000	2.557	TOTAL AREA	

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Type III 24-hr 2-yr Rainfall=3.30"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre Subcatchment 1 Runoff Area=20,023 sf 0.00% Impervious Runoff Depth>1.18"
Flow Length=138' Tc=4.0 min CN=77 Runoff=0.71 cfs 0.045 af

Subcatchment 2S: Pre Subcatchment 2 Runoff Area=27,744 sf 0.00% Impervious Runoff Depth>1.18"
Flow Length=198' Tc=12.7 min CN=77 Runoff=0.74 cfs 0.062 af

Subcatchment 3S: Pre Subcatchment 3 Runoff Area=63,622 sf 1.18% Impervious Runoff Depth>1.37"
Flow Length=445' Tc=7.0 min CN=80 Runoff=2.39 cfs 0.166 af

Reach DP1: Shoreline 1 Inflow=0.71 cfs 0.045 af
Outflow=0.71 cfs 0.045 af

Reach DP2: Shoreline 2 Inflow=0.74 cfs 0.062 af
Outflow=0.74 cfs 0.062 af

Reach DP3: Shoreline 3 Inflow=2.39 cfs 0.166 af
Outflow=2.39 cfs 0.166 af

Reach SP1: SACO RIVER / OCEAN Inflow=3.63 cfs 0.274 af
Outflow=3.63 cfs 0.274 af

Total Runoff Area = 2.557 ac Runoff Volume = 0.274 af Average Runoff Depth = 1.29"
99.33% Pervious = 2.540 ac 0.67% Impervious = 0.017 ac

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Type III 24-hr 2-yr Rainfall=3.30"

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Summary for Subcatchment 1S: Pre Subcatchment 1

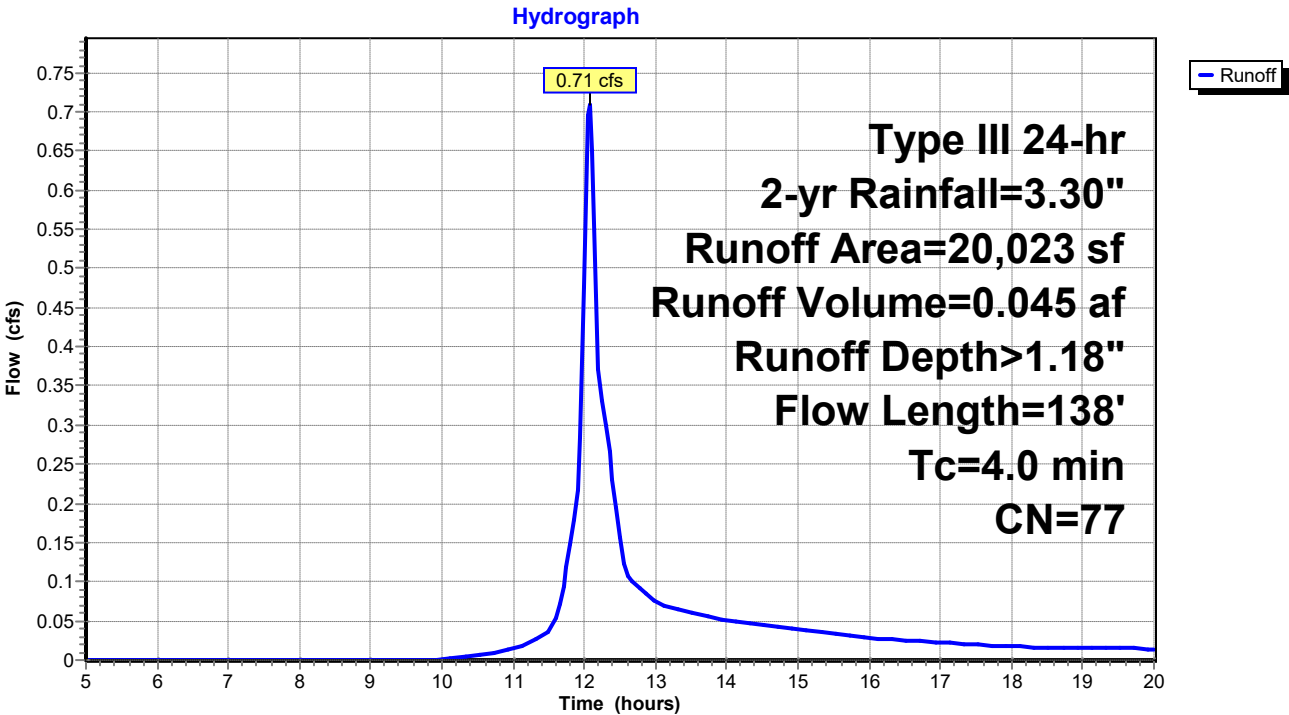
Runoff = 0.71 cfs @ 12.07 hrs, Volume= 0.045 af, Depth> 1.18"
Routed to Reach DP1 : Shoreline 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.30"

Area (sf)	CN	Description
20,023	77	Woods, Good, HSG D
20,023		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	20	0.1000	0.11		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
0.9	118	0.1780	2.11		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
4.0	138	Total			

Subcatchment 1S: Pre Subcatchment 1



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Type III 24-hr 2-yr Rainfall=3.30"

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Summary for Subcatchment 2S: Pre Subcatchment 2

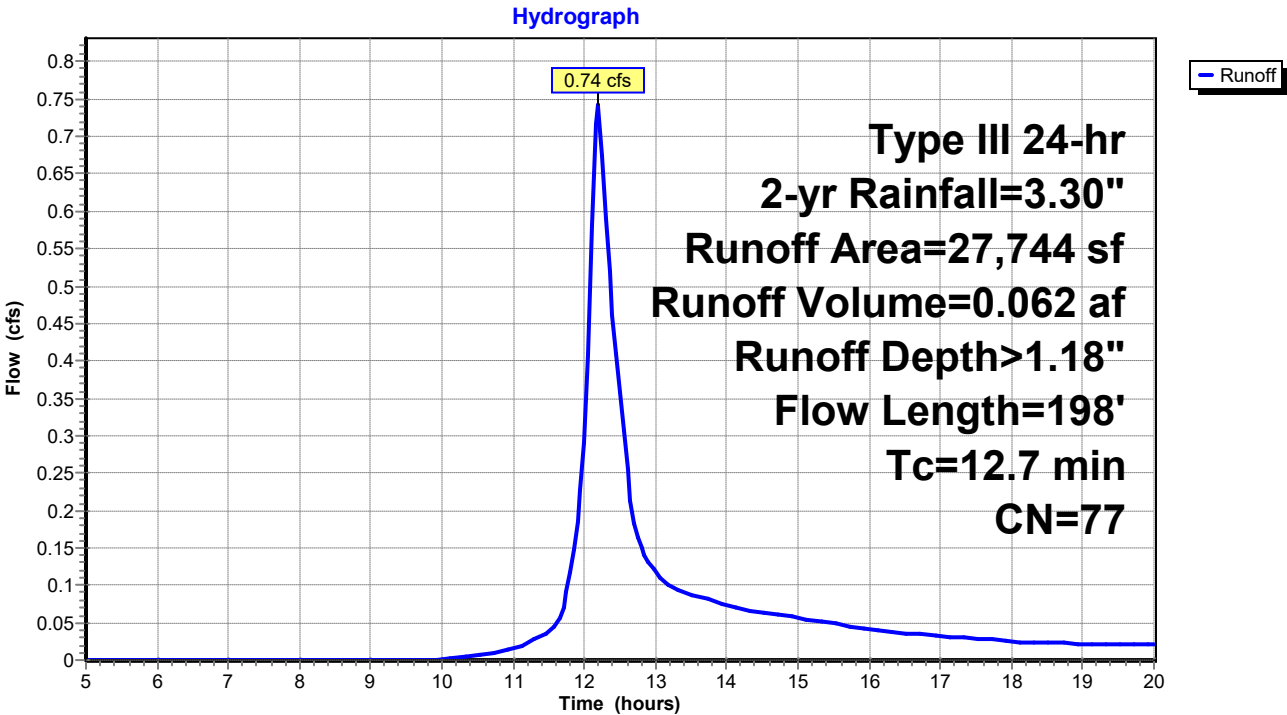
Runoff = 0.74 cfs @ 12.19 hrs, Volume= 0.062 af, Depth> 1.18"
Routed to Reach DP2 : Shoreline 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.30"

Area (sf)	CN	Description
27,744	77	Woods, Good, HSG D
27,744		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	148	0.1689	0.20		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
0.4	50	0.1800	2.12		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
12.7	198	Total			

Subcatchment 2S: Pre Subcatchment 2



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Type III 24-hr 2-yr Rainfall=3.30"

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Summary for Subcatchment 3S: Pre Subcatchment 3

Runoff = 2.39 cfs @ 12.11 hrs, Volume= 0.166 af, Depth> 1.37"
 Routed to Reach DP3 : Shoreline 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-yr Rainfall=3.30"

Area (sf)	CN	Description
51,121	77	Woods, Good, HSG D
751	98	Roofs, HSG D
4,795	96	Gravel surface, HSG D
* 6,955	88	Sand Beach, HSG D
63,622	80	Weighted Average
62,871		98.82% Pervious Area
751		1.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	23	0.1740	0.14		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
1.0	70	0.0571	1.19		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
0.5	170	0.1059	5.24		Shallow Concentrated Flow, Tc-3
					Unpaved Kv= 16.1 fps
2.5	140	0.0357	0.94		Shallow Concentrated Flow, Tc-4
					Woodland Kv= 5.0 fps
0.3	42	0.0714	2.67		Shallow Concentrated Flow, Tc-4
					Nearly Bare & Untilled Kv= 10.0 fps
7.0	445	Total			

UNE-PreDrainage

Prepared by GEI Consultants

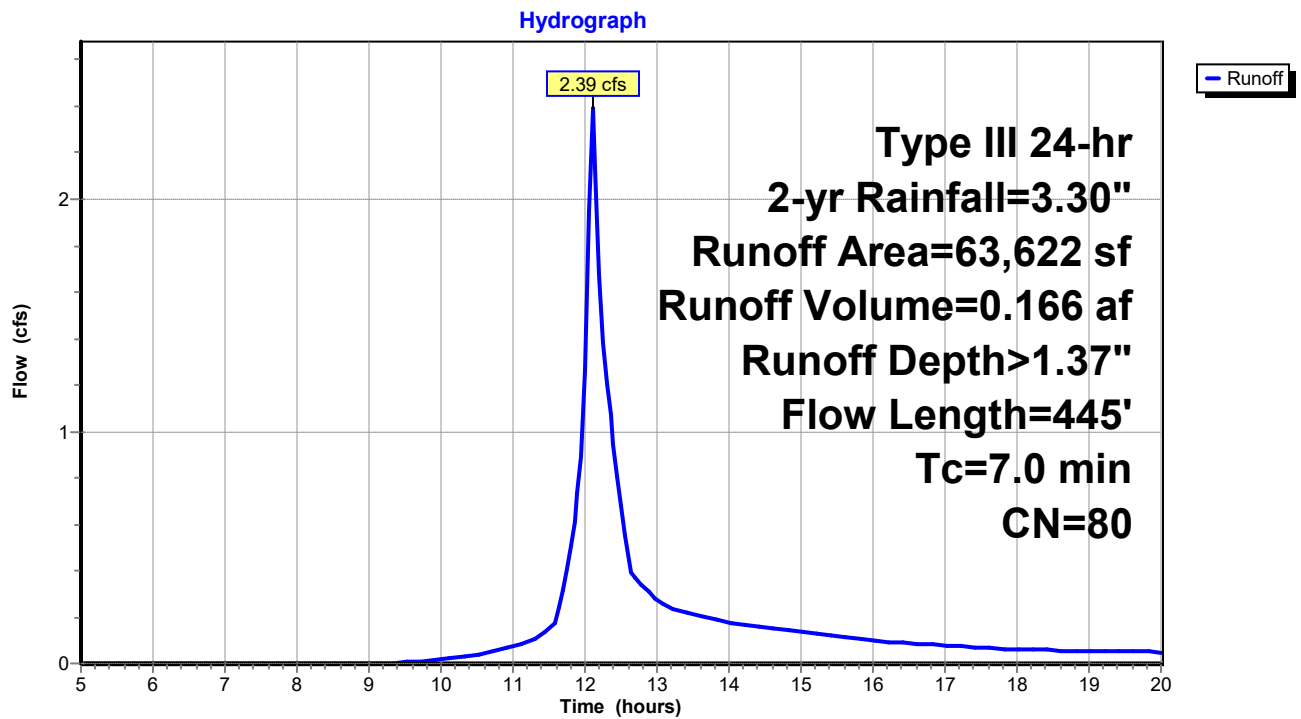
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Type III 24-hr 2-yr Rainfall=3.30"

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Subcatchment 3S: Pre Subcatchment 3



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Type III 24-hr 2-yr Rainfall=3.30"

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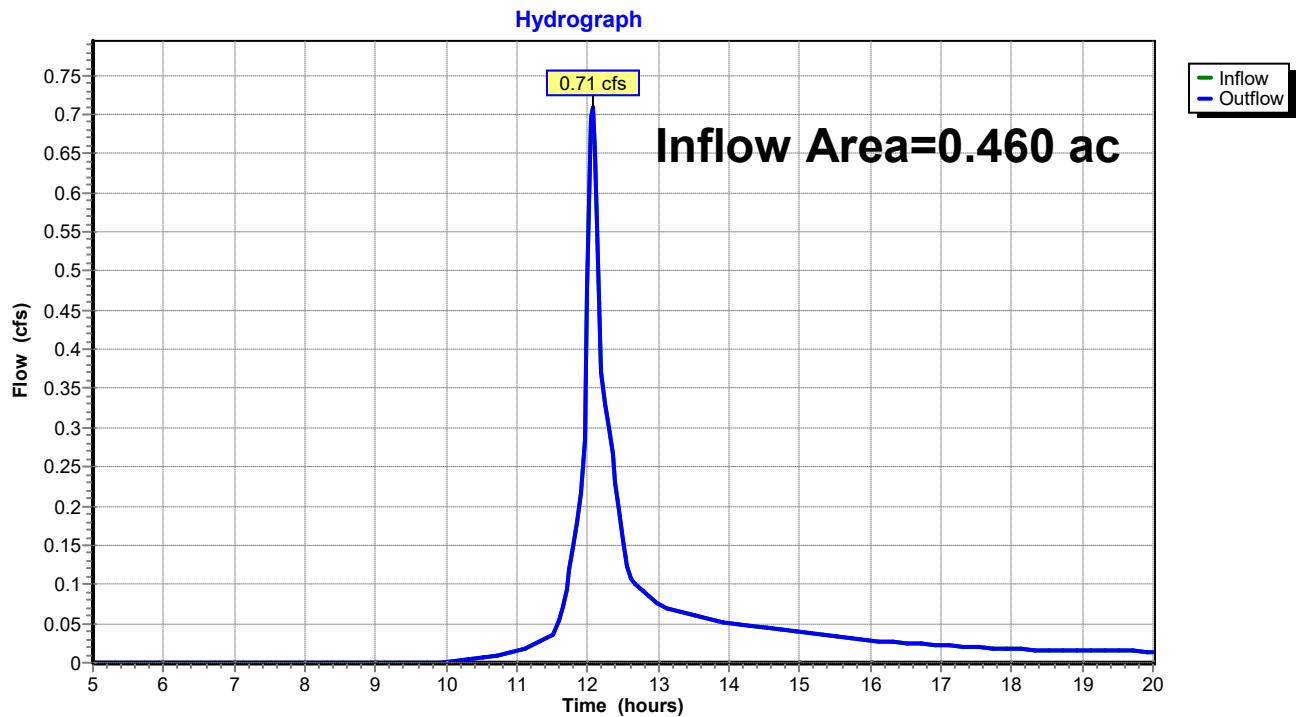
Page 12

Summary for Reach DP1: Shoreline 1

Inflow Area = 0.460 ac, 0.00% Impervious, Inflow Depth > 1.18" for 2-yr event
Inflow = 0.71 cfs @ 12.07 hrs, Volume= 0.045 af
Outflow = 0.71 cfs @ 12.07 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP1: Shoreline 1



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Type III 24-hr 2-yr Rainfall=3.30"

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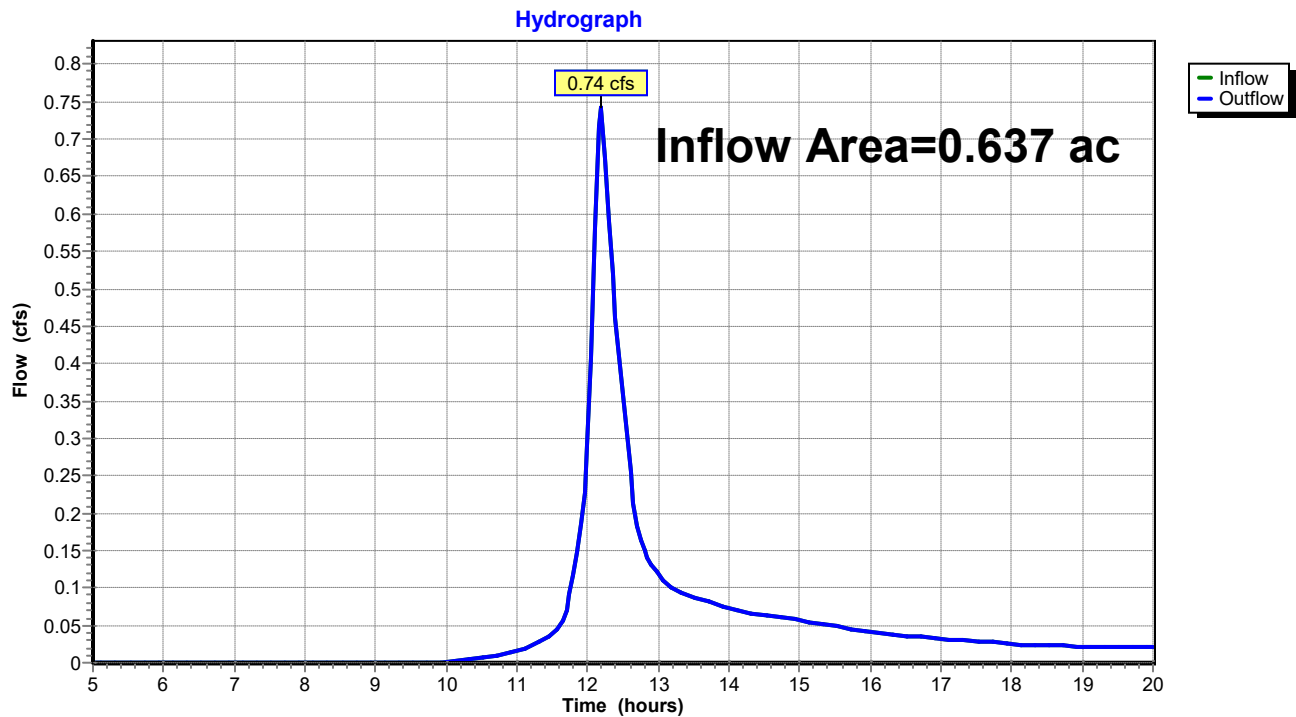
Page 13

Summary for Reach DP2: Shoreline 2

Inflow Area = 0.637 ac, 0.00% Impervious, Inflow Depth > 1.18" for 2-yr event
Inflow = 0.74 cfs @ 12.19 hrs, Volume= 0.062 af
Outflow = 0.74 cfs @ 12.19 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP2: Shoreline 2



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Type III 24-hr 2-yr Rainfall=3.30"

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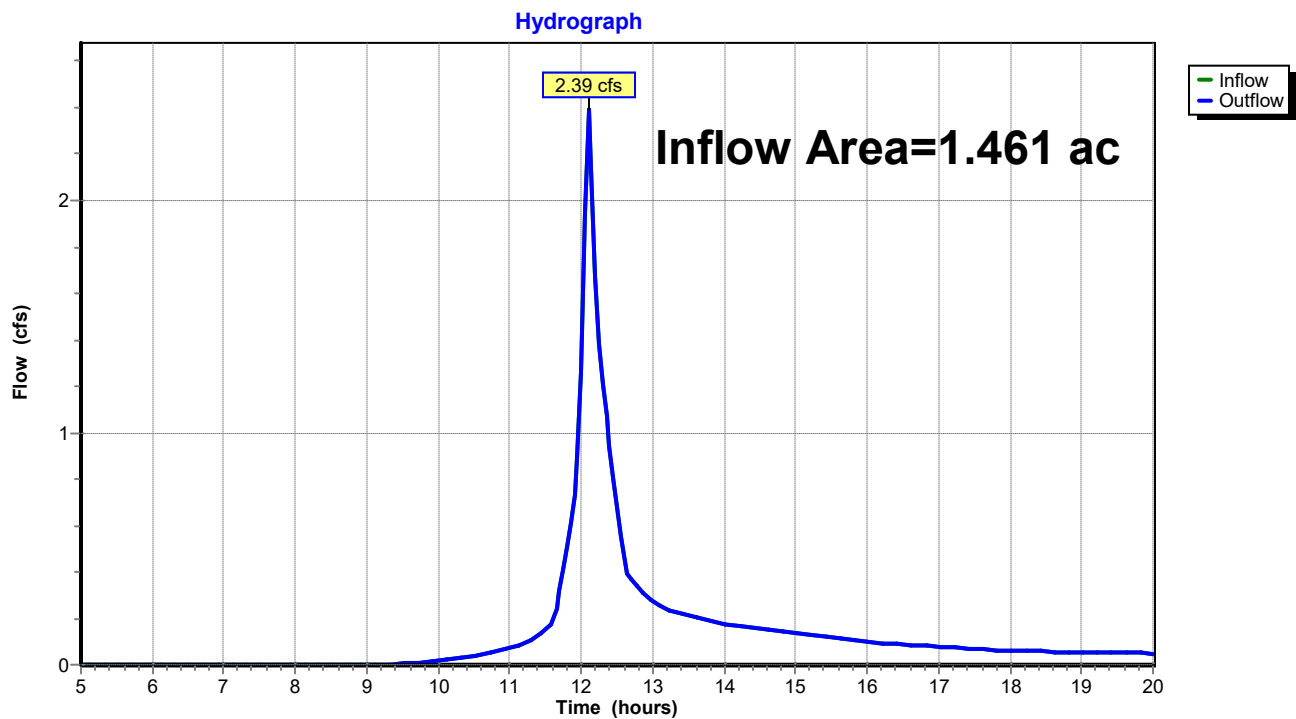
Page 14

Summary for Reach DP3: Shoreline 3

Inflow Area = 1.461 ac, 1.18% Impervious, Inflow Depth > 1.37" for 2-yr event
Inflow = 2.39 cfs @ 12.11 hrs, Volume= 0.166 af
Outflow = 2.39 cfs @ 12.11 hrs, Volume= 0.166 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP3: Shoreline 3



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Type III 24-hr 2-yr Rainfall=3.30"

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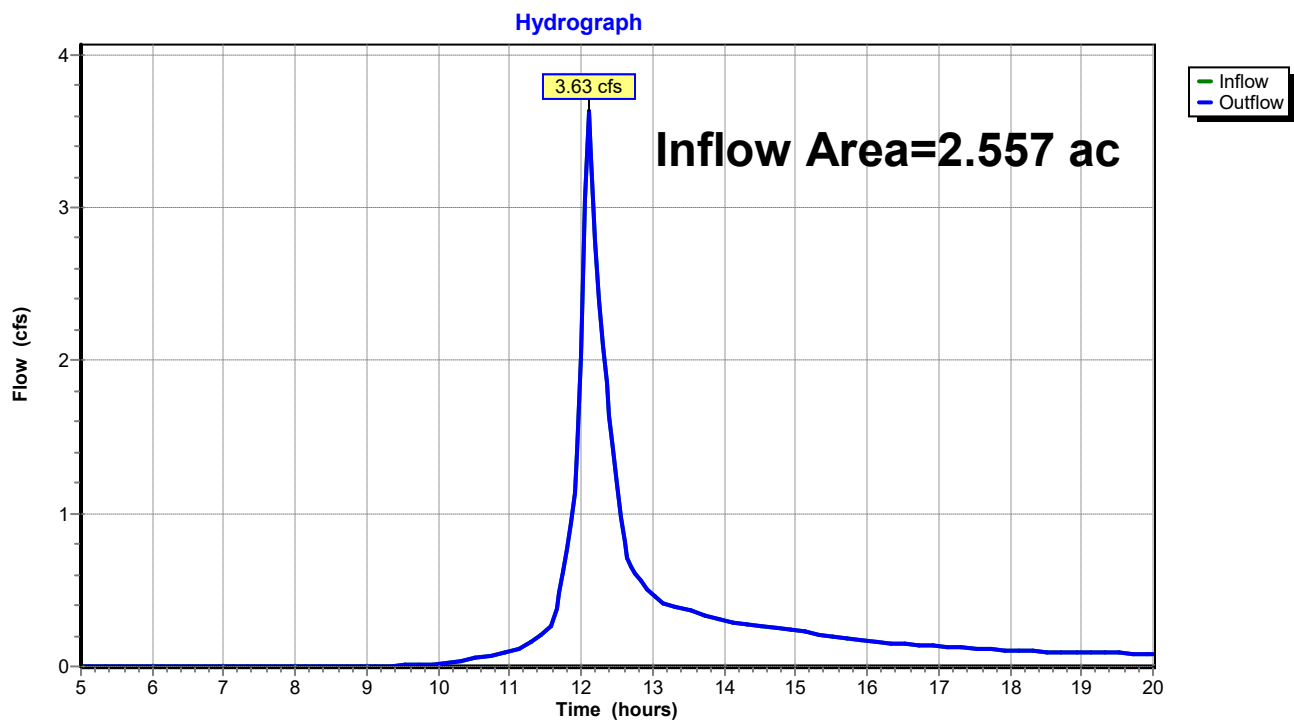
Page 15

Summary for Reach SP1: SACO RIVER / OCEAN

Inflow Area = 2.557 ac, 0.67% Impervious, Inflow Depth > 1.29" for 2-yr event
Inflow = 3.63 cfs @ 12.11 hrs, Volume= 0.274 af
Outflow = 3.63 cfs @ 12.11 hrs, Volume= 0.274 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SP1: SACO RIVER / OCEAN



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Type III 24-hr 10-yr Rainfall=4.90"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre Subcatchment 1 Runoff Area=20,023 sf 0.00% Impervious Runoff Depth>2.36"
Flow Length=138' Tc=4.0 min CN=77 Runoff=1.44 cfs 0.091 af

Subcatchment 2S: Pre Subcatchment 2 Runoff Area=27,744 sf 0.00% Impervious Runoff Depth>2.36"
Flow Length=198' Tc=12.7 min CN=77 Runoff=1.51 cfs 0.125 af

Subcatchment 3S: Pre Subcatchment 3 Runoff Area=63,622 sf 1.18% Impervious Runoff Depth>2.62"
Flow Length=445' Tc=7.0 min CN=80 Runoff=4.58 cfs 0.319 af

Reach DP1: Shoreline 1 Inflow=1.44 cfs 0.091 af
Outflow=1.44 cfs 0.091 af

Reach DP2: Shoreline 2 Inflow=1.51 cfs 0.125 af
Outflow=1.51 cfs 0.125 af

Reach DP3: Shoreline 3 Inflow=4.58 cfs 0.319 af
Outflow=4.58 cfs 0.319 af

Reach SP1: SACO RIVER / OCEAN Inflow=7.10 cfs 0.534 af
Outflow=7.10 cfs 0.534 af

Total Runoff Area = 2.557 ac Runoff Volume = 0.534 af Average Runoff Depth = 2.51"
99.33% Pervious = 2.540 ac 0.67% Impervious = 0.017 ac

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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Subcatchment 1S: Pre Subcatchment 1

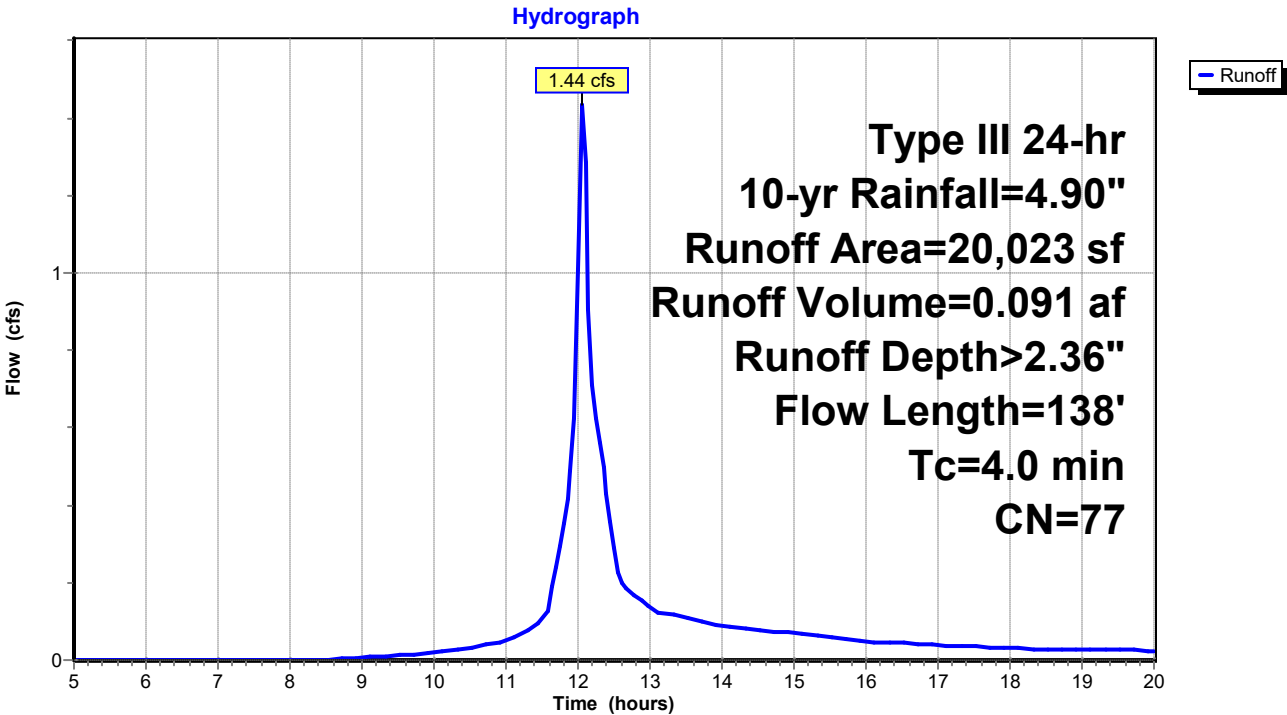
Runoff = 1.44 cfs @ 12.06 hrs, Volume= 0.091 af, Depth> 2.36"
Routed to Reach DP1 : Shoreline 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.90"

Area (sf)	CN	Description
20,023	77	Woods, Good, HSG D
20,023		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	20	0.1000	0.11		Sheet Flow, Tc-1
0.9	118	0.1780	2.11		Woods: Light underbrush n= 0.400 P2= 3.30"
					Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
4.0	138	Total			

Subcatchment 1S: Pre Subcatchment 1



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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Subcatchment 2S: Pre Subcatchment 2

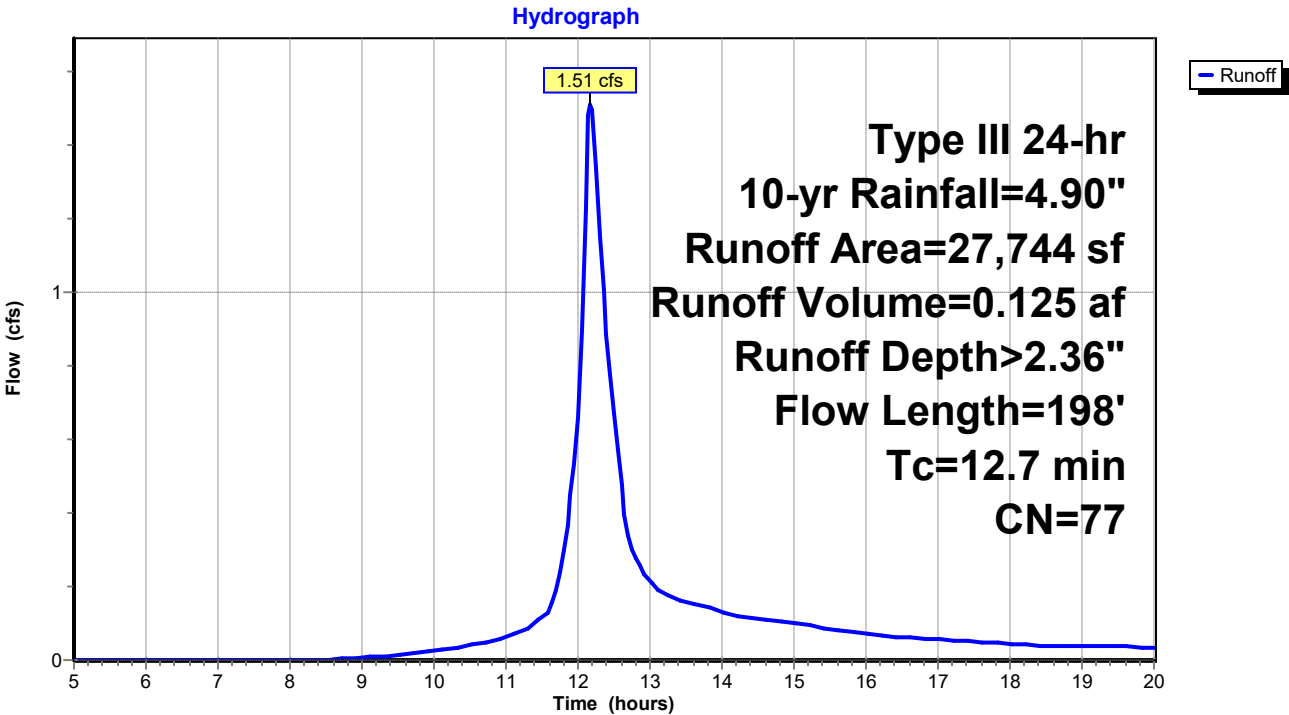
Runoff = 1.51 cfs @ 12.18 hrs, Volume= 0.125 af, Depth> 2.36"
Routed to Reach DP2 : Shoreline 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.90"

Area (sf)	CN	Description
27,744	77	Woods, Good, HSG D
27,744		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	148	0.1689	0.20		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
0.4	50	0.1800	2.12		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
12.7	198	Total			

Subcatchment 2S: Pre Subcatchment 2



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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Subcatchment 3S: Pre Subcatchment 3

Runoff = 4.58 cfs @ 12.10 hrs, Volume= 0.319 af, Depth> 2.62"
 Routed to Reach DP3 : Shoreline 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-yr Rainfall=4.90"

Area (sf)	CN	Description
51,121	77	Woods, Good, HSG D
751	98	Roofs, HSG D
4,795	96	Gravel surface, HSG D
* 6,955	88	Sand Beach, HSG D
63,622	80	Weighted Average
62,871		98.82% Pervious Area
751		1.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	23	0.1740	0.14		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
1.0	70	0.0571	1.19		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
0.5	170	0.1059	5.24		Shallow Concentrated Flow, Tc-3
					Unpaved Kv= 16.1 fps
2.5	140	0.0357	0.94		Shallow Concentrated Flow, Tc-4
					Woodland Kv= 5.0 fps
0.3	42	0.0714	2.67		Shallow Concentrated Flow, Tc-4
					Nearly Bare & Untilled Kv= 10.0 fps
7.0	445	Total			

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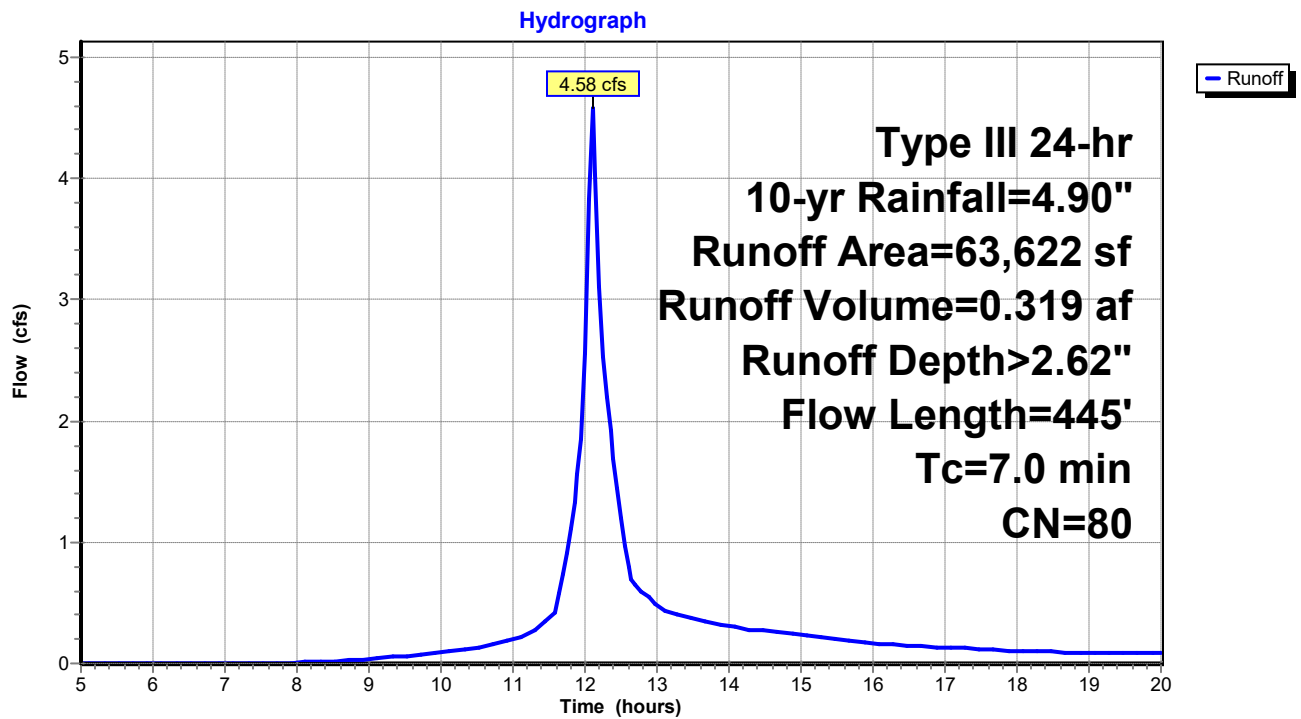
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Type III 24-hr 10-yr Rainfall=4.90"

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Subcatchment 3S: Pre Subcatchment 3



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Type III 24-hr 10-yr Rainfall=4.90"

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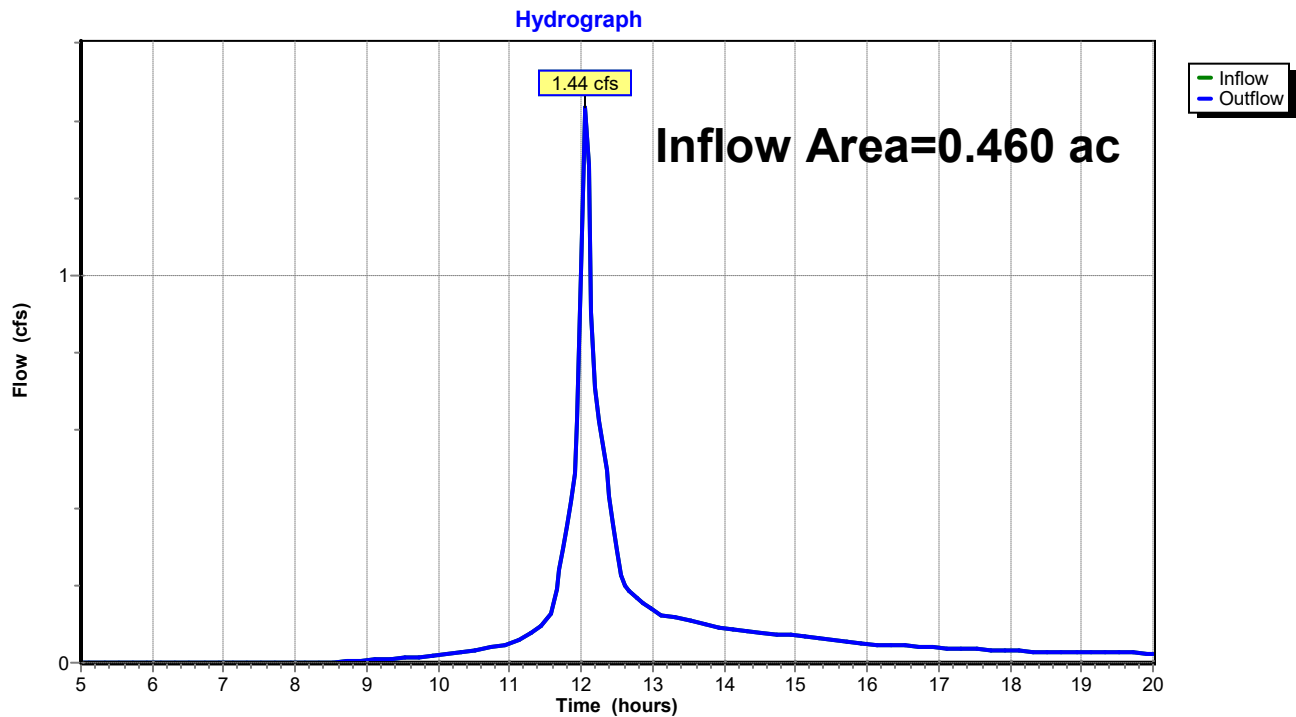
Page 21

Summary for Reach DP1: Shoreline 1

Inflow Area = 0.460 ac, 0.00% Impervious, Inflow Depth > 2.36" for 10-yr event
Inflow = 1.44 cfs @ 12.06 hrs, Volume= 0.091 af
Outflow = 1.44 cfs @ 12.06 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP1: Shoreline 1



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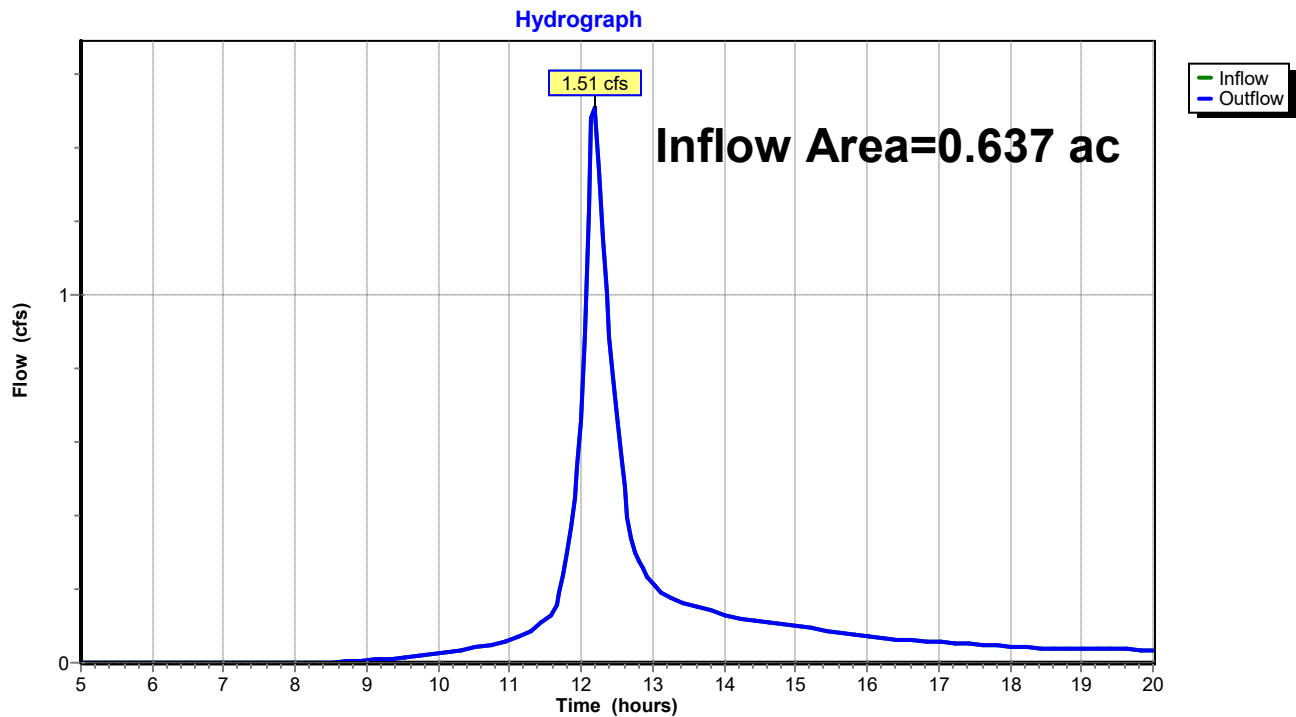
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Summary for Reach DP2: Shoreline 2

Inflow Area = 0.637 ac, 0.00% Impervious, Inflow Depth > 2.36" for 10-yr event
Inflow = 1.51 cfs @ 12.18 hrs, Volume= 0.125 af
Outflow = 1.51 cfs @ 12.18 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP2: Shoreline 2



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Type III 24-hr 10-yr Rainfall=4.90"

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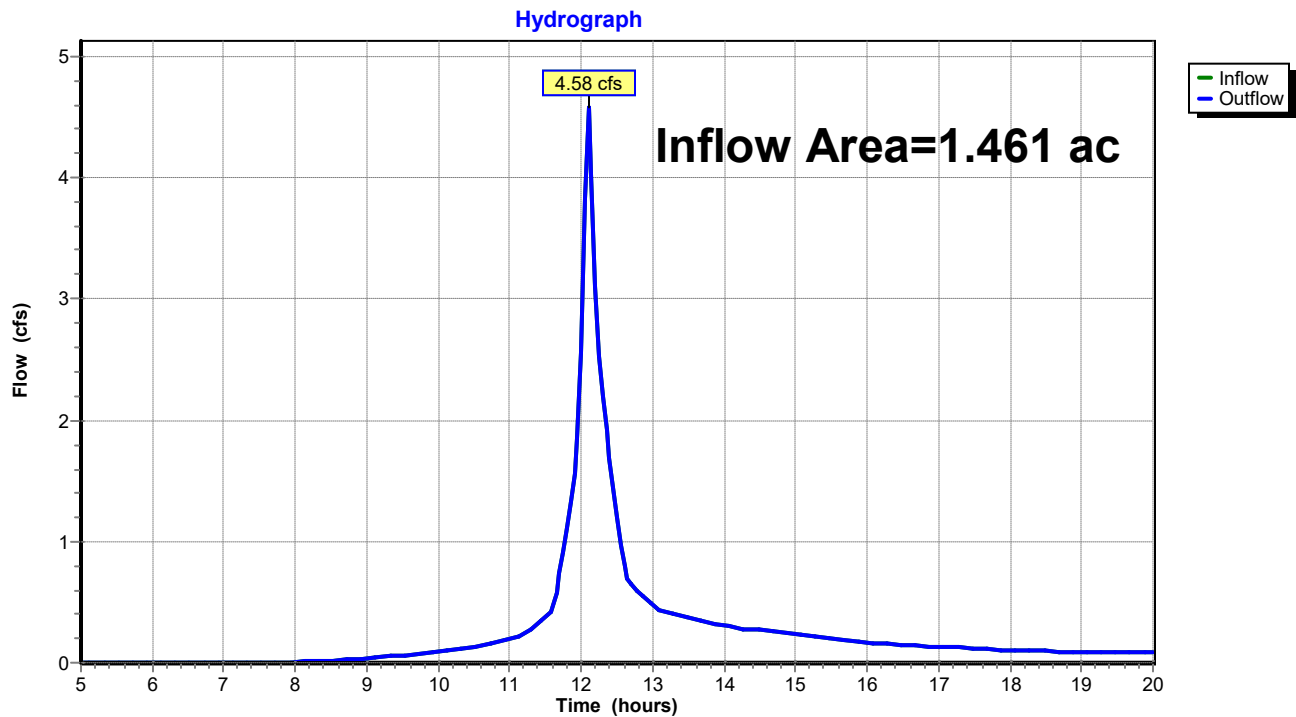
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Summary for Reach DP3: Shoreline 3

Inflow Area = 1.461 ac, 1.18% Impervious, Inflow Depth > 2.62" for 10-yr event
Inflow = 4.58 cfs @ 12.10 hrs, Volume= 0.319 af
Outflow = 4.58 cfs @ 12.10 hrs, Volume= 0.319 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP3: Shoreline 3



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Type III 24-hr 10-yr Rainfall=4.90"

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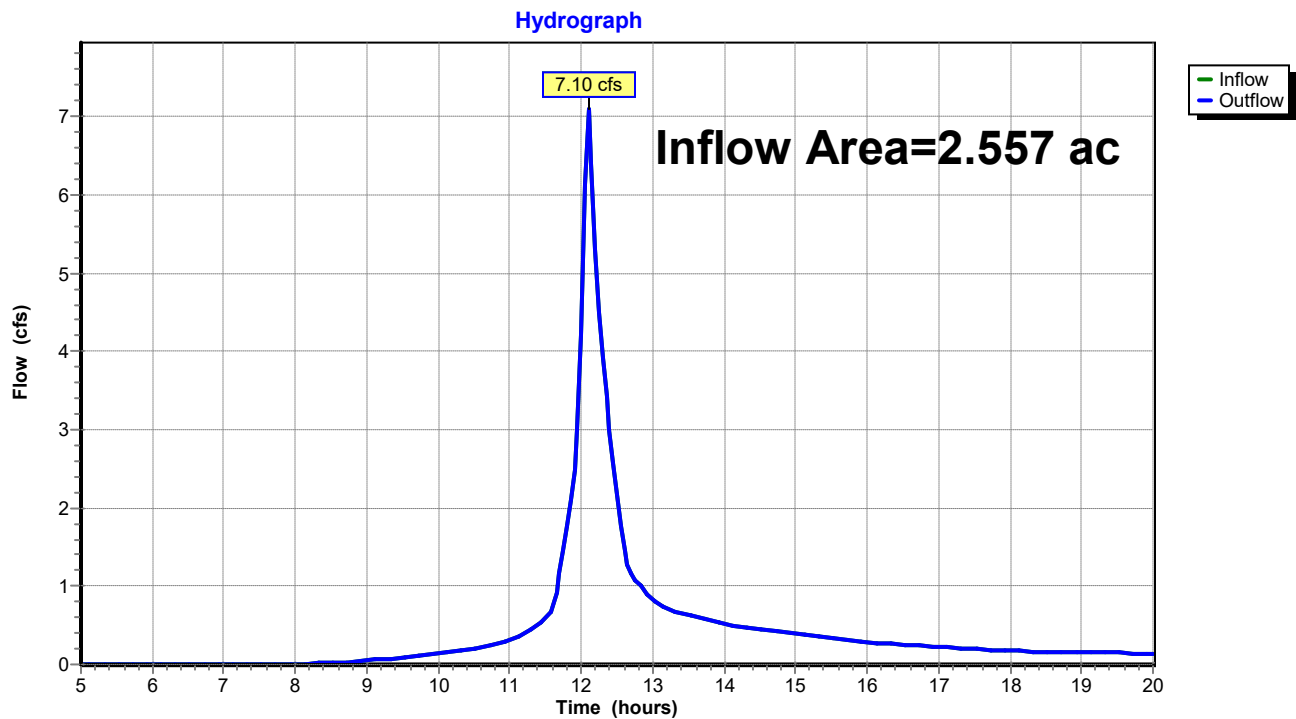
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Summary for Reach SP1: SACO RIVER / OCEAN

Inflow Area = 2.557 ac, 0.67% Impervious, Inflow Depth > 2.51" for 10-yr event
Inflow = 7.10 cfs @ 12.10 hrs, Volume= 0.534 af
Outflow = 7.10 cfs @ 12.10 hrs, Volume= 0.534 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SP1: SACO RIVER / OCEAN



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Type III 24-hr 25-yr Rainfall=6.20"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre Subcatchment 1 Runoff Area=20,023 sf 0.00% Impervious Runoff Depth>3.42"
Flow Length=138' Tc=4.0 min CN=77 Runoff=2.07 cfs 0.131 af

Subcatchment 2S: Pre Subcatchment 2 Runoff Area=27,744 sf 0.00% Impervious Runoff Depth>3.41"
Flow Length=198' Tc=12.7 min CN=77 Runoff=2.17 cfs 0.181 af

Subcatchment 3S: Pre Subcatchment 3 Runoff Area=63,622 sf 1.18% Impervious Runoff Depth>3.72"
Flow Length=445' Tc=7.0 min CN=80 Runoff=6.44 cfs 0.452 af

Reach DP1: Shoreline 1 Inflow=2.07 cfs 0.131 af
Outflow=2.07 cfs 0.131 af

Reach DP2: Shoreline 2 Inflow=2.17 cfs 0.181 af
Outflow=2.17 cfs 0.181 af

Reach DP3: Shoreline 3 Inflow=6.44 cfs 0.452 af
Outflow=6.44 cfs 0.452 af

Reach SP1: SACO RIVER / OCEAN Inflow=10.07 cfs 0.764 af
Outflow=10.07 cfs 0.764 af

Total Runoff Area = 2.557 ac Runoff Volume = 0.764 af Average Runoff Depth = 3.59"
99.33% Pervious = 2.540 ac 0.67% Impervious = 0.017 ac

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Type III 24-hr 25-yr Rainfall=6.20"

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Summary for Subcatchment 1S: Pre Subcatchment 1

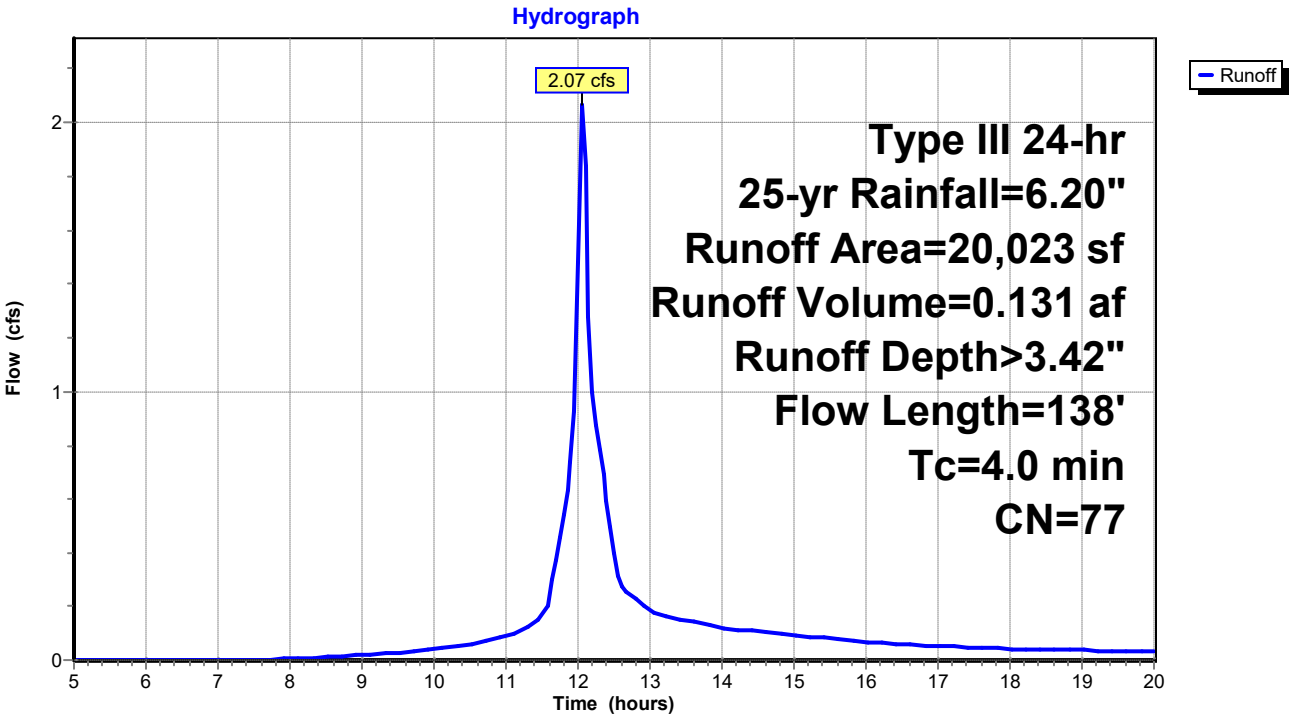
Runoff = 2.07 cfs @ 12.06 hrs, Volume= 0.131 af, Depth> 3.42"
Routed to Reach DP1 : Shoreline 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=6.20"

Area (sf)	CN	Description
20,023	77	Woods, Good, HSG D
20,023		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	20	0.1000	0.11		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
0.9	118	0.1780	2.11		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
4.0	138	Total			

Subcatchment 1S: Pre Subcatchment 1



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Type III 24-hr 25-yr Rainfall=6.20"

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Summary for Subcatchment 2S: Pre Subcatchment 2

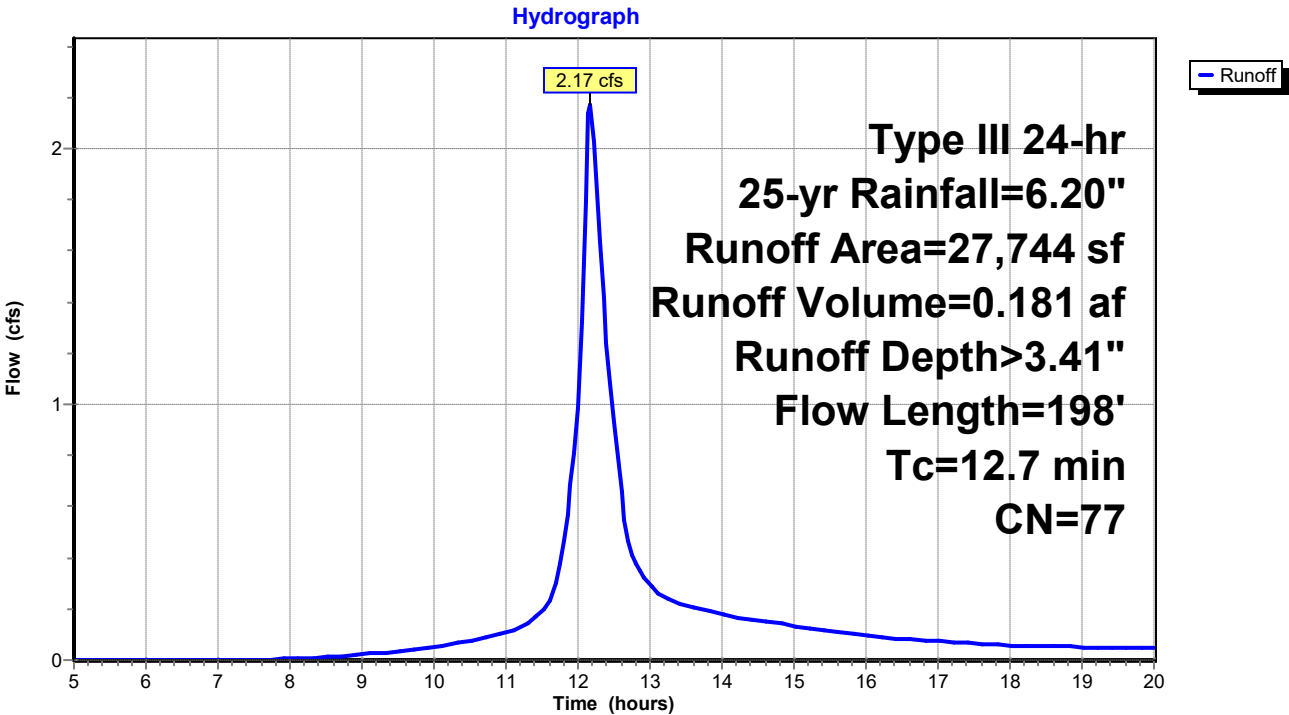
Runoff = 2.17 cfs @ 12.18 hrs, Volume= 0.181 af, Depth> 3.41"
Routed to Reach DP2 : Shoreline 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=6.20"

Area (sf)	CN	Description
27,744	77	Woods, Good, HSG D
27,744		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	148	0.1689	0.20		Sheet Flow, Tc-1 Woods: Light underbrush n= 0.400 P2= 3.30"
0.4	50	0.1800	2.12		Shallow Concentrated Flow, Tc-2 Woodland Kv= 5.0 fps
12.7	198	Total			

Subcatchment 2S: Pre Subcatchment 2



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Type III 24-hr 25-yr Rainfall=6.20"

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Summary for Subcatchment 3S: Pre Subcatchment 3

Runoff = 6.44 cfs @ 12.10 hrs, Volume= 0.452 af, Depth> 3.72"
 Routed to Reach DP3 : Shoreline 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-yr Rainfall=6.20"

Area (sf)	CN	Description
51,121	77	Woods, Good, HSG D
751	98	Roofs, HSG D
4,795	96	Gravel surface, HSG D
* 6,955	88	Sand Beach, HSG D
63,622	80	Weighted Average
62,871		98.82% Pervious Area
751		1.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	23	0.1740	0.14		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
1.0	70	0.0571	1.19		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
0.5	170	0.1059	5.24		Shallow Concentrated Flow, Tc-3
					Unpaved Kv= 16.1 fps
2.5	140	0.0357	0.94		Shallow Concentrated Flow, Tc-4
					Woodland Kv= 5.0 fps
0.3	42	0.0714	2.67		Shallow Concentrated Flow, Tc-4
					Nearly Bare & Untilled Kv= 10.0 fps
7.0	445	Total			

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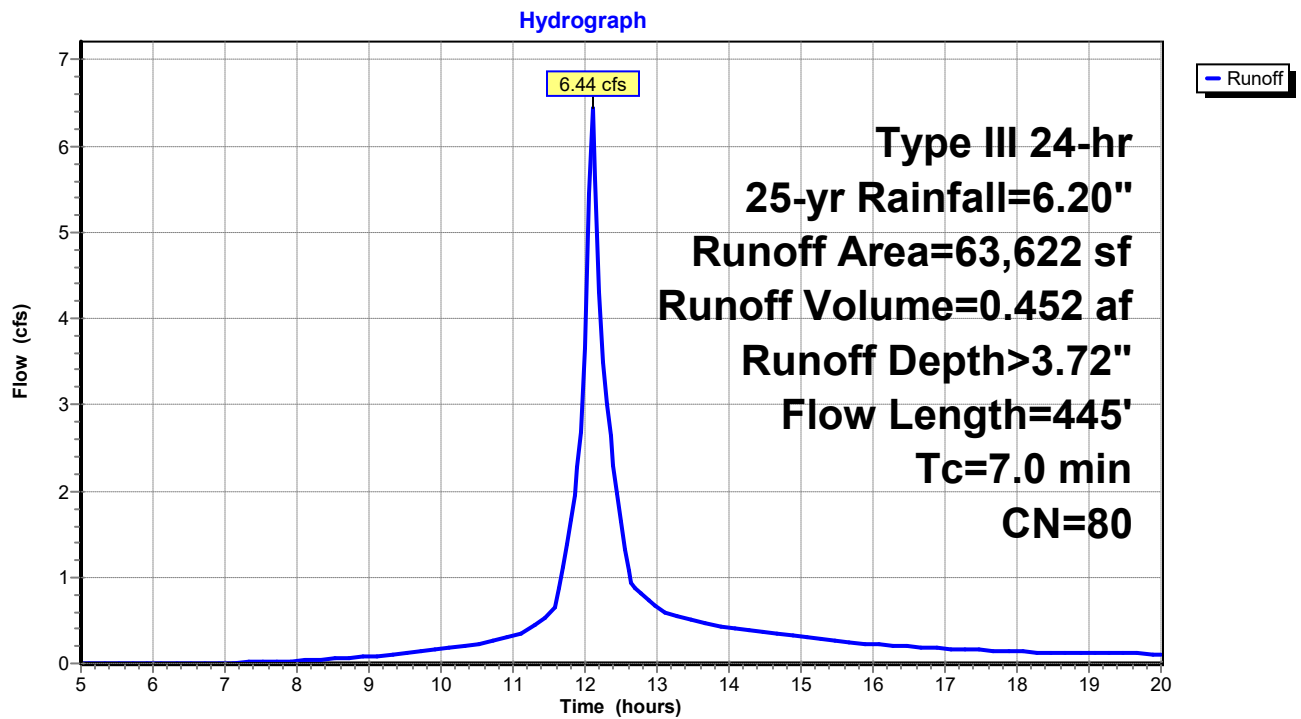
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Type III 24-hr 25-yr Rainfall=6.20"

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Subcatchment 3S: Pre Subcatchment 3



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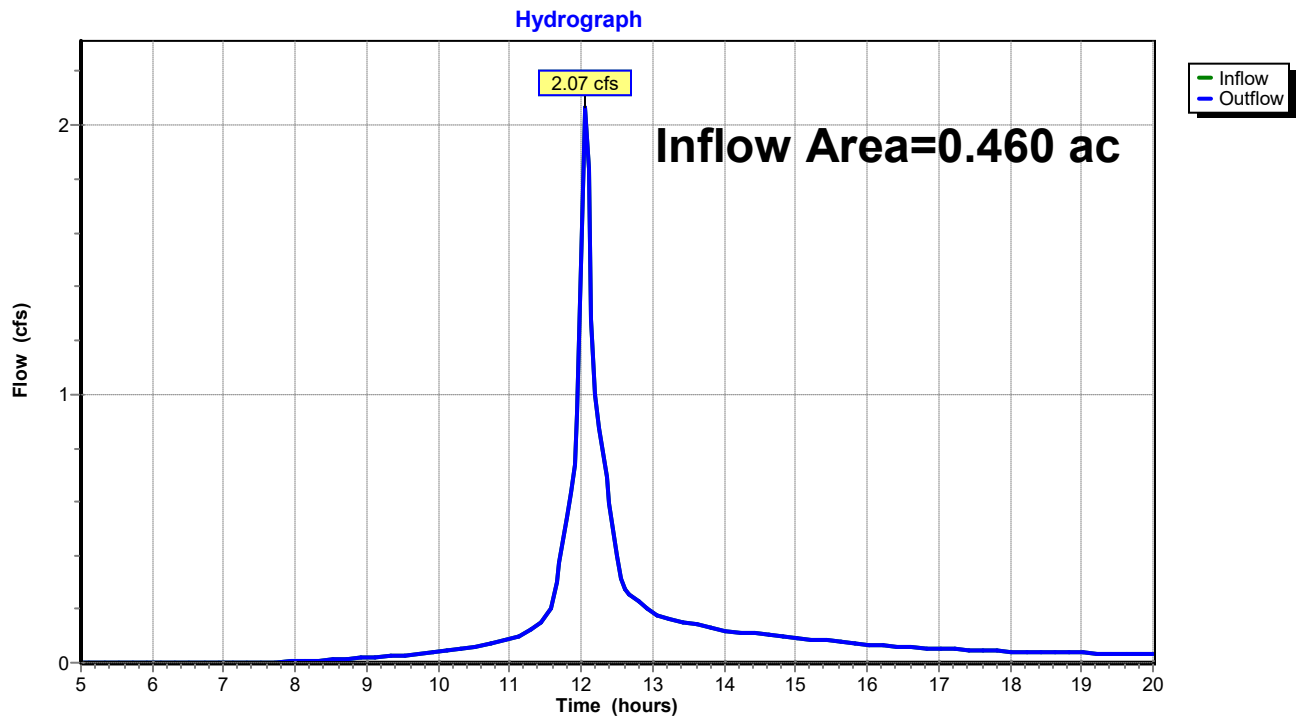
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Summary for Reach DP1: Shoreline 1

Inflow Area = 0.460 ac, 0.00% Impervious, Inflow Depth > 3.42" for 25-yr event
Inflow = 2.07 cfs @ 12.06 hrs, Volume= 0.131 af
Outflow = 2.07 cfs @ 12.06 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP1: Shoreline 1



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Type III 24-hr 25-yr Rainfall=6.20"

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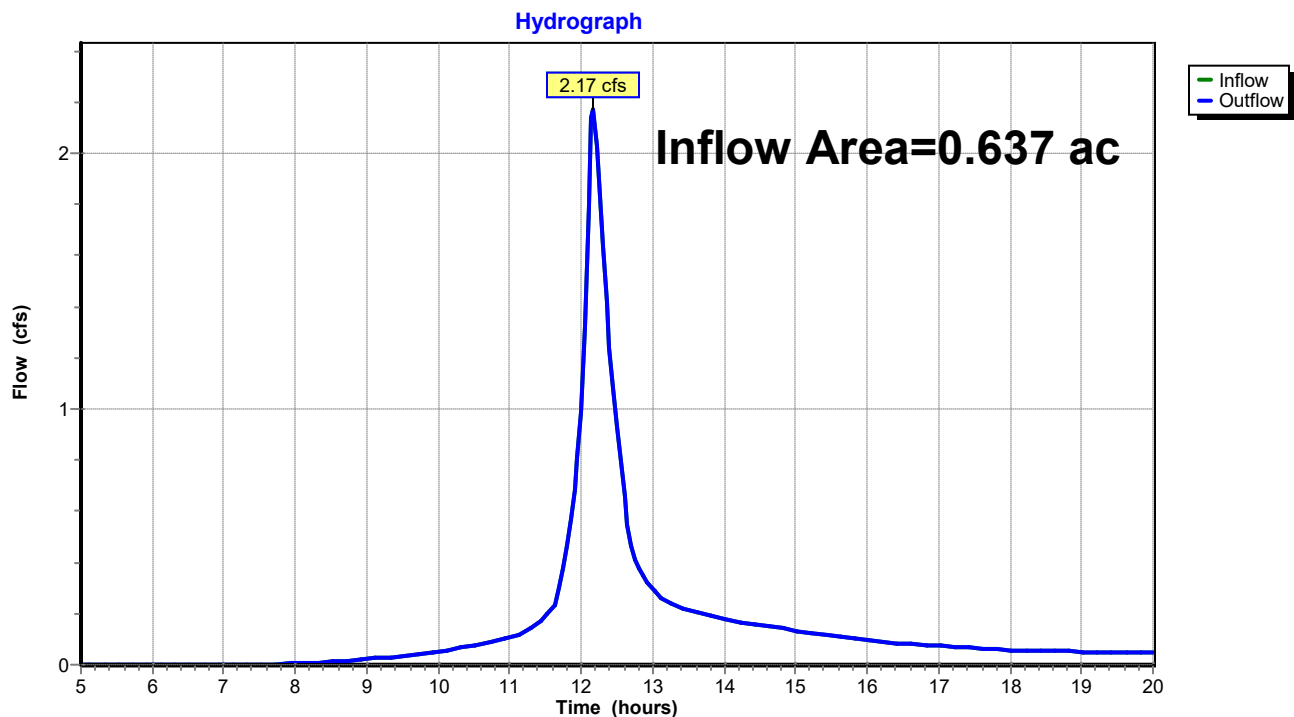
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Summary for Reach DP2: Shoreline 2

Inflow Area = 0.637 ac, 0.00% Impervious, Inflow Depth > 3.41" for 25-yr event
Inflow = 2.17 cfs @ 12.18 hrs, Volume= 0.181 af
Outflow = 2.17 cfs @ 12.18 hrs, Volume= 0.181 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP2: Shoreline 2



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Type III 24-hr 25-yr Rainfall=6.20"

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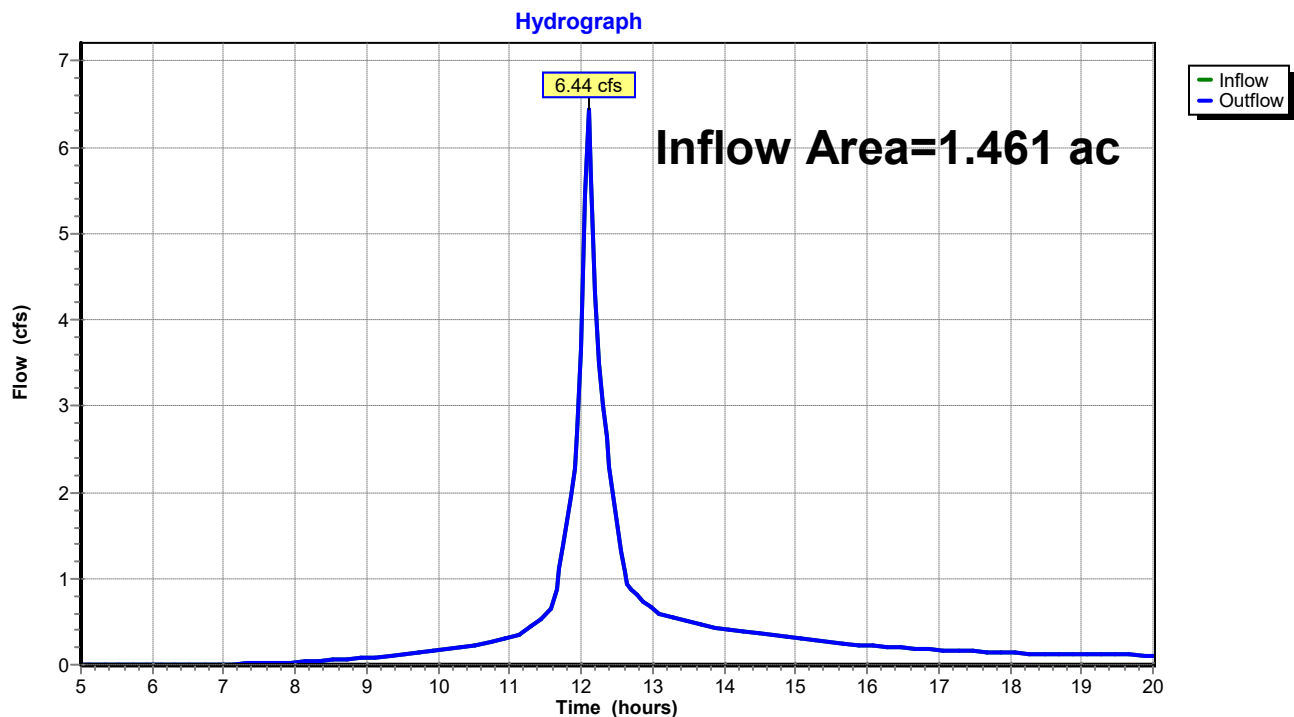
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Summary for Reach DP3: Shoreline 3

Inflow Area = 1.461 ac, 1.18% Impervious, Inflow Depth > 3.72" for 25-yr event
Inflow = 6.44 cfs @ 12.10 hrs, Volume= 0.452 af
Outflow = 6.44 cfs @ 12.10 hrs, Volume= 0.452 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP3: Shoreline 3



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Type III 24-hr 25-yr Rainfall=6.20"

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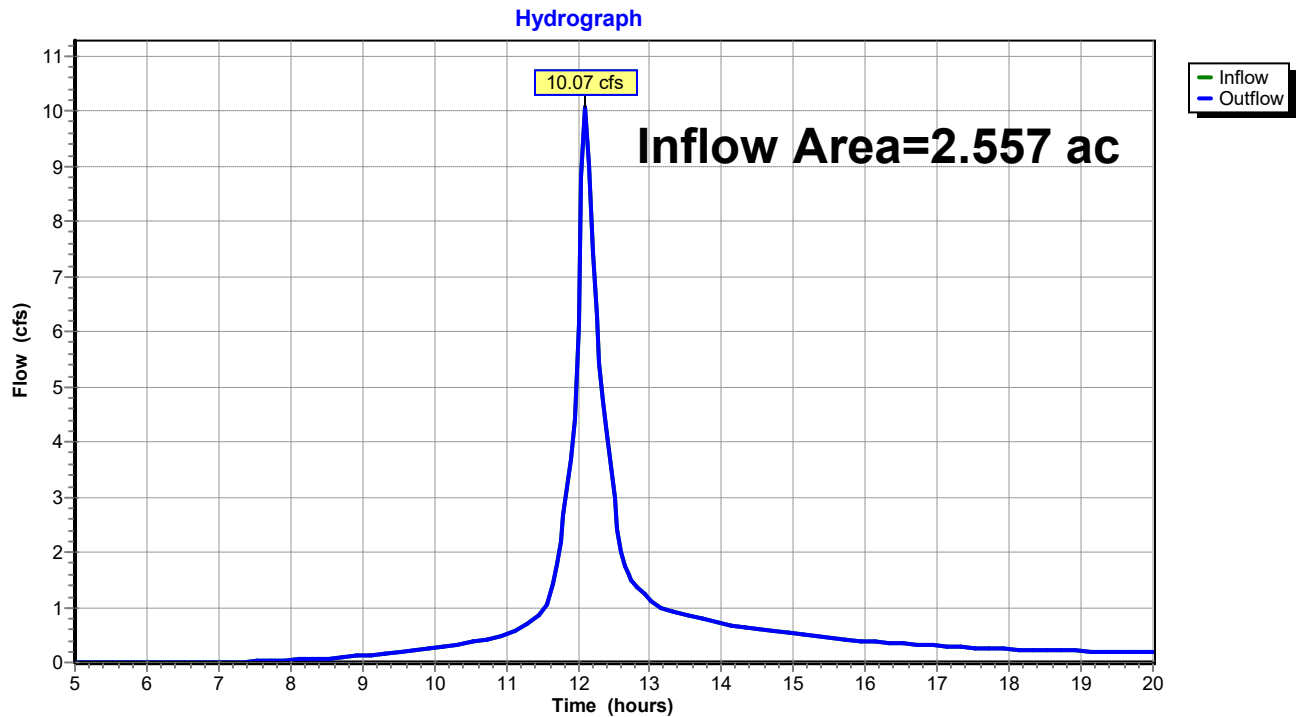
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Summary for Reach SP1: SACO RIVER / OCEAN

Inflow Area = 2.557 ac, 0.67% Impervious, Inflow Depth > 3.59" for 25-yr event
Inflow = 10.07 cfs @ 12.10 hrs, Volume= 0.764 af
Outflow = 10.07 cfs @ 12.10 hrs, Volume= 0.764 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SP1: SACO RIVER / OCEAN



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Type III 24-hr 100-yr Rainfall=8.70"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre Subcatchment 1 Runoff Area=20,023 sf 0.00% Impervious Runoff Depth>5.57"
Flow Length=138' Tc=4.0 min CN=77 Runoff=3.31 cfs 0.213 af

Subcatchment 2S: Pre Subcatchment 2 Runoff Area=27,744 sf 0.00% Impervious Runoff Depth>5.56"
Flow Length=198' Tc=12.7 min CN=77 Runoff=3.50 cfs 0.295 af

Subcatchment 3S: Pre Subcatchment 3 Runoff Area=63,622 sf 1.18% Impervious Runoff Depth>5.92"
Flow Length=445' Tc=7.0 min CN=80 Runoff=10.05 cfs 0.721 af

Reach DP1: Shoreline 1 Inflow=3.31 cfs 0.213 af
Outflow=3.31 cfs 0.213 af

Reach DP2: Shoreline 2 Inflow=3.50 cfs 0.295 af
Outflow=3.50 cfs 0.295 af

Reach DP3: Shoreline 3 Inflow=10.05 cfs 0.721 af
Outflow=10.05 cfs 0.721 af

Reach SP1: SACO RIVER / OCEAN Inflow=15.89 cfs 1.229 af
Outflow=15.89 cfs 1.229 af

Total Runoff Area = 2.557 ac Runoff Volume = 1.229 af Average Runoff Depth = 5.77"
99.33% Pervious = 2.540 ac 0.67% Impervious = 0.017 ac

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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Subcatchment 1S: Pre Subcatchment 1

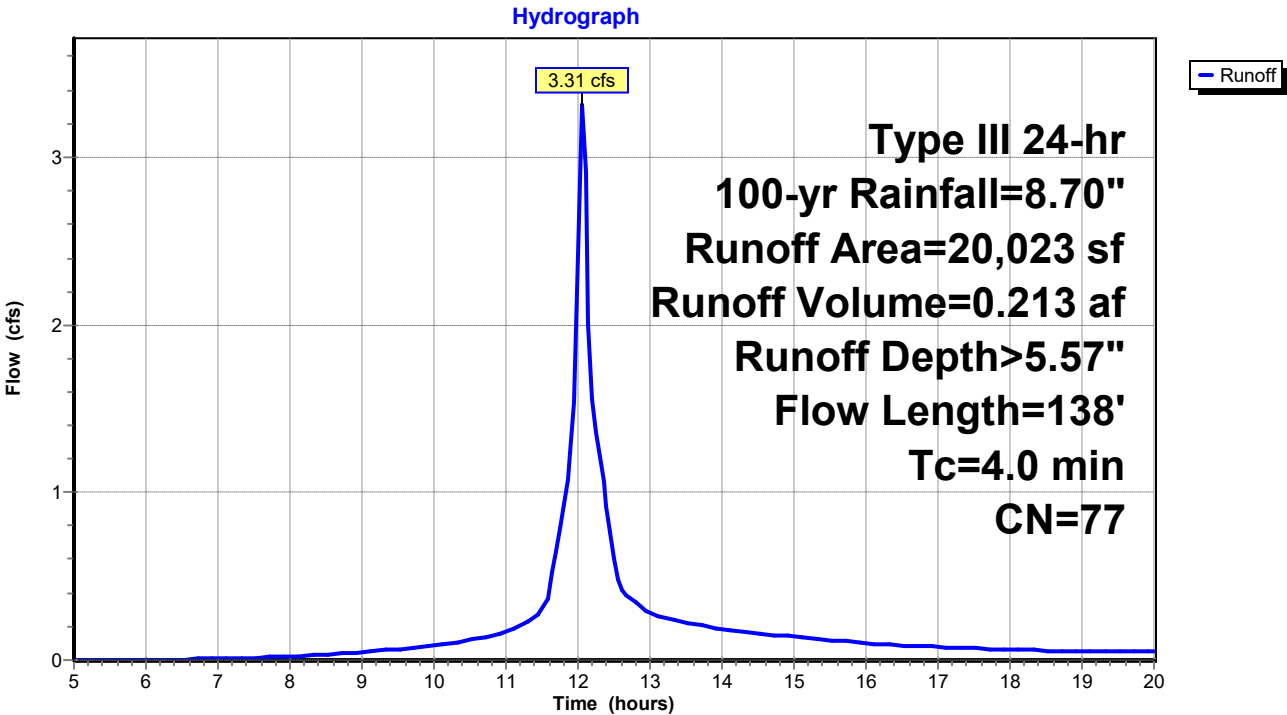
Runoff = 3.31 cfs @ 12.06 hrs, Volume= 0.213 af, Depth> 5.57"
Routed to Reach DP1 : Shoreline 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.70"

Area (sf)	CN	Description
20,023	77	Woods, Good, HSG D
20,023		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	20	0.1000	0.11		Sheet Flow, Tc-1
0.9	118	0.1780	2.11		Woods: Light underbrush n= 0.400 P2= 3.30"
					Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
4.0	138	Total			

Subcatchment 1S: Pre Subcatchment 1



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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Subcatchment 2S: Pre Subcatchment 2

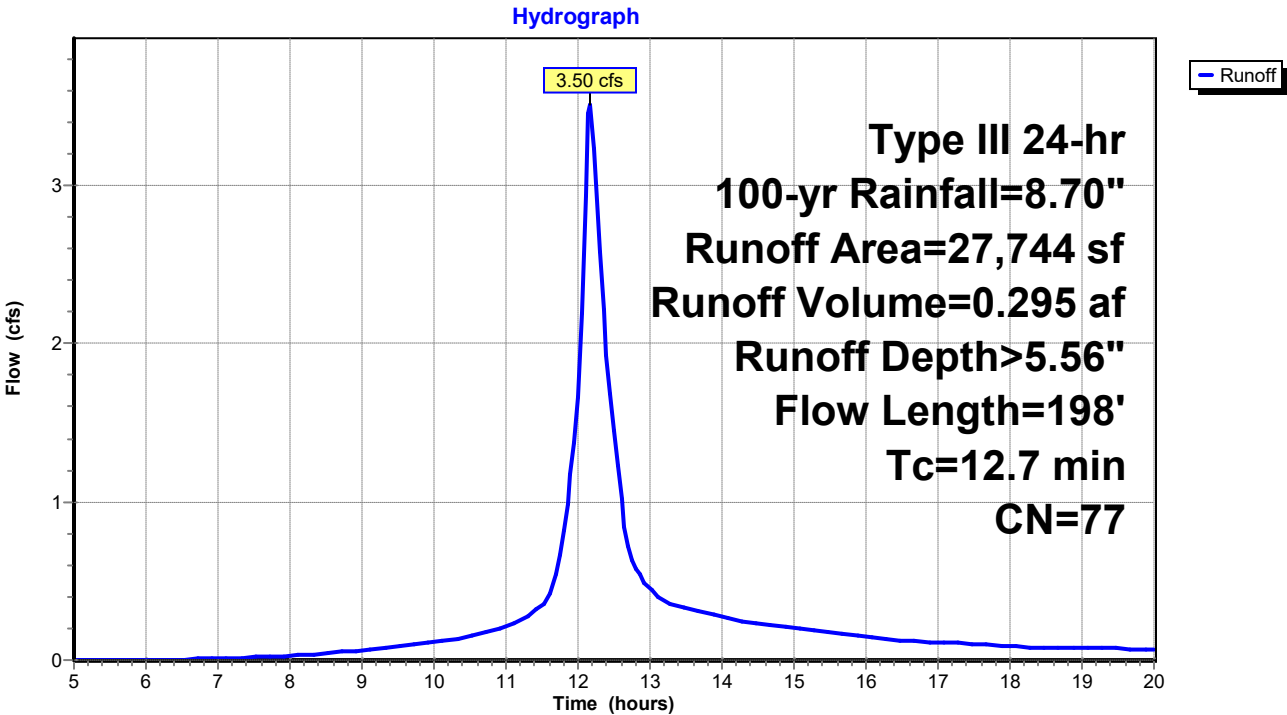
Runoff = 3.50 cfs @ 12.17 hrs, Volume= 0.295 af, Depth> 5.56"
Routed to Reach DP2 : Shoreline 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.70"

Area (sf)	CN	Description
27,744	77	Woods, Good, HSG D
27,744		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	148	0.1689	0.20		Sheet Flow, Tc-1 Woods: Light underbrush n= 0.400 P2= 3.30"
0.4	50	0.1800	2.12		Shallow Concentrated Flow, Tc-2 Woodland Kv= 5.0 fps
12.7	198	Total			

Subcatchment 2S: Pre Subcatchment 2



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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Subcatchment 3S: Pre Subcatchment 3

Runoff = 10.05 cfs @ 12.10 hrs, Volume= 0.721 af, Depth> 5.92"
 Routed to Reach DP3 : Shoreline 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-yr Rainfall=8.70"

Area (sf)	CN	Description
51,121	77	Woods, Good, HSG D
751	98	Roofs, HSG D
4,795	96	Gravel surface, HSG D
* 6,955	88	Sand Beach, HSG D
63,622	80	Weighted Average
62,871		98.82% Pervious Area
751		1.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	23	0.1740	0.14		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
1.0	70	0.0571	1.19		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
0.5	170	0.1059	5.24		Shallow Concentrated Flow, Tc-3
					Unpaved Kv= 16.1 fps
2.5	140	0.0357	0.94		Shallow Concentrated Flow, Tc-4
					Woodland Kv= 5.0 fps
0.3	42	0.0714	2.67		Shallow Concentrated Flow, Tc-4
					Nearly Bare & Untilled Kv= 10.0 fps
7.0	445	Total			

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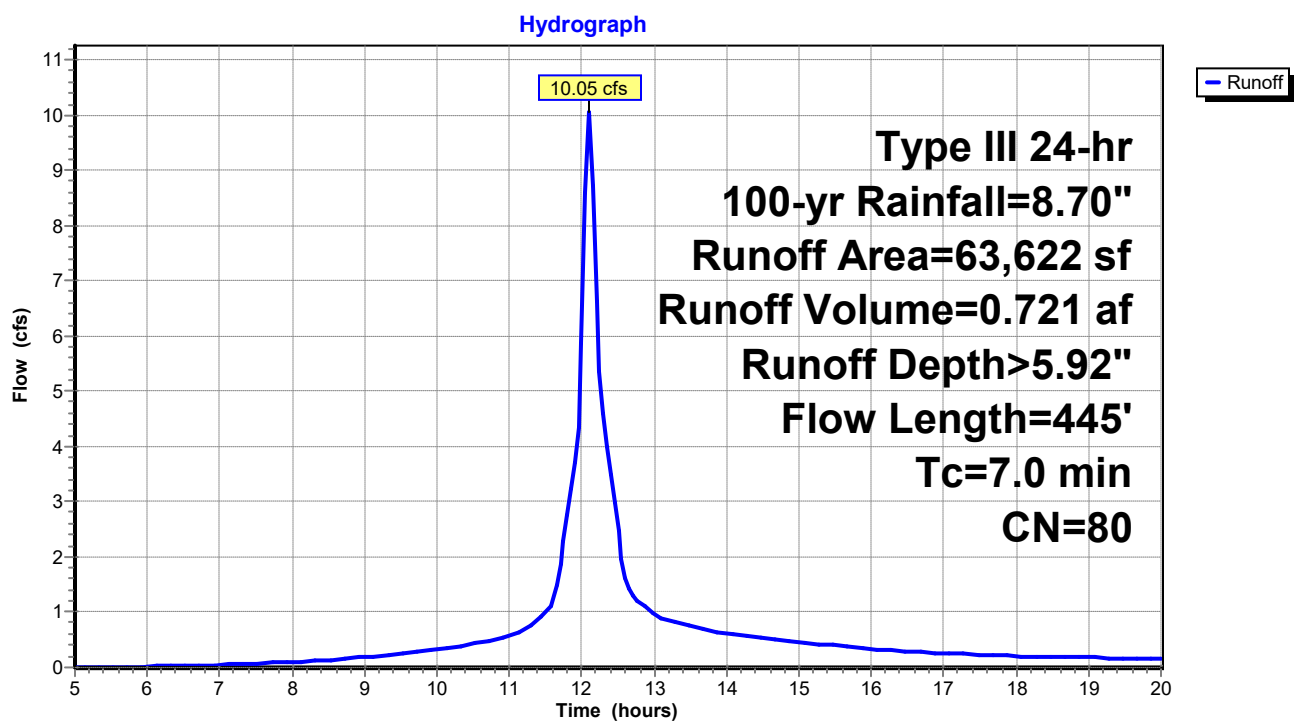
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Type III 24-hr 100-yr Rainfall=8.70"

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Subcatchment 3S: Pre Subcatchment 3



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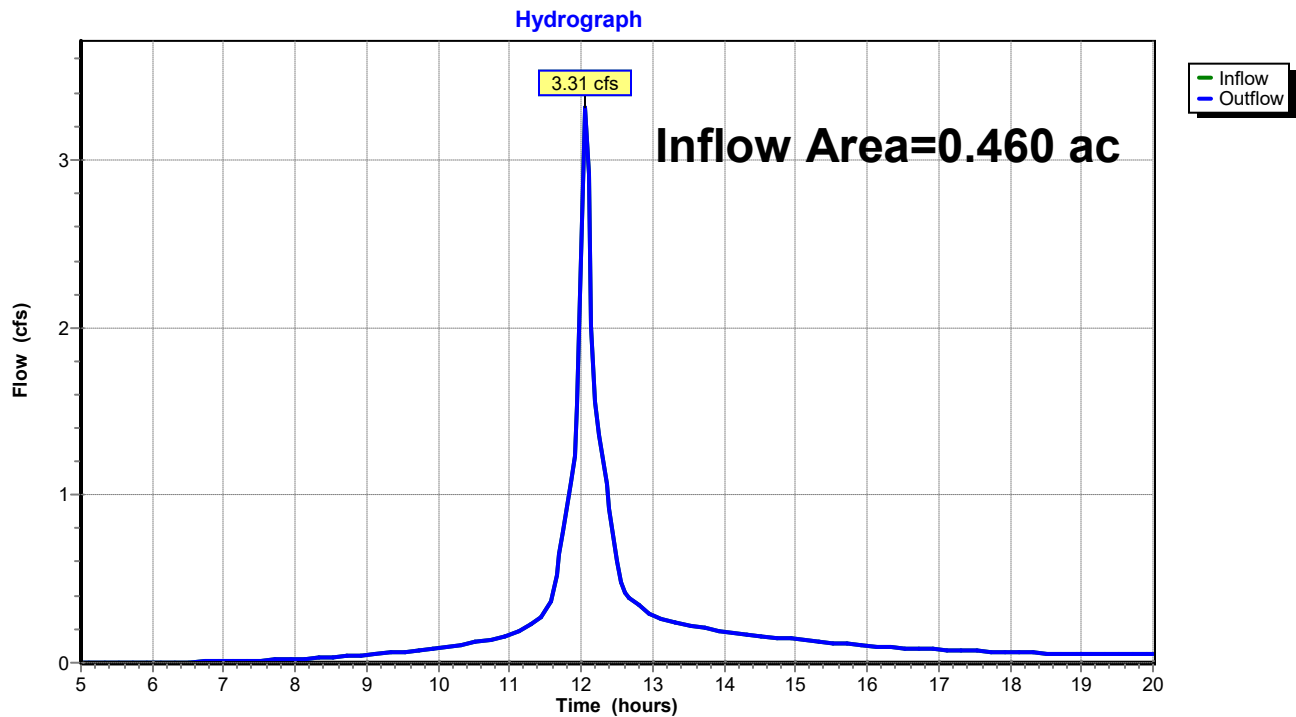
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Summary for Reach DP1: Shoreline 1

Inflow Area = 0.460 ac, 0.00% Impervious, Inflow Depth > 5.57" for 100-yr event
Inflow = 3.31 cfs @ 12.06 hrs, Volume= 0.213 af
Outflow = 3.31 cfs @ 12.06 hrs, Volume= 0.213 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP1: Shoreline 1



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Type III 24-hr 100-yr Rainfall=8.70"

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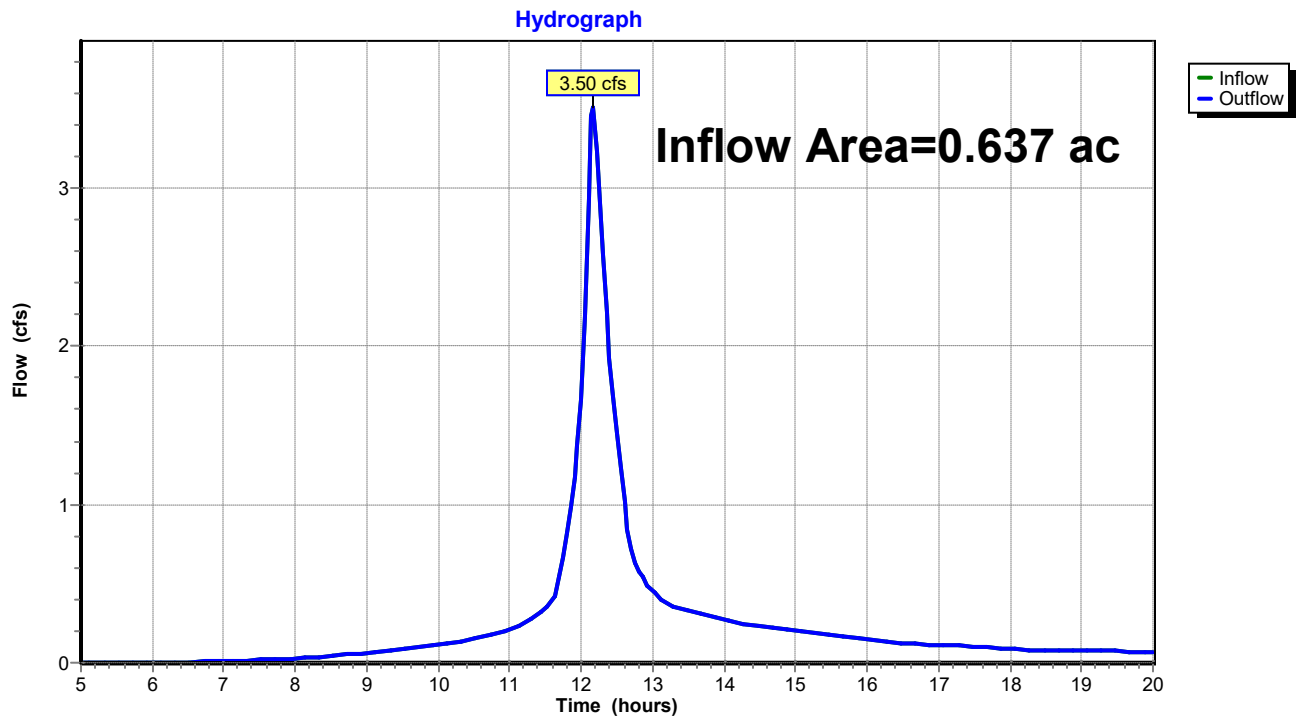
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Summary for Reach DP2: Shoreline 2

Inflow Area = 0.637 ac, 0.00% Impervious, Inflow Depth > 5.56" for 100-yr event
Inflow = 3.50 cfs @ 12.17 hrs, Volume= 0.295 af
Outflow = 3.50 cfs @ 12.17 hrs, Volume= 0.295 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP2: Shoreline 2



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Type III 24-hr 100-yr Rainfall=8.70"

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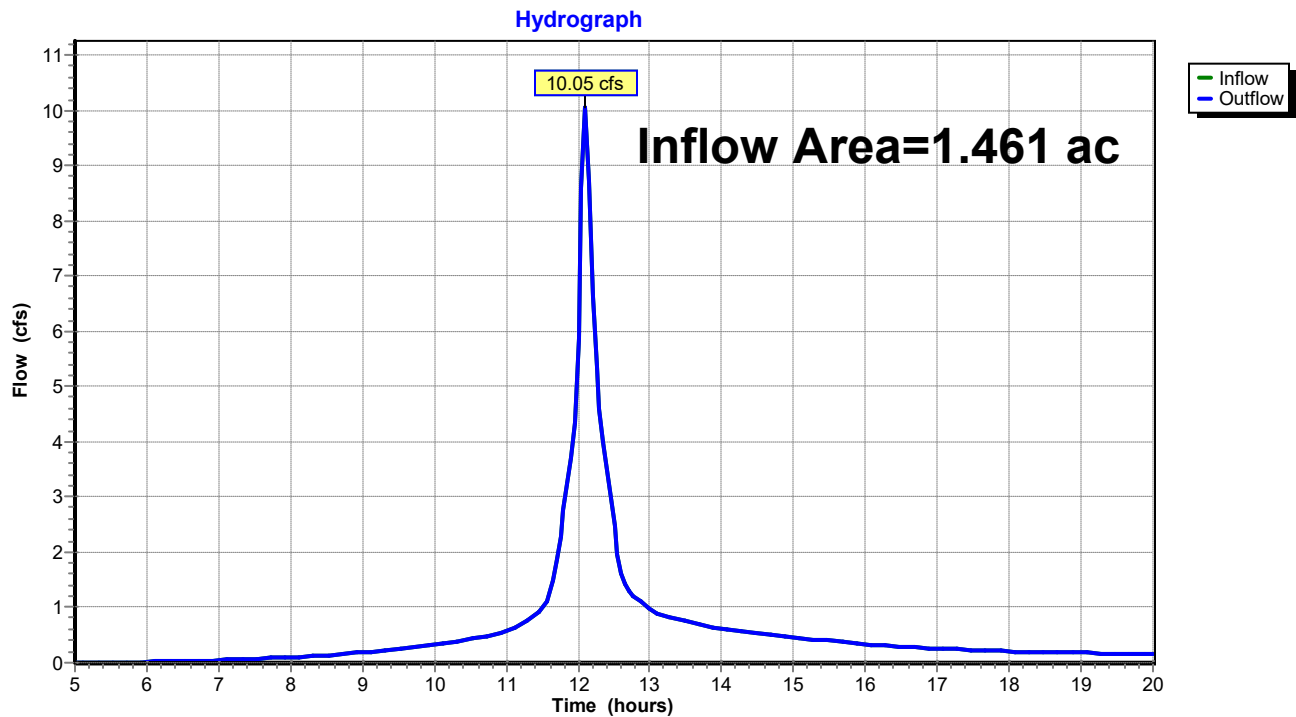
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Summary for Reach DP3: Shoreline 3

Inflow Area = 1.461 ac, 1.18% Impervious, Inflow Depth > 5.92" for 100-yr event
Inflow = 10.05 cfs @ 12.10 hrs, Volume= 0.721 af
Outflow = 10.05 cfs @ 12.10 hrs, Volume= 0.721 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP3: Shoreline 3



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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Reach SP1: SACO RIVER / OCEAN

Inflow Area = 2.557 ac, 0.67% Impervious, Inflow Depth > 5.77" for 100-yr event
Inflow = 15.89 cfs @ 12.10 hrs, Volume= 1.229 af
Outflow = 15.89 cfs @ 12.10 hrs, Volume= 1.229 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SP1: SACO RIVER / OCEAN

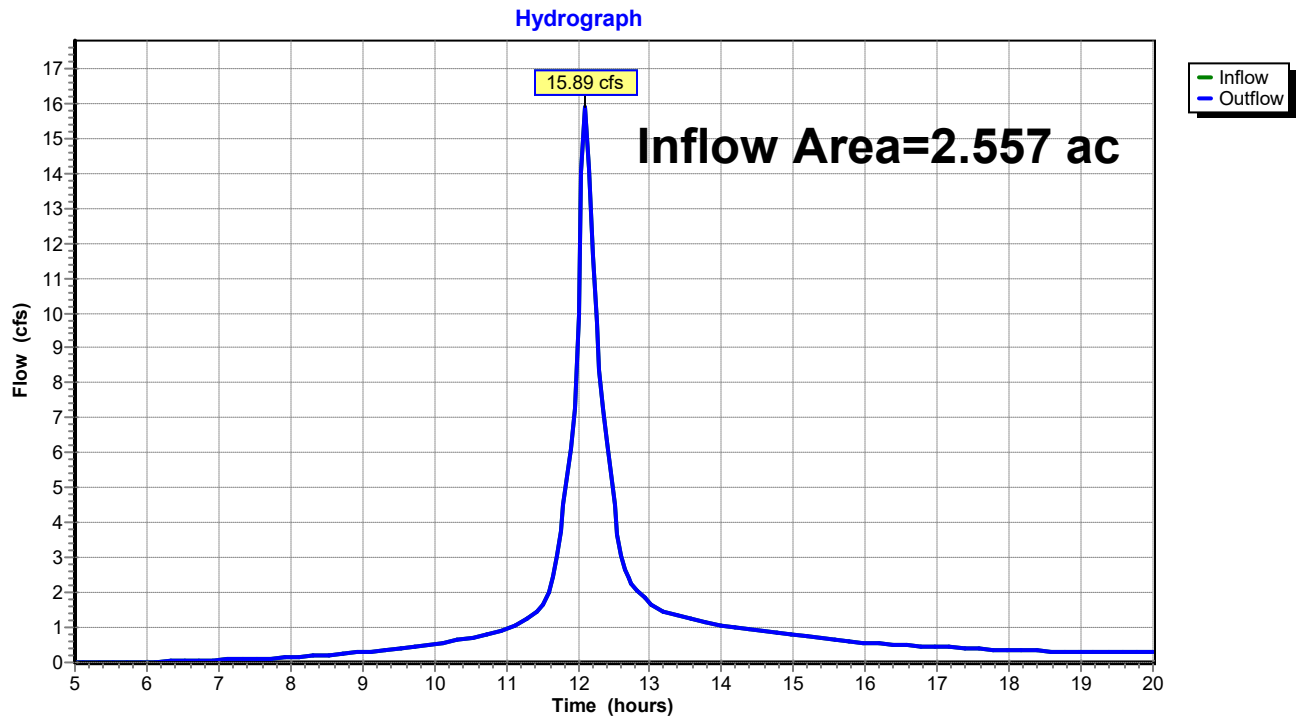


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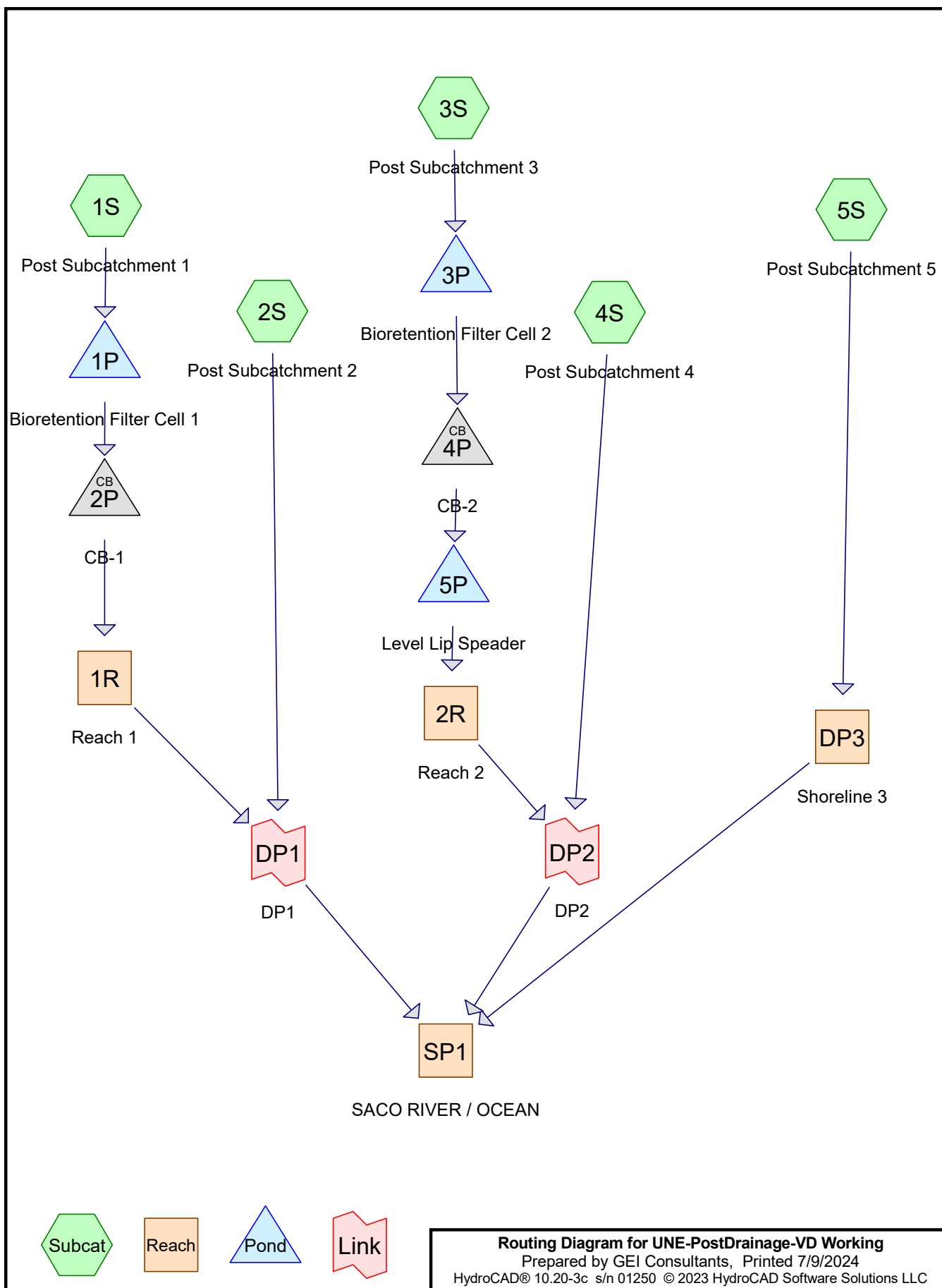
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Appendix C

Post Development HydroCAD Calculations



Project Notes

Defined 3 rainfall events from ME-York IDF

UNE-PostDrainage-VD Working

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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type III 24-hr		Default	24.00	1	3.30	2
2	10-yr	Type III 24-hr		Default	24.00	1	4.90	2
3	25-yr	Type III 24-hr		Default	24.00	1	6.20	2
4	100-yr	Type III 24-hr		Default	24.00	1	8.70	2
5	WQ	Type III 24-hr		Default	24.00	1	1.00	2

UNE-PostDrainage-VD Working

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.081	80	>75% Grass cover, Good, HSG D (1S, 3S, 4S)
0.013	73	Biofiltration cell, Good, HSG D (3S)
0.020	73	Bioretention Filter Cell, Good, HSG D (1S)
0.089	96	Gravel surface, HSG D (5S)
0.039	98	Ledge, HSG D (1S, 3S)
0.090	98	Paved Access Drive, HSG D (1S)
0.038	98	Paved access drive, HSG D (5S)
0.093	98	Paved access drive, HSG D (3S, 4S)
0.028	98	Paved parking, HSG D (2S)
0.017	98	Roofs, HSG D (5S)
0.160	88	Sand beach, HSG D (5S)
0.362	79	Woods, Fair, HSG D (4S)
1.526	77	Woods, Good, HSG D (1S, 2S, 3S, 5S)
2.557	81	TOTAL AREA

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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	
2.557	HSG D	1S, 2S, 3S, 4S, 5S
0.000	Other	
2.557		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	0.081	0.000	0.081	>75% Grass cover, Good	1S, 3S, 4S
0.000	0.000	0.000	0.013	0.000	0.013	Biofiltration cell, Good	3S
0.000	0.000	0.000	0.020	0.000	0.020	Bioretention Filter Cell, Good	1S
0.000	0.000	0.000	0.089	0.000	0.089	Gravel surface	5S
0.000	0.000	0.000	0.039	0.000	0.039	Ledge	1S, 3S
0.000	0.000	0.000	0.090	0.000	0.090	Paved Access Drive	1S
0.000	0.000	0.000	0.038	0.000	0.038	Paved access drive	5S
0.000	0.000	0.000	0.093	0.000	0.093	Paved access drive	3S, 4S
0.000	0.000	0.000	0.028	0.000	0.028	Paved parking	2S
0.000	0.000	0.000	0.017	0.000	0.017	Roofs	5S
0.000	0.000	0.000	0.160	0.000	0.160	Sand beach	5S
0.000	0.000	0.000	0.362	0.000	0.362	Woods, Fair	4S
0.000	0.000	0.000	1.526	0.000	1.526	Woods, Good	1S, 2S, 3S, 5S
0.000	0.000	0.000	2.557	0.000	2.557	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	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	2P	13.75	12.00	48.0	0.0365	0.013	0.0	15.0	0.0	
2	4P	18.75	18.00	40.0	0.0187	0.013	0.0	18.0	0.0	

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Type III 24-hr 2-yr Rainfall=3.30"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 1S: Post Subcatchment 1 Runoff Area=9,832 sf 50.01% Impervious Runoff Depth>1.88"
Flow Length=172' Tc=0.8 min CN=87 Runoff=0.59 cfs 0.035 af

Subcatchment 2S: Post Subcatchment 2 Runoff Area=11,488 sf 10.78% Impervious Runoff Depth>1.30"
Flow Length=133' Tc=3.4 min CN=79 Runoff=0.46 cfs 0.029 af

Subcatchment 3S: Post Subcatchment 3 Runoff Area=13,365 sf 33.49% Impervious Runoff Depth>1.65"
Flow Length=262' Tc=4.9 min CN=84 Runoff=0.64 cfs 0.042 af

Subcatchment 4S: Post Subcatchment 4 Runoff Area=17,529 sf 1.68% Impervious Runoff Depth>1.30"
Flow Length=126' Tc=7.2 min CN=79 Runoff=0.62 cfs 0.044 af

Subcatchment 5S: Post Subcatchment 5 Runoff Area=59,179 sf 4.06% Impervious Runoff Depth>1.37"
Flow Length=445' Tc=7.0 min CN=80 Runoff=2.23 cfs 0.155 af

Reach 1R: Reach 1 Inflow=0.58 cfs 0.034 af
Outflow=0.58 cfs 0.034 af

Reach 2R: Reach 2 Inflow=0.61 cfs 0.038 af
Outflow=0.61 cfs 0.038 af

Reach DP3: Shoreline 3 Inflow=2.23 cfs 0.155 af
Outflow=2.23 cfs 0.155 af

Reach SP1: SACO RIVER / OCEAN Inflow=4.22 cfs 0.300 af
Outflow=4.22 cfs 0.300 af

Pond 1P: Bioretention Filter Cell 1 Peak Elev=18.11' Storage=79 cf Inflow=0.59 cfs 0.035 af
Outflow=0.58 cfs 0.034 af

Pond 2P: CB-1 Peak Elev=14.15' Inflow=0.58 cfs 0.034 af
15.0" Round Culvert n=0.013 L=48.0' S=0.0365 ' /' Outflow=0.58 cfs 0.034 af

Pond 3P: Bioretention Filter Cell 2 Peak Elev=23.62' Storage=64 cf Inflow=0.64 cfs 0.042 af
Outflow=0.64 cfs 0.041 af

Pond 4P: CB-2 Peak Elev=19.15' Inflow=0.64 cfs 0.041 af
18.0" Round Culvert n=0.013 L=40.0' S=0.0187 ' /' Outflow=0.64 cfs 0.041 af

Pond 5P: Level Lip Spreader Peak Elev=18.00' Storage=115 cf Inflow=0.64 cfs 0.041 af
Outflow=0.61 cfs 0.038 af

Link DP1: DP1 Inflow=1.02 cfs 0.063 af
Primary=1.02 cfs 0.063 af

Link DP2: DP2 Inflow=1.24 cfs 0.082 af
Primary=1.24 cfs 0.082 af

UNE-PostDrainage-VD Working

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Type III 24-hr 2-yr Rainfall=3.30"

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Total Runoff Area = 2.557 ac Runoff Volume = 0.305 af Average Runoff Depth = 1.43"
88.04% Pervious = 2.251 ac 11.96% Impervious = 0.306 ac

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Type III 24-hr 2-yr Rainfall=3.30"

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Summary for Subcatchment 1S: Post Subcatchment 1

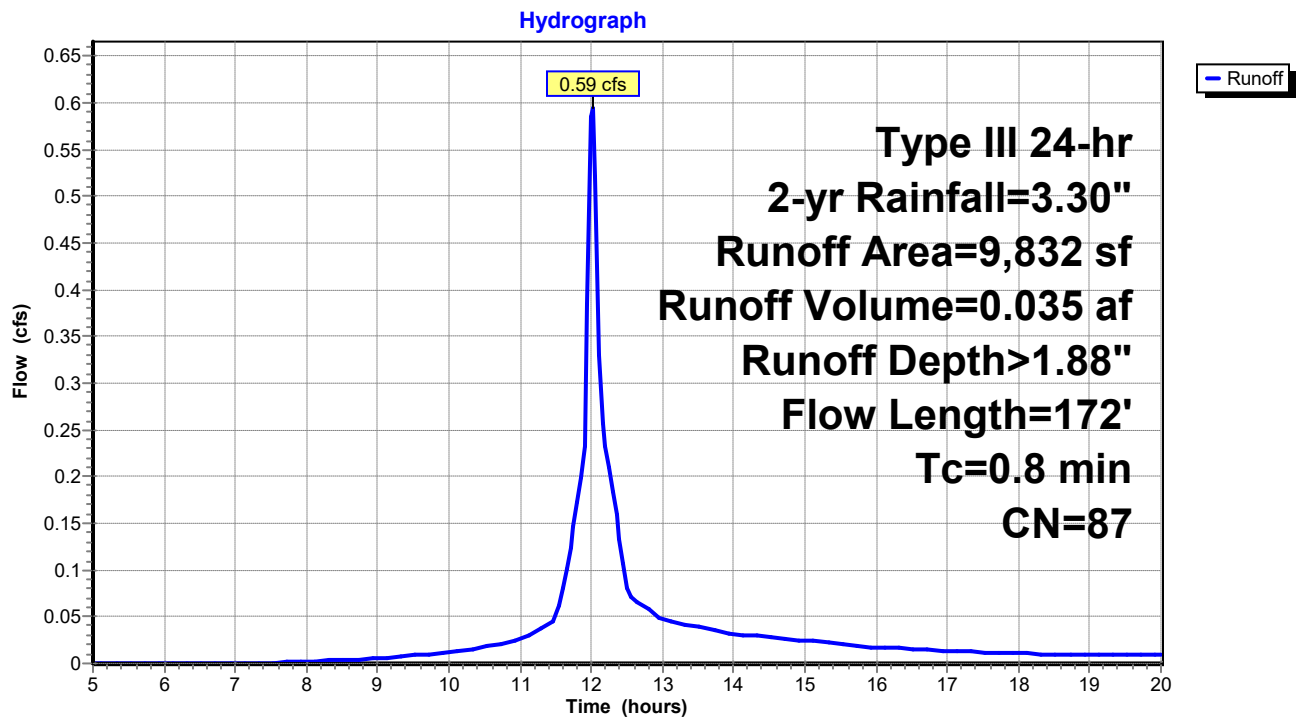
Runoff = 0.59 cfs @ 12.01 hrs, Volume= 0.035 af, Depth> 1.88"
 Routed to Pond 1P : Bioretention Filter Cell 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-yr Rainfall=3.30"

Area (sf)	CN	Description
3,430	77	Woods, Good, HSG D
* 982	98	Ledge, HSG D
595	80	>75% Grass cover, Good, HSG D
* 3,935	98	Paved Access Drive, HSG D
* 890	73	Bioretention Filter Cell, Good, HSG D
9,832	87	Weighted Average
4,915		49.99% Pervious Area
4,917		50.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	46	0.0500	1.73		Sheet Flow, Tc-1 Smooth surfaces n= 0.011 P2= 3.30"
0.3	102	0.0500	5.25	15.74	Channel Flow, Tc-2 Area= 3.0 sf Perim= 9.2' r= 0.33' n= 0.030 Earth, grassed & winding
0.1	24	0.0625	3.75		Shallow Concentrated Flow, Tc-3 Grassed Waterway Kv= 15.0 fps
0.8	172	Total			

Subcatchment 1S: Post Subcatchment 1



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Type III 24-hr 2-yr Rainfall=3.30"

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Summary for Subcatchment 2S: Post Subcatchment 2

Runoff = 0.46 cfs @ 12.06 hrs, Volume= 0.029 af, Depth> 1.30"
Routed to Link DP1 : DP1

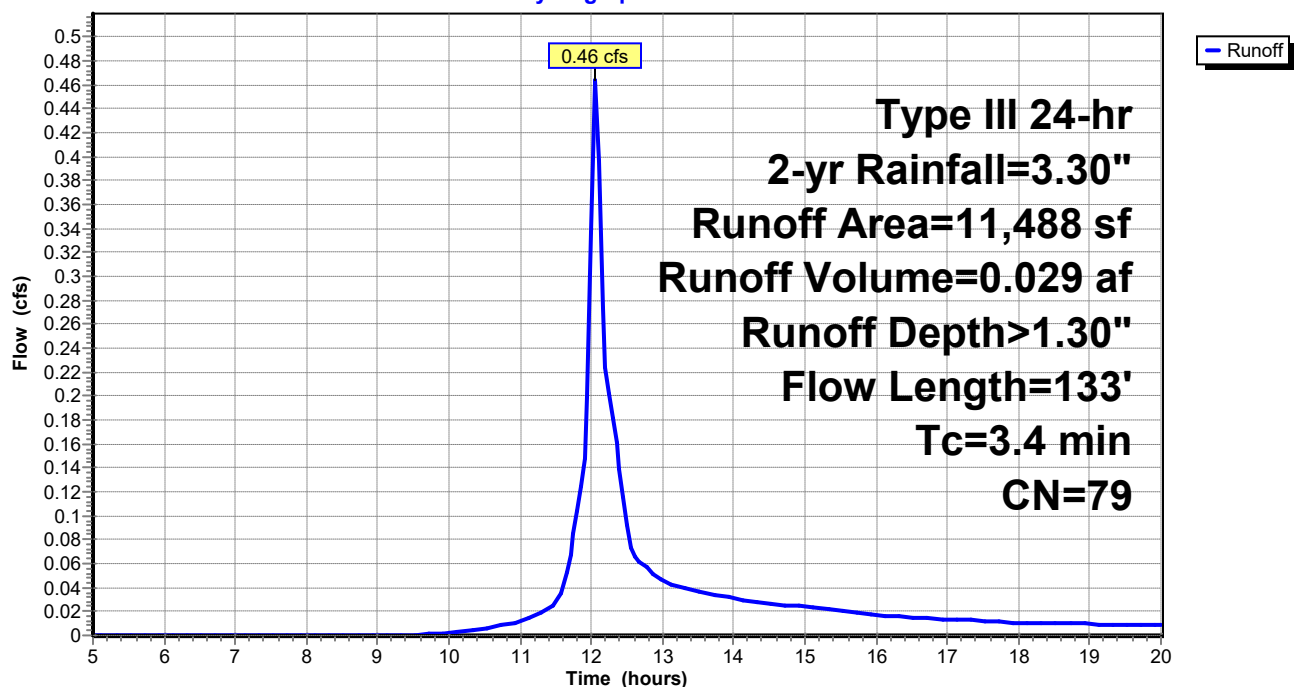
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.30"

Area (sf)	CN	Description
10,250	77	Woods, Good, HSG D
1,238	98	Paved parking, HSG D
11,488	79	Weighted Average
10,250		89.22% Pervious Area
1,238		10.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	21	0.1905	0.14		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
0.9	112	0.1696	2.06		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
3.4	133	Total			

Subcatchment 2S: Post Subcatchment 2

Hydrograph



UNE-PostDrainage-VD Working

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Type III 24-hr 2-yr Rainfall=3.30"

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Summary for Subcatchment 3S: Post Subcatchment 3

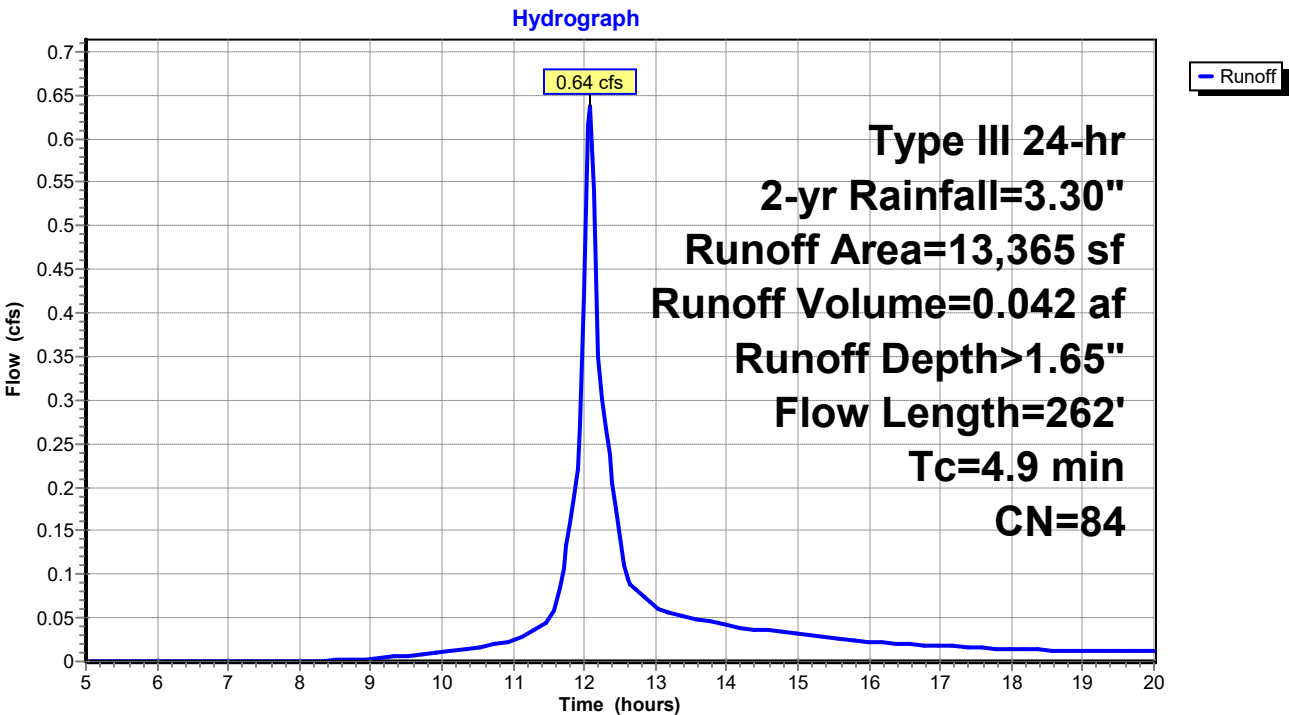
Runoff = 0.64 cfs @ 12.08 hrs, Volume= 0.042 af, Depth> 1.65"
 Routed to Pond 3P : Bioretention Filter Cell 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-yr Rainfall=3.30"

Area (sf)	CN	Description
6,822	77	Woods, Good, HSG D
* 580	73	Biofiltration cell, Good, HSG D
* 3,768	98	Paved access drive, HSG D
1,487	80	>75% Grass cover, Good, HSG D
* 708	98	Ledge, HSG D
13,365	84	Weighted Average
8,889		66.51% Pervious Area
4,476		33.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	43	0.2093	0.17		Sheet Flow, Tc-1 Woods: Light underbrush n= 0.400 P2= 3.30"
0.7	214	0.0500	5.25	15.74	Channel Flow, Tc-2 Area= 3.0 sf Perim= 9.2' r= 0.33' n= 0.030 Earth, grassed & winding
0.0	5	0.0500	3.35		Shallow Concentrated Flow, Tc-3 Grassed Waterway Kv= 15.0 fps
4.9	262	Total			

Subcatchment 3S: Post Subcatchment 3



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Type III 24-hr 2-yr Rainfall=3.30"

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Summary for Subcatchment 4S: Post Subcatchment 4

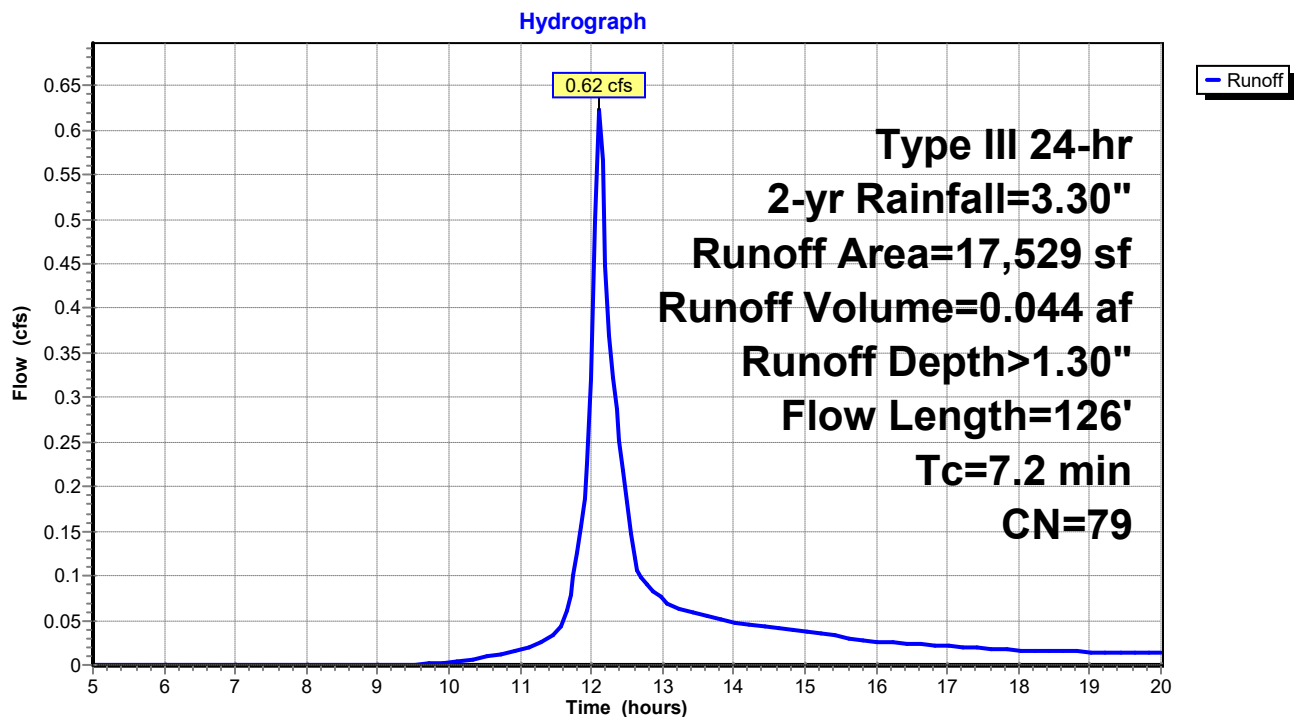
Runoff = 0.62 cfs @ 12.11 hrs, Volume= 0.044 af, Depth> 1.30"
Routed to Link DP2 : DP2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.30"

Area (sf)	CN	Description
* 295	98	Paved access drive, HSG D
1,450	80	>75% Grass cover, Good, HSG D
15,784	79	Woods, Fair, HSG D
17,529	79	Weighted Average
17,234		98.32% Pervious Area
295		1.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	62	0.1290	0.15		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
0.4	64	0.2343	2.42		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
7.2	126	Total			

Subcatchment 4S: Post Subcatchment 4



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Type III 24-hr 2-yr Rainfall=3.30"

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Summary for Subcatchment 5S: Post Subcatchment 5

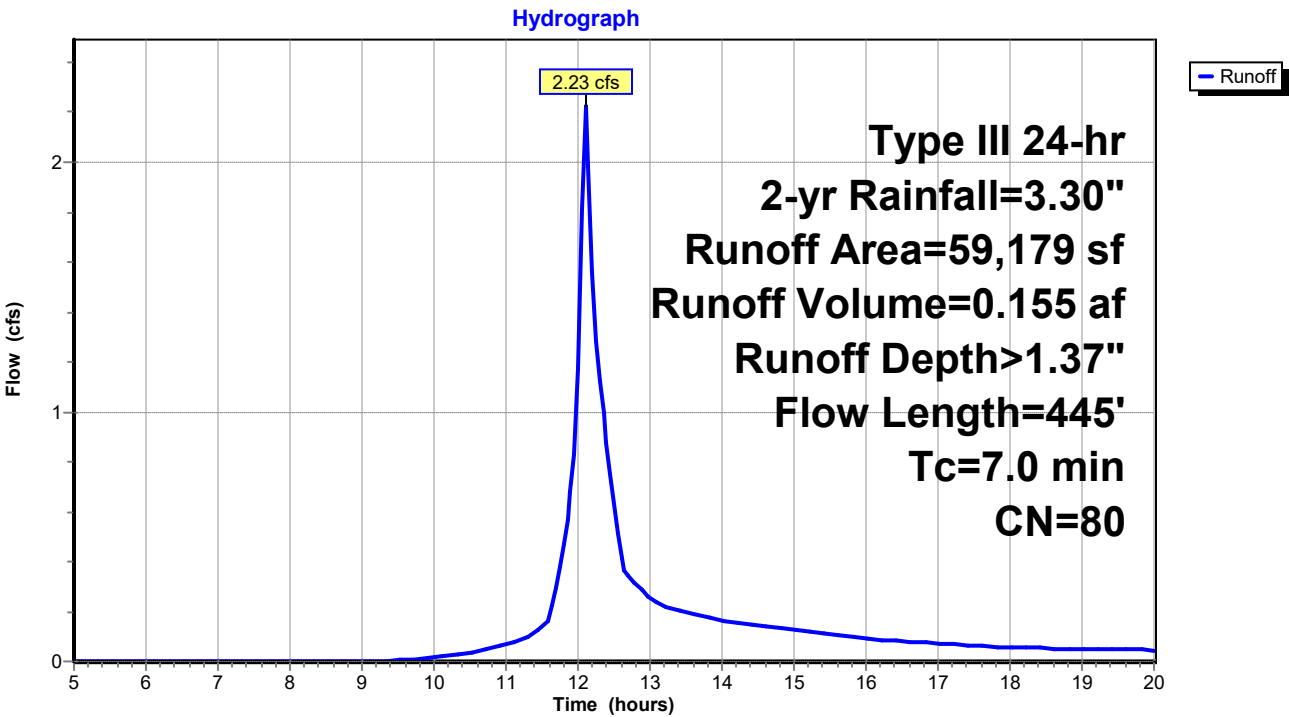
Runoff = 2.23 cfs @ 12.11 hrs, Volume= 0.155 af, Depth> 1.37"
 Routed to Reach DP3 : Shoreline 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-yr Rainfall=3.30"

	Area (sf)	CN	Description
*	1,650	98	Paved access drive, HSG D
	751	98	Roofs, HSG D
*	6,955	88	Sand beach, HSG D
	3,872	96	Gravel surface, HSG D
	45,951	77	Woods, Good, HSG D
	59,179	80	Weighted Average
	56,778		95.94% Pervious Area
	2,401		4.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	23	0.1740	0.14		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
1.0	70	0.0574	1.20		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
0.5	170	0.1059	5.24		Shallow Concentrated Flow, Tc-3
					Unpaved Kv= 16.1 fps
2.5	140	0.0357	0.94		Shallow Concentrated Flow, Tc-4
					Woodland Kv= 5.0 fps
0.3	42	0.0714	2.67		Shallow Concentrated Flow, Tc-5
					Nearly Bare & Untilled Kv= 10.0 fps
7.0	445	Total			

Subcatchment 5S: Post Subcatchment 5



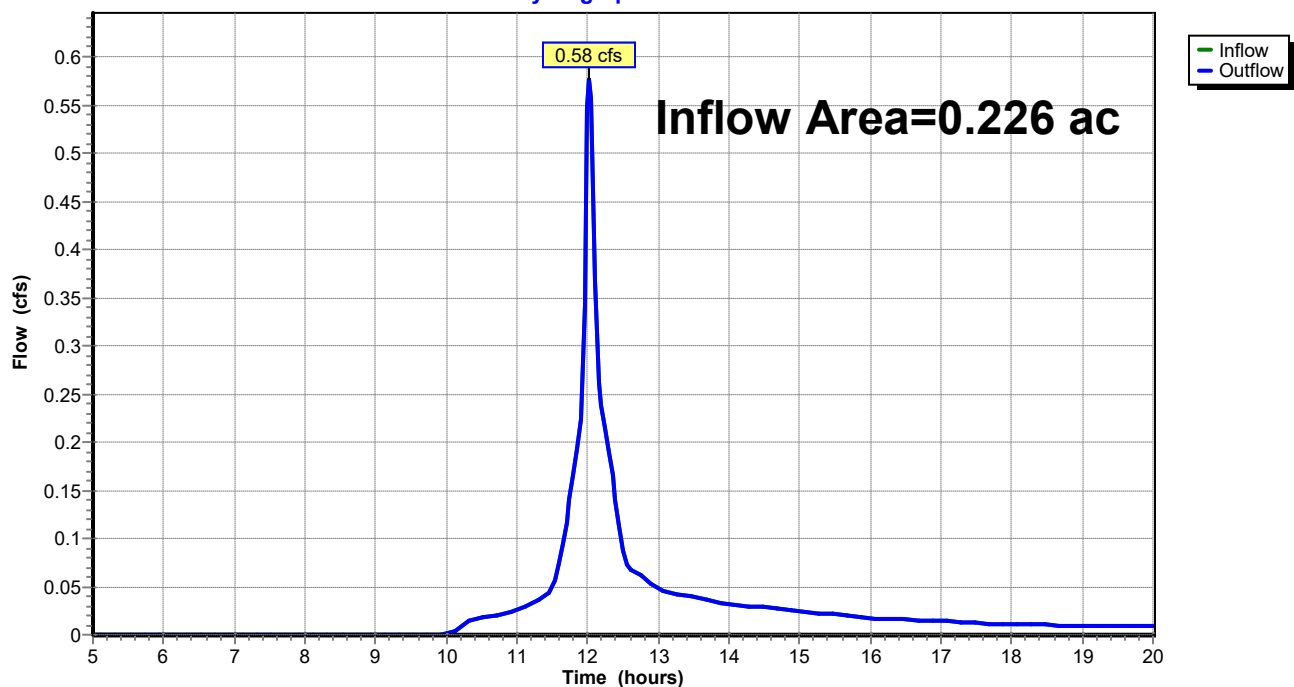
Summary for Reach 1R: Reach 1

Inflow Area = 0.226 ac, 50.01% Impervious, Inflow Depth > 1.81" for 2-yr event
 Inflow = 0.58 cfs @ 12.03 hrs, Volume= 0.034 af
 Outflow = 0.58 cfs @ 12.03 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
 Routed to Link DP1 : DP1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: Reach 1

Hydrograph



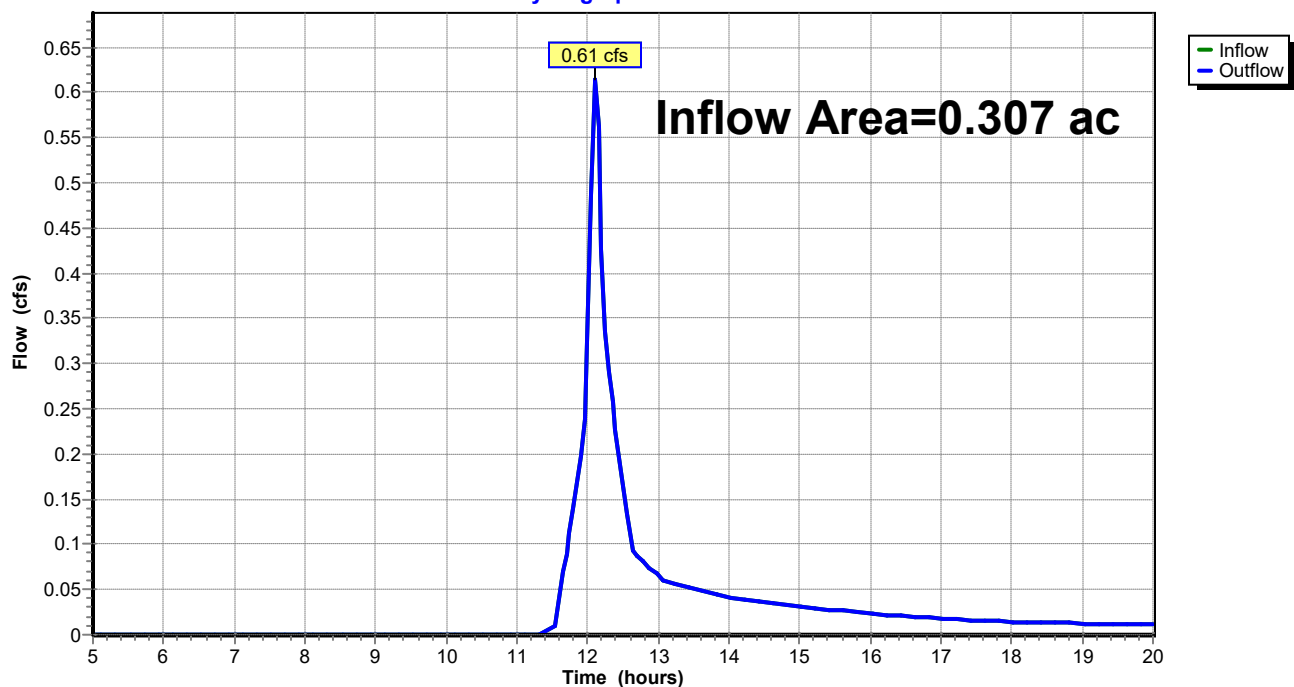
Summary for Reach 2R: Reach 2

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 1.50" for 2-yr event
 Inflow = 0.61 cfs @ 12.11 hrs, Volume= 0.038 af
 Outflow = 0.61 cfs @ 12.11 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min
 Routed to Link DP2 : DP2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: Reach 2

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.30"

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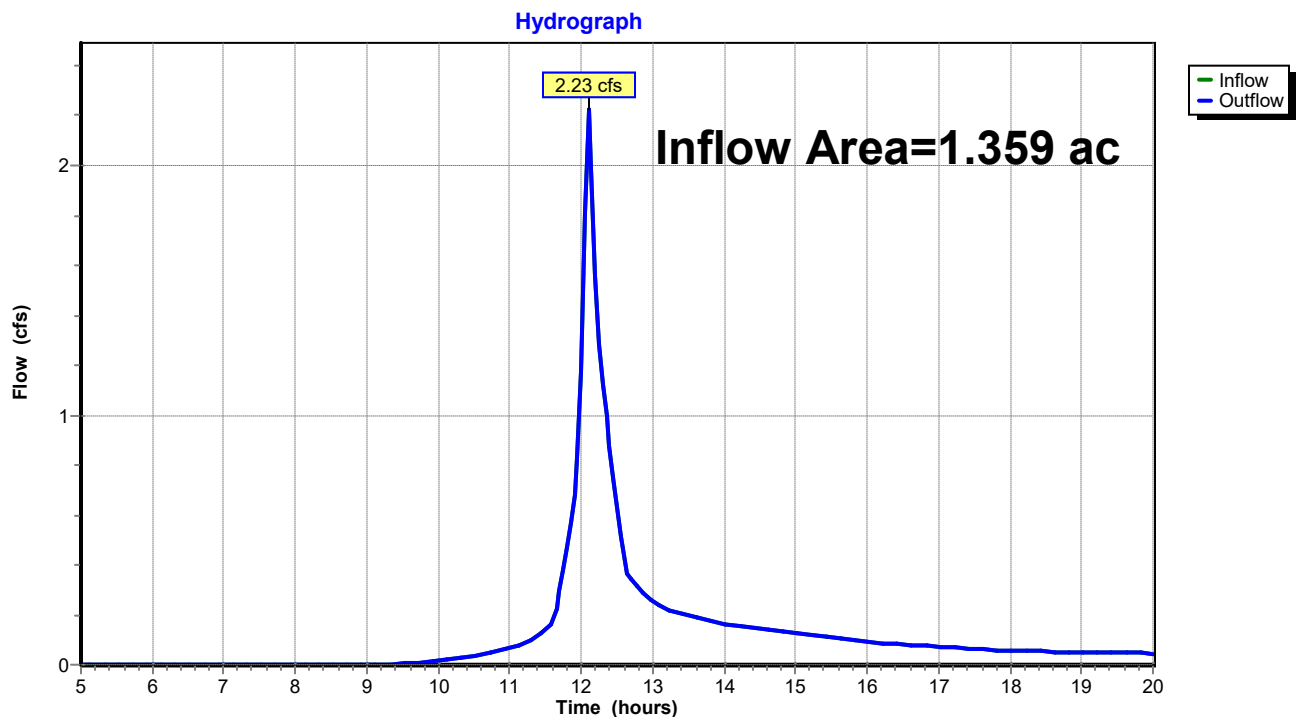
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Summary for Reach DP3: Shoreline 3

Inflow Area = 1.359 ac, 4.06% Impervious, Inflow Depth > 1.37" for 2-yr event
Inflow = 2.23 cfs @ 12.11 hrs, Volume= 0.155 af
Outflow = 2.23 cfs @ 12.11 hrs, Volume= 0.155 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP3: Shoreline 3

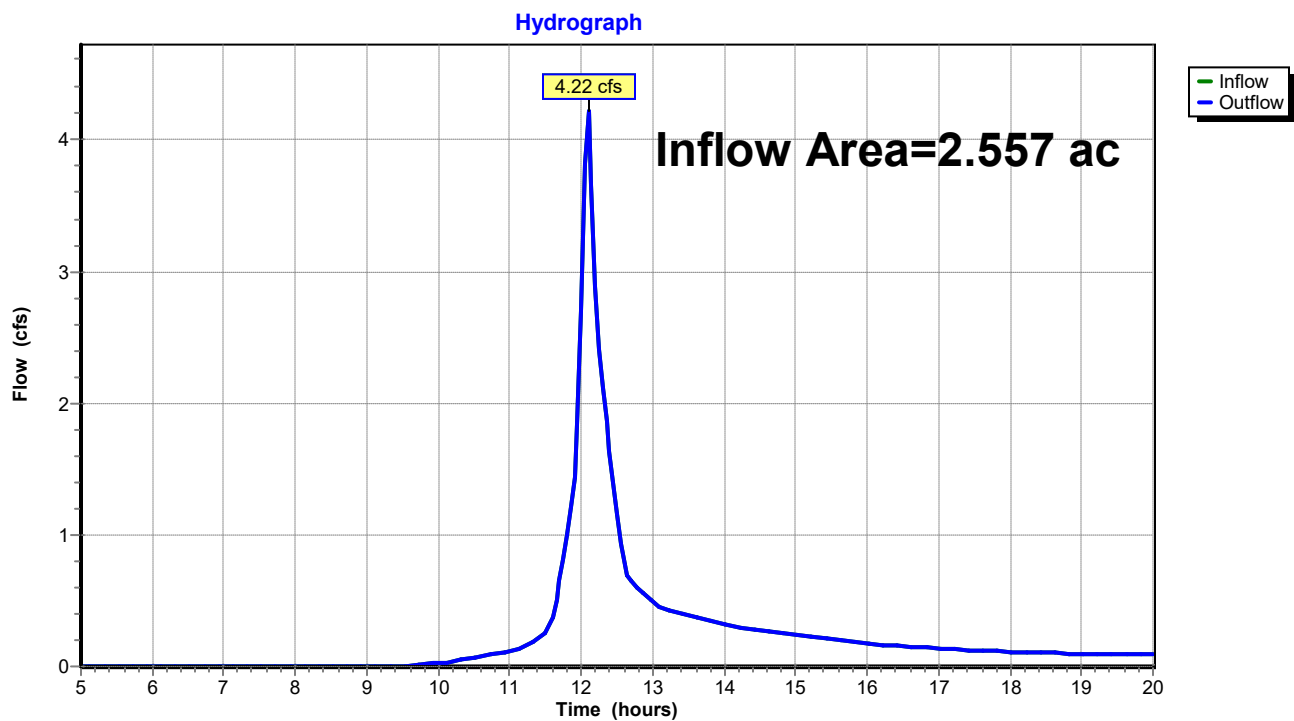


Summary for Reach SP1: SACO RIVER / OCEAN

Inflow Area = 2.557 ac, 11.96% Impervious, Inflow Depth > 1.41" for 2-yr event
 Inflow = 4.22 cfs @ 12.10 hrs, Volume= 0.300 af
 Outflow = 4.22 cfs @ 12.10 hrs, Volume= 0.300 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SP1: SACO RIVER / OCEAN



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Type III 24-hr 2-yr Rainfall=3.30"

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Summary for Pond 1P: Bioretention Filter Cell 1

Inflow Area = 0.226 ac, 50.01% Impervious, Inflow Depth > 1.88" for 2-yr event
Inflow = 0.59 cfs @ 12.01 hrs, Volume= 0.035 af
Outflow = 0.58 cfs @ 12.03 hrs, Volume= 0.034 af, Atten= 3%, Lag= 0.8 min
Primary = 0.58 cfs @ 12.03 hrs, Volume= 0.034 af
Routed to Pond 2P : CB-1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 18.11' @ 12.03 hrs Surf.Area= 249 sf Storage= 79 cf

Plug-Flow detention time= 22.5 min calculated for 0.034 af (96% of inflow)
Center-of-Mass det. time= 9.1 min (788.5 - 779.4)

Volume	Invert	Avail.Storage	Storage Description
#1	17.50'	200 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

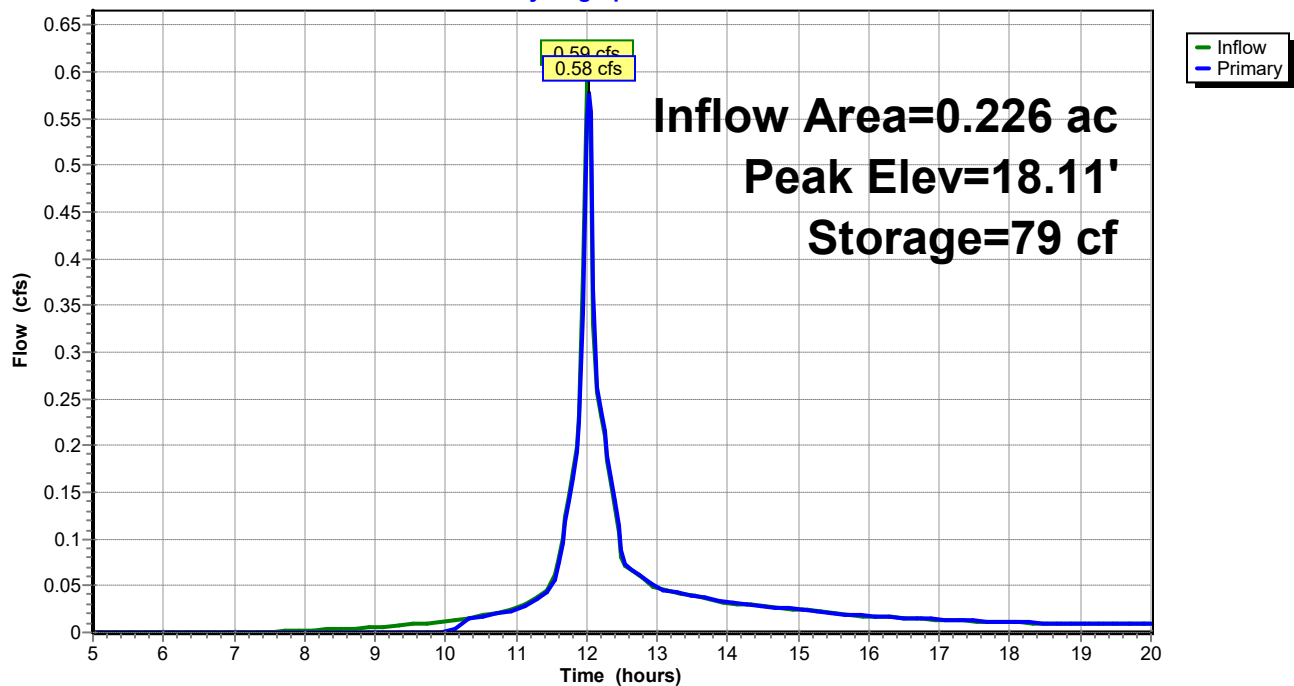
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
17.50	0	0	0
18.00	213	53	53
18.50	372	146	200

Device	Routing	Invert	Outlet Devices
#1	Primary	18.00'	18.0" Horiz. Orifice/Grate C= 0.600 in 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.55 cfs @ 12.03 hrs HW=18.11' (Free Discharge)
↑ **1=Orifice/Grate** (Weir Controls 0.55 cfs @ 1.08 fps)

Pond 1P: Bioretention Filter Cell 1

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.30"

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Summary for Pond 2P: CB-1

Inflow Area = 0.226 ac, 50.01% Impervious, Inflow Depth > 1.81" for 2-yr event
Inflow = 0.58 cfs @ 12.03 hrs, Volume= 0.034 af
Outflow = 0.58 cfs @ 12.03 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
Primary = 0.58 cfs @ 12.03 hrs, Volume= 0.034 af
Routed to Reach 1R : Reach 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 14.15' @ 12.03 hrs

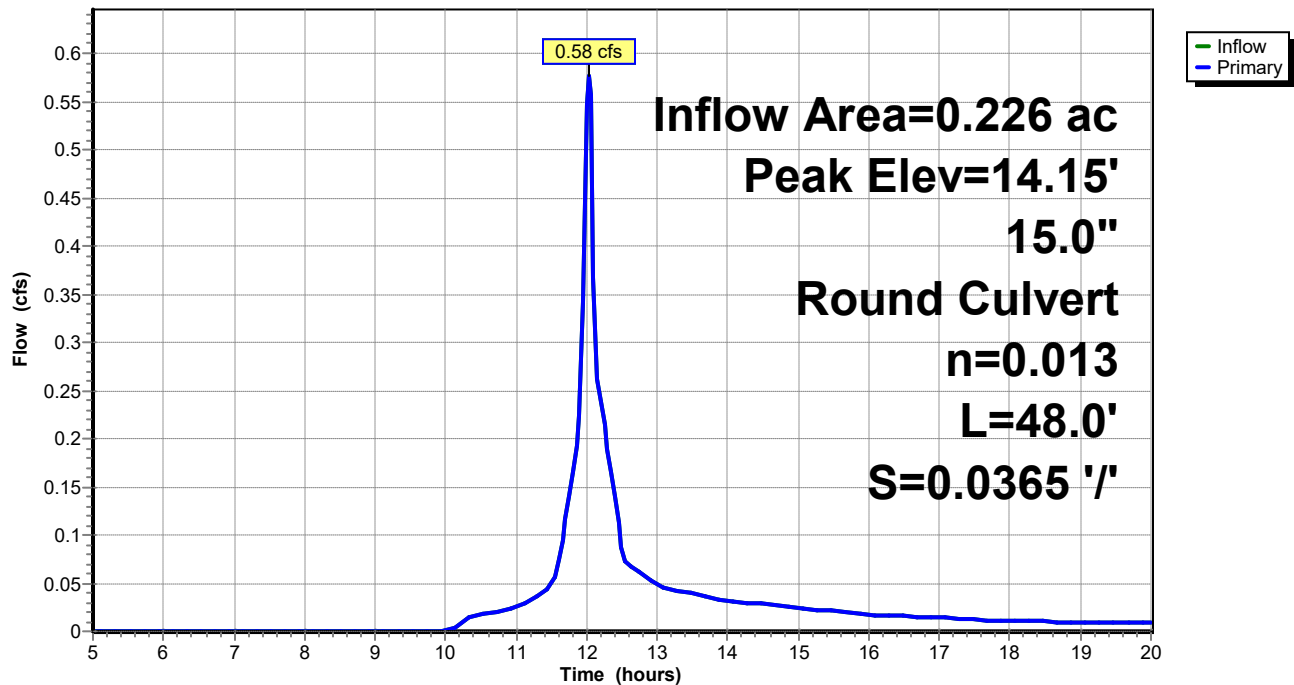
Device	Routing	Invert	Outlet Devices
#1	Primary	13.75'	15.0" Round Culvert L= 48.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.75' / 12.00' S= 0.0365 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.55 cfs @ 12.03 hrs HW=14.14' (Free Discharge)

↑1=Culvert (Inlet Controls 0.55 cfs @ 1.68 fps)

Pond 2P: CB-1

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.30"

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Summary for Pond 3P: Bioretention Filter Cell 2

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 1.65" for 2-yr event
Inflow = 0.64 cfs @ 12.08 hrs, Volume= 0.042 af
Outflow = 0.64 cfs @ 12.09 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.7 min
Primary = 0.64 cfs @ 12.09 hrs, Volume= 0.041 af
Routed to Pond 4P : CB-2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 23.62' @ 12.09 hrs Surf.Area= 208 sf Storage= 64 cf

Plug-Flow detention time= 14.5 min calculated for 0.041 af (97% of inflow)
Center-of-Mass det. time= 5.7 min (797.0 - 791.3)

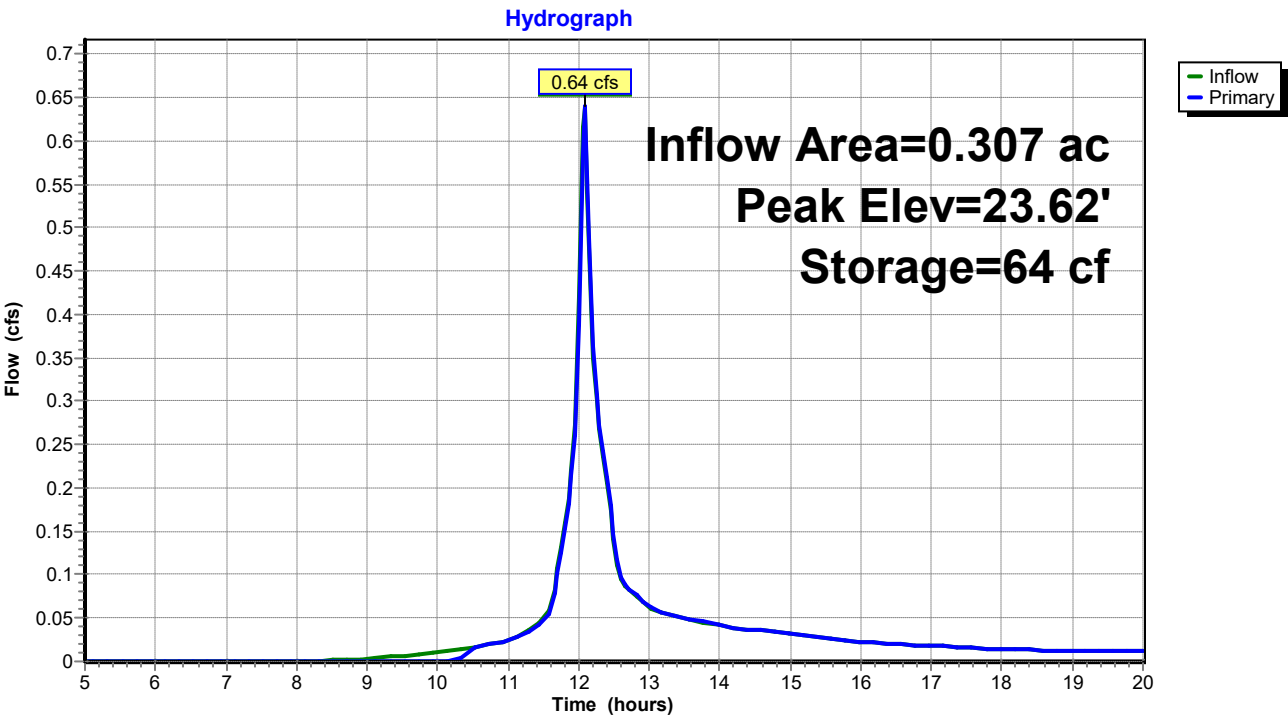
Volume	Invert	Avail.Storage	Storage Description
#1	23.00'	380 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.00	0	0	0
24.00	335	168	168
24.50	515	213	380

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	18.0" Horiz. Orifice/Grate C= 0.600 in 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.62 cfs @ 12.09 hrs HW=23.62' (Free Discharge)
↑ **1=Orifice/Grate** (Weir Controls 0.62 cfs @ 1.12 fps)

Pond 3P: Bioretention Filter Cell 2



UNE-PostDrainage-VD Working

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Type III 24-hr 2-yr Rainfall=3.30"

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Summary for Pond 4P: CB-2

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 1.61" for 2-yr event
Inflow = 0.64 cfs @ 12.09 hrs, Volume= 0.041 af
Outflow = 0.64 cfs @ 12.09 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.09 hrs, Volume= 0.041 af
Routed to Pond 5P : Level Lip Spreader

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 19.15' @ 12.09 hrs

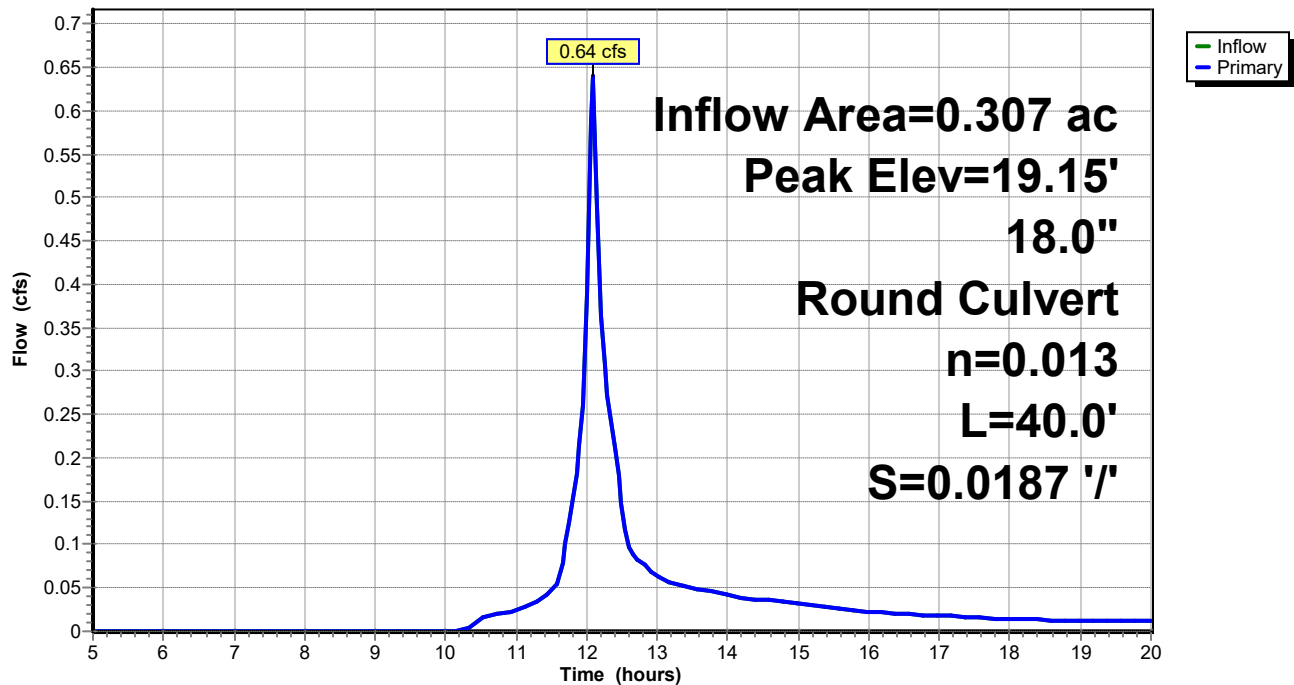
Device	Routing	Invert	Outlet Devices
#1	Primary	18.75'	18.0" Round Culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.75' / 18.00' S= 0.0187 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.62 cfs @ 12.09 hrs HW=19.14' (Free Discharge)

↑1=Culvert (Inlet Controls 0.62 cfs @ 1.69 fps)

Pond 4P: CB-2

Hydrograph



UNE-PostDrainage-VD Working

Type III 24-hr 2-yr Rainfall=3.30"

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Summary for Pond 5P: Level Lip Spreader

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 1.61" for 2-yr event
 Inflow = 0.64 cfs @ 12.09 hrs, Volume= 0.041 af
 Outflow = 0.61 cfs @ 12.11 hrs, Volume= 0.038 af, Atten= 4%, Lag= 1.4 min
 Primary = 0.61 cfs @ 12.11 hrs, Volume= 0.038 af
 Routed to Reach 2R : Reach 2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 18.00' @ 11.60 hrs Surf.Area= 168 sf Storage= 115 cf
 Flood Elev= 20.00' Surf.Area= 168 sf Storage= 115 cf

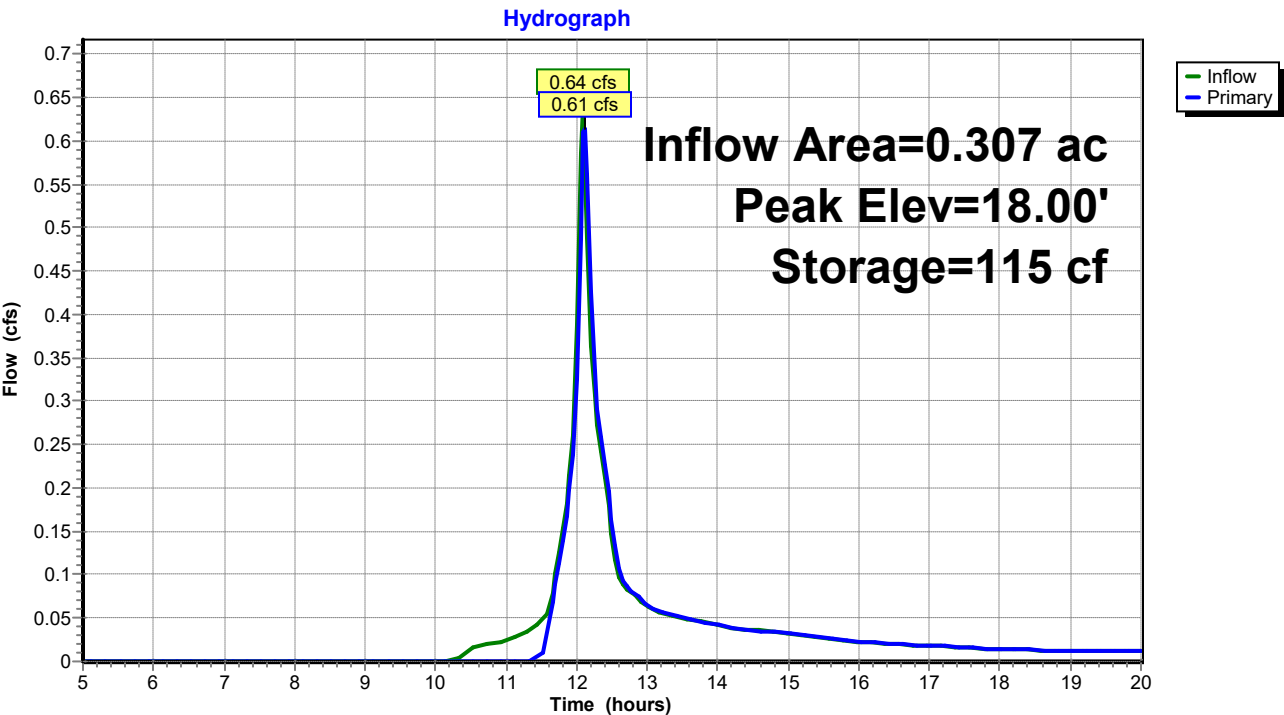
Plug-Flow detention time= 32.2 min calculated for 0.038 af (93% of inflow)
 Center-of-Mass det. time= 10.2 min (807.2 - 797.0)

Volume	Invert	Avail.Storage	Storage Description	
#1	17.00'	115 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
17.00	61	0.0	0	0
18.00	168	100.0	115	115

Device	Routing	Invert	Outlet Devices
#0	Primary	18.00'	Automatic Storage Overflow (Discharged without head)

Primary OutFlow Max=0.00 cfs @ 12.11 hrs HW=18.00' (Free Discharge)

Pond 5P: Level Lip Speader



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Type III 24-hr 2-yr Rainfall=3.30"

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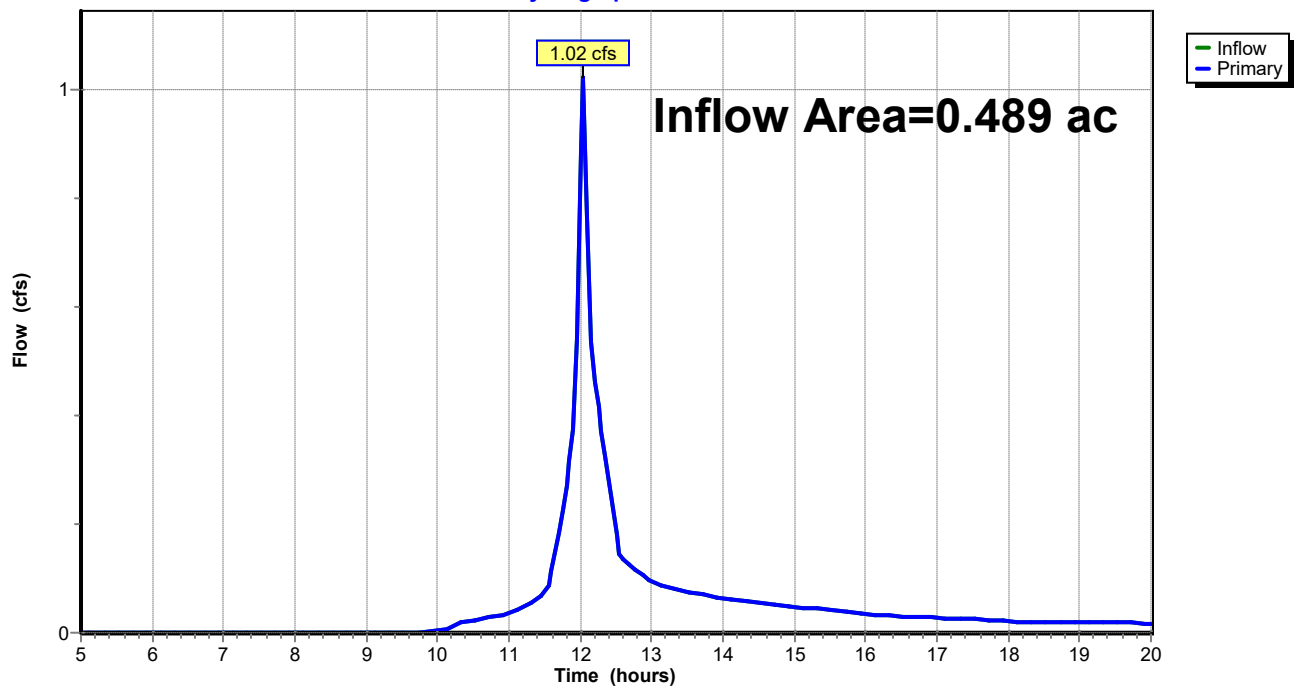
Summary for Link DP1: DP1

Inflow Area = 0.489 ac, 28.87% Impervious, Inflow Depth > 1.54" for 2-yr event
Inflow = 1.02 cfs @ 12.04 hrs, Volume= 0.063 af
Primary = 1.02 cfs @ 12.04 hrs, Volume= 0.063 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP1: DP1

Hydrograph



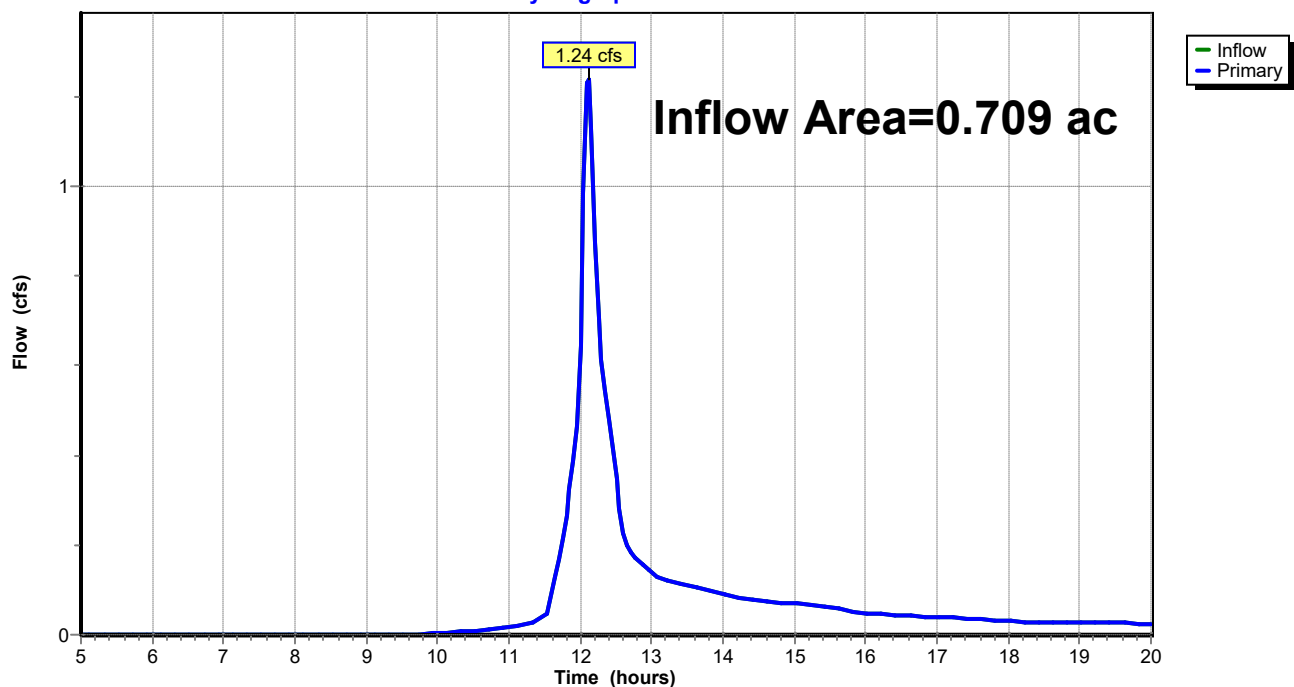
Summary for Link DP2: DP2

Inflow Area = 0.709 ac, 15.44% Impervious, Inflow Depth > 1.39" for 2-yr event
 Inflow = 1.24 cfs @ 12.11 hrs, Volume= 0.082 af
 Primary = 1.24 cfs @ 12.11 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min
 Routed to Reach SP1 : SACO RIVER / OCEAN

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP2: DP2

Hydrograph



UNE-PostDrainage-VD Working

Type III 24-hr 10-yr Rainfall=4.90"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 1S: Post Subcatchment 1 Runoff Area=9,832 sf 50.01% Impervious Runoff Depth>3.28"
Flow Length=172' Tc=0.8 min CN=87 Runoff=1.02 cfs 0.062 af

Subcatchment 2S: Post Subcatchment 2 Runoff Area=11,488 sf 10.78% Impervious Runoff Depth>2.53"
Flow Length=133' Tc=3.4 min CN=79 Runoff=0.90 cfs 0.056 af

Subcatchment 3S: Post Subcatchment 3 Runoff Area=13,365 sf 33.49% Impervious Runoff Depth>2.98"
Flow Length=262' Tc=4.9 min CN=84 Runoff=1.15 cfs 0.076 af

Subcatchment 4S: Post Subcatchment 4 Runoff Area=17,529 sf 1.68% Impervious Runoff Depth>2.53"
Flow Length=126' Tc=7.2 min CN=79 Runoff=1.21 cfs 0.085 af

Subcatchment 5S: Post Subcatchment 5 Runoff Area=59,179 sf 4.06% Impervious Runoff Depth>2.62"
Flow Length=445' Tc=7.0 min CN=80 Runoff=4.26 cfs 0.297 af

Reach 1R: Reach 1 Inflow=0.99 cfs 0.060 af
Outflow=0.99 cfs 0.060 af

Reach 2R: Reach 2 Inflow=1.10 cfs 0.073 af
Outflow=1.10 cfs 0.073 af

Reach DP3: Shoreline 3 Inflow=4.26 cfs 0.297 af
Outflow=4.26 cfs 0.297 af

Reach SP1: SACO RIVER / OCEAN Inflow=7.94 cfs 0.570 af
Outflow=7.94 cfs 0.570 af

Pond 1P: Bioretention Filter Cell 1 Peak Elev=18.16' Storage=92 cf Inflow=1.02 cfs 0.062 af
Outflow=0.99 cfs 0.060 af

Pond 2P: CB-1 Peak Elev=14.29' Inflow=0.99 cfs 0.060 af
15.0" Round Culvert n=0.013 L=48.0' S=0.0365 '/' Outflow=0.99 cfs 0.060 af

Pond 3P: Bioretention Filter Cell 2 Peak Elev=23.68' Storage=77 cf Inflow=1.15 cfs 0.076 af
Outflow=1.14 cfs 0.075 af

Pond 4P: CB-2 Peak Elev=19.29' Inflow=1.14 cfs 0.075 af
18.0" Round Culvert n=0.013 L=40.0' S=0.0187 '/' Outflow=1.14 cfs 0.075 af

Pond 5P: Level Lip Spreader Peak Elev=18.00' Storage=115 cf Inflow=1.14 cfs 0.075 af
Outflow=1.10 cfs 0.073 af

Link DP1: DP1 Inflow=1.85 cfs 0.116 af
Primary=1.85 cfs 0.116 af

Link DP2: DP2 Inflow=2.31 cfs 0.158 af
Primary=2.31 cfs 0.158 af

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Type III 24-hr 10-yr Rainfall=4.90"

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Total Runoff Area = 2.557 ac Runoff Volume = 0.575 af Average Runoff Depth = 2.70"
88.04% Pervious = 2.251 ac 11.96% Impervious = 0.306 ac

UNE-PostDrainage-VD Working

Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Subcatchment 1S: Post Subcatchment 1

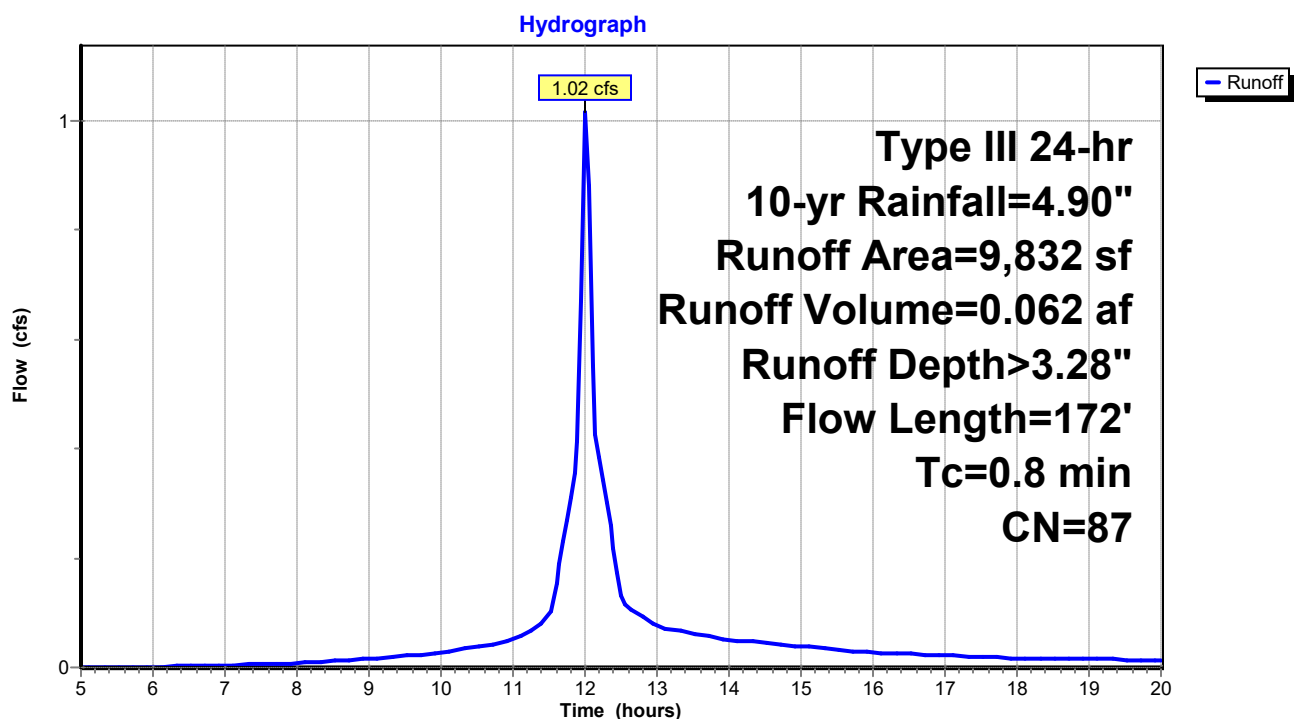
Runoff = 1.02 cfs @ 12.01 hrs, Volume= 0.062 af, Depth> 3.28"
 Routed to Pond 1P : Bioretention Filter Cell 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-yr Rainfall=4.90"

Area (sf)	CN	Description
3,430	77	Woods, Good, HSG D
* 982	98	Ledge, HSG D
595	80	>75% Grass cover, Good, HSG D
* 3,935	98	Paved Access Drive, HSG D
* 890	73	Bioretention Filter Cell, Good, HSG D
9,832	87	Weighted Average
4,915		49.99% Pervious Area
4,917		50.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	46	0.0500	1.73		Sheet Flow, Tc-1 Smooth surfaces n= 0.011 P2= 3.30"
0.3	102	0.0500	5.25	15.74	Channel Flow, Tc-2 Area= 3.0 sf Perim= 9.2' r= 0.33' n= 0.030 Earth, grassed & winding
0.1	24	0.0625	3.75		Shallow Concentrated Flow, Tc-3 Grassed Waterway Kv= 15.0 fps
0.8	172	Total			

Subcatchment 1S: Post Subcatchment 1



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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Subcatchment 2S: Post Subcatchment 2

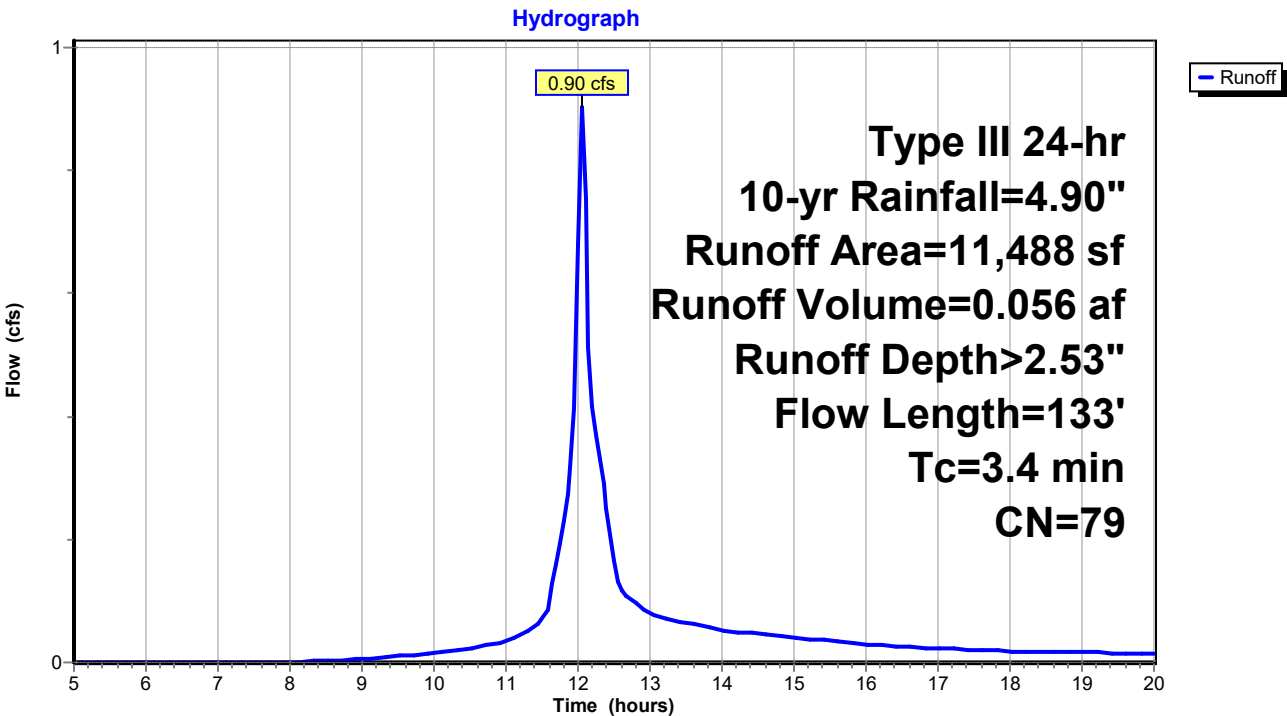
Runoff = 0.90 cfs @ 12.06 hrs, Volume= 0.056 af, Depth> 2.53"
Routed to Link DP1 : DP1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.90"

Area (sf)	CN	Description
10,250	77	Woods, Good, HSG D
1,238	98	Paved parking, HSG D
11,488	79	Weighted Average
10,250		89.22% Pervious Area
1,238		10.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	21	0.1905	0.14		Sheet Flow, Tc-1
0.9	112	0.1696	2.06		Woods: Light underbrush n= 0.400 P2= 3.30"
					Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
3.4	133	Total			

Subcatchment 2S: Post Subcatchment 2



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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Subcatchment 3S: Post Subcatchment 3

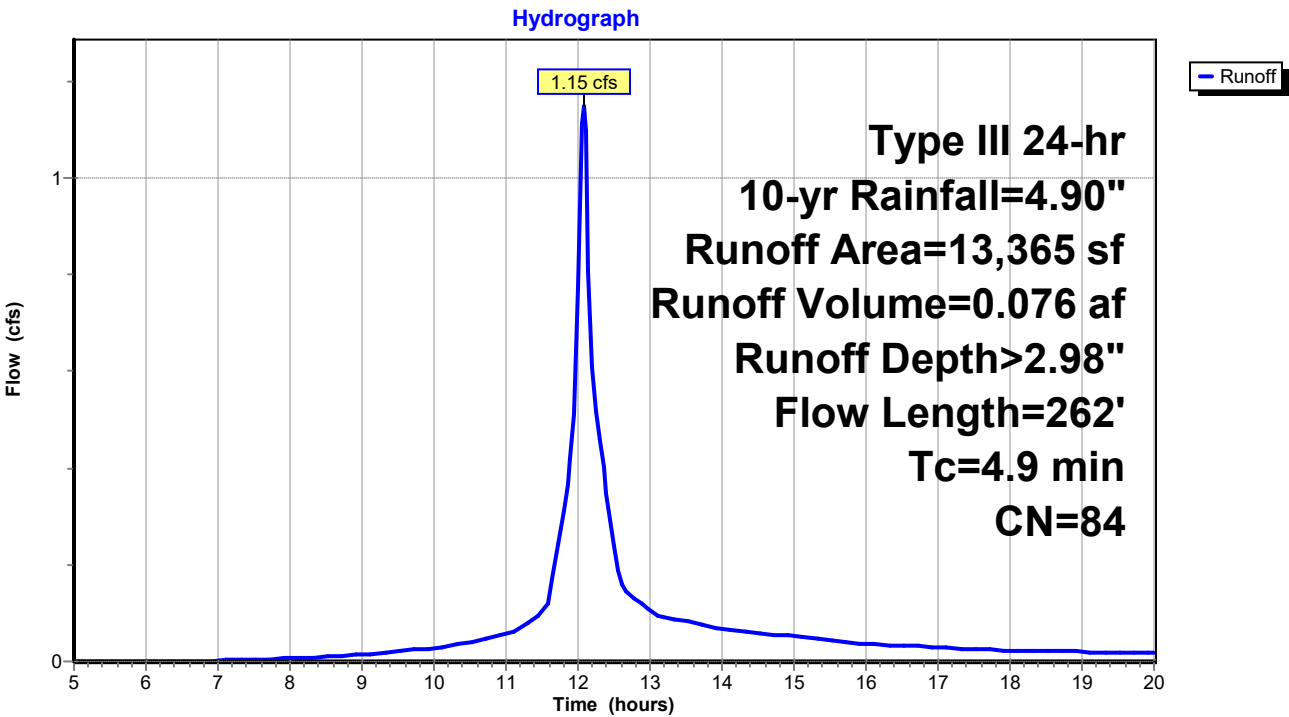
Runoff = 1.15 cfs @ 12.07 hrs, Volume= 0.076 af, Depth> 2.98"
 Routed to Pond 3P : Bioretention Filter Cell 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-yr Rainfall=4.90"

Area (sf)	CN	Description
6,822	77	Woods, Good, HSG D
* 580	73	Biofiltration cell, Good, HSG D
* 3,768	98	Paved access drive, HSG D
1,487	80	>75% Grass cover, Good, HSG D
* 708	98	Ledge, HSG D
13,365	84	Weighted Average
8,889		66.51% Pervious Area
4,476		33.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	43	0.2093	0.17		Sheet Flow, Tc-1 Woods: Light underbrush n= 0.400 P2= 3.30"
0.7	214	0.0500	5.25	15.74	Channel Flow, Tc-2 Area= 3.0 sf Perim= 9.2' r= 0.33' n= 0.030 Earth, grassed & winding
0.0	5	0.0500	3.35		Shallow Concentrated Flow, Tc-3 Grassed Waterway Kv= 15.0 fps
4.9	262	Total			

Subcatchment 3S: Post Subcatchment 3



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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Subcatchment 4S: Post Subcatchment 4

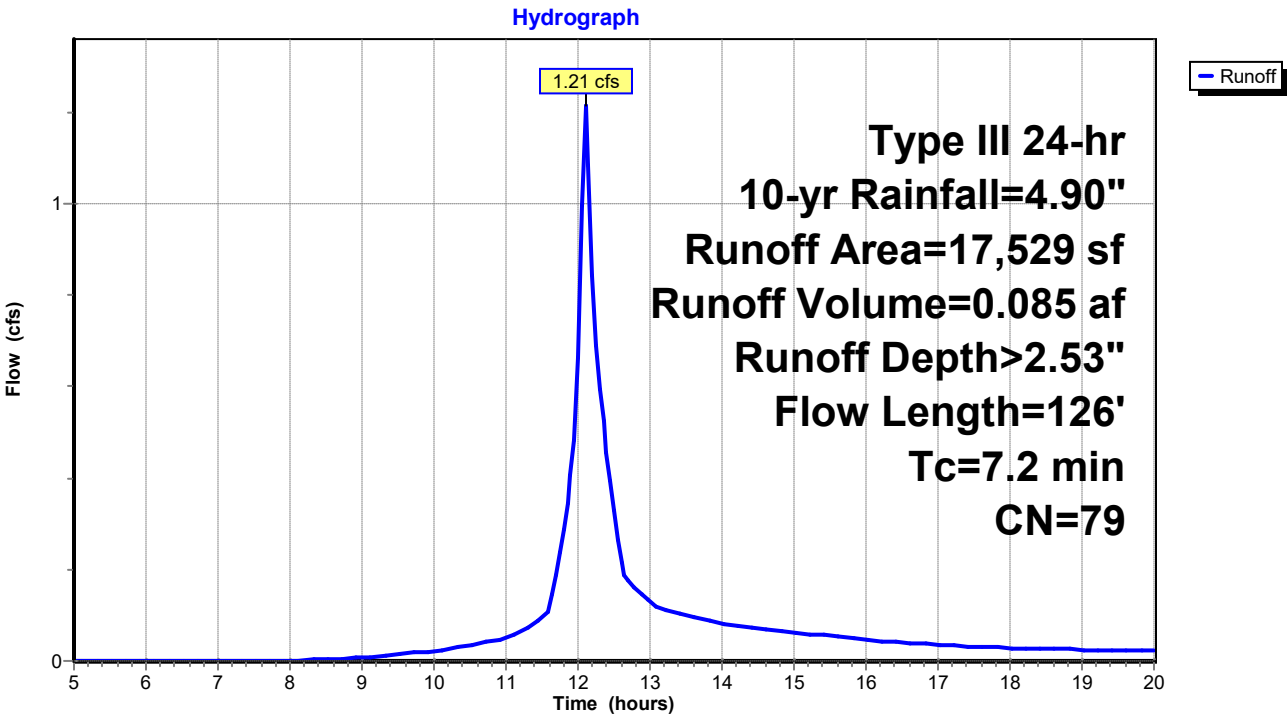
Runoff = 1.21 cfs @ 12.11 hrs, Volume= 0.085 af, Depth> 2.53"
Routed to Link DP2 : DP2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.90"

Area (sf)	CN	Description
* 295	98	Paved access drive, HSG D
1,450	80	>75% Grass cover, Good, HSG D
15,784	79	Woods, Fair, HSG D
17,529	79	Weighted Average
17,234		98.32% Pervious Area
295		1.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	62	0.1290	0.15		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
0.4	64	0.2343	2.42		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
7.2	126	Total			

Subcatchment 4S: Post Subcatchment 4



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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Subcatchment 5S: Post Subcatchment 5

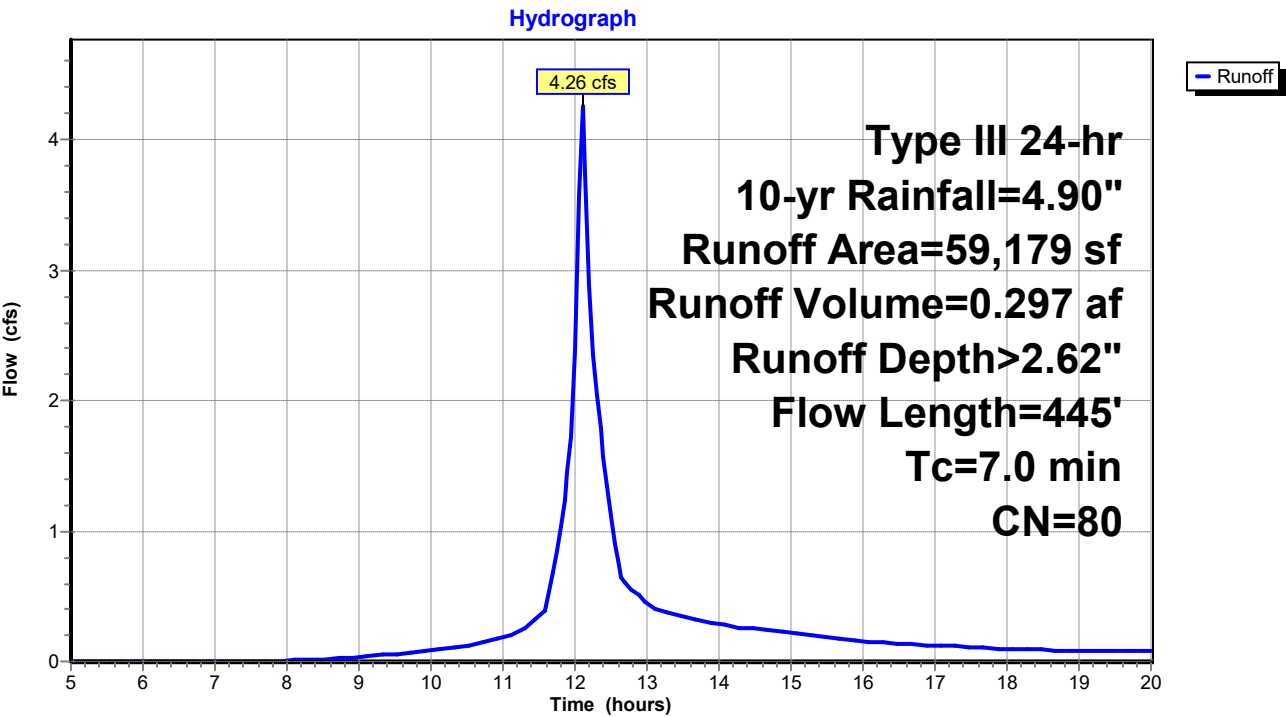
Runoff = 4.26 cfs @ 12.10 hrs, Volume= 0.297 af, Depth> 2.62"
 Routed to Reach DP3 : Shoreline 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-yr Rainfall=4.90"

	Area (sf)	CN	Description
*	1,650	98	Paved access drive, HSG D
	751	98	Roofs, HSG D
*	6,955	88	Sand beach, HSG D
	3,872	96	Gravel surface, HSG D
	45,951	77	Woods, Good, HSG D
	59,179	80	Weighted Average
	56,778		95.94% Pervious Area
	2,401		4.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	23	0.1740	0.14		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
1.0	70	0.0574	1.20		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
0.5	170	0.1059	5.24		Shallow Concentrated Flow, Tc-3
					Unpaved Kv= 16.1 fps
2.5	140	0.0357	0.94		Shallow Concentrated Flow, Tc-4
					Woodland Kv= 5.0 fps
0.3	42	0.0714	2.67		Shallow Concentrated Flow, Tc-5
					Nearly Bare & Untilled Kv= 10.0 fps
7.0	445	Total			

Subcatchment 5S: Post Subcatchment 5



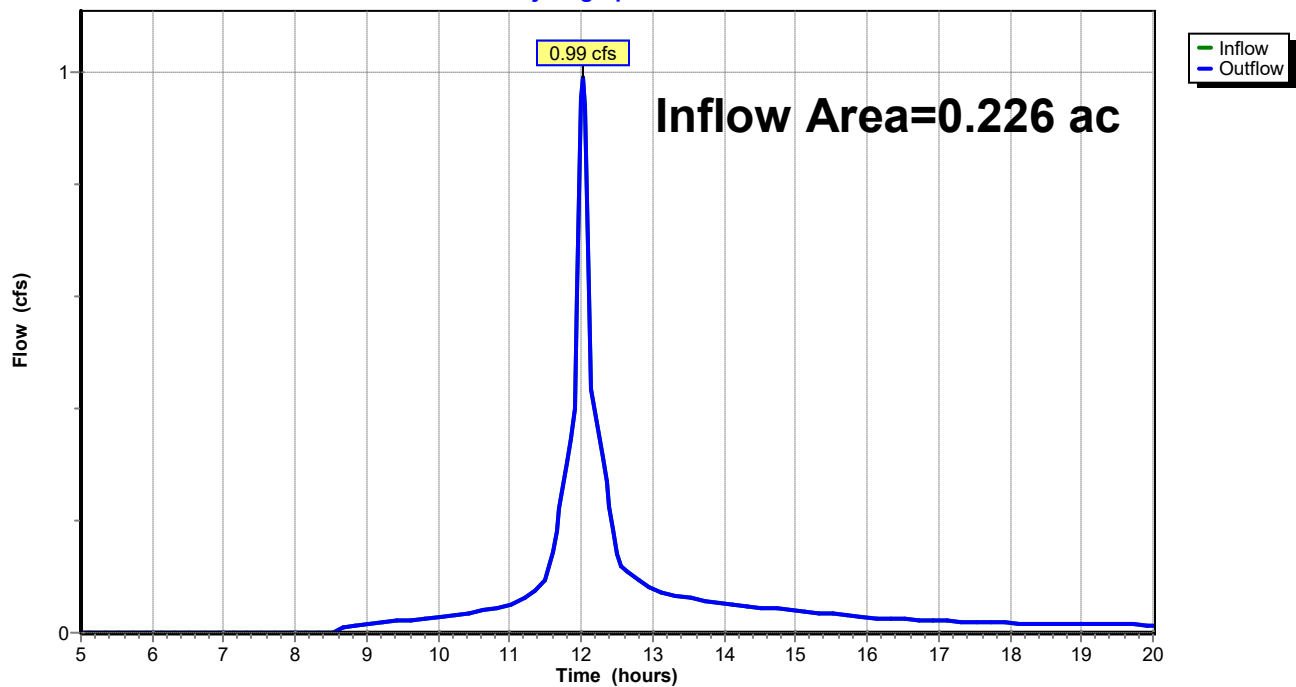
Summary for Reach 1R: Reach 1

Inflow Area = 0.226 ac, 50.01% Impervious, Inflow Depth > 3.21" for 10-yr event
 Inflow = 0.99 cfs @ 12.02 hrs, Volume= 0.060 af
 Outflow = 0.99 cfs @ 12.02 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min
 Routed to Link DP1 : DP1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: Reach 1

Hydrograph



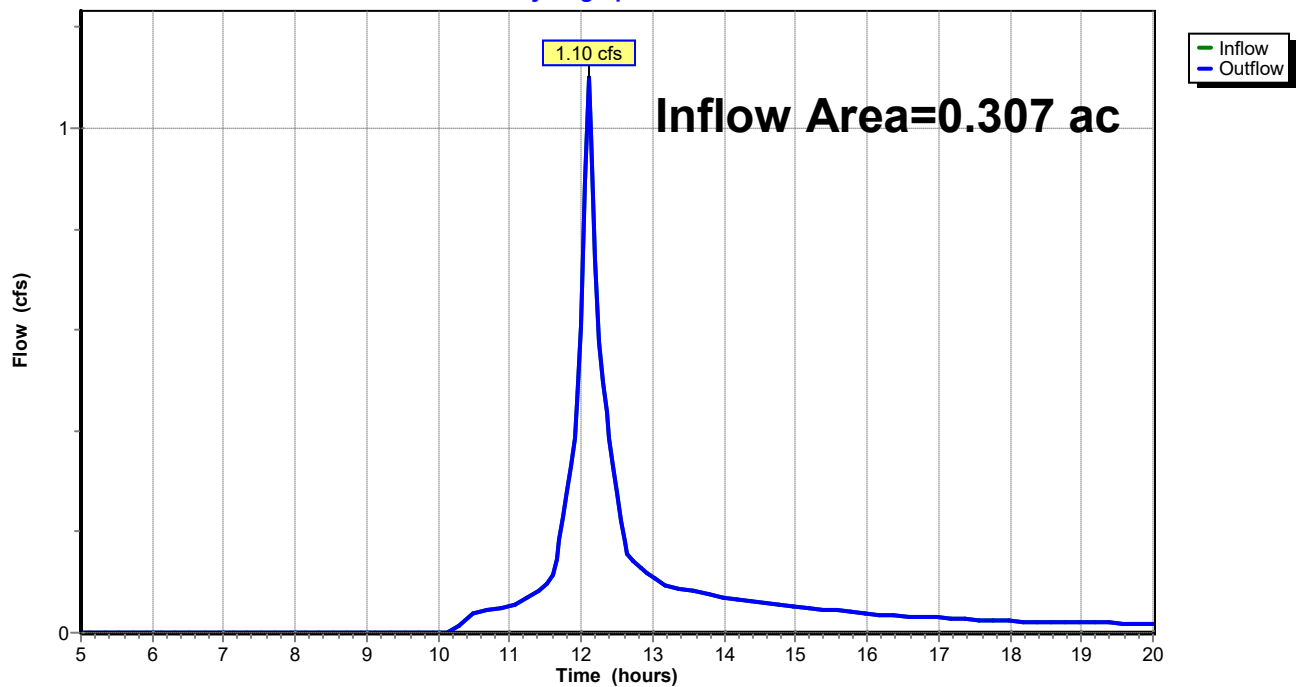
Summary for Reach 2R: Reach 2

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 2.84" for 10-yr event
 Inflow = 1.10 cfs @ 12.11 hrs, Volume= 0.073 af
 Outflow = 1.10 cfs @ 12.11 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min
 Routed to Link DP2 : DP2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: Reach 2

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.90"

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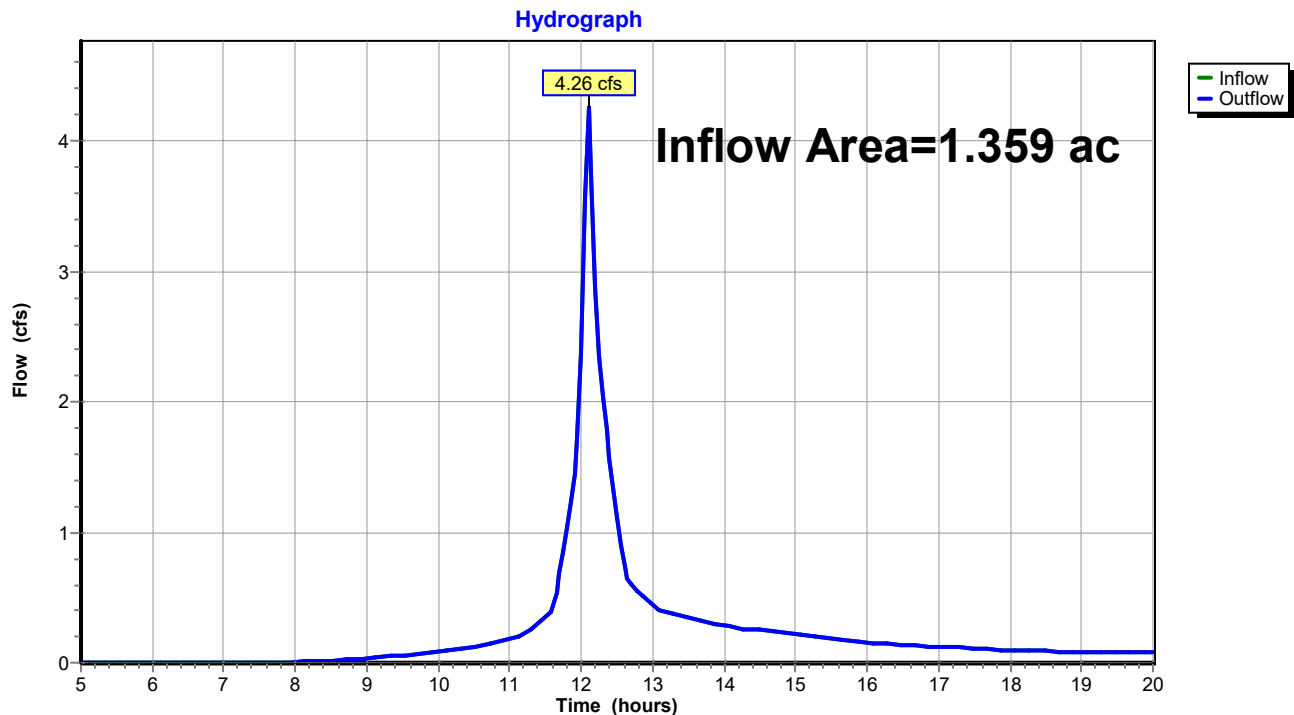
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Summary for Reach DP3: Shoreline 3

Inflow Area = 1.359 ac, 4.06% Impervious, Inflow Depth > 2.62" for 10-yr event
Inflow = 4.26 cfs @ 12.10 hrs, Volume= 0.297 af
Outflow = 4.26 cfs @ 12.10 hrs, Volume= 0.297 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP3: Shoreline 3



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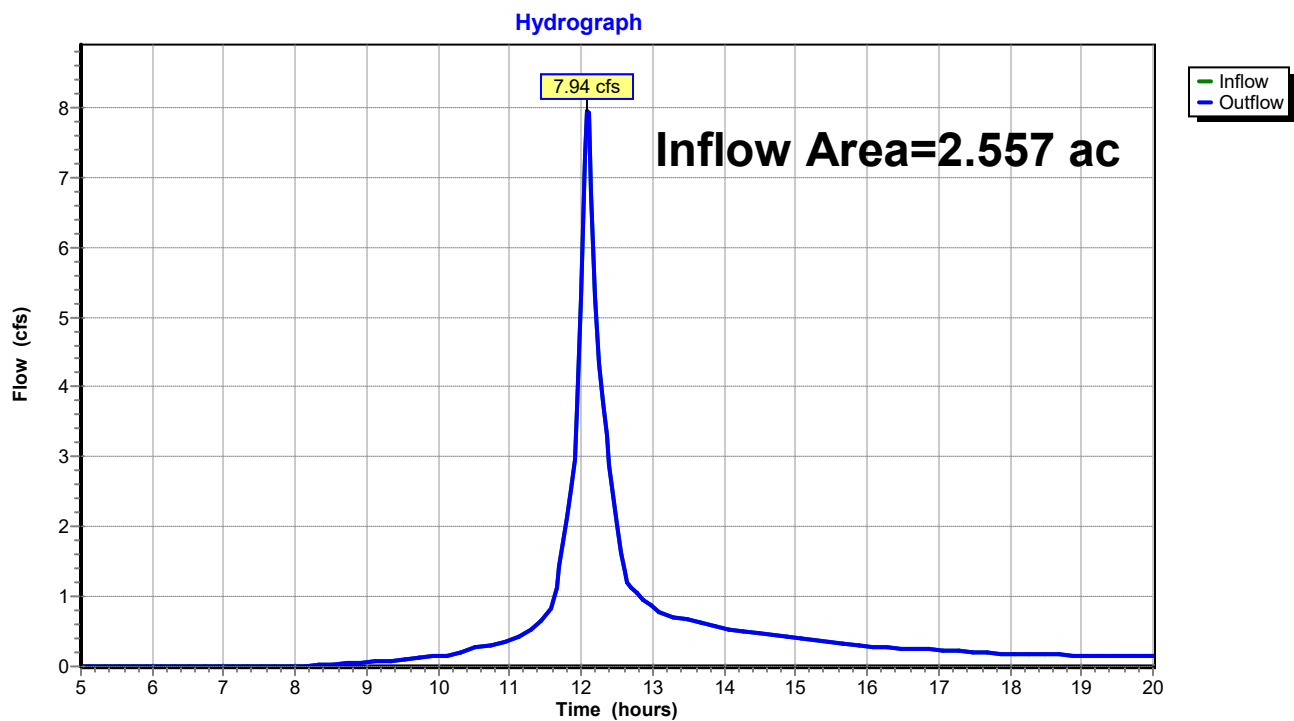
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Summary for Reach SP1: SACO RIVER / OCEAN

Inflow Area = 2.557 ac, 11.96% Impervious, Inflow Depth > 2.68" for 10-yr event
Inflow = 7.94 cfs @ 12.09 hrs, Volume= 0.570 af
Outflow = 7.94 cfs @ 12.09 hrs, Volume= 0.570 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SP1: SACO RIVER / OCEAN



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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Pond 1P: Bioretention Filter Cell 1

Inflow Area = 0.226 ac, 50.01% Impervious, Inflow Depth > 3.28" for 10-yr event
Inflow = 1.02 cfs @ 12.01 hrs, Volume= 0.062 af
Outflow = 0.99 cfs @ 12.02 hrs, Volume= 0.060 af, Atten= 3%, Lag= 0.7 min
Primary = 0.99 cfs @ 12.02 hrs, Volume= 0.060 af
Routed to Pond 2P : CB-1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 18.16' @ 12.02 hrs Surf.Area= 264 sf Storage= 92 cf

Plug-Flow detention time= 15.2 min calculated for 0.060 af (98% of inflow)
Center-of-Mass det. time= 7.1 min (773.3 - 766.2)

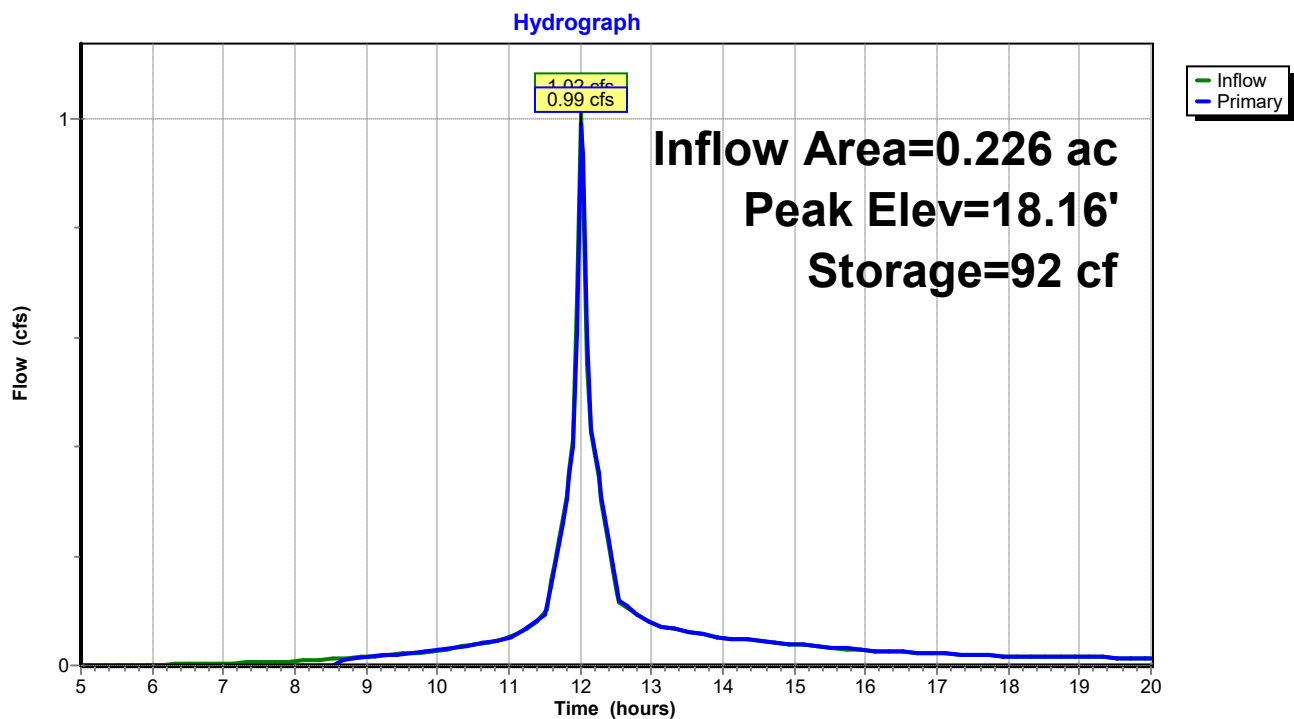
Volume	Invert	Avail.Storage	Storage Description
#1	17.50'	200 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
17.50	0	0	0
18.00	213	53	53
18.50	372	146	200

Device	Routing	Invert	Outlet Devices
#1	Primary	18.00'	18.0" Horiz. Orifice/Grate C= 0.600 in 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.94 cfs @ 12.02 hrs HW=18.16' (Free Discharge)
↑ **1=Orifice/Grate** (Weir Controls 0.94 cfs @ 1.29 fps)

Pond 1P: Bioretention Filter Cell 1



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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Pond 2P: CB-1

Inflow Area = 0.226 ac, 50.01% Impervious, Inflow Depth > 3.21" for 10-yr event
Inflow = 0.99 cfs @ 12.02 hrs, Volume= 0.060 af
Outflow = 0.99 cfs @ 12.02 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min
Primary = 0.99 cfs @ 12.02 hrs, Volume= 0.060 af
Routed to Reach 1R : Reach 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 14.29' @ 12.02 hrs

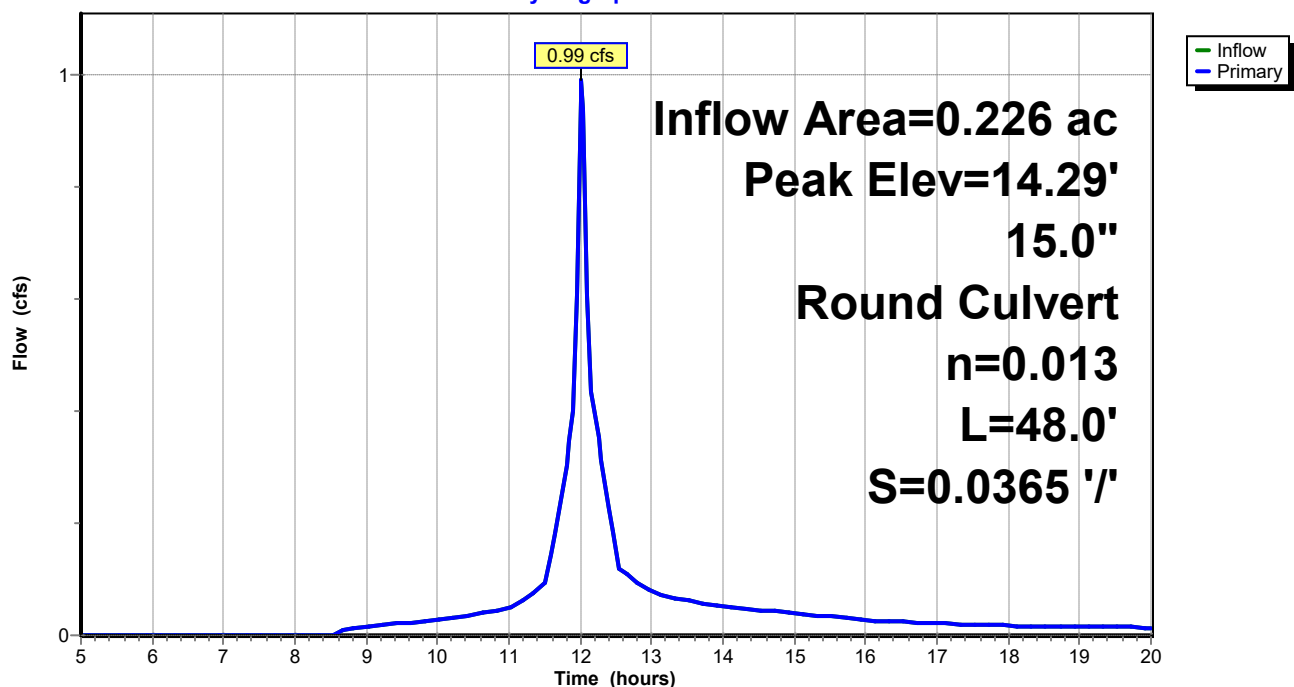
Device	Routing	Invert	Outlet Devices
#1	Primary	13.75'	15.0" Round Culvert L= 48.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.75' / 12.00' S= 0.0365 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.94 cfs @ 12.02 hrs HW=14.27' (Free Discharge)

↑1=Culvert (Inlet Controls 0.94 cfs @ 1.94 fps)

Pond 2P: CB-1

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Pond 3P: Bioretention Filter Cell 2

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 2.98" for 10-yr event
Inflow = 1.15 cfs @ 12.07 hrs, Volume= 0.076 af
Outflow = 1.14 cfs @ 12.08 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.6 min
Primary = 1.14 cfs @ 12.08 hrs, Volume= 0.075 af
Routed to Pond 4P : CB-2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 23.68' @ 12.08 hrs Surf.Area= 227 sf Storage= 77 cf

Plug-Flow detention time= 9.5 min calculated for 0.075 af (98% of inflow)
Center-of-Mass det. time= 4.4 min (781.8 - 777.5)

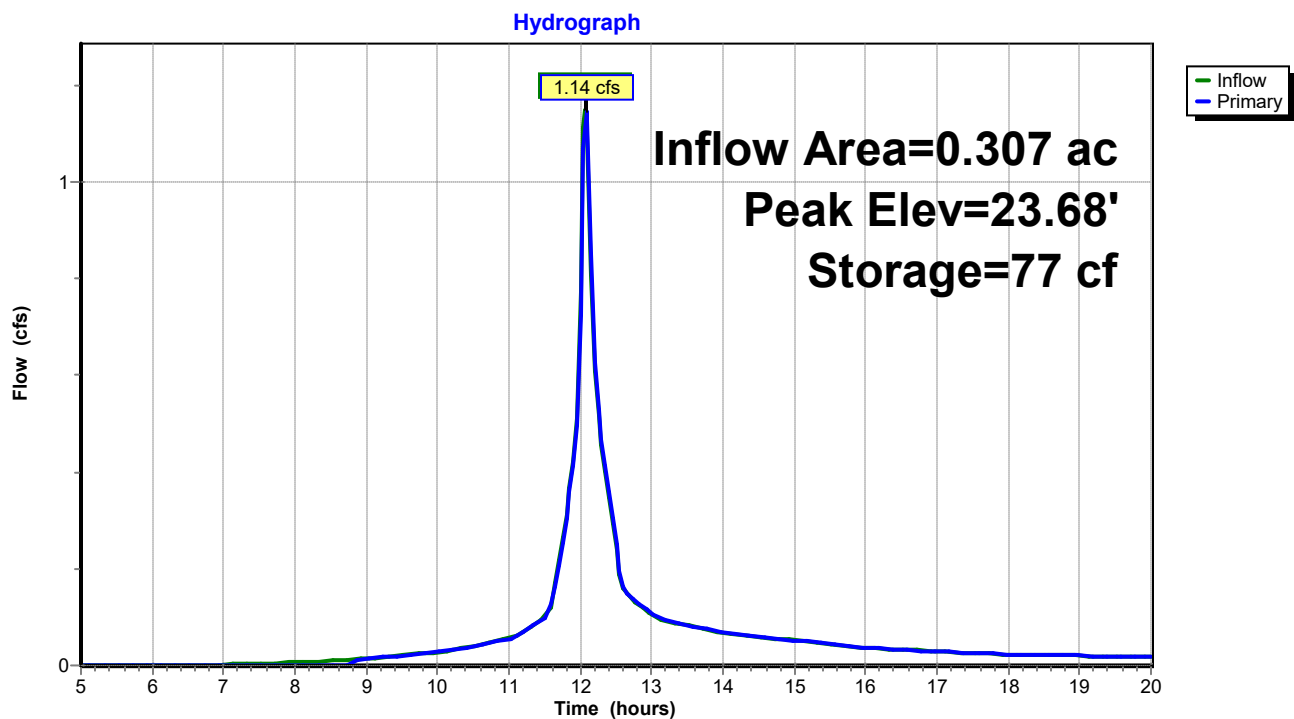
Volume	Invert	Avail.Storage	Storage Description
#1	23.00'	380 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.00	0	0	0
24.00	335	168	168
24.50	515	213	380

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	18.0" Horiz. Orifice/Grate C= 0.600 in 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=1.11 cfs @ 12.08 hrs HW=23.67' (Free Discharge)
↑ **1=Orifice/Grate** (Weir Controls 1.11 cfs @ 1.36 fps)

Pond 3P: Bioretention Filter Cell 2



UNE-PostDrainage-VD Working

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Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Pond 4P: CB-2

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 2.95" for 10-yr event
Inflow = 1.14 cfs @ 12.08 hrs, Volume= 0.075 af
Outflow = 1.14 cfs @ 12.08 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min
Primary = 1.14 cfs @ 12.08 hrs, Volume= 0.075 af
Routed to Pond 5P : Level Lip Spreader

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 19.29' @ 12.08 hrs

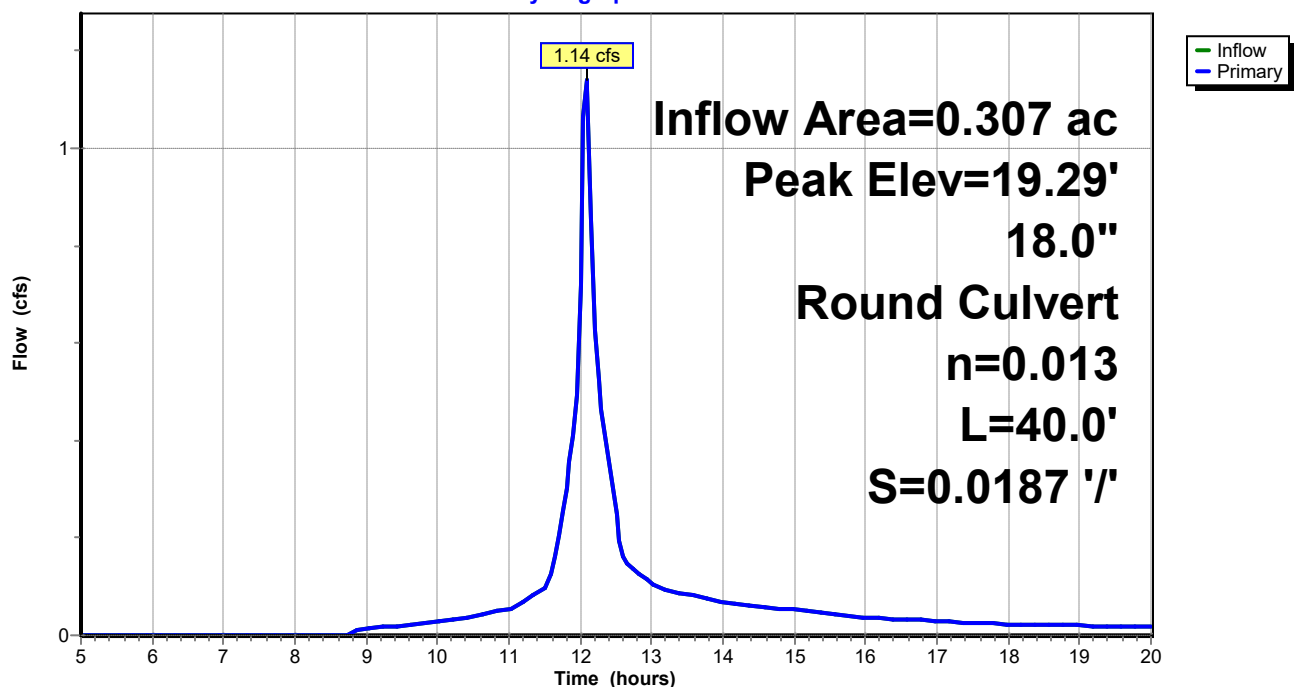
Device	Routing	Invert	Outlet Devices
#1	Primary	18.75'	18.0" Round Culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.75' / 18.00' S= 0.0187 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.11 cfs @ 12.08 hrs HW=19.28' (Free Discharge)

↑1=Culvert (Inlet Controls 1.11 cfs @ 1.96 fps)

Pond 4P: CB-2

Hydrograph



UNE-PostDrainage-VD Working

Type III 24-hr 10-yr Rainfall=4.90"

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Summary for Pond 5P: Level Lip Spreader

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 2.95" for 10-yr event
 Inflow = 1.14 cfs @ 12.08 hrs, Volume= 0.075 af
 Outflow = 1.10 cfs @ 12.11 hrs, Volume= 0.073 af, Atten= 4%, Lag= 1.4 min
 Primary = 1.10 cfs @ 12.11 hrs, Volume= 0.073 af
 Routed to Reach 2R : Reach 2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 18.00' @ 10.30 hrs Surf.Area= 168 sf Storage= 115 cf
 Flood Elev= 20.00' Surf.Area= 168 sf Storage= 115 cf

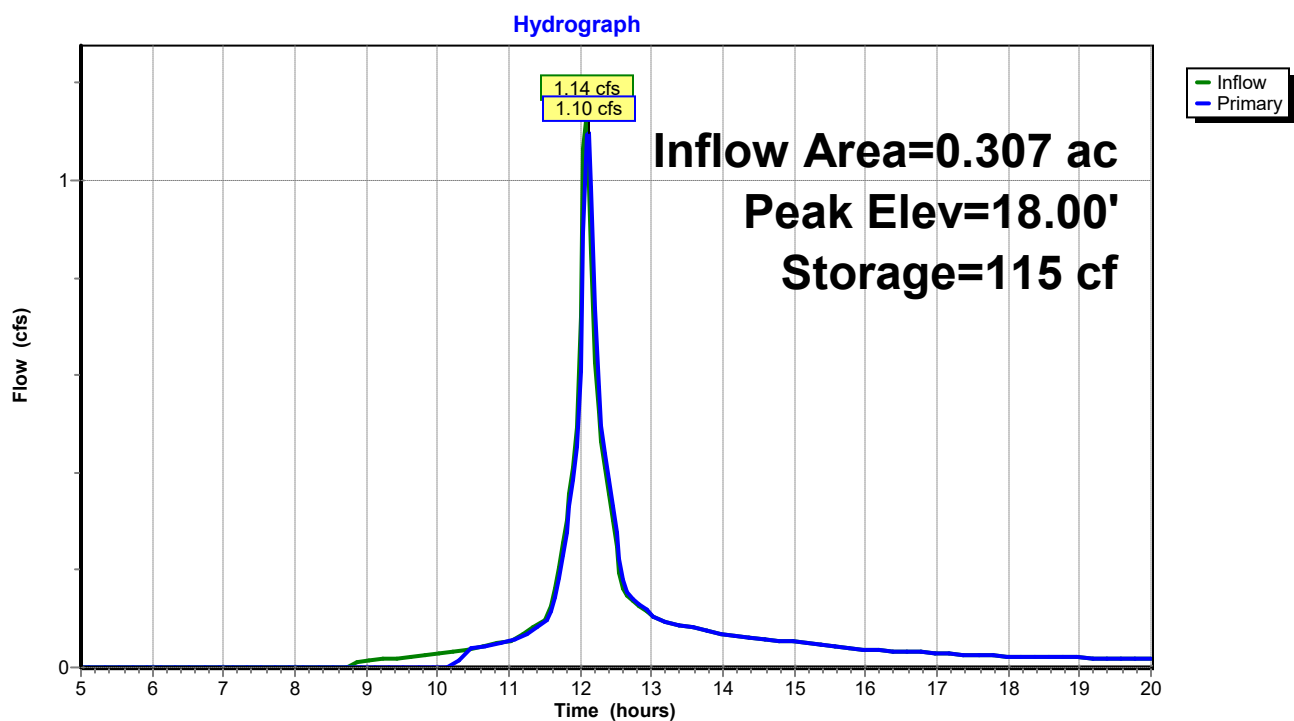
Plug-Flow detention time= 21.7 min calculated for 0.072 af (96% of inflow)
 Center-of-Mass det. time= 8.6 min (790.4 - 781.8)

Volume	Invert	Avail.Storage	Storage Description	
#1	17.00'	115 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
17.00	61	0.0	0	0
18.00	168	100.0	115	115

Device	Routing	Invert	Outlet Devices
#0	Primary	18.00'	Automatic Storage Overflow (Discharged without head)

Primary OutFlow Max=0.00 cfs @ 12.11 hrs HW=18.00' (Free Discharge)

Pond 5P: Level Lip Spreader



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Type III 24-hr 10-yr Rainfall=4.90"

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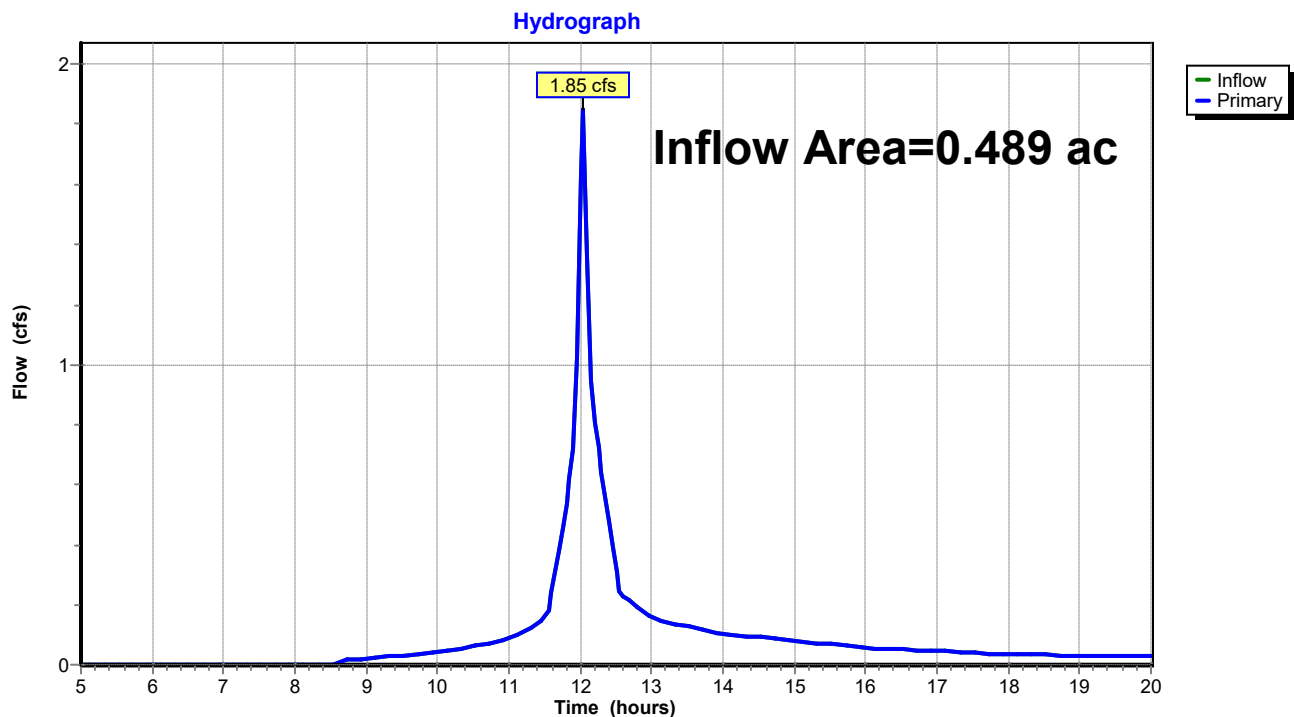
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Summary for Link DP1: DP1

Inflow Area = 0.489 ac, 28.87% Impervious, Inflow Depth > 2.85" for 10-yr event
Inflow = 1.85 cfs @ 12.04 hrs, Volume= 0.116 af
Primary = 1.85 cfs @ 12.04 hrs, Volume= 0.116 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP1: DP1



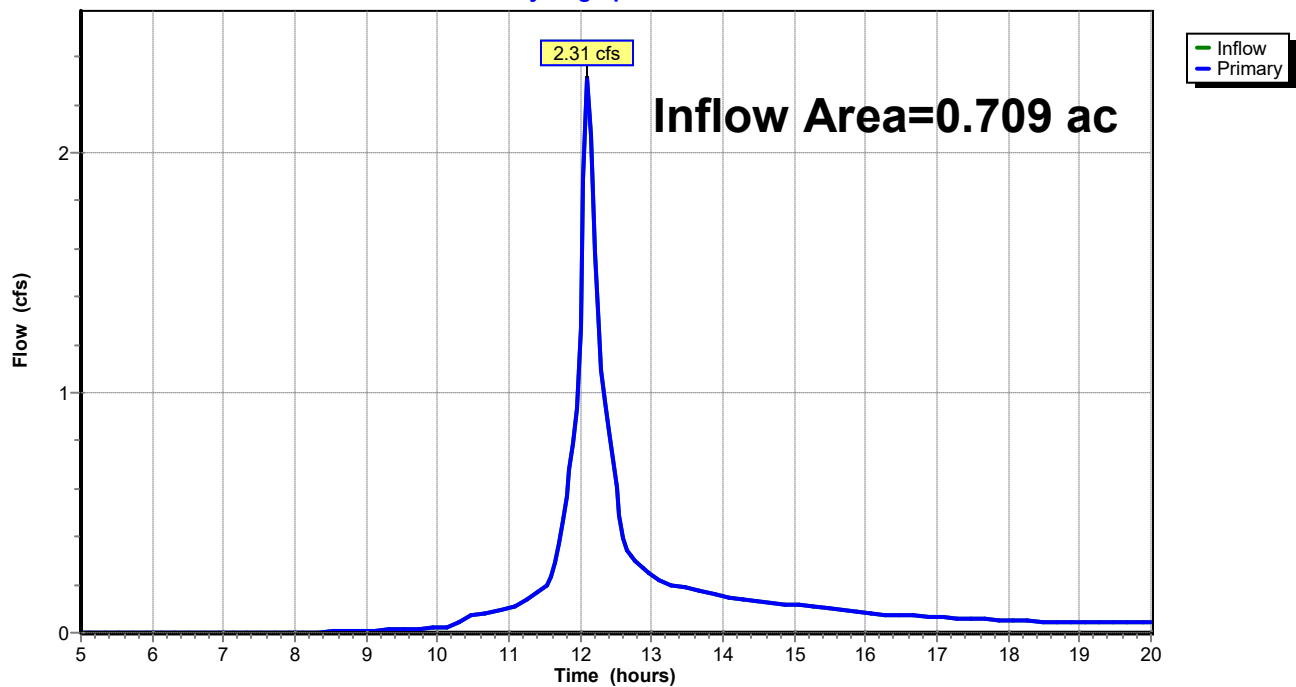
Summary for Link DP2: DP2

Inflow Area = 0.709 ac, 15.44% Impervious, Inflow Depth > 2.67" for 10-yr event
 Inflow = 2.31 cfs @ 12.11 hrs, Volume= 0.158 af
 Primary = 2.31 cfs @ 12.11 hrs, Volume= 0.158 af, Atten= 0%, Lag= 0.0 min
 Routed to Reach SP1 : SACO RIVER / OCEAN

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP2: DP2

Hydrograph



UNE-PostDrainage-VD Working

Type III 24-hr 25-yr Rainfall=6.20"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 1S: Post Subcatchment 1 Runoff Area=9,832 sf 50.01% Impervious Runoff Depth>4.45"
Flow Length=172' Tc=0.8 min CN=87 Runoff=1.36 cfs 0.084 af

Subcatchment 2S: Post Subcatchment 2 Runoff Area=11,488 sf 10.78% Impervious Runoff Depth>3.62"
Flow Length=133' Tc=3.4 min CN=79 Runoff=1.28 cfs 0.080 af

Subcatchment 3S: Post Subcatchment 3 Runoff Area=13,365 sf 33.49% Impervious Runoff Depth>4.13"
Flow Length=262' Tc=4.9 min CN=84 Runoff=1.57 cfs 0.106 af

Subcatchment 4S: Post Subcatchment 4 Runoff Area=17,529 sf 1.68% Impervious Runoff Depth>3.61"
Flow Length=126' Tc=7.2 min CN=79 Runoff=1.72 cfs 0.121 af

Subcatchment 5S: Post Subcatchment 5 Runoff Area=59,179 sf 4.06% Impervious Runoff Depth>3.72"
Flow Length=445' Tc=7.0 min CN=80 Runoff=5.99 cfs 0.421 af

Reach 1R: Reach 1 Inflow=1.33 cfs 0.082 af
Outflow=1.33 cfs 0.082 af

Reach 2R: Reach 2 Inflow=1.50 cfs 0.102 af
Outflow=1.50 cfs 0.102 af

Reach DP3: Shoreline 3 Inflow=5.99 cfs 0.421 af
Outflow=5.99 cfs 0.421 af

Reach SP1: SACO RIVER / OCEAN Inflow=11.09 cfs 0.806 af
Outflow=11.09 cfs 0.806 af

Pond 1P: Bioretention Filter Cell 1 Peak Elev=18.20' Storage=101 cf Inflow=1.36 cfs 0.084 af
Outflow=1.33 cfs 0.082 af

Pond 2P: CB-1 Peak Elev=14.38' Inflow=1.33 cfs 0.082 af
15.0" Round Culvert n=0.013 L=48.0' S=0.0365 ' Outflow=1.33 cfs 0.082 af

Pond 3P: Bioretention Filter Cell 2 Peak Elev=23.72' Storage=86 cf Inflow=1.57 cfs 0.106 af
Outflow=1.56 cfs 0.105 af

Pond 4P: CB-2 Peak Elev=19.39' Inflow=1.56 cfs 0.105 af
18.0" Round Culvert n=0.013 L=40.0' S=0.0187 ' Outflow=1.56 cfs 0.105 af

Pond 5P: Level Lip Spreader Peak Elev=18.00' Storage=115 cf Inflow=1.56 cfs 0.105 af
Outflow=1.50 cfs 0.102 af

Link DP1: DP1 Inflow=2.54 cfs 0.162 af
Primary=2.54 cfs 0.162 af

Link DP2: DP2 Inflow=3.22 cfs 0.223 af
Primary=3.22 cfs 0.223 af

UNE-PostDrainage-VD Working

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Type III 24-hr 25-yr Rainfall=6.20"

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Total Runoff Area = 2.557 ac Runoff Volume = 0.811 af Average Runoff Depth = 3.80"
88.04% Pervious = 2.251 ac 11.96% Impervious = 0.306 ac

UNE-PostDrainage-VD Working

Type III 24-hr 25-yr Rainfall=6.20"

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Summary for Subcatchment 1S: Post Subcatchment 1

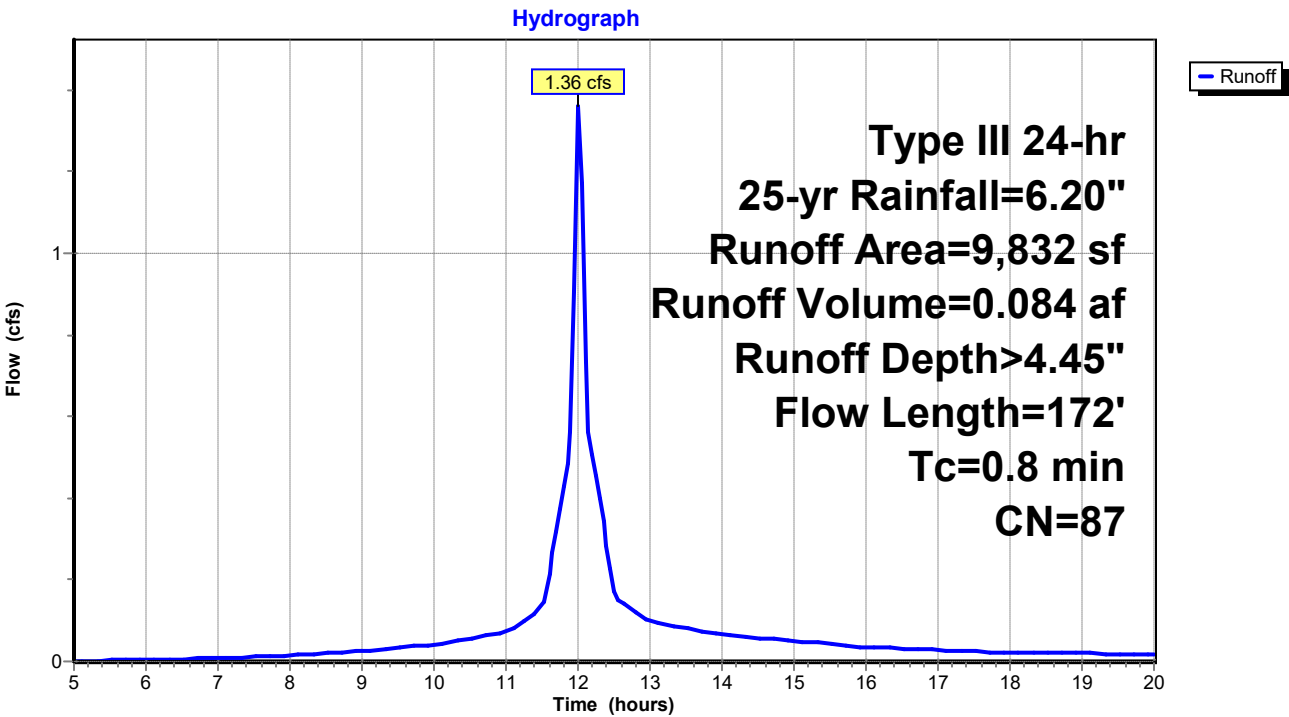
Runoff = 1.36 cfs @ 12.01 hrs, Volume= 0.084 af, Depth> 4.45"
 Routed to Pond 1P : Bioretention Filter Cell 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-yr Rainfall=6.20"

Area (sf)	CN	Description
3,430	77	Woods, Good, HSG D
* 982	98	Ledge, HSG D
595	80	>75% Grass cover, Good, HSG D
* 3,935	98	Paved Access Drive, HSG D
* 890	73	Bioretention Filter Cell, Good, HSG D
9,832	87	Weighted Average
4,915		49.99% Pervious Area
4,917		50.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	46	0.0500	1.73		Sheet Flow, Tc-1 Smooth surfaces n= 0.011 P2= 3.30"
0.3	102	0.0500	5.25	15.74	Channel Flow, Tc-2 Area= 3.0 sf Perim= 9.2' r= 0.33' n= 0.030 Earth, grassed & winding
0.1	24	0.0625	3.75		Shallow Concentrated Flow, Tc-3 Grassed Waterway Kv= 15.0 fps
0.8	172	Total			

Subcatchment 1S: Post Subcatchment 1



UNE-PostDrainage-VD Working

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Type III 24-hr 25-yr Rainfall=6.20"

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Summary for Subcatchment 2S: Post Subcatchment 2

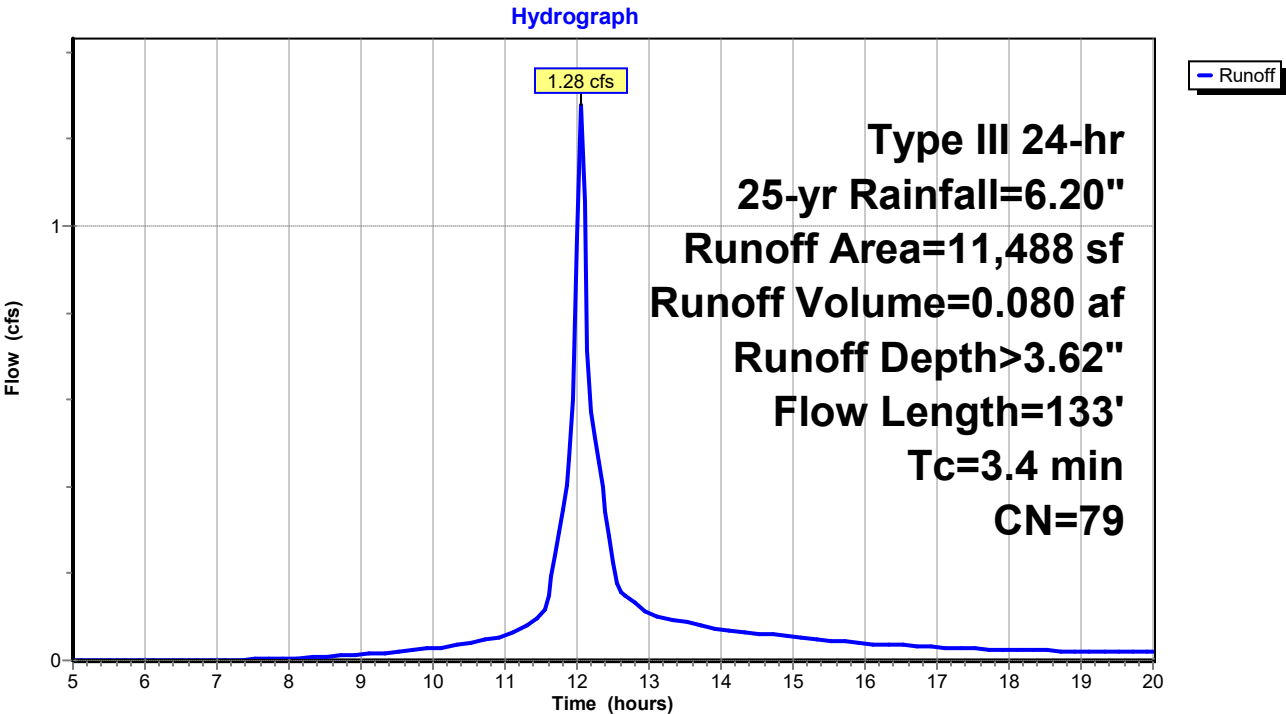
Runoff = 1.28 cfs @ 12.05 hrs, Volume= 0.080 af, Depth> 3.62"
Routed to Link DP1 : DP1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=6.20"

Area (sf)	CN	Description
10,250	77	Woods, Good, HSG D
1,238	98	Paved parking, HSG D
11,488	79	Weighted Average
10,250		89.22% Pervious Area
1,238		10.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	21	0.1905	0.14		Sheet Flow, Tc-1
0.9	112	0.1696	2.06		Woods: Light underbrush n= 0.400 P2= 3.30"
					Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
3.4	133	Total			

Subcatchment 2S: Post Subcatchment 2



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Type III 24-hr 25-yr Rainfall=6.20"

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Summary for Subcatchment 3S: Post Subcatchment 3

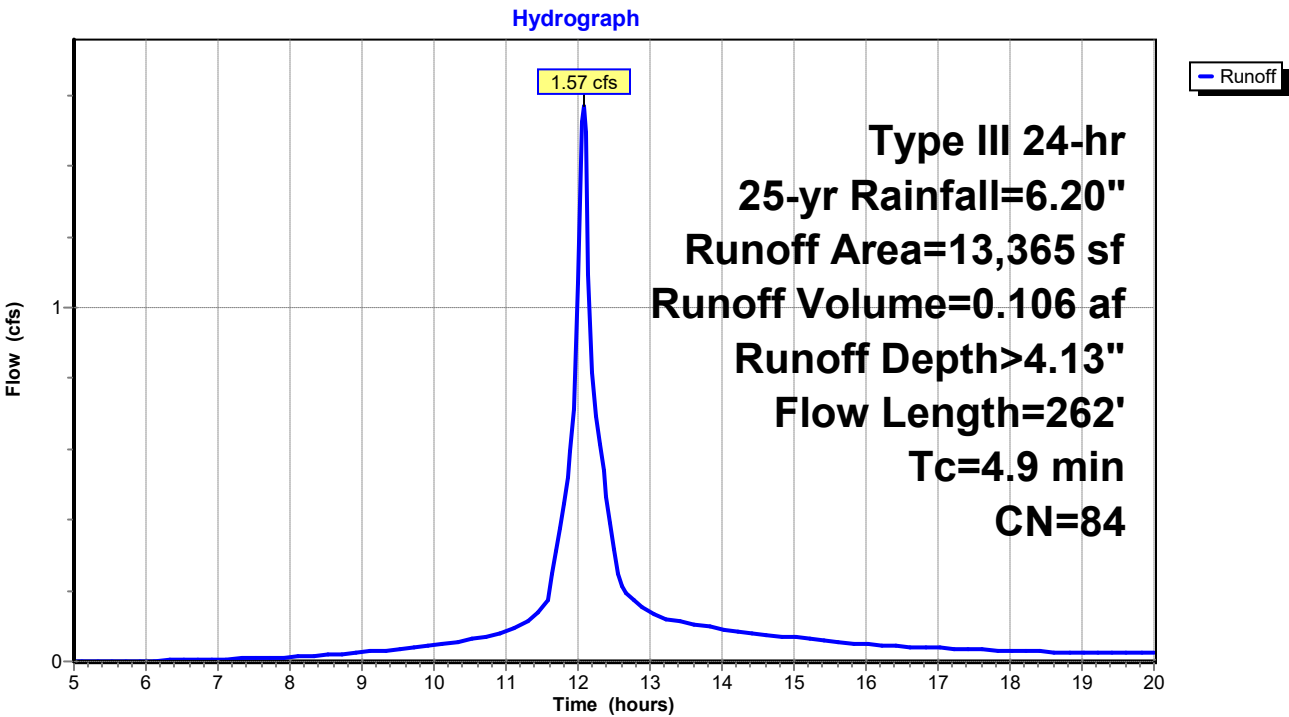
Runoff = 1.57 cfs @ 12.07 hrs, Volume= 0.106 af, Depth> 4.13"
 Routed to Pond 3P : Bioretention Filter Cell 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-yr Rainfall=6.20"

Area (sf)	CN	Description
6,822	77	Woods, Good, HSG D
* 580	73	Biofiltration cell, Good, HSG D
* 3,768	98	Paved access drive, HSG D
1,487	80	>75% Grass cover, Good, HSG D
* 708	98	Ledge, HSG D
13,365	84	Weighted Average
8,889		66.51% Pervious Area
4,476		33.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	43	0.2093	0.17		Sheet Flow, Tc-1 Woods: Light underbrush n= 0.400 P2= 3.30"
0.7	214	0.0500	5.25	15.74	Channel Flow, Tc-2 Area= 3.0 sf Perim= 9.2' r= 0.33' n= 0.030 Earth, grassed & winding
0.0	5	0.0500	3.35		Shallow Concentrated Flow, Tc-3 Grassed Waterway Kv= 15.0 fps
4.9	262	Total			

Subcatchment 3S: Post Subcatchment 3



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Type III 24-hr 25-yr Rainfall=6.20"

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Summary for Subcatchment 4S: Post Subcatchment 4

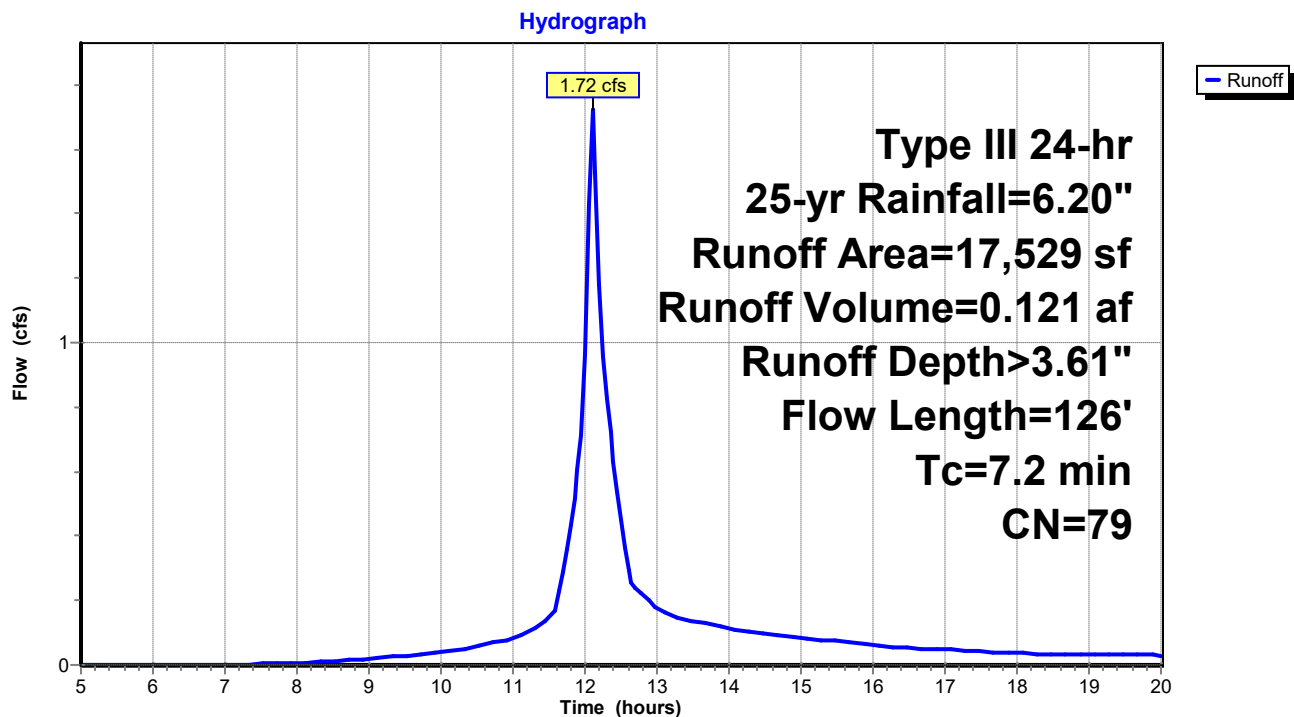
Runoff = 1.72 cfs @ 12.11 hrs, Volume= 0.121 af, Depth> 3.61"
Routed to Link DP2 : DP2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=6.20"

Area (sf)	CN	Description
* 295	98	Paved access drive, HSG D
1,450	80	>75% Grass cover, Good, HSG D
15,784	79	Woods, Fair, HSG D
17,529	79	Weighted Average
17,234		98.32% Pervious Area
295		1.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	62	0.1290	0.15		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
0.4	64	0.2343	2.42		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
7.2	126	Total			

Subcatchment 4S: Post Subcatchment 4



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Type III 24-hr 25-yr Rainfall=6.20"

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Summary for Subcatchment 5S: Post Subcatchment 5

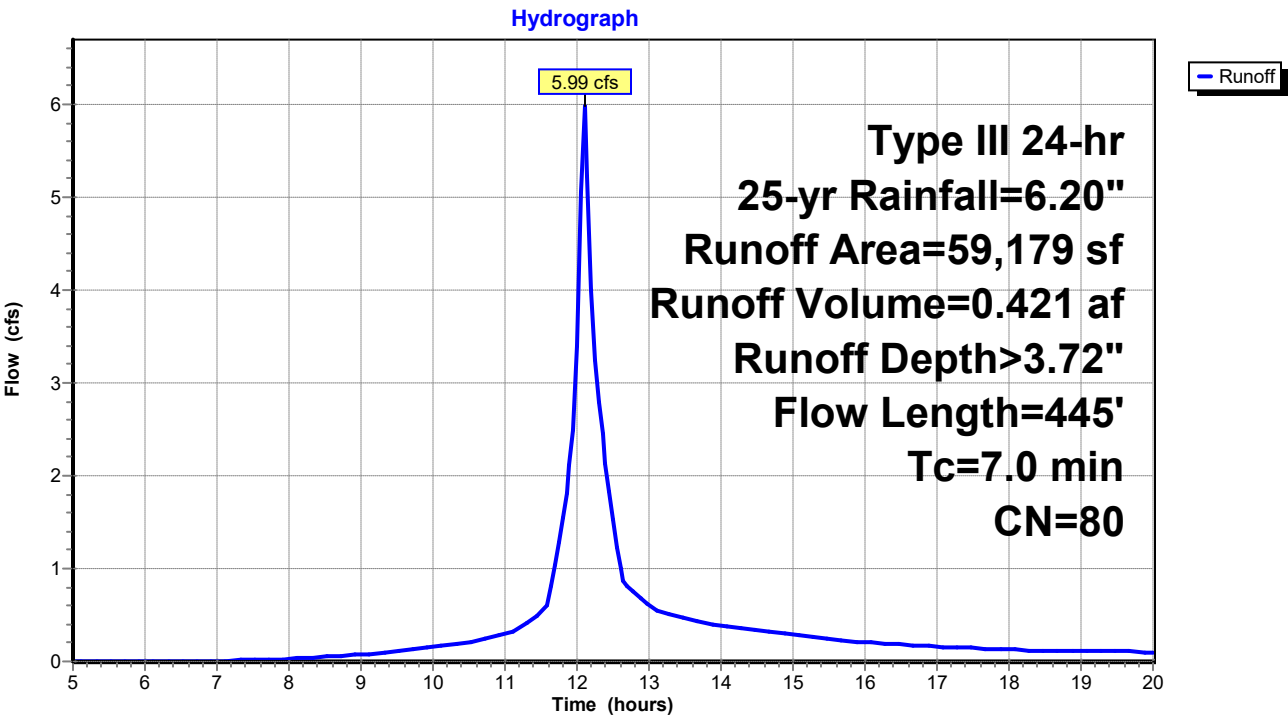
Runoff = 5.99 cfs @ 12.10 hrs, Volume= 0.421 af, Depth> 3.72"
 Routed to Reach DP3 : Shoreline 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-yr Rainfall=6.20"

	Area (sf)	CN	Description
*	1,650	98	Paved access drive, HSG D
	751	98	Roofs, HSG D
*	6,955	88	Sand beach, HSG D
	3,872	96	Gravel surface, HSG D
	45,951	77	Woods, Good, HSG D
	59,179	80	Weighted Average
	56,778		95.94% Pervious Area
	2,401		4.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	23	0.1740	0.14		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
1.0	70	0.0574	1.20		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
0.5	170	0.1059	5.24		Shallow Concentrated Flow, Tc-3
					Unpaved Kv= 16.1 fps
2.5	140	0.0357	0.94		Shallow Concentrated Flow, Tc-4
					Woodland Kv= 5.0 fps
0.3	42	0.0714	2.67		Shallow Concentrated Flow, Tc-5
					Nearly Bare & Untilled Kv= 10.0 fps
7.0	445	Total			

Subcatchment 5S: Post Subcatchment 5



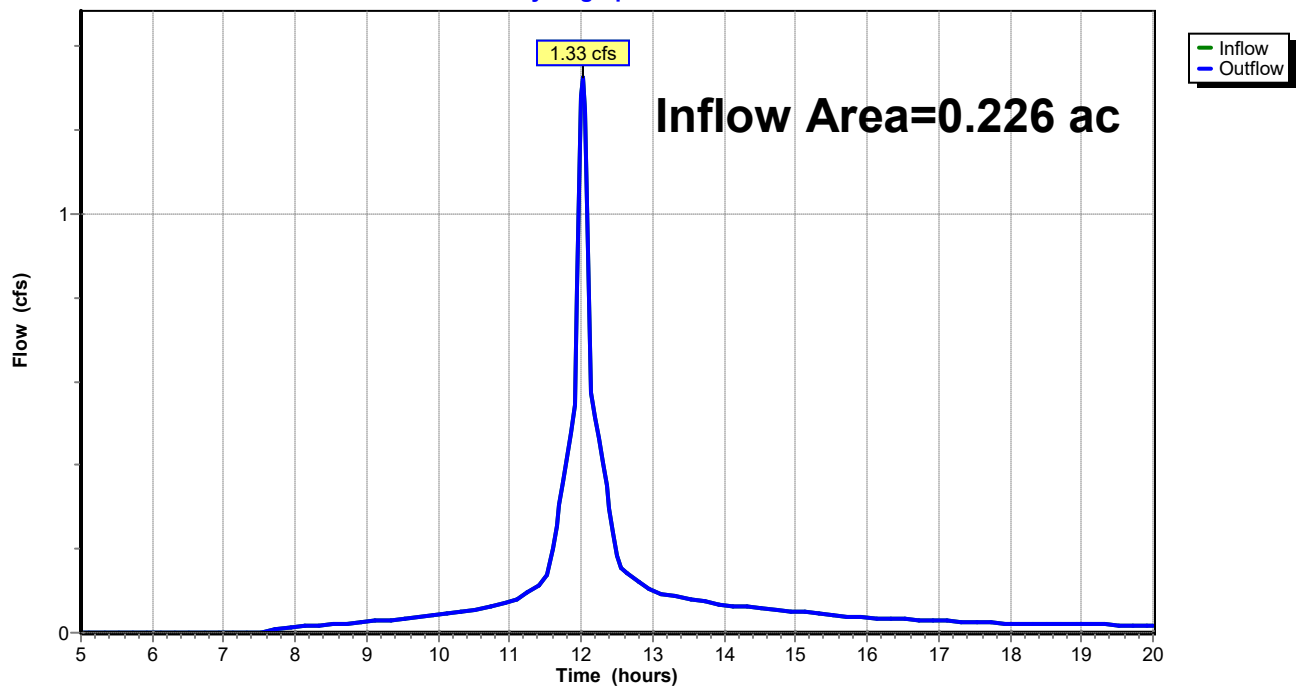
Summary for Reach 1R: Reach 1

Inflow Area = 0.226 ac, 50.01% Impervious, Inflow Depth > 4.39" for 25-yr event
 Inflow = 1.33 cfs @ 12.02 hrs, Volume= 0.082 af
 Outflow = 1.33 cfs @ 12.02 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min
 Routed to Link DP1 : DP1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: Reach 1

Hydrograph



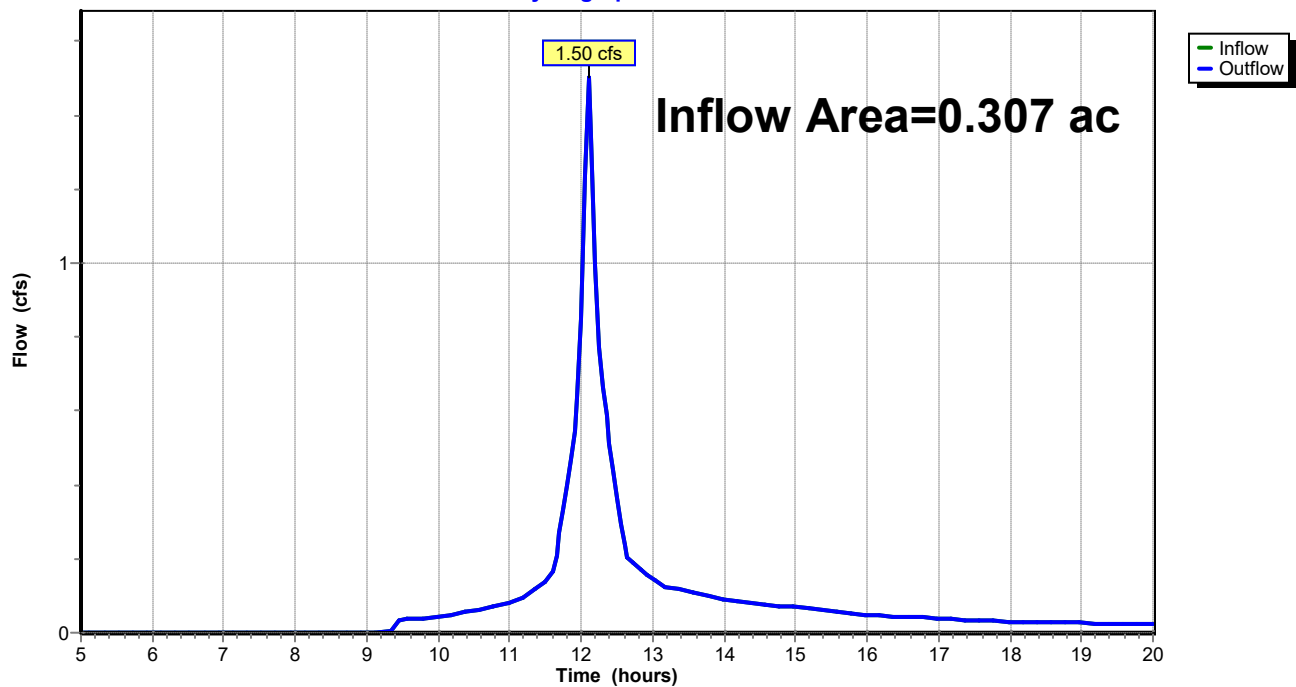
Summary for Reach 2R: Reach 2

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 3.99" for 25-yr event
 Inflow = 1.50 cfs @ 12.11 hrs, Volume= 0.102 af
 Outflow = 1.50 cfs @ 12.11 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
 Routed to Link DP2 : DP2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: Reach 2

Hydrograph

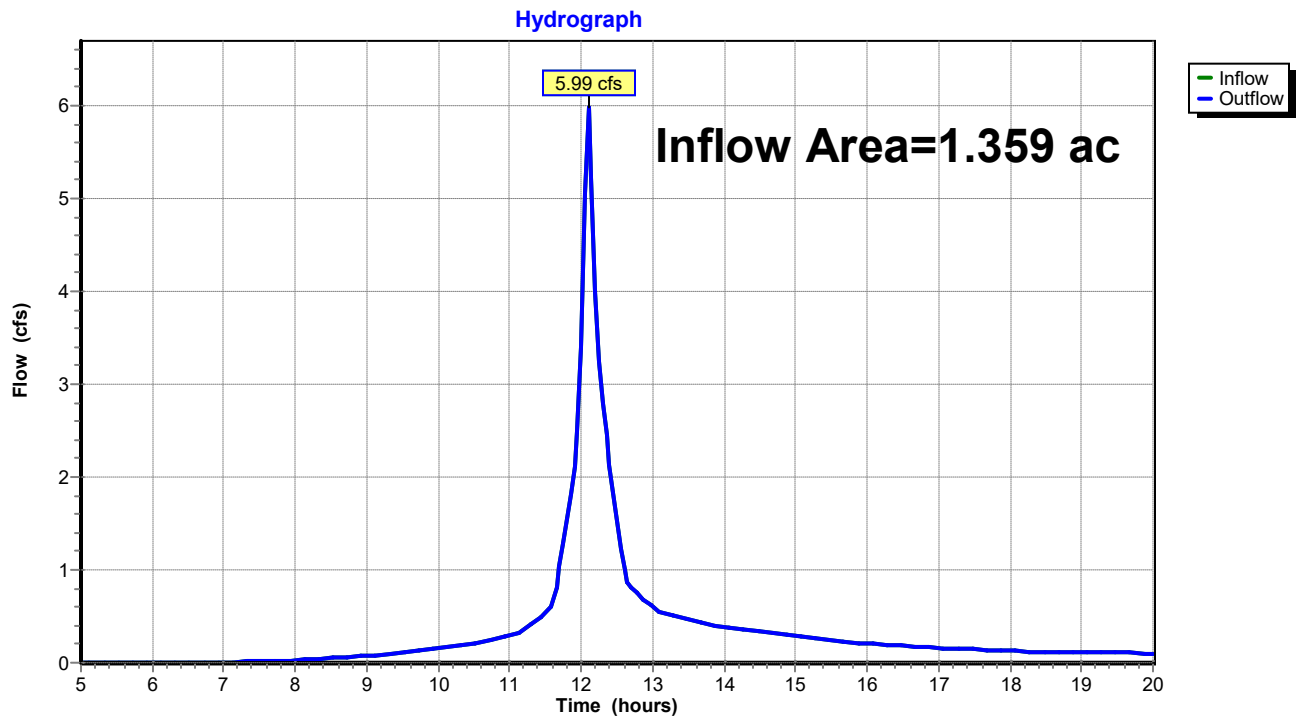


Summary for Reach DP3: Shoreline 3

Inflow Area = 1.359 ac, 4.06% Impervious, Inflow Depth > 3.72" for 25-yr event
 Inflow = 5.99 cfs @ 12.10 hrs, Volume= 0.421 af
 Outflow = 5.99 cfs @ 12.10 hrs, Volume= 0.421 af, Atten= 0%, Lag= 0.0 min
 Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP3: Shoreline 3

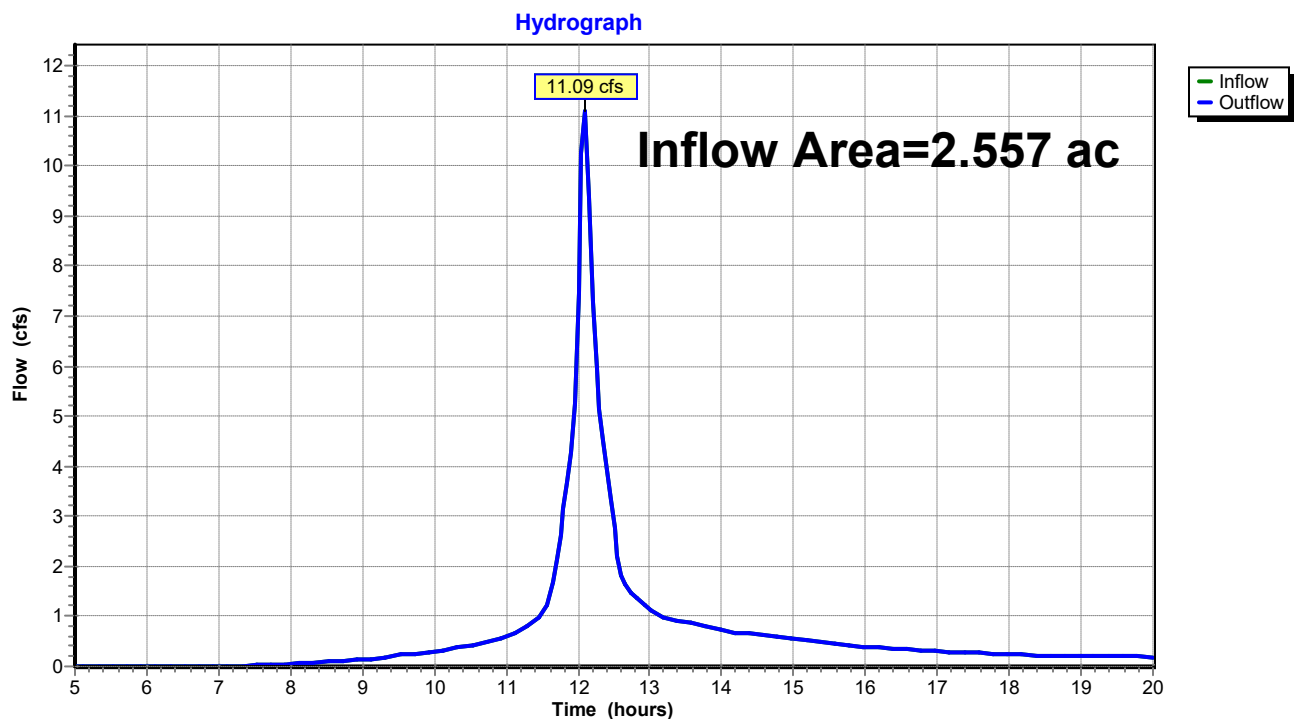


Summary for Reach SP1: SACO RIVER / OCEAN

Inflow Area = 2.557 ac, 11.96% Impervious, Inflow Depth > 3.78" for 25-yr event
 Inflow = 11.09 cfs @ 12.09 hrs, Volume= 0.806 af
 Outflow = 11.09 cfs @ 12.09 hrs, Volume= 0.806 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SP1: SACO RIVER / OCEAN



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Type III 24-hr 25-yr Rainfall=6.20"

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Summary for Pond 1P: Bioretention Filter Cell 1

Inflow Area = 0.226 ac, 50.01% Impervious, Inflow Depth > 4.45" for 25-yr event
Inflow = 1.36 cfs @ 12.01 hrs, Volume= 0.084 af
Outflow = 1.33 cfs @ 12.02 hrs, Volume= 0.082 af, Atten= 2%, Lag= 0.6 min
Primary = 1.33 cfs @ 12.02 hrs, Volume= 0.082 af
Routed to Pond 2P : CB-1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 18.20' @ 12.02 hrs Surf.Area= 275 sf Storage= 101 cf

Plug-Flow detention time= 12.6 min calculated for 0.082 af (98% of inflow)

Center-of-Mass det. time= 6.1 min (765.1 - 758.9)

Volume	Invert	Avail.Storage	Storage Description
#1	17.50'	200 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

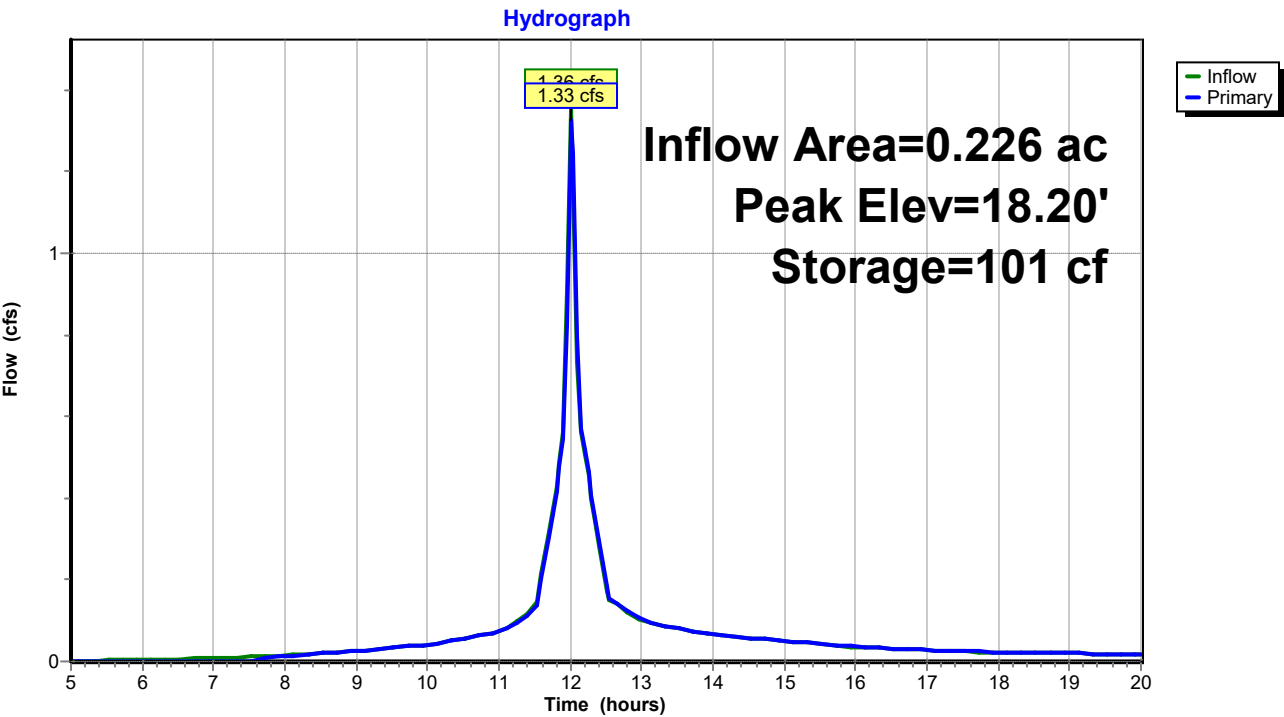
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
17.50	0	0	0
18.00	213	53	53
18.50	372	146	200

Device	Routing	Invert	Outlet Devices
#1	Primary	18.00'	18.0" Horiz. Orifice/Grate C= 0.600 in 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=1.27 cfs @ 12.02 hrs HW=18.19' (Free Discharge)

↑ **1=Orifice/Grate** (Weir Controls 1.27 cfs @ 1.42 fps)

Pond 1P: Bioretention Filter Cell 1



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Type III 24-hr 25-yr Rainfall=6.20"

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Summary for Pond 2P: CB-1

Inflow Area = 0.226 ac, 50.01% Impervious, Inflow Depth > 4.39" for 25-yr event
Inflow = 1.33 cfs @ 12.02 hrs, Volume= 0.082 af
Outflow = 1.33 cfs @ 12.02 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min
Primary = 1.33 cfs @ 12.02 hrs, Volume= 0.082 af
Routed to Reach 1R : Reach 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 14.38' @ 12.02 hrs

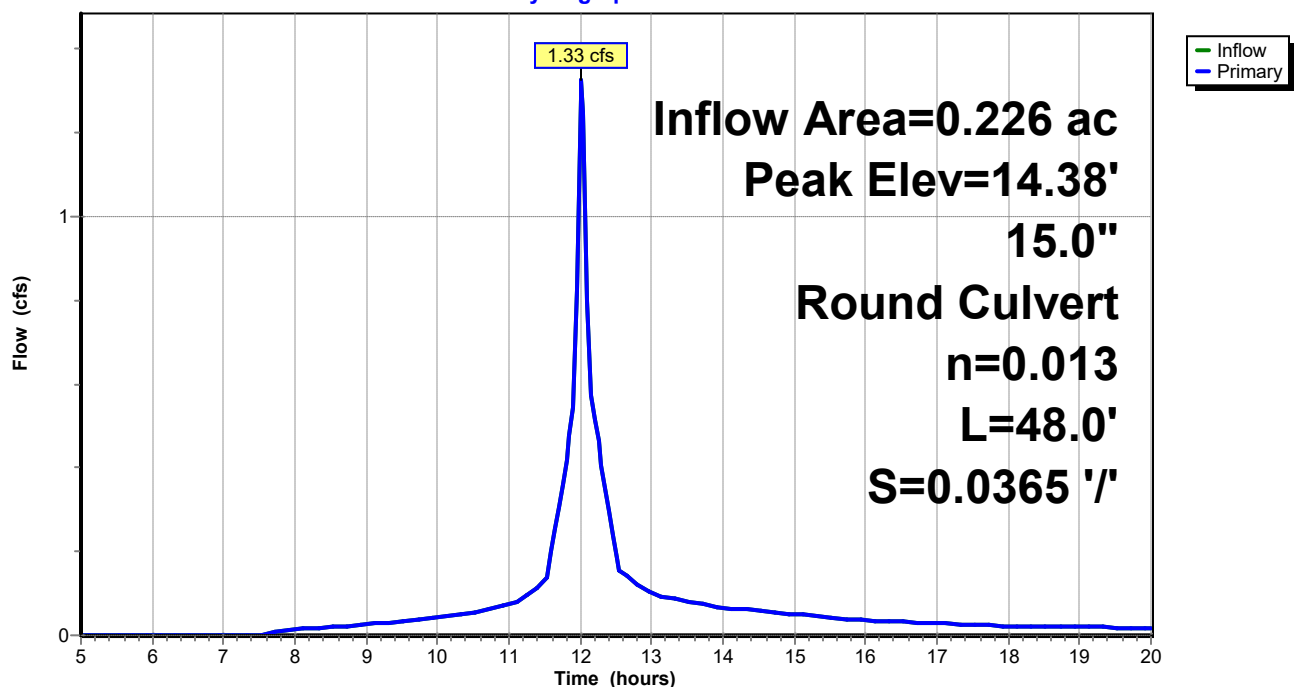
Device	Routing	Invert	Outlet Devices
#1	Primary	13.75'	15.0" Round Culvert L= 48.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.75' / 12.00' S= 0.0365 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.27 cfs @ 12.02 hrs HW=14.36' (Free Discharge)

↑1=Culvert (Inlet Controls 1.27 cfs @ 2.11 fps)

Pond 2P: CB-1

Hydrograph



UNE-PostDrainage-VD Working

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Type III 24-hr 25-yr Rainfall=6.20"

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Summary for Pond 3P: Bioretention Filter Cell 2

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 4.13" for 25-yr event
Inflow = 1.57 cfs @ 12.07 hrs, Volume= 0.106 af
Outflow = 1.56 cfs @ 12.08 hrs, Volume= 0.105 af, Atten= 1%, Lag= 0.6 min
Primary = 1.56 cfs @ 12.08 hrs, Volume= 0.105 af
Routed to Pond 4P : CB-2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 23.72' @ 12.08 hrs Surf.Area= 240 sf Storage= 86 cf

Plug-Flow detention time= 7.6 min calculated for 0.104 af (99% of inflow)
Center-of-Mass det. time= 3.8 min (773.5 - 769.7)

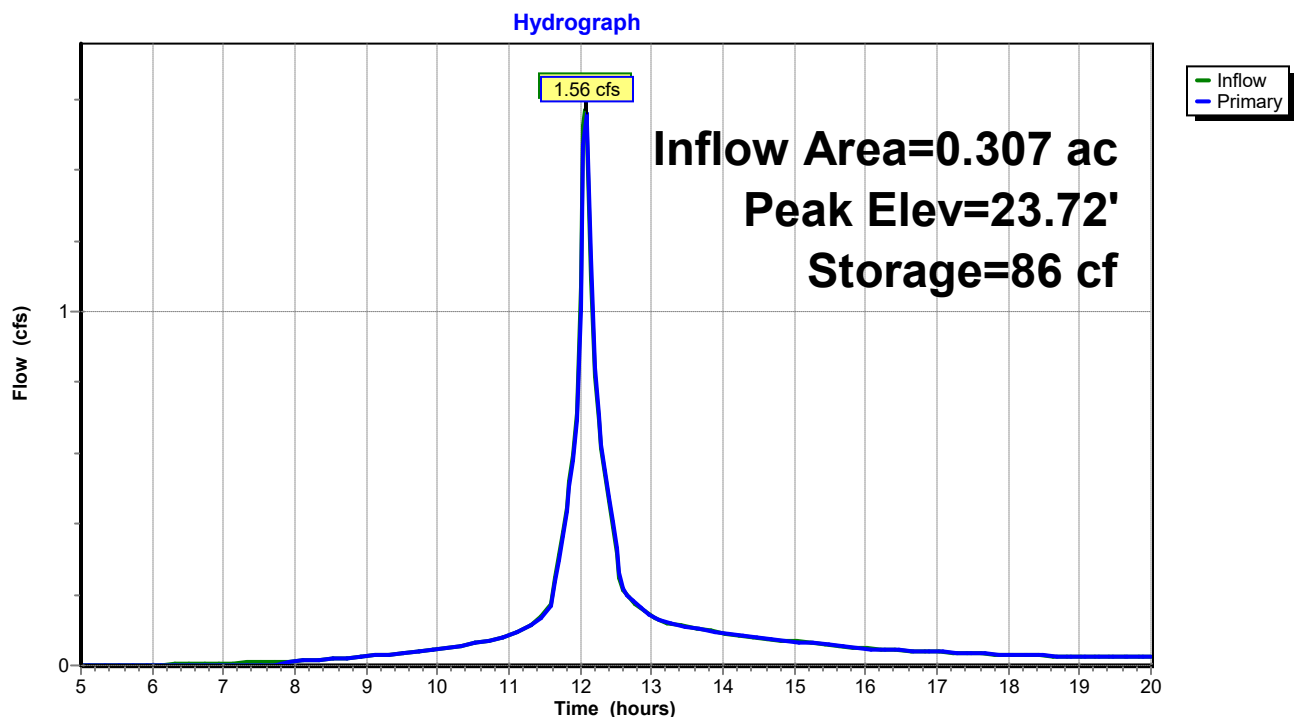
Volume	Invert	Avail.Storage	Storage Description
#1	23.00'	380 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.00	0	0	0
24.00	335	168	168
24.50	515	213	380

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	18.0" Horiz. Orifice/Grate C= 0.600 in 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=1.51 cfs @ 12.08 hrs HW=23.71' (Free Discharge)
↑ **1=Orifice/Grate** (Weir Controls 1.51 cfs @ 1.51 fps)

Pond 3P: Bioretention Filter Cell 2



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Type III 24-hr 25-yr Rainfall=6.20"

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Summary for Pond 4P: CB-2

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 4.09" for 25-yr event
Inflow = 1.56 cfs @ 12.08 hrs, Volume= 0.105 af
Outflow = 1.56 cfs @ 12.08 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.0 min
Primary = 1.56 cfs @ 12.08 hrs, Volume= 0.105 af
Routed to Pond 5P : Level Lip Spreader

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 19.39' @ 12.08 hrs

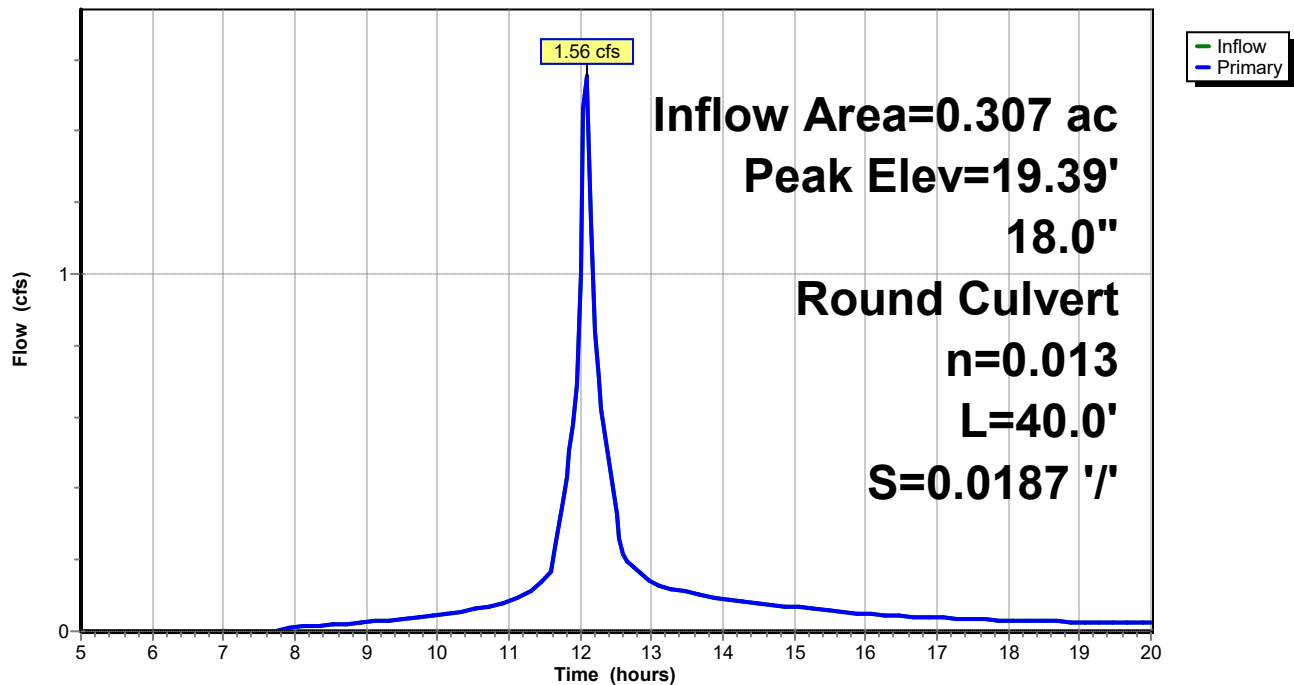
Device	Routing	Invert	Outlet Devices
#1	Primary	18.75'	18.0" Round Culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.75' / 18.00' S= 0.0187 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.51 cfs @ 12.08 hrs HW=19.38' (Free Discharge)

↑1=Culvert (Inlet Controls 1.51 cfs @ 2.13 fps)

Pond 4P: CB-2

Hydrograph



UNE-PostDrainage-VD Working

Type III 24-hr 25-yr Rainfall=6.20"

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Summary for Pond 5P: Level Lip Spreader

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 4.09" for 25-yr event
 Inflow = 1.56 cfs @ 12.08 hrs, Volume= 0.105 af
 Outflow = 1.50 cfs @ 12.11 hrs, Volume= 0.102 af, Atten= 4%, Lag= 1.4 min
 Primary = 1.50 cfs @ 12.11 hrs, Volume= 0.102 af
 Routed to Reach 2R : Reach 2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 18.00' @ 9.40 hrs Surf.Area= 168 sf Storage= 115 cf

Flood Elev= 20.00' Surf.Area= 168 sf Storage= 115 cf

Plug-Flow detention time= 17.8 min calculated for 0.102 af (97% of inflow)

Center-of-Mass det. time= 7.7 min (781.2 - 773.5)

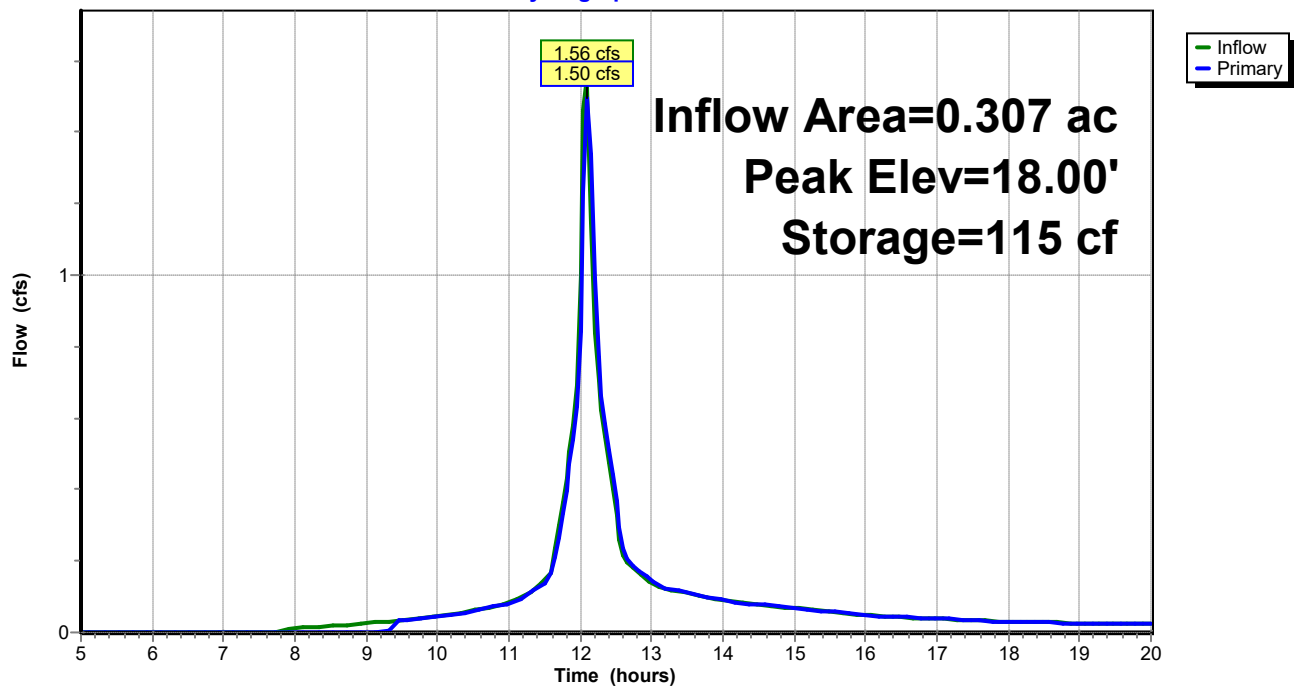
Volume	Invert	Avail.Storage	Storage Description	
#1	17.00'	115 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
17.00	61	0.0	0	0
18.00	168	100.0	115	115

Device	Routing	Invert	Outlet Devices
#0	Primary	18.00'	Automatic Storage Overflow (Discharged without head)

Primary OutFlow Max=0.00 cfs @ 12.11 hrs HW=18.00' (Free Discharge)

Pond 5P: Level Lip Spreader

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.20"

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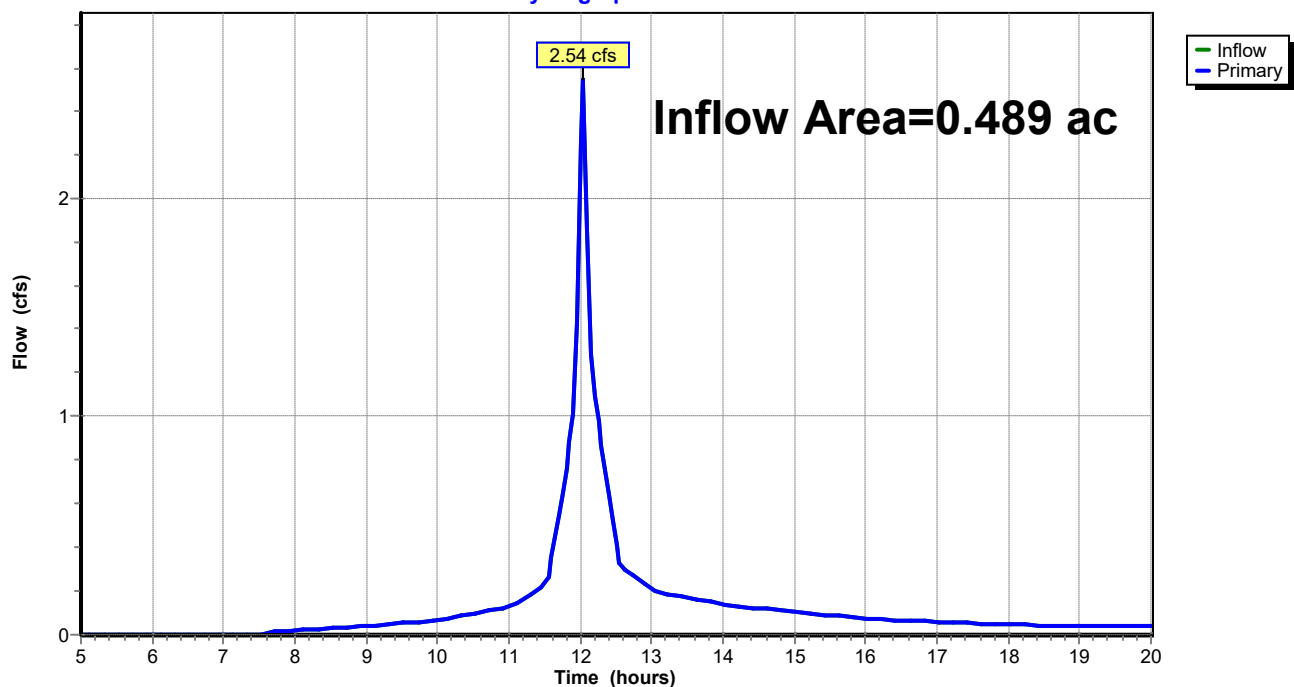
Summary for Link DP1: DP1

Inflow Area = 0.489 ac, 28.87% Impervious, Inflow Depth > 3.97" for 25-yr event
Inflow = 2.54 cfs @ 12.04 hrs, Volume= 0.162 af
Primary = 2.54 cfs @ 12.04 hrs, Volume= 0.162 af, Atten= 0%, Lag= 0.0 min
Routed to Reach SP1 : SACO RIVER / OCEAN

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP1: DP1

Hydrograph



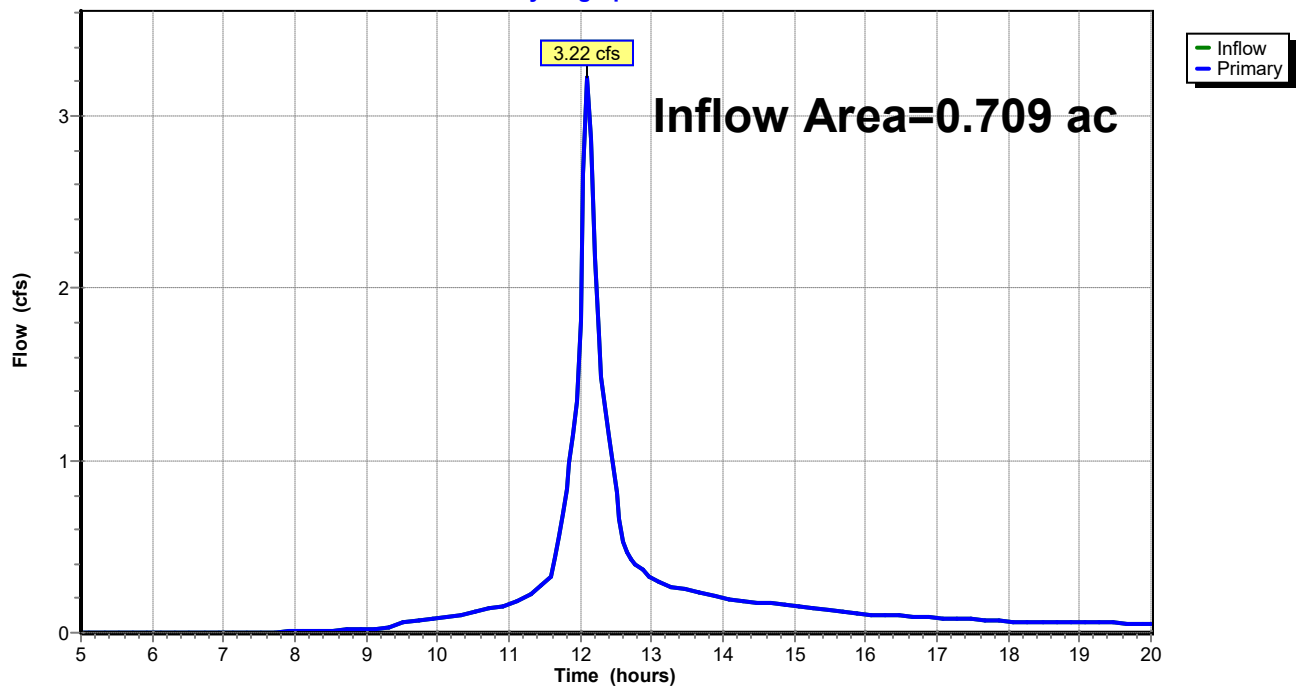
Summary for Link DP2: DP2

Inflow Area = 0.709 ac, 15.44% Impervious, Inflow Depth > 3.77" for 25-yr event
 Inflow = 3.22 cfs @ 12.11 hrs, Volume= 0.223 af
 Primary = 3.22 cfs @ 12.11 hrs, Volume= 0.223 af, Atten= 0%, Lag= 0.0 min
 Routed to Reach SP1 : SACO RIVER / OCEAN

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP2: DP2

Hydrograph



UNE-PostDrainage-VD Working

Type III 24-hr 100-yr Rainfall=8.70"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 1S: Post Subcatchment 1 Runoff Area=9,832 sf 50.01% Impervious Runoff Depth>6.75"
Flow Length=172' Tc=0.8 min CN=87 Runoff=2.01 cfs 0.127 af

Subcatchment 2S: Post Subcatchment 2 Runoff Area=11,488 sf 10.78% Impervious Runoff Depth>5.81"
Flow Length=133' Tc=3.4 min CN=79 Runoff=2.01 cfs 0.128 af

Subcatchment 3S: Post Subcatchment 3 Runoff Area=13,365 sf 33.49% Impervious Runoff Depth>6.40"
Flow Length=262' Tc=4.9 min CN=84 Runoff=2.37 cfs 0.164 af

Subcatchment 4S: Post Subcatchment 4 Runoff Area=17,529 sf 1.68% Impervious Runoff Depth>5.80"
Flow Length=126' Tc=7.2 min CN=79 Runoff=2.71 cfs 0.195 af

Subcatchment 5S: Post Subcatchment 5 Runoff Area=59,179 sf 4.06% Impervious Runoff Depth>5.92"
Flow Length=445' Tc=7.0 min CN=80 Runoff=9.35 cfs 0.670 af

Reach 1R: Reach 1 Inflow=1.97 cfs 0.126 af
Outflow=1.97 cfs 0.126 af

Reach 2R: Reach 2 Inflow=2.27 cfs 0.160 af
Outflow=2.27 cfs 0.160 af

Reach DP3: Shoreline 3 Inflow=9.35 cfs 0.670 af
Outflow=9.35 cfs 0.670 af

Reach SP1: SACO RIVER / OCEAN Inflow=17.21 cfs 1.278 af
Outflow=17.21 cfs 1.278 af

Pond 1P: Bioretention Filter Cell 1 Peak Elev=18.25' Storage=118 cf Inflow=2.01 cfs 0.127 af
Outflow=1.97 cfs 0.126 af

Pond 2P: CB-1 Peak Elev=14.54' Inflow=1.97 cfs 0.126 af
15.0" Round Culvert n=0.013 L=48.0' S=0.0365 ' /' Outflow=1.97 cfs 0.126 af

Pond 3P: Bioretention Filter Cell 2 Peak Elev=23.79' Storage=103 cf Inflow=2.37 cfs 0.164 af
Outflow=2.35 cfs 0.163 af

Pond 4P: CB-2 Peak Elev=19.56' Inflow=2.35 cfs 0.163 af
18.0" Round Culvert n=0.013 L=40.0' S=0.0187 ' /' Outflow=2.35 cfs 0.163 af

Pond 5P: Level Lip Spreader Peak Elev=18.00' Storage=115 cf Inflow=2.35 cfs 0.163 af
Outflow=2.27 cfs 0.160 af

Link DP1: DP1 Inflow=3.88 cfs 0.253 af
Primary=3.88 cfs 0.253 af

Link DP2: DP2 Inflow=4.98 cfs 0.354 af
Primary=4.98 cfs 0.354 af

UNE-PostDrainage-VD Working

Type III 24-hr 100-yr Rainfall=8.70"

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Total Runoff Area = 2.557 ac Runoff Volume = 1.283 af Average Runoff Depth = 6.02"
88.04% Pervious = 2.251 ac 11.96% Impervious = 0.306 ac

UNE-PostDrainage-VD Working

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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Subcatchment 1S: Post Subcatchment 1

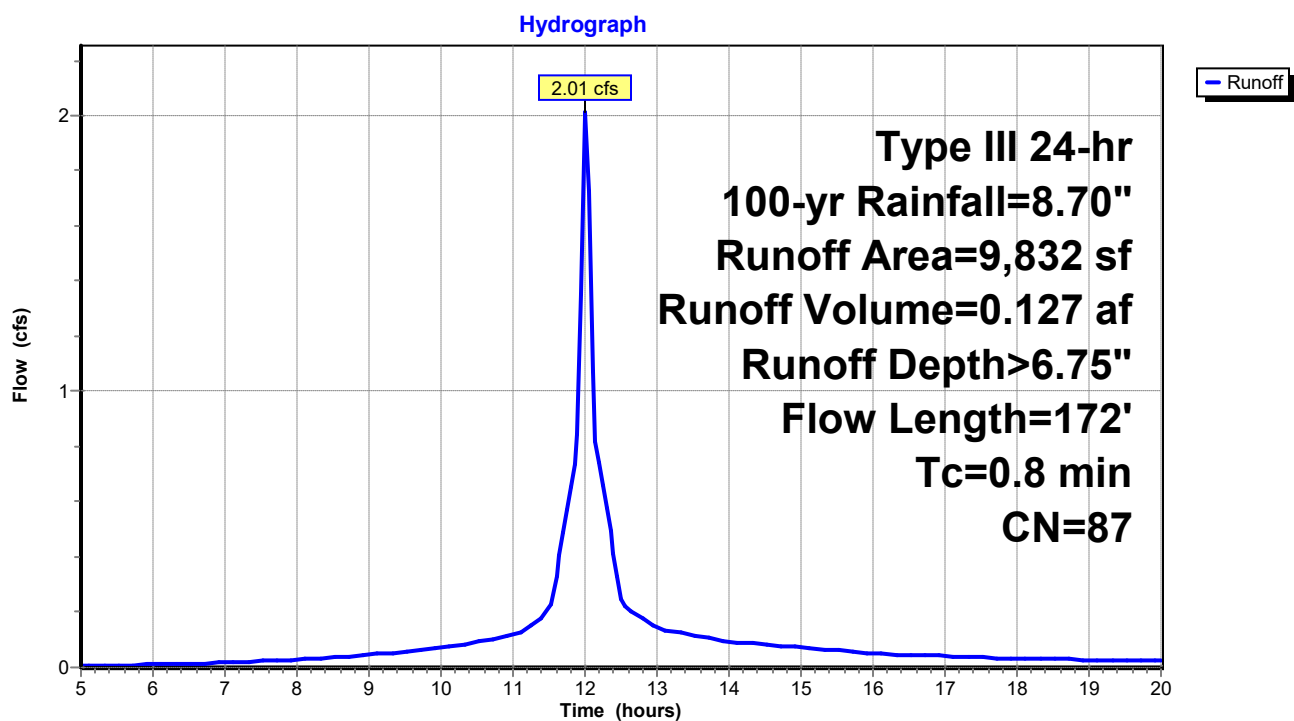
Runoff = 2.01 cfs @ 12.01 hrs, Volume= 0.127 af, Depth> 6.75"
 Routed to Pond 1P : Bioretention Filter Cell 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-yr Rainfall=8.70"

Area (sf)	CN	Description
3,430	77	Woods, Good, HSG D
* 982	98	Ledge, HSG D
595	80	>75% Grass cover, Good, HSG D
* 3,935	98	Paved Access Drive, HSG D
* 890	73	Bioretention Filter Cell, Good, HSG D
9,832	87	Weighted Average
4,915		49.99% Pervious Area
4,917		50.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	46	0.0500	1.73		Sheet Flow, Tc-1 Smooth surfaces n= 0.011 P2= 3.30"
0.3	102	0.0500	5.25	15.74	Channel Flow, Tc-2 Area= 3.0 sf Perim= 9.2' r= 0.33' n= 0.030 Earth, grassed & winding
0.1	24	0.0625	3.75		Shallow Concentrated Flow, Tc-3 Grassed Waterway Kv= 15.0 fps
0.8	172	Total			

Subcatchment 1S: Post Subcatchment 1



UNE-PostDrainage-VD Working

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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Subcatchment 2S: Post Subcatchment 2

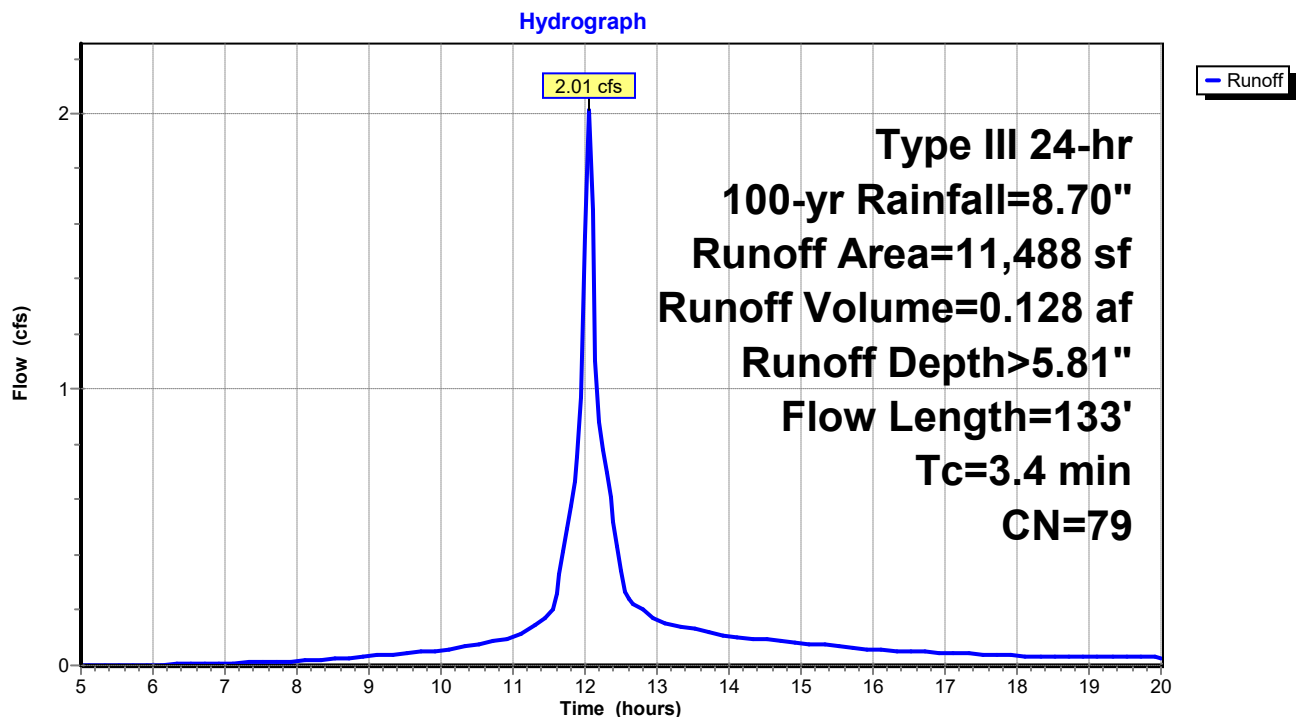
Runoff = 2.01 cfs @ 12.05 hrs, Volume= 0.128 af, Depth> 5.81"
Routed to Link DP1 : DP1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.70"

Area (sf)	CN	Description
10,250	77	Woods, Good, HSG D
1,238	98	Paved parking, HSG D
11,488	79	Weighted Average
10,250		89.22% Pervious Area
1,238		10.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	21	0.1905	0.14		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
0.9	112	0.1696	2.06		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
3.4	133	Total			

Subcatchment 2S: Post Subcatchment 2



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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Subcatchment 3S: Post Subcatchment 3

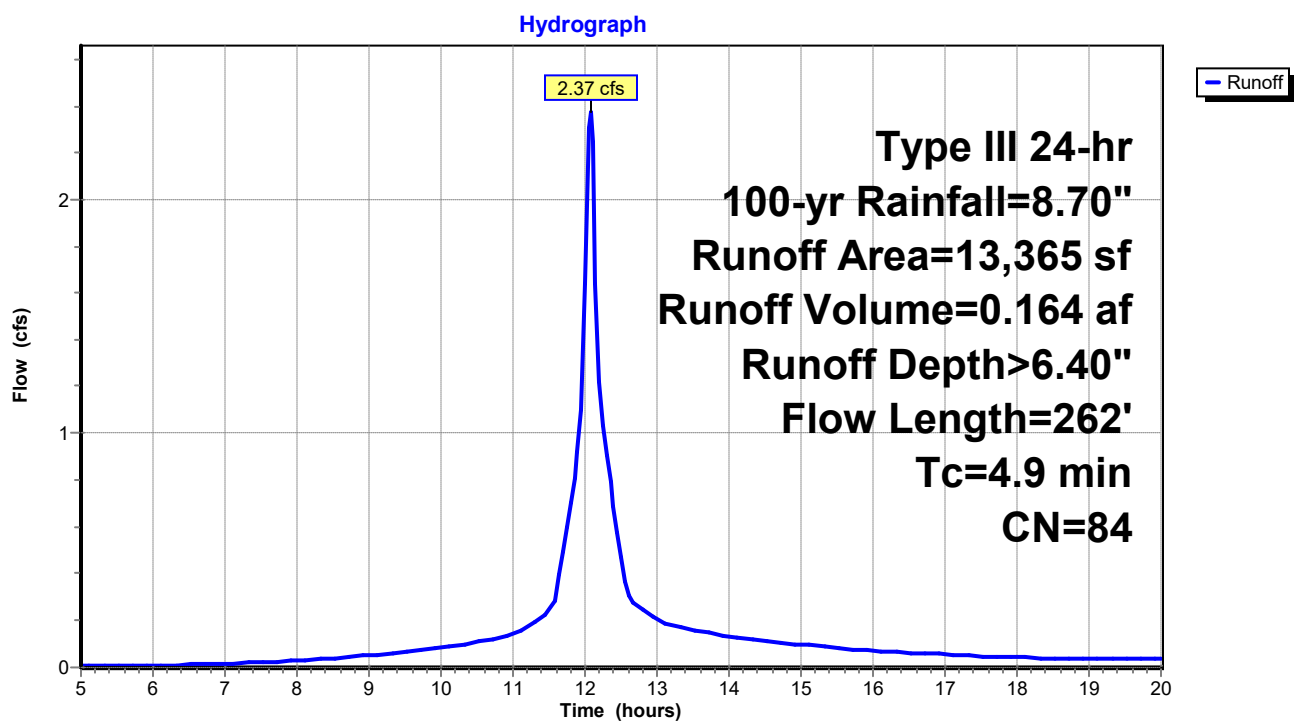
Runoff = 2.37 cfs @ 12.07 hrs, Volume= 0.164 af, Depth> 6.40"
 Routed to Pond 3P : Bioretention Filter Cell 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-yr Rainfall=8.70"

Area (sf)	CN	Description
6,822	77	Woods, Good, HSG D
* 580	73	Biofiltration cell, Good, HSG D
* 3,768	98	Paved access drive, HSG D
1,487	80	>75% Grass cover, Good, HSG D
* 708	98	Ledge, HSG D
13,365	84	Weighted Average
8,889		66.51% Pervious Area
4,476		33.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	43	0.2093	0.17		Sheet Flow, Tc-1 Woods: Light underbrush n= 0.400 P2= 3.30"
0.7	214	0.0500	5.25	15.74	Channel Flow, Tc-2 Area= 3.0 sf Perim= 9.2' r= 0.33' n= 0.030 Earth, grassed & winding
0.0	5	0.0500	3.35		Shallow Concentrated Flow, Tc-3 Grassed Waterway Kv= 15.0 fps
4.9	262	Total			

Subcatchment 3S: Post Subcatchment 3



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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Subcatchment 4S: Post Subcatchment 4

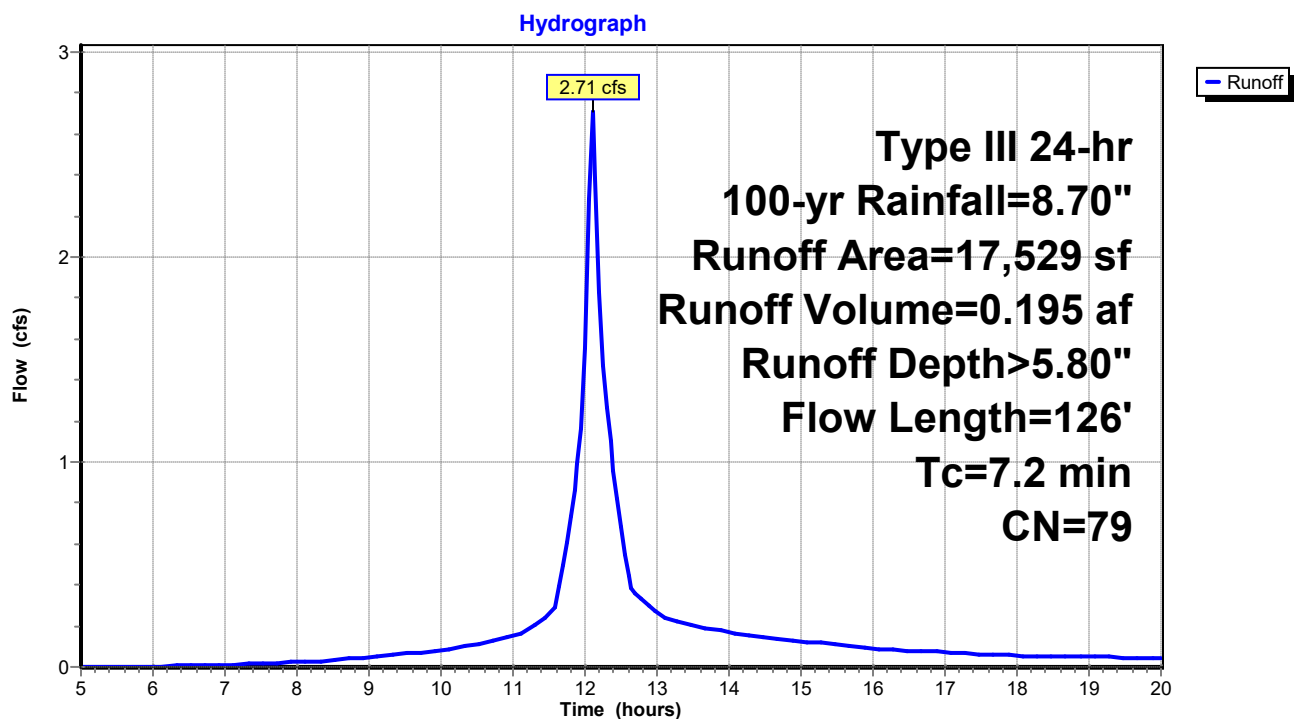
Runoff = 2.71 cfs @ 12.10 hrs, Volume= 0.195 af, Depth> 5.80"
Routed to Link DP2 : DP2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.70"

Area (sf)	CN	Description
* 295	98	Paved access drive, HSG D
1,450	80	>75% Grass cover, Good, HSG D
15,784	79	Woods, Fair, HSG D
17,529	79	Weighted Average
17,234		98.32% Pervious Area
295		1.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	62	0.1290	0.15		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
0.4	64	0.2343	2.42		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
7.2	126	Total			

Subcatchment 4S: Post Subcatchment 4



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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Subcatchment 5S: Post Subcatchment 5

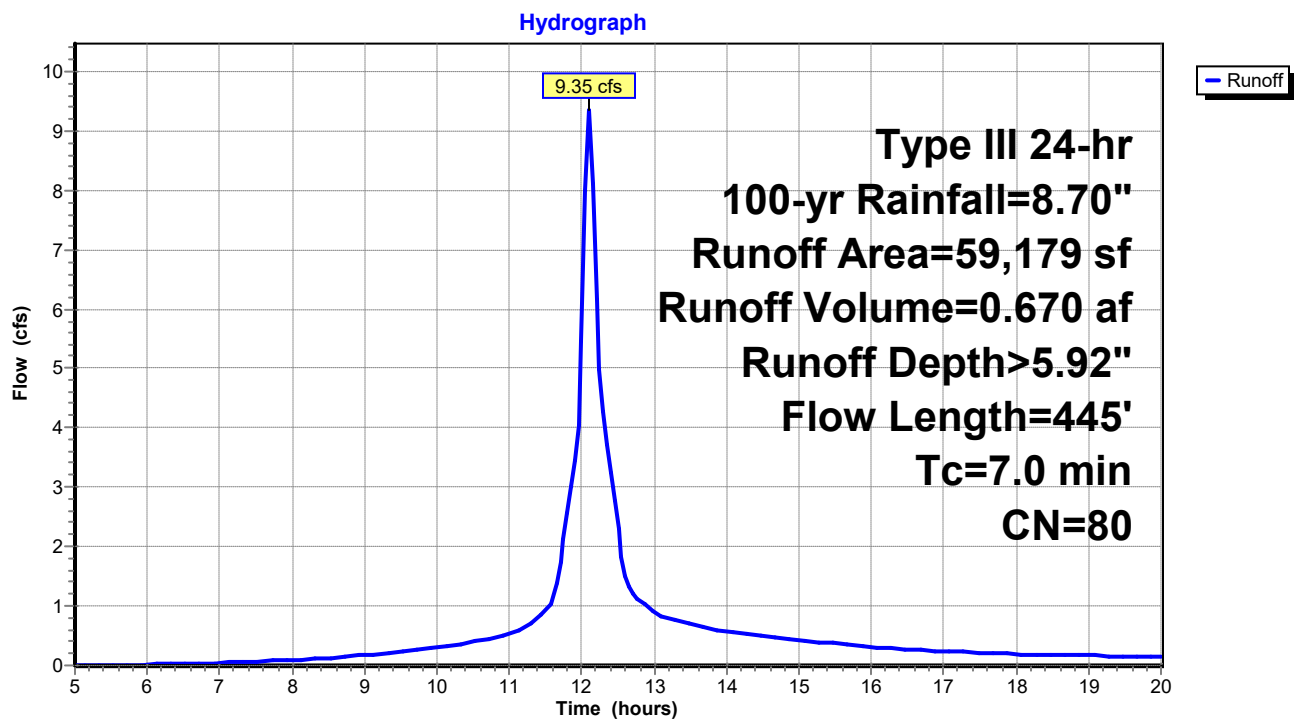
Runoff = 9.35 cfs @ 12.10 hrs, Volume= 0.670 af, Depth> 5.92"
 Routed to Reach DP3 : Shoreline 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-yr Rainfall=8.70"

	Area (sf)	CN	Description
*	1,650	98	Paved access drive, HSG D
	751	98	Roofs, HSG D
*	6,955	88	Sand beach, HSG D
	3,872	96	Gravel surface, HSG D
	45,951	77	Woods, Good, HSG D
	59,179	80	Weighted Average
	56,778		95.94% Pervious Area
	2,401		4.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	23	0.1740	0.14		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
1.0	70	0.0574	1.20		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
0.5	170	0.1059	5.24		Shallow Concentrated Flow, Tc-3
					Unpaved Kv= 16.1 fps
2.5	140	0.0357	0.94		Shallow Concentrated Flow, Tc-4
					Woodland Kv= 5.0 fps
0.3	42	0.0714	2.67		Shallow Concentrated Flow, Tc-5
					Nearly Bare & Untilled Kv= 10.0 fps
7.0	445	Total			

Subcatchment 5S: Post Subcatchment 5



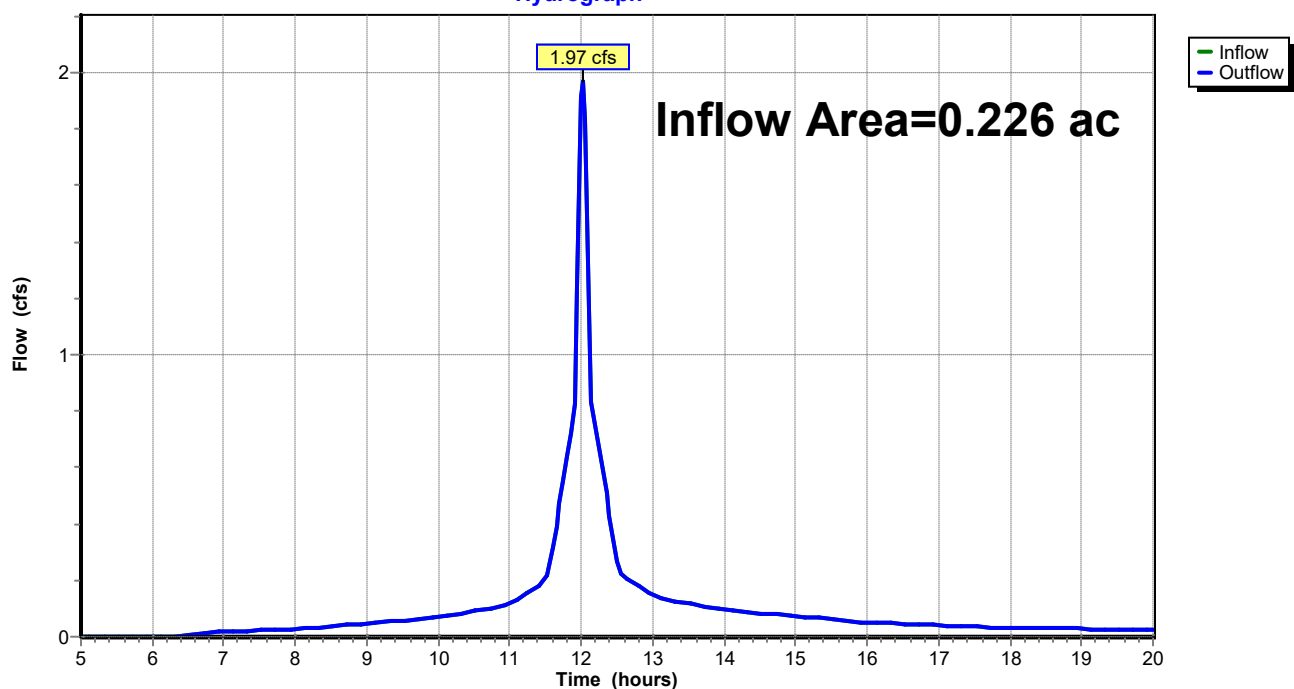
Summary for Reach 1R: Reach 1

Inflow Area = 0.226 ac, 50.01% Impervious, Inflow Depth > 6.68" for 100-yr event
 Inflow = 1.97 cfs @ 12.02 hrs, Volume= 0.126 af
 Outflow = 1.97 cfs @ 12.02 hrs, Volume= 0.126 af, Atten= 0%, Lag= 0.0 min
 Routed to Link DP1 : DP1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: Reach 1

Hydrograph



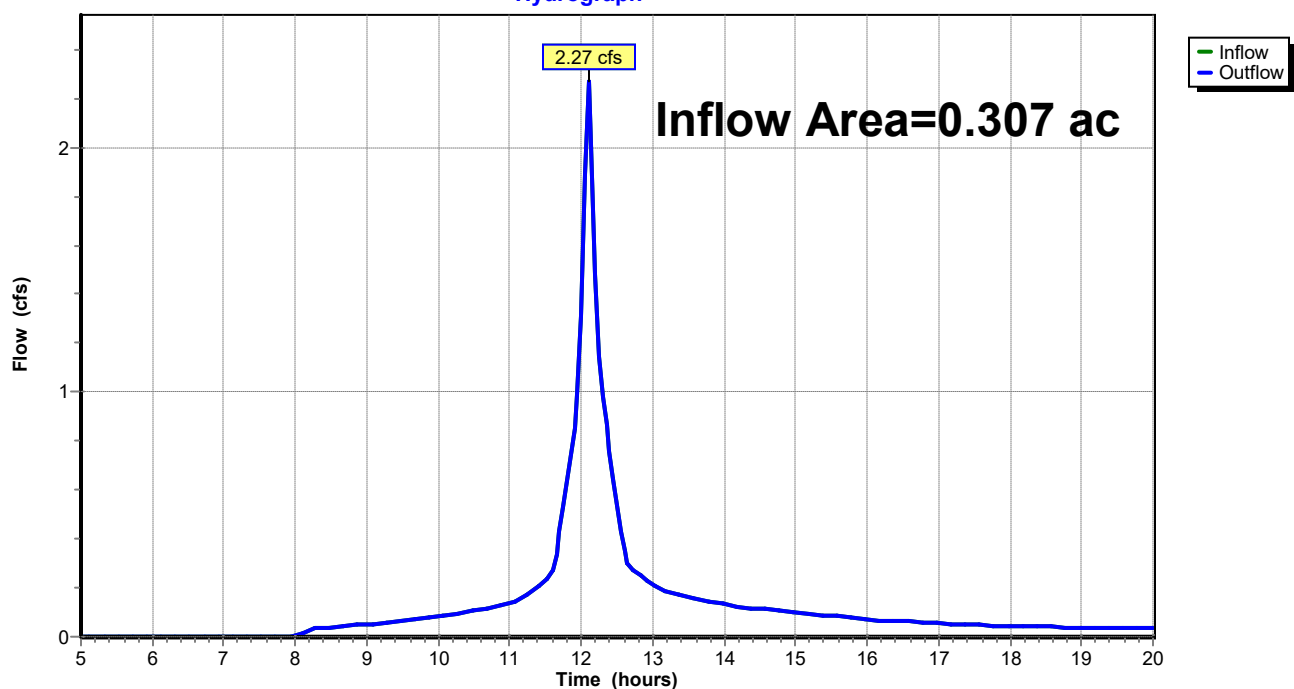
Summary for Reach 2R: Reach 2

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 6.25" for 100-yr event
 Inflow = 2.27 cfs @ 12.10 hrs, Volume= 0.160 af
 Outflow = 2.27 cfs @ 12.10 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min
 Routed to Link DP2 : DP2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: Reach 2

Hydrograph

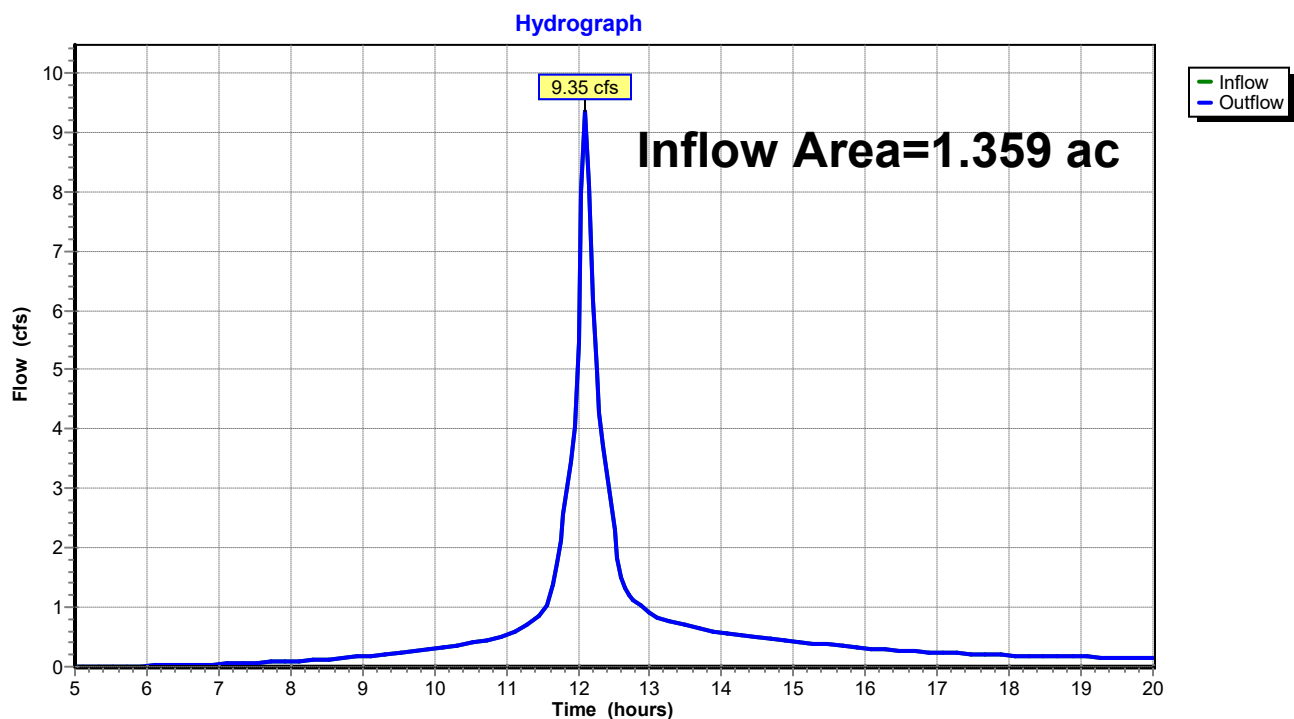


Summary for Reach DP3: Shoreline 3

Inflow Area = 1.359 ac, 4.06% Impervious, Inflow Depth > 5.92" for 100-yr event
 Inflow = 9.35 cfs @ 12.10 hrs, Volume= 0.670 af
 Outflow = 9.35 cfs @ 12.10 hrs, Volume= 0.670 af, Atten= 0%, Lag= 0.0 min
 Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP3: Shoreline 3

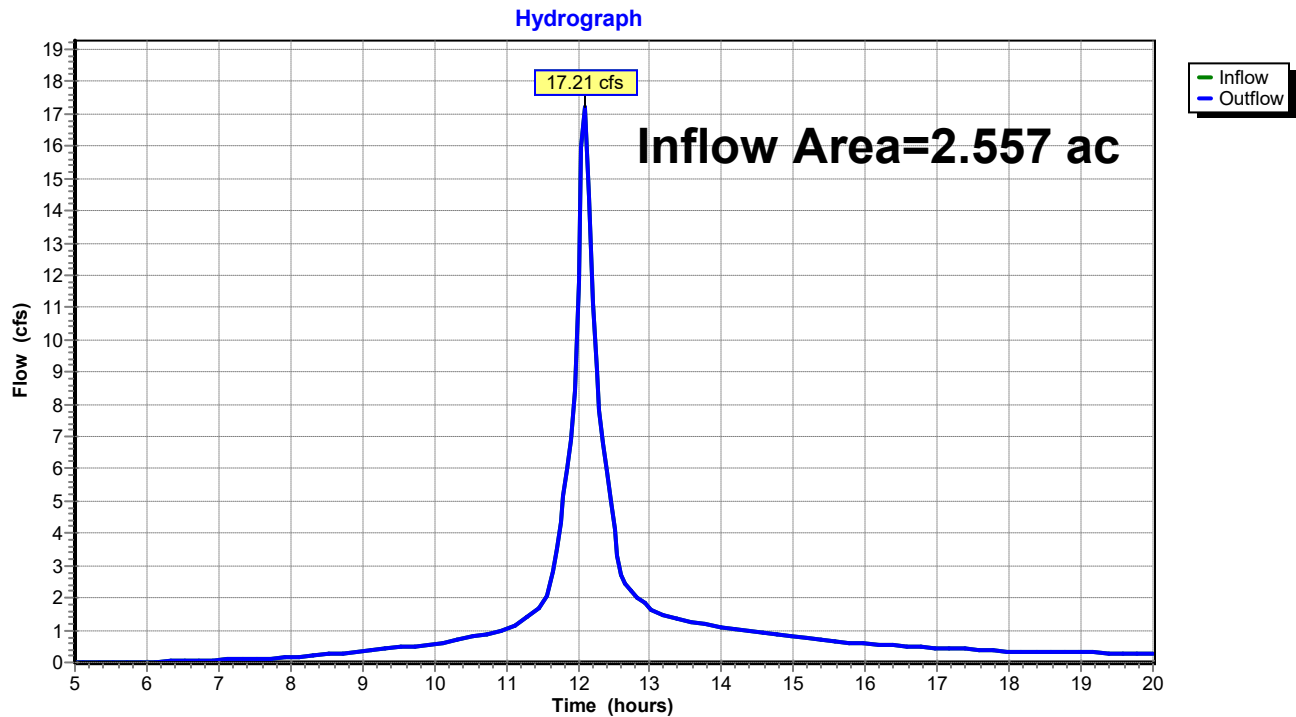


Summary for Reach SP1: SACO RIVER / OCEAN

Inflow Area = 2.557 ac, 11.96% Impervious, Inflow Depth > 6.00" for 100-yr event
 Inflow = 17.21 cfs @ 12.09 hrs, Volume= 1.278 af
 Outflow = 17.21 cfs @ 12.09 hrs, Volume= 1.278 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SP1: SACO RIVER / OCEAN



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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Pond 1P: Bioretention Filter Cell 1

Inflow Area = 0.226 ac, 50.01% Impervious, Inflow Depth > 6.75" for 100-yr event
Inflow = 2.01 cfs @ 12.01 hrs, Volume= 0.127 af
Outflow = 1.97 cfs @ 12.02 hrs, Volume= 0.126 af, Atten= 2%, Lag= 0.6 min
Primary = 1.97 cfs @ 12.02 hrs, Volume= 0.126 af
Routed to Pond 2P : CB-1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 18.25' @ 12.02 hrs Surf.Area= 294 sf Storage= 118 cf

Plug-Flow detention time= 9.1 min calculated for 0.125 af (99% of inflow)
Center-of-Mass det. time= 4.7 min (754.9 - 750.3)

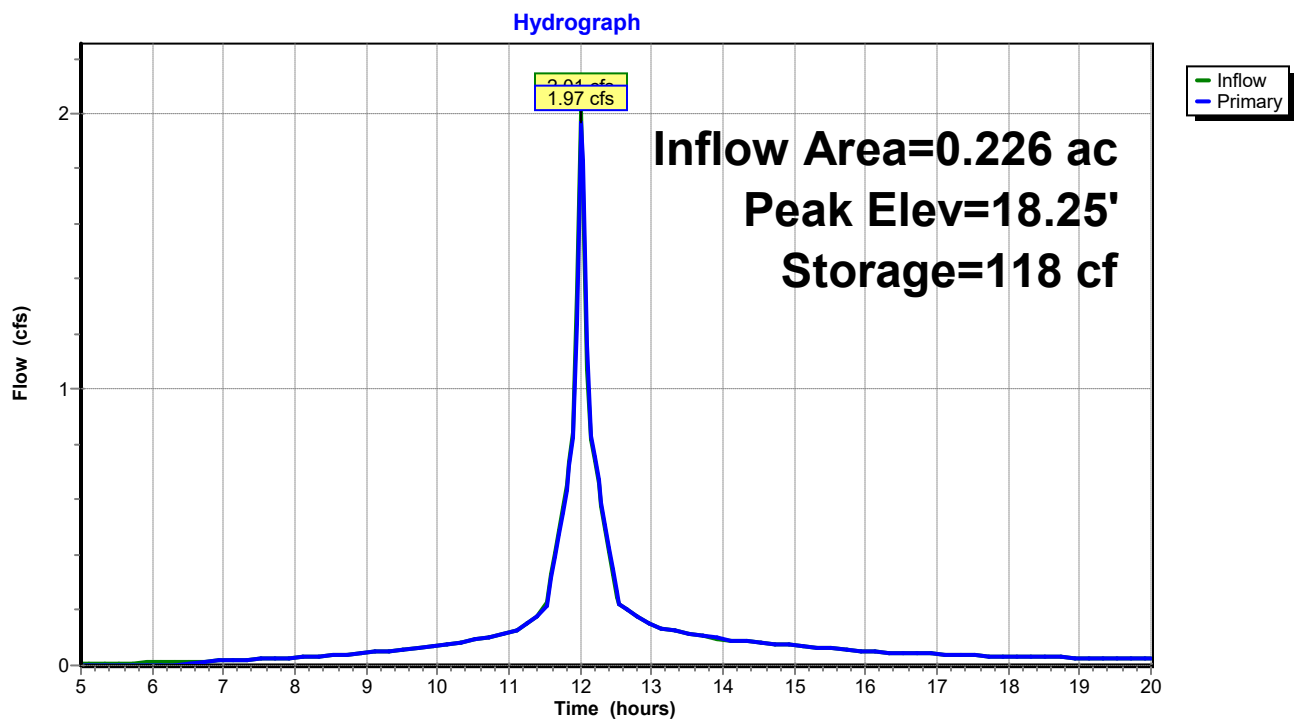
Volume	Invert	Avail.Storage	Storage Description
#1	17.50'	200 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
17.50	0	0	0
18.00	213	53	53
18.50	372	146	200

Device	Routing	Invert	Outlet Devices
#1	Primary	18.00'	18.0" Horiz. Orifice/Grate C= 0.600 in 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=1.88 cfs @ 12.02 hrs HW=18.25' (Free Discharge)
↑ **1=Orifice/Grate** (Weir Controls 1.88 cfs @ 1.62 fps)

Pond 1P: Bioretention Filter Cell 1



UNE-PostDrainage-VD Working

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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Pond 2P: CB-1

Inflow Area = 0.226 ac, 50.01% Impervious, Inflow Depth > 6.68" for 100-yr event
Inflow = 1.97 cfs @ 12.02 hrs, Volume= 0.126 af
Outflow = 1.97 cfs @ 12.02 hrs, Volume= 0.126 af, Atten= 0%, Lag= 0.0 min
Primary = 1.97 cfs @ 12.02 hrs, Volume= 0.126 af
Routed to Reach 1R : Reach 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 14.54' @ 12.02 hrs

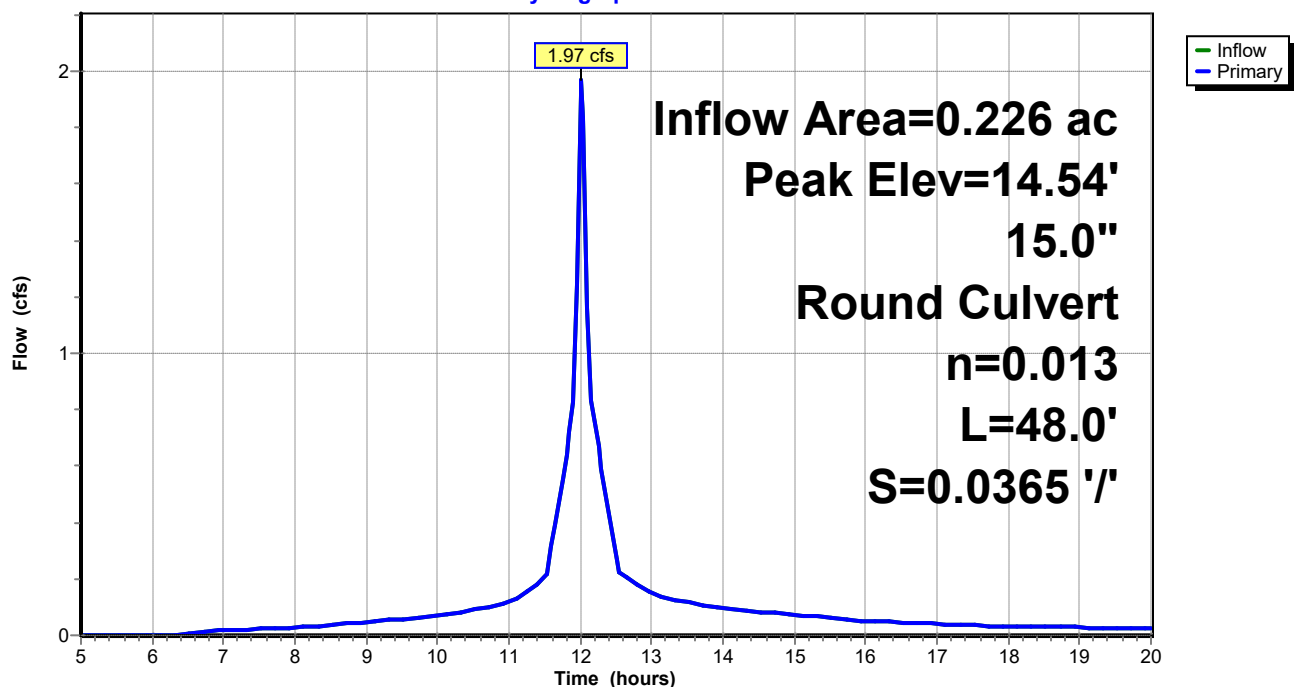
Device	Routing	Invert	Outlet Devices
#1	Primary	13.75'	15.0" Round Culvert L= 48.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.75' / 12.00' S= 0.0365 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.88 cfs @ 12.02 hrs HW=14.52' (Free Discharge)

↑1=Culvert (Inlet Controls 1.88 cfs @ 2.36 fps)

Pond 2P: CB-1

Hydrograph



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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Pond 3P: Bioretention Filter Cell 2

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 6.40" for 100-yr event
Inflow = 2.37 cfs @ 12.07 hrs, Volume= 0.164 af
Outflow = 2.35 cfs @ 12.08 hrs, Volume= 0.163 af, Atten= 1%, Lag= 0.6 min
Primary = 2.35 cfs @ 12.08 hrs, Volume= 0.163 af
Routed to Pond 4P : CB-2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 23.79' @ 12.08 hrs Surf.Area= 263 sf Storage= 103 cf

Plug-Flow detention time= 5.8 min calculated for 0.163 af (99% of inflow)
Center-of-Mass det. time= 3.0 min (762.5 - 759.5)

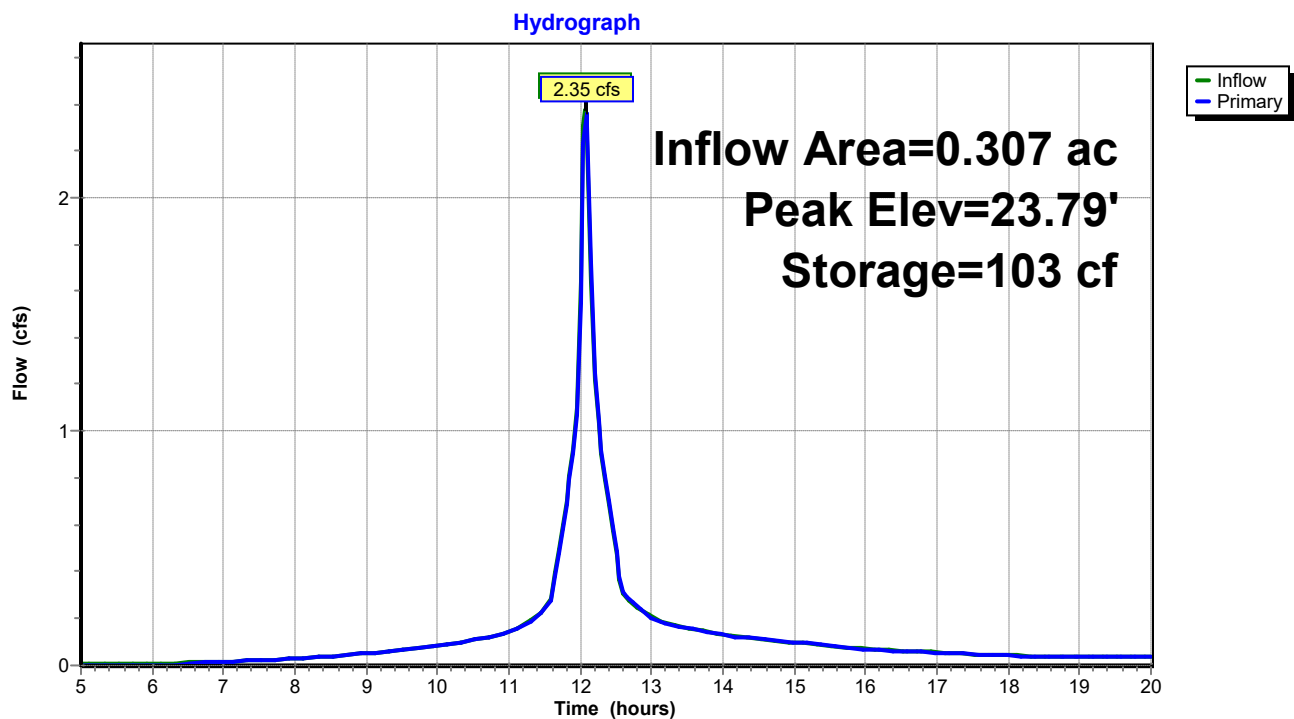
Volume	Invert	Avail.Storage	Storage Description
#1	23.00'	380 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.00	0	0	0
24.00	335	168	168
24.50	515	213	380

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	18.0" Horiz. Orifice/Grate C= 0.600 in 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=2.28 cfs @ 12.08 hrs HW=23.78' (Free Discharge)
↑ **1=Orifice/Grate** (Weir Controls 2.28 cfs @ 1.73 fps)

Pond 3P: Bioretention Filter Cell 2



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Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Pond 4P: CB-2

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 6.36" for 100-yr event
Inflow = 2.35 cfs @ 12.08 hrs, Volume= 0.163 af
Outflow = 2.35 cfs @ 12.08 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min
Primary = 2.35 cfs @ 12.08 hrs, Volume= 0.163 af
Routed to Pond 5P : Level Lip Spreader

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 19.56' @ 12.08 hrs

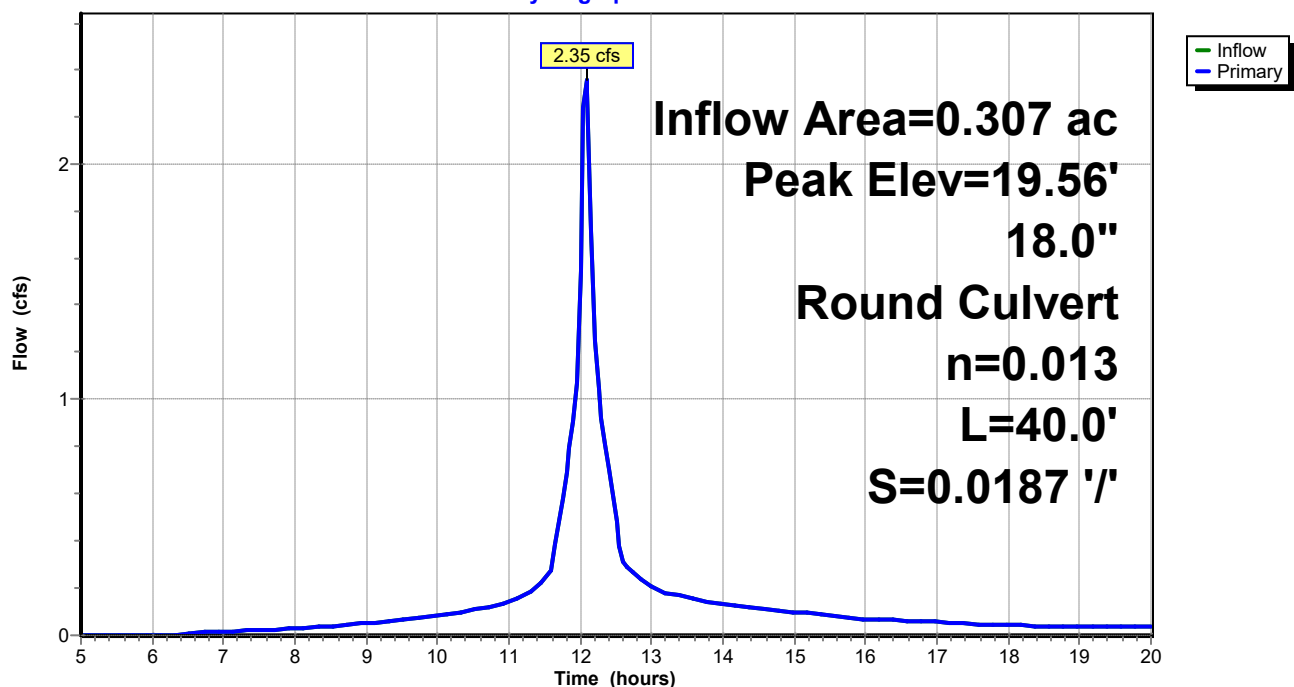
Device	Routing	Invert	Outlet Devices
#1	Primary	18.75'	18.0" Round Culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.75' / 18.00' S= 0.0187 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.28 cfs @ 12.08 hrs HW=19.54' (Free Discharge)

↑1=Culvert (Inlet Controls 2.28 cfs @ 2.40 fps)

Pond 4P: CB-2

Hydrograph



UNE-PostDrainage-VD Working

Type III 24-hr 100-yr Rainfall=8.70"

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Summary for Pond 5P: Level Lip Spreader

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 6.36" for 100-yr event
 Inflow = 2.35 cfs @ 12.08 hrs, Volume= 0.163 af
 Outflow = 2.27 cfs @ 12.10 hrs, Volume= 0.160 af, Atten= 4%, Lag= 1.5 min
 Primary = 2.27 cfs @ 12.10 hrs, Volume= 0.160 af
 Routed to Reach 2R : Reach 2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 18.00' @ 8.10 hrs Surf.Area= 168 sf Storage= 115 cf

Flood Elev= 20.00' Surf.Area= 168 sf Storage= 115 cf

Plug-Flow detention time= 13.3 min calculated for 0.160 af (98% of inflow)

Center-of-Mass det. time= 6.5 min (769.1 - 762.5)

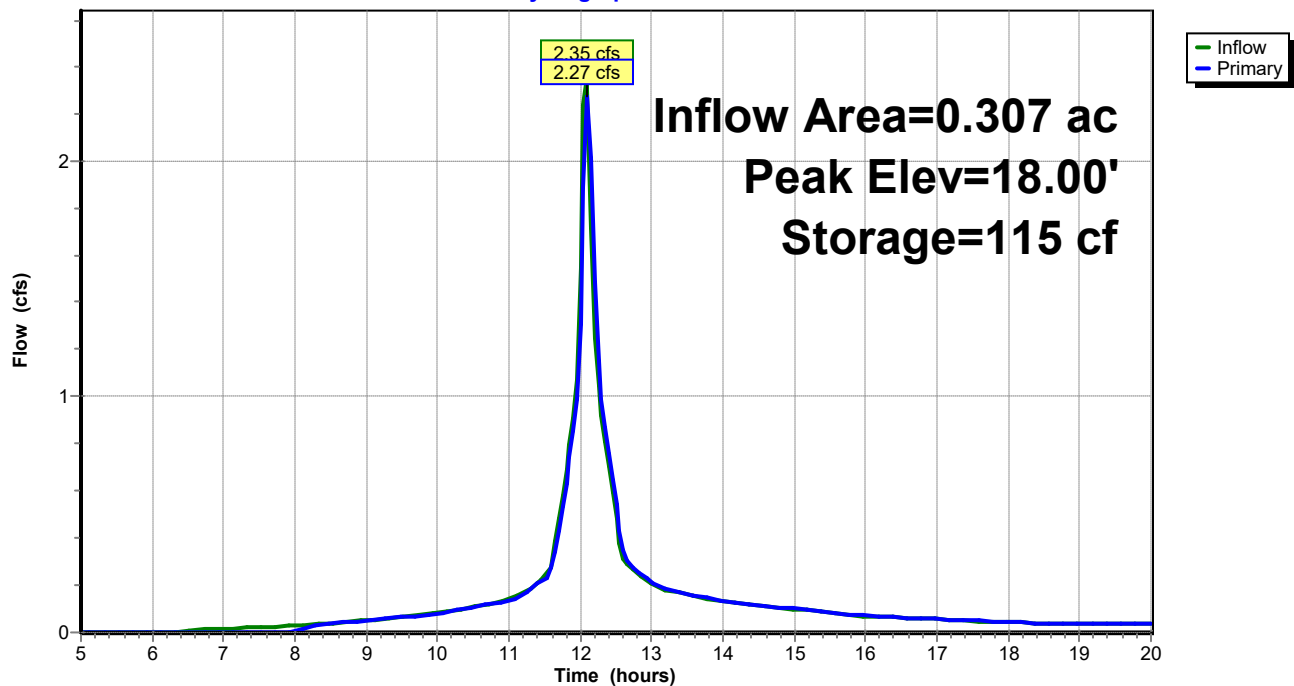
Volume	Invert	Avail.Storage	Storage Description	
#1	17.00'	115 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
17.00	61	0.0	0	0
18.00	168	100.0	115	115

Device	Routing	Invert	Outlet Devices
#0	Primary	18.00'	Automatic Storage Overflow (Discharged without head)

Primary OutFlow Max=0.00 cfs @ 12.10 hrs HW=18.00' (Free Discharge)

Pond 5P: Level Lip Spreader

Hydrograph



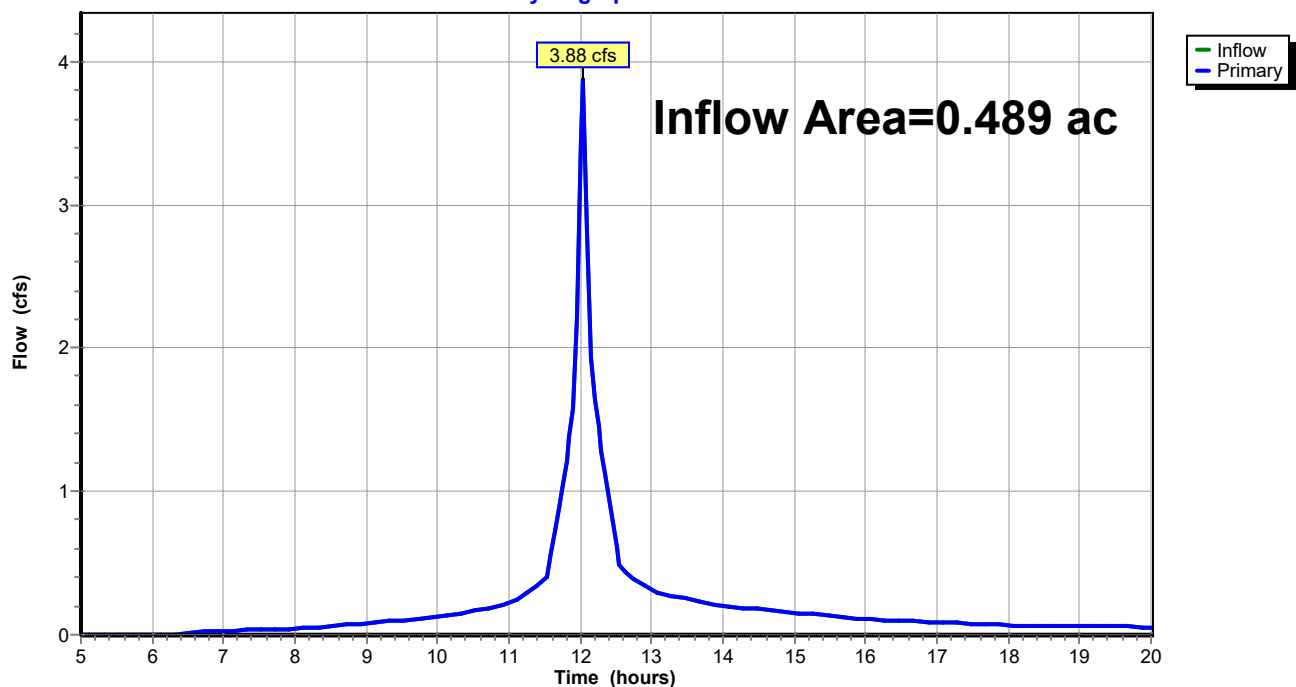
Summary for Link DP1: DP1

Inflow Area = 0.489 ac, 28.87% Impervious, Inflow Depth > 6.21" for 100-yr event
 Inflow = 3.88 cfs @ 12.04 hrs, Volume= 0.253 af
 Primary = 3.88 cfs @ 12.04 hrs, Volume= 0.253 af, Atten= 0%, Lag= 0.0 min
 Routed to Reach SP1 : SACO RIVER / OCEAN

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP1: DP1

Hydrograph



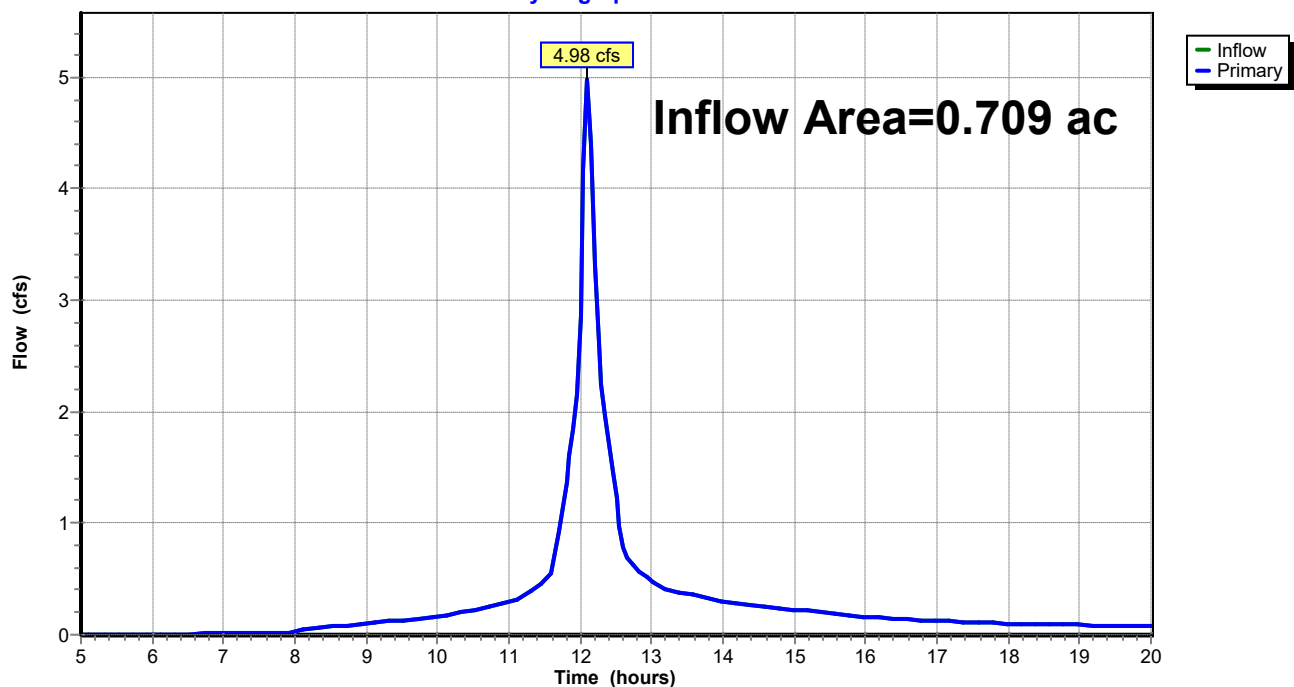
Summary for Link DP2: DP2

Inflow Area = 0.709 ac, 15.44% Impervious, Inflow Depth > 6.00" for 100-yr event
 Inflow = 4.98 cfs @ 12.10 hrs, Volume= 0.354 af
 Primary = 4.98 cfs @ 12.10 hrs, Volume= 0.354 af, Atten= 0%, Lag= 0.0 min
 Routed to Reach SP1 : SACO RIVER / OCEAN

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP2: DP2

Hydrograph



UNE-PostDrainage-VD Working

Type III 24-hr WQ Rainfall=1.00"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 1S: Post Subcatchment 1 Runoff Area=9,832 sf 50.01% Impervious Runoff Depth>0.20"
Flow Length=172' Tc=0.8 min CN=87 Runoff=0.06 cfs 0.004 af

Subcatchment 2S: Post Subcatchment 2 Runoff Area=11,488 sf 10.78% Impervious Runoff Depth>0.06"
Flow Length=133' Tc=3.4 min CN=79 Runoff=0.01 cfs 0.001 af

Subcatchment 3S: Post Subcatchment 3 Runoff Area=13,365 sf 33.49% Impervious Runoff Depth>0.13"
Flow Length=262' Tc=4.9 min CN=84 Runoff=0.04 cfs 0.003 af

Subcatchment 4S: Post Subcatchment 4 Runoff Area=17,529 sf 1.68% Impervious Runoff Depth>0.06"
Flow Length=126' Tc=7.2 min CN=79 Runoff=0.01 cfs 0.002 af

Subcatchment 5S: Post Subcatchment 5 Runoff Area=59,179 sf 4.06% Impervious Runoff Depth>0.07"
Flow Length=445' Tc=7.0 min CN=80 Runoff=0.05 cfs 0.008 af

Reach 1R: Reach 1 Inflow=0.02 cfs 0.003 af
Outflow=0.02 cfs 0.003 af

Reach 2R: Reach 2 Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach DP3: Shoreline 3 Inflow=0.05 cfs 0.008 af
Outflow=0.05 cfs 0.008 af

Reach SP1: SACO RIVER / OCEAN Inflow=0.09 cfs 0.014 af
Outflow=0.09 cfs 0.014 af

Pond 1P: Bioretention Filter Cell 1 Peak Elev=18.01' Storage=56 cf Inflow=0.06 cfs 0.004 af
Outflow=0.02 cfs 0.003 af

Pond 2P: CB-1 Peak Elev=13.83' Inflow=0.02 cfs 0.003 af
15.0" Round Culvert n=0.013 L=48.0' S=0.0365 ' /' Outflow=0.02 cfs 0.003 af

Pond 3P: Bioretention Filter Cell 2 Peak Elev=23.51' Storage=44 cf Inflow=0.04 cfs 0.003 af
Outflow=0.02 cfs 0.002 af

Pond 4P: CB-2 Peak Elev=18.81' Inflow=0.02 cfs 0.002 af
18.0" Round Culvert n=0.013 L=40.0' S=0.0187 ' /' Outflow=0.02 cfs 0.002 af

Pond 5P: Level Lip Spreader Peak Elev=17.95' Storage=106 cf Inflow=0.02 cfs 0.002 af
Outflow=0.00 cfs 0.000 af

Link DP1: DP1 Inflow=0.03 cfs 0.004 af
Primary=0.03 cfs 0.004 af

Link DP2: DP2 Inflow=0.01 cfs 0.002 af
Primary=0.01 cfs 0.002 af

UNE-PostDrainage-VD Working

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Type III 24-hr WQ Rainfall=1.00"

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Total Runoff Area = 2.557 ac Runoff Volume = 0.018 af Average Runoff Depth = 0.09"
88.04% Pervious = 2.251 ac 11.96% Impervious = 0.306 ac

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Type III 24-hr WQ Rainfall=1.00"

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Summary for Subcatchment 1S: Post Subcatchment 1

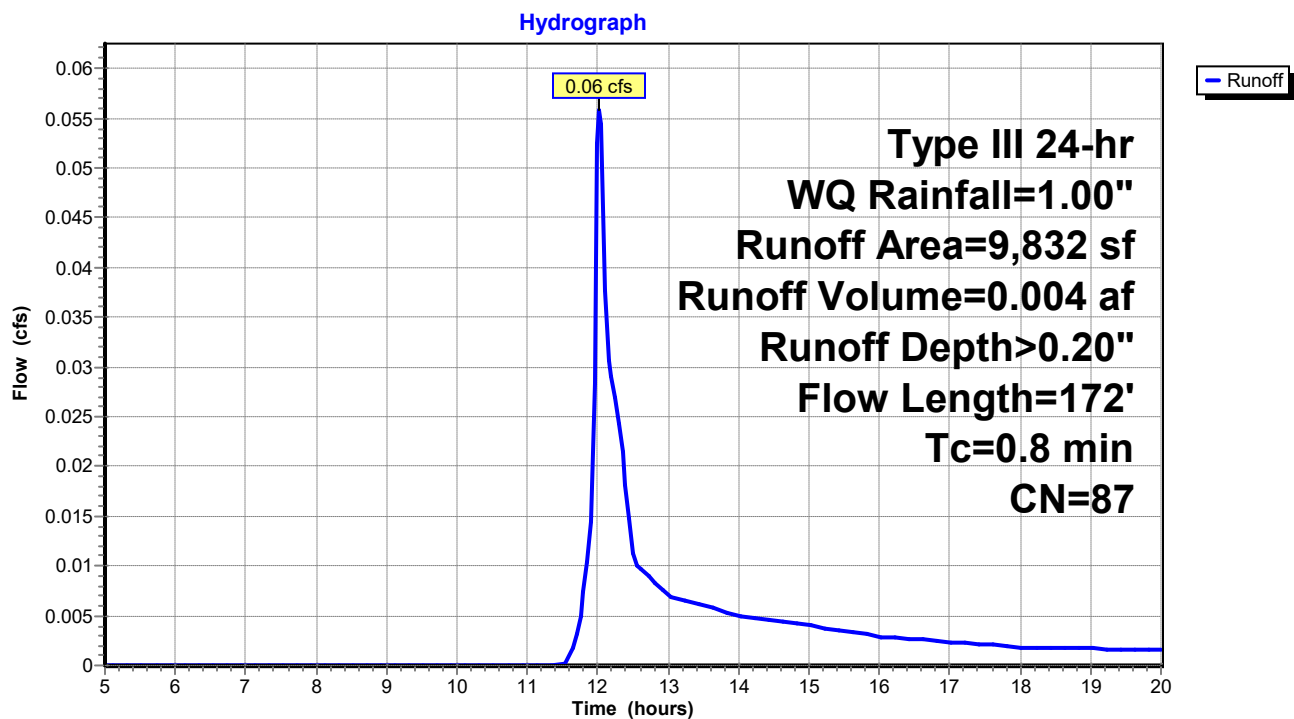
Runoff = 0.06 cfs @ 12.03 hrs, Volume= 0.004 af, Depth> 0.20"
 Routed to Pond 1P : Bioretention Filter Cell 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr WQ Rainfall=1.00"

Area (sf)	CN	Description
3,430	77	Woods, Good, HSG D
* 982	98	Ledge, HSG D
595	80	>75% Grass cover, Good, HSG D
* 3,935	98	Paved Access Drive, HSG D
* 890	73	Bioretention Filter Cell, Good, HSG D
9,832	87	Weighted Average
4,915		49.99% Pervious Area
4,917		50.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	46	0.0500	1.73		Sheet Flow, Tc-1 Smooth surfaces n= 0.011 P2= 3.30"
0.3	102	0.0500	5.25	15.74	Channel Flow, Tc-2 Area= 3.0 sf Perim= 9.2' r= 0.33' n= 0.030 Earth, grassed & winding
0.1	24	0.0625	3.75		Shallow Concentrated Flow, Tc-3 Grassed Waterway Kv= 15.0 fps
0.8	172	Total			

Subcatchment 1S: Post Subcatchment 1



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Type III 24-hr WQ Rainfall=1.00"

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Summary for Subcatchment 2S: Post Subcatchment 2

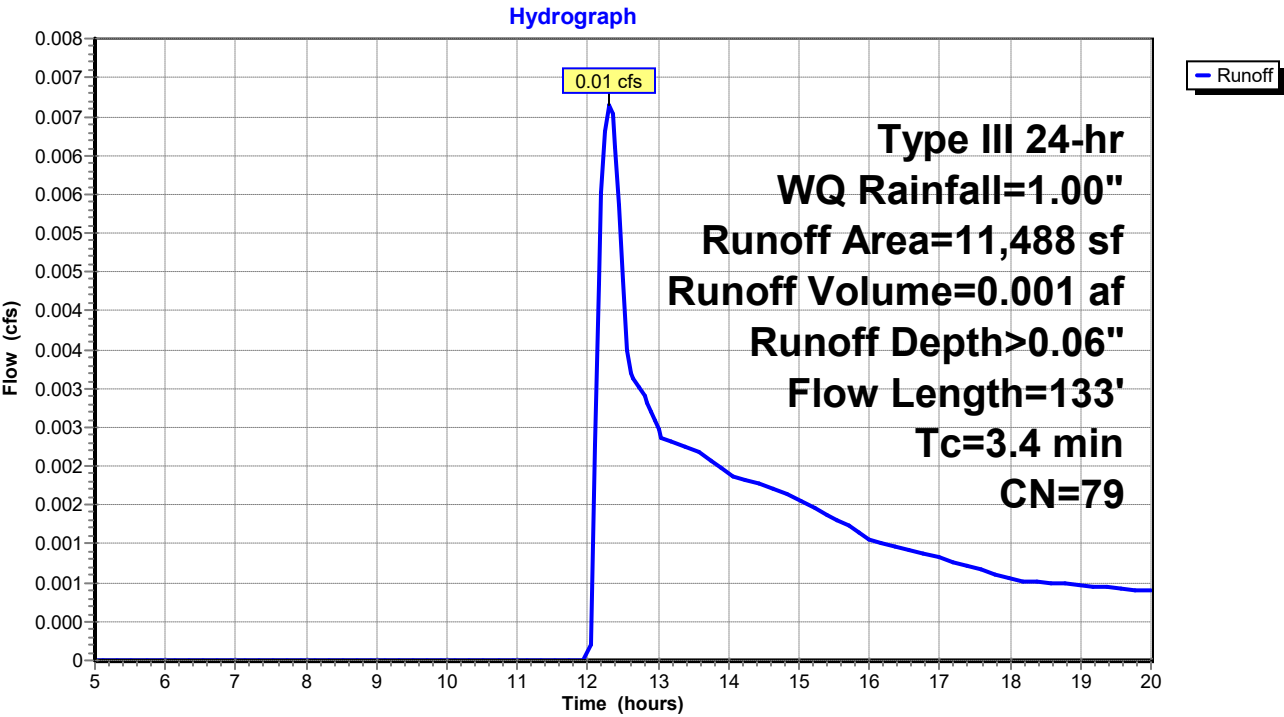
Runoff = 0.01 cfs @ 12.31 hrs, Volume= 0.001 af, Depth> 0.06"
Routed to Link DP1 : DP1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ Rainfall=1.00"

Area (sf)	CN	Description
10,250	77	Woods, Good, HSG D
1,238	98	Paved parking, HSG D
11,488	79	Weighted Average
10,250		89.22% Pervious Area
1,238		10.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	21	0.1905	0.14		Sheet Flow, Tc-1
0.9	112	0.1696	2.06		Woods: Light underbrush n= 0.400 P2= 3.30"
					Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
3.4	133	Total			

Subcatchment 2S: Post Subcatchment 2



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Type III 24-hr WQ Rainfall=1.00"

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Summary for Subcatchment 3S: Post Subcatchment 3

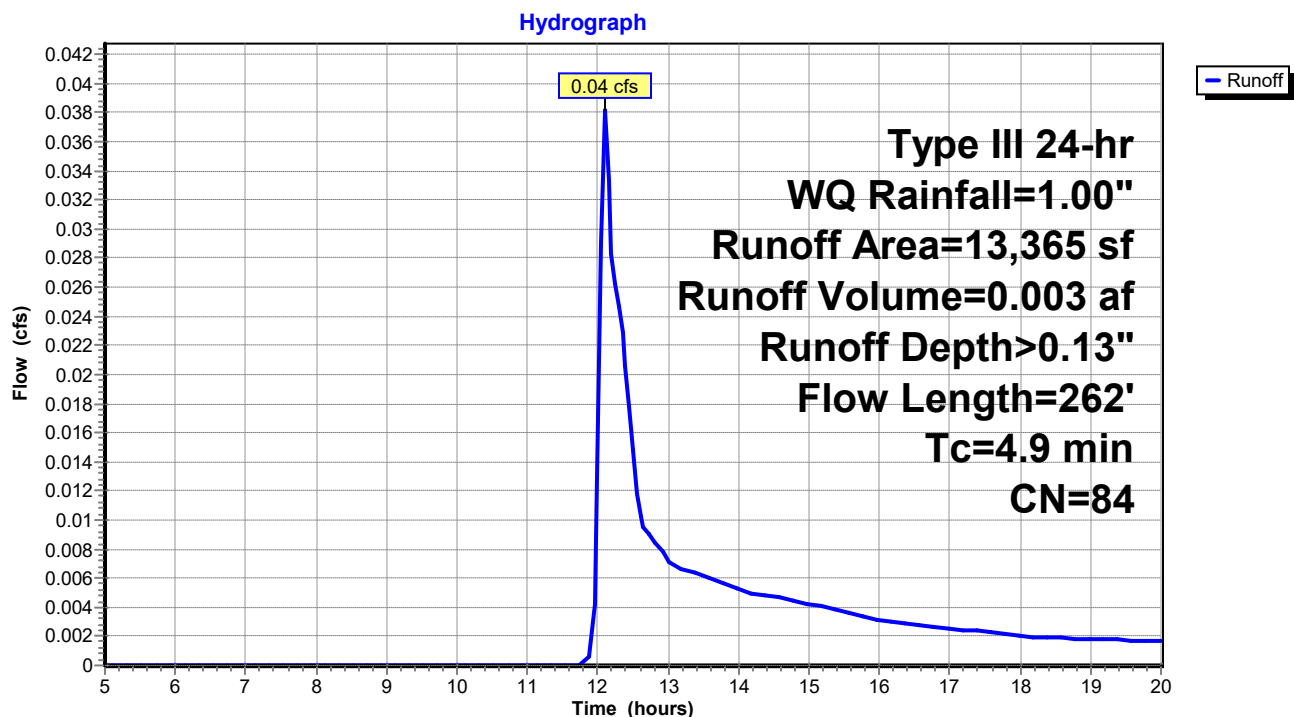
Runoff = 0.04 cfs @ 12.11 hrs, Volume= 0.003 af, Depth> 0.13"
 Routed to Pond 3P : Bioretention Filter Cell 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr WQ Rainfall=1.00"

Area (sf)	CN	Description
6,822	77	Woods, Good, HSG D
* 580	73	Biofiltration cell, Good, HSG D
* 3,768	98	Paved access drive, HSG D
1,487	80	>75% Grass cover, Good, HSG D
* 708	98	Ledge, HSG D
13,365	84	Weighted Average
8,889		66.51% Pervious Area
4,476		33.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	43	0.2093	0.17		Sheet Flow, Tc-1 Woods: Light underbrush n= 0.400 P2= 3.30"
0.7	214	0.0500	5.25	15.74	Channel Flow, Tc-2 Area= 3.0 sf Perim= 9.2' r= 0.33' n= 0.030 Earth, grassed & winding
0.0	5	0.0500	3.35		Shallow Concentrated Flow, Tc-3 Grassed Waterway Kv= 15.0 fps
4.9	262	Total			

Subcatchment 3S: Post Subcatchment 3



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Type III 24-hr WQ Rainfall=1.00"

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Summary for Subcatchment 4S: Post Subcatchment 4

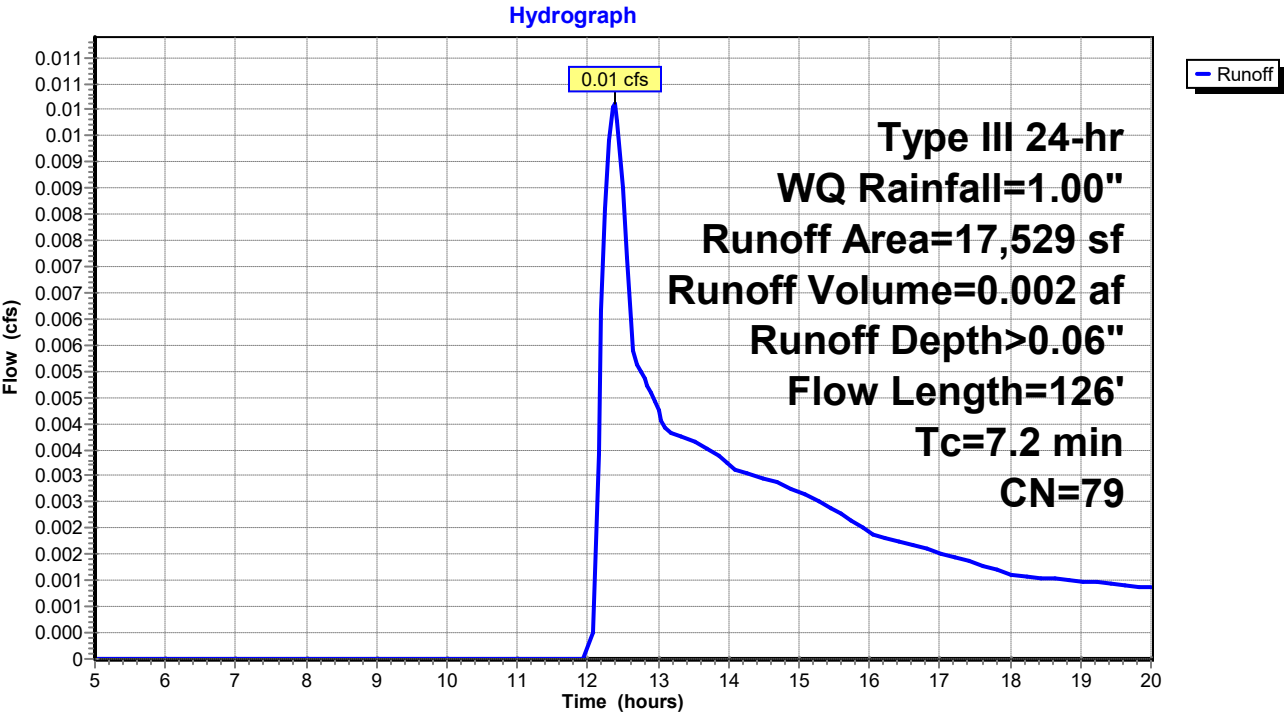
Runoff = 0.01 cfs @ 12.38 hrs, Volume= 0.002 af, Depth> 0.06"
Routed to Link DP2 : DP2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ Rainfall=1.00"

Area (sf)	CN	Description
* 295	98	Paved access drive, HSG D
1,450	80	>75% Grass cover, Good, HSG D
15,784	79	Woods, Fair, HSG D
17,529	79	Weighted Average
17,234		98.32% Pervious Area
295		1.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	62	0.1290	0.15		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
0.4	64	0.2343	2.42		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
7.2	126	Total			

Subcatchment 4S: Post Subcatchment 4



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Type III 24-hr WQ Rainfall=1.00"

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Summary for Subcatchment 5S: Post Subcatchment 5

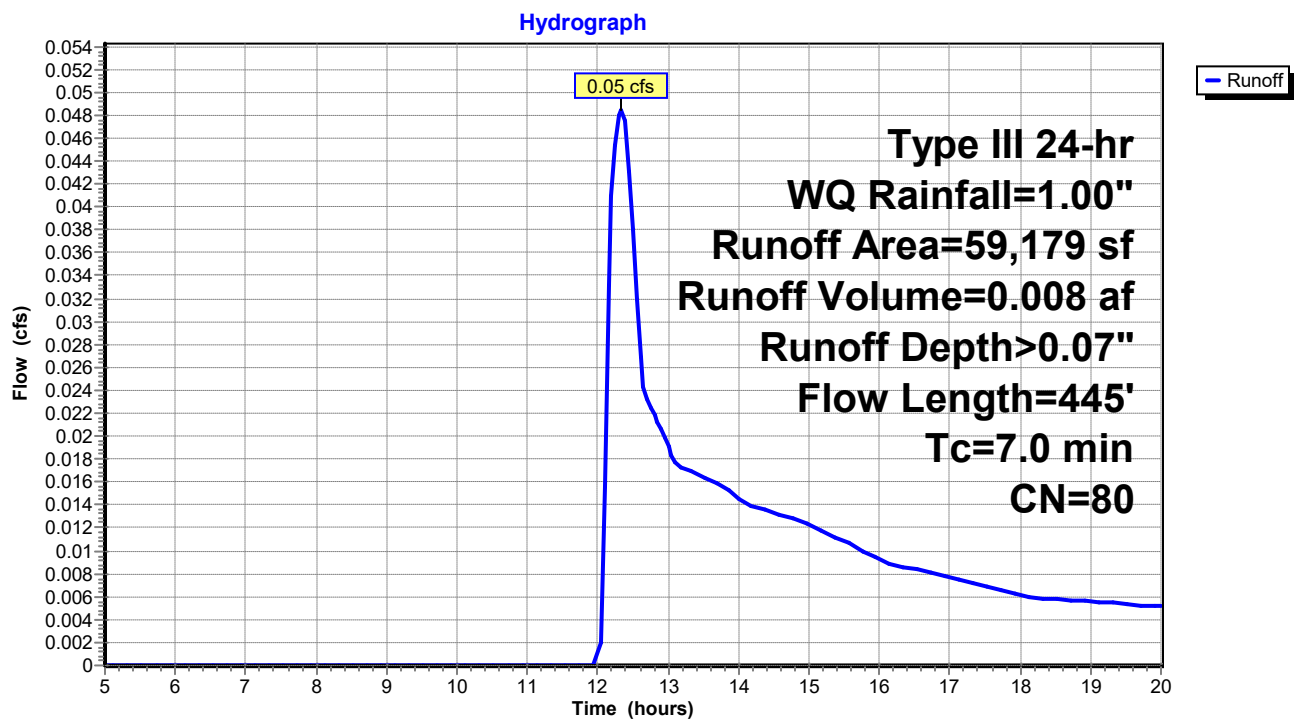
Runoff = 0.05 cfs @ 12.34 hrs, Volume= 0.008 af, Depth> 0.07"
 Routed to Reach DP3 : Shoreline 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr WQ Rainfall=1.00"

	Area (sf)	CN	Description
*	1,650	98	Paved access drive, HSG D
	751	98	Roofs, HSG D
*	6,955	88	Sand beach, HSG D
	3,872	96	Gravel surface, HSG D
	45,951	77	Woods, Good, HSG D
	59,179	80	Weighted Average
	56,778		95.94% Pervious Area
	2,401		4.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	23	0.1740	0.14		Sheet Flow, Tc-1
					Woods: Light underbrush n= 0.400 P2= 3.30"
1.0	70	0.0574	1.20		Shallow Concentrated Flow, Tc-2
					Woodland Kv= 5.0 fps
0.5	170	0.1059	5.24		Shallow Concentrated Flow, Tc-3
					Unpaved Kv= 16.1 fps
2.5	140	0.0357	0.94		Shallow Concentrated Flow, Tc-4
					Woodland Kv= 5.0 fps
0.3	42	0.0714	2.67		Shallow Concentrated Flow, Tc-5
					Nearly Bare & Untilled Kv= 10.0 fps
7.0	445	Total			

Subcatchment 5S: Post Subcatchment 5



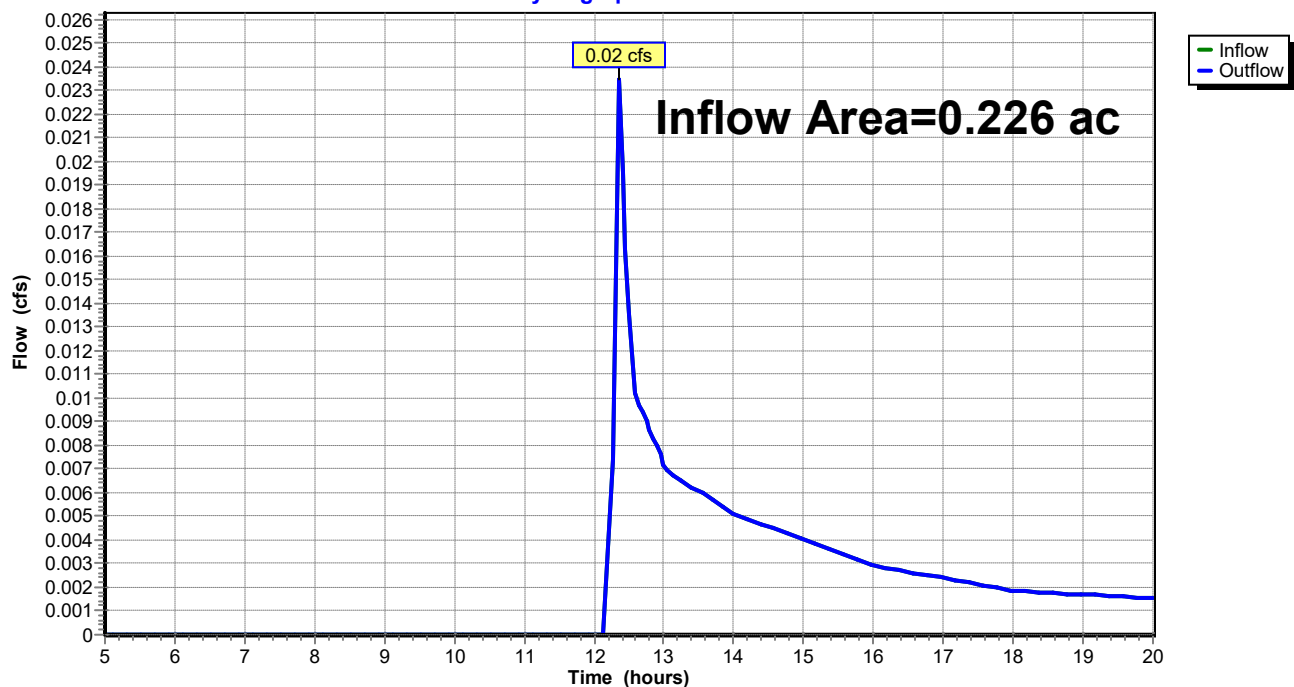
Summary for Reach 1R: Reach 1

Inflow Area = 0.226 ac, 50.01% Impervious, Inflow Depth > 0.14" for WQ event
 Inflow = 0.02 cfs @ 12.36 hrs, Volume= 0.003 af
 Outflow = 0.02 cfs @ 12.36 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
 Routed to Link DP1 : DP1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: Reach 1

Hydrograph



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Type III 24-hr WQ Rainfall=1.00"

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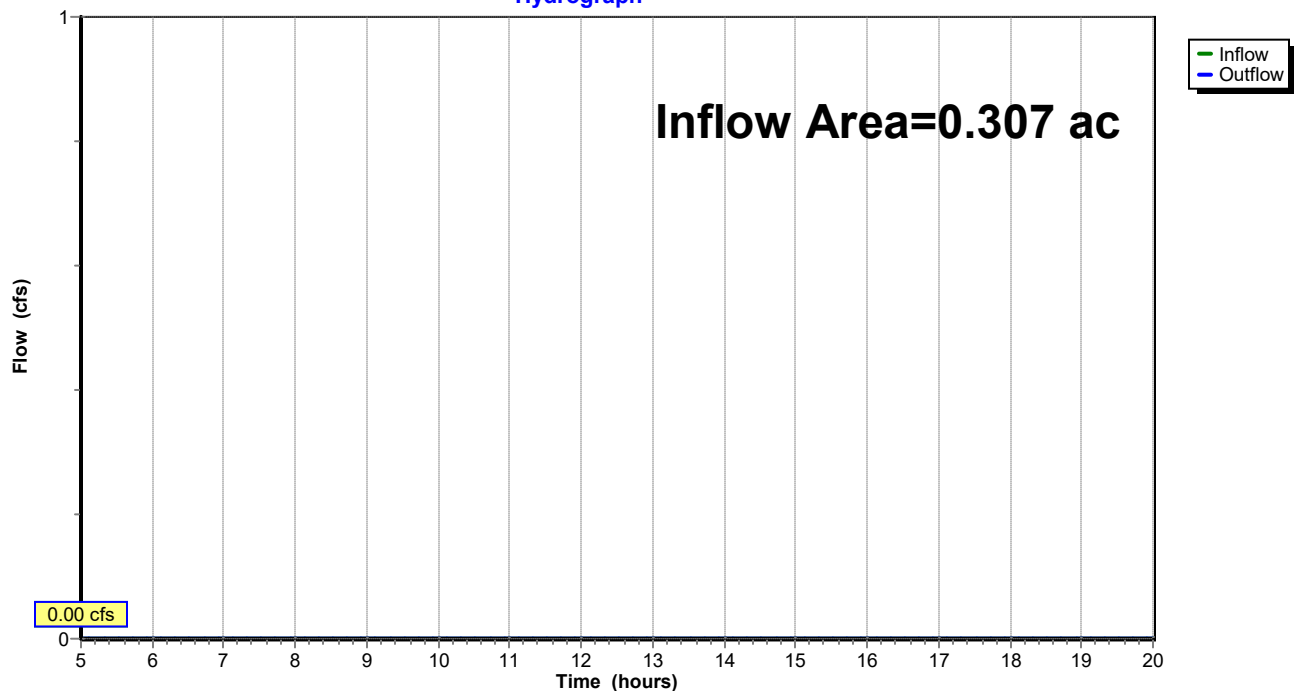
Summary for Reach 2R: Reach 2

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth = 0.00" for WQ event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Link DP2 : DP2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: Reach 2

Hydrograph

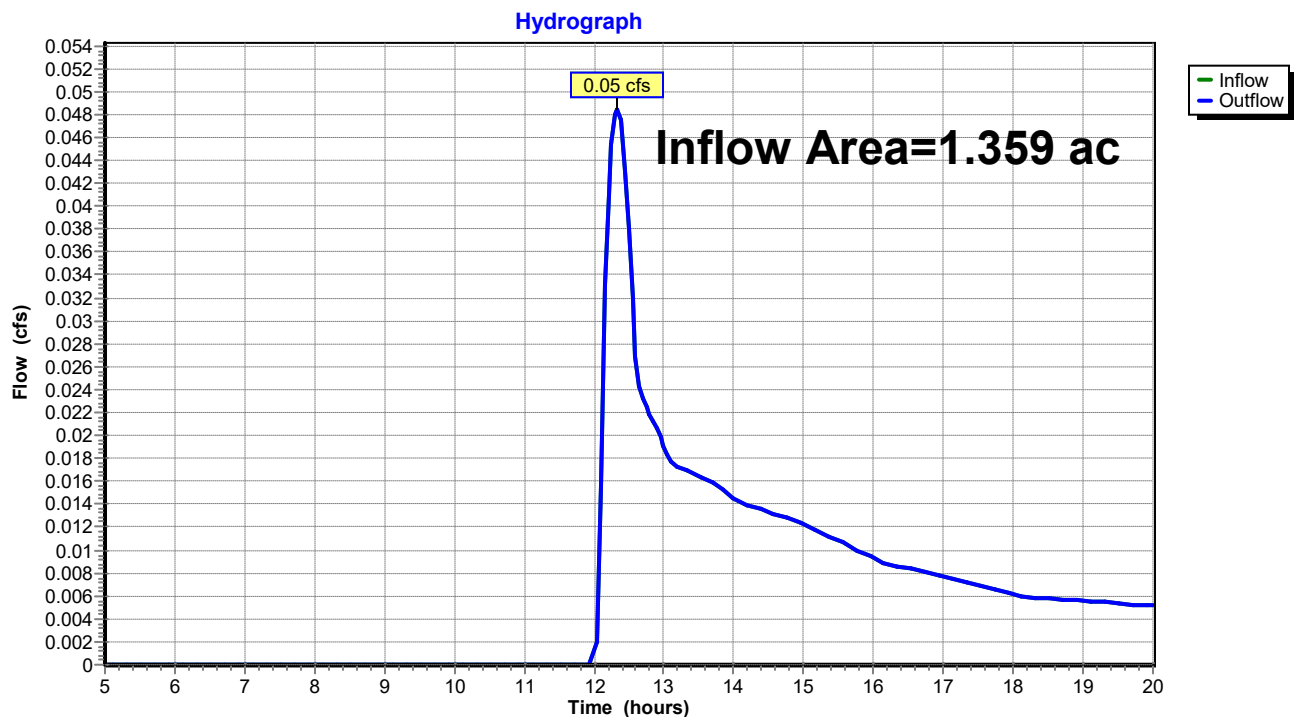


Summary for Reach DP3: Shoreline 3

Inflow Area = 1.359 ac, 4.06% Impervious, Inflow Depth > 0.07" for WQ event
 Inflow = 0.05 cfs @ 12.34 hrs, Volume= 0.008 af
 Outflow = 0.05 cfs @ 12.34 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min
 Routed to Reach SP1 : SACO RIVER / OCEAN

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP3: Shoreline 3

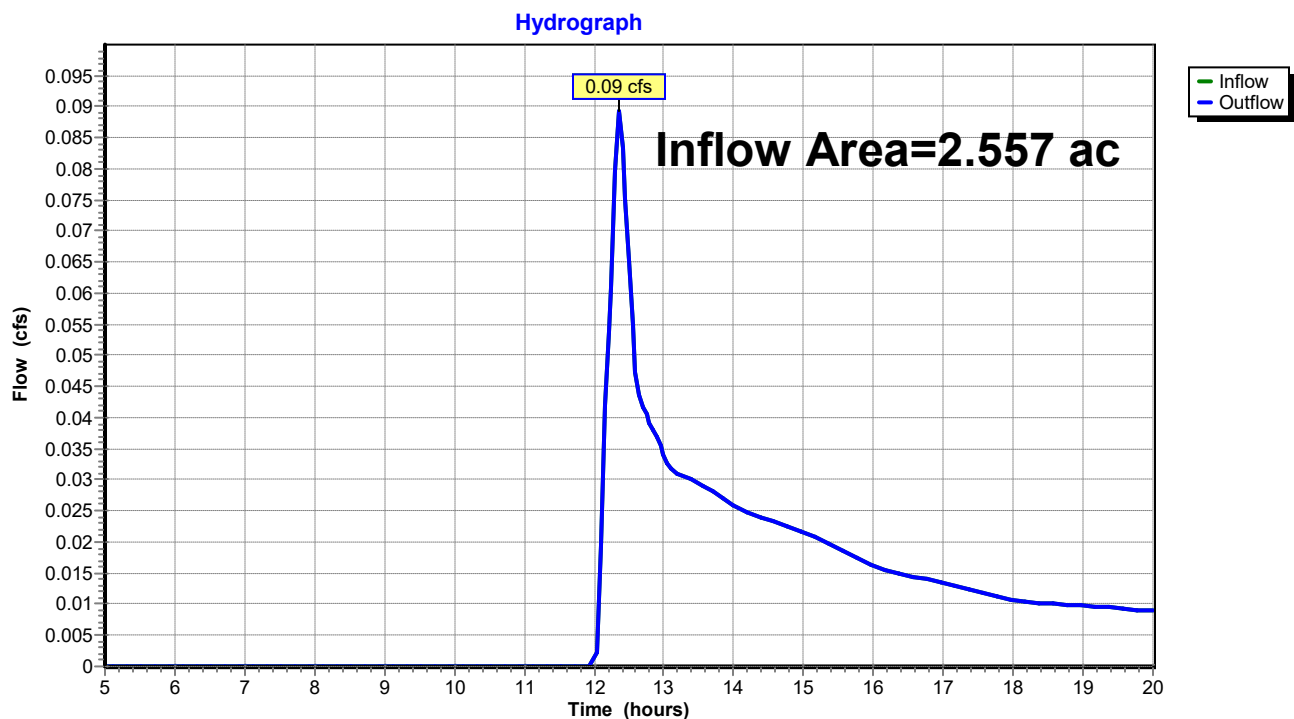


Summary for Reach SP1: SACO RIVER / OCEAN

Inflow Area = 2.557 ac, 11.96% Impervious, Inflow Depth > 0.06" for WQ event
 Inflow = 0.09 cfs @ 12.36 hrs, Volume= 0.014 af
 Outflow = 0.09 cfs @ 12.36 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SP1: SACO RIVER / OCEAN



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Type III 24-hr WQ Rainfall=1.00"

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Summary for Pond 1P: Bioretention Filter Cell 1

Inflow Area = 0.226 ac, 50.01% Impervious, Inflow Depth > 0.20" for WQ event
Inflow = 0.06 cfs @ 12.03 hrs, Volume= 0.004 af
Outflow = 0.02 cfs @ 12.36 hrs, Volume= 0.003 af, Atten= 58%, Lag= 19.8 min
Primary = 0.02 cfs @ 12.36 hrs, Volume= 0.003 af
Routed to Pond 2P : CB-1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 18.01' @ 12.36 hrs Surf.Area= 217 sf Storage= 56 cf

Plug-Flow detention time= 130.6 min calculated for 0.003 af (67% of inflow)
Center-of-Mass det. time= 53.4 min (884.3 - 831.0)

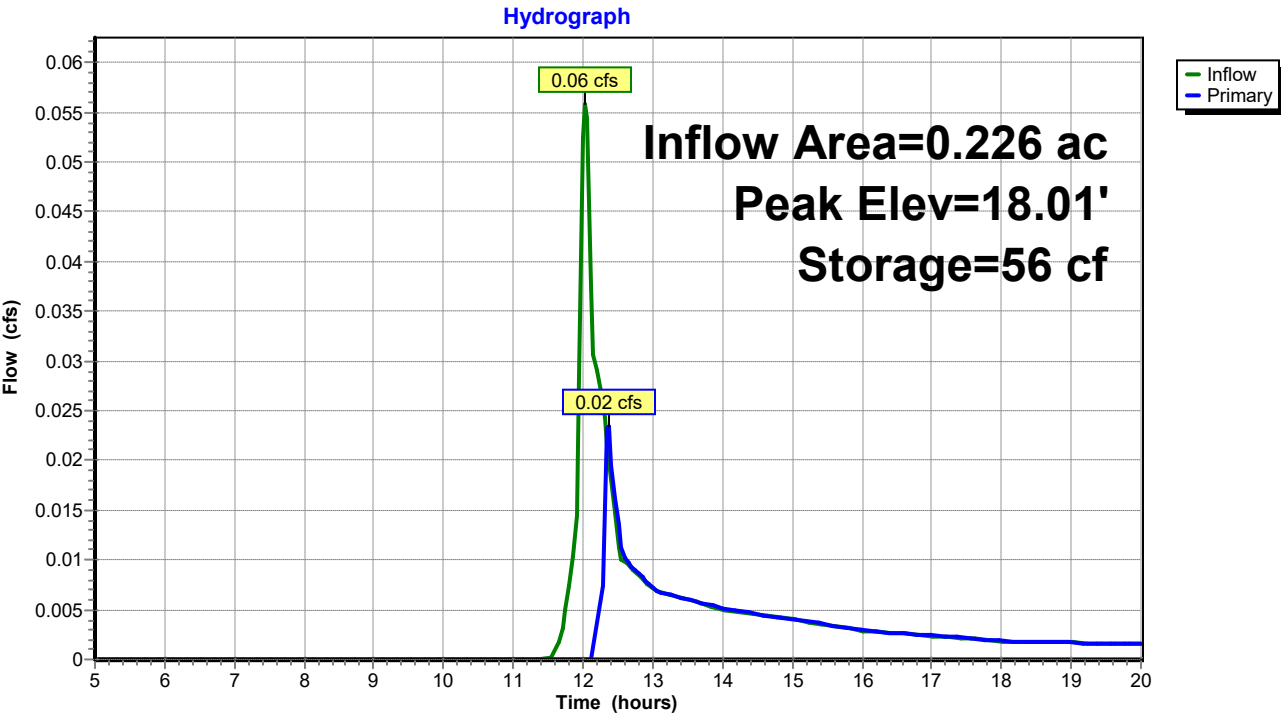
Volume	Invert	Avail.Storage	Storage Description
#1	17.50'	200 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
17.50	0	0	0
18.00	213	53	53
18.50	372	146	200

Device	Routing	Invert	Outlet Devices
#1	Primary	18.00'	18.0" Horiz. Orifice/Grate C= 0.600 in 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.02 cfs @ 12.36 hrs HW=18.01' (Free Discharge)
↑ **1=Orifice/Grate** (Weir Controls 0.02 cfs @ 0.37 fps)

Pond 1P: Bioretention Filter Cell 1



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Type III 24-hr WQ Rainfall=1.00"

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Summary for Pond 2P: CB-1

Inflow Area = 0.226 ac, 50.01% Impervious, Inflow Depth > 0.14" for WQ event
Inflow = 0.02 cfs @ 12.36 hrs, Volume= 0.003 af
Outflow = 0.02 cfs @ 12.36 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Primary = 0.02 cfs @ 12.36 hrs, Volume= 0.003 af
Routed to Reach 1R : Reach 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 13.83' @ 12.36 hrs

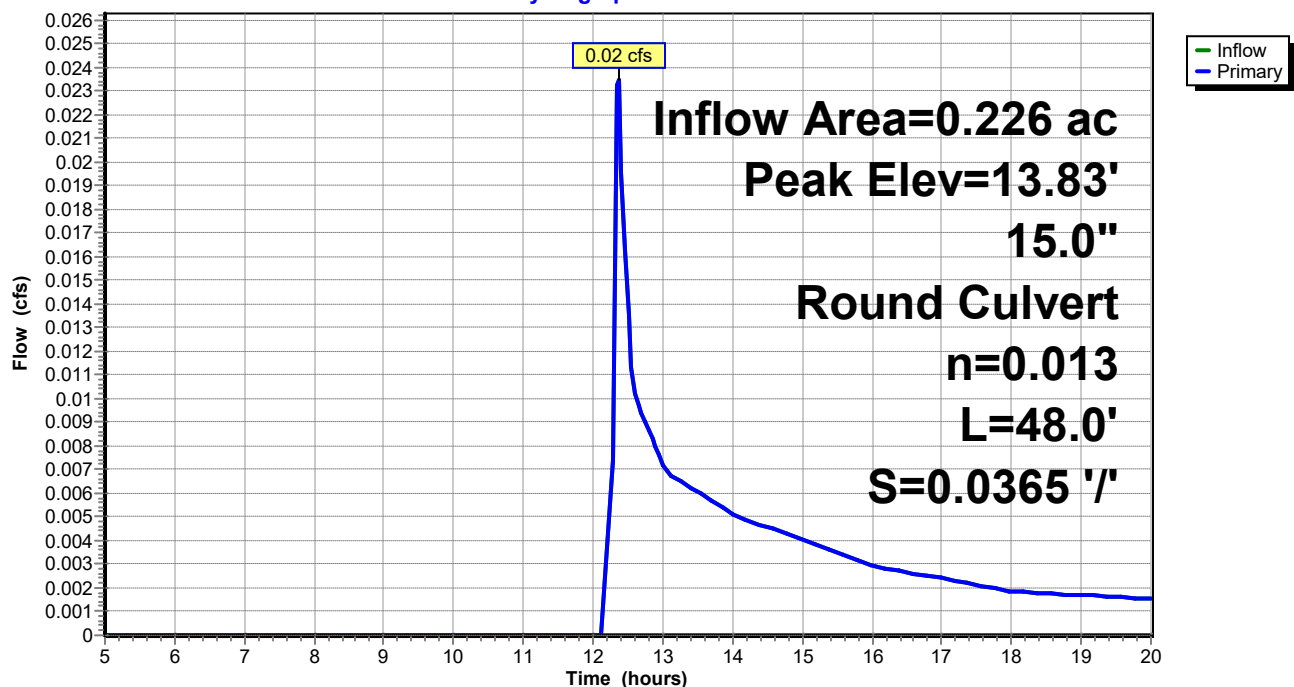
Device	Routing	Invert	Outlet Devices
#1	Primary	13.75'	15.0" Round Culvert L= 48.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.75' / 12.00' S= 0.0365 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.02 cfs @ 12.36 hrs HW=13.83' (Free Discharge)

↑1=Culvert (Inlet Controls 0.02 cfs @ 0.74 fps)

Pond 2P: CB-1

Hydrograph



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Type III 24-hr WQ Rainfall=1.00"

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Summary for Pond 3P: Bioretention Filter Cell 2

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 0.13" for WQ event
Inflow = 0.04 cfs @ 12.11 hrs, Volume= 0.003 af
Outflow = 0.02 cfs @ 12.48 hrs, Volume= 0.002 af, Atten= 56%, Lag= 22.5 min
Primary = 0.02 cfs @ 12.48 hrs, Volume= 0.002 af
Routed to Pond 4P : CB-2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 23.51' @ 12.48 hrs Surf.Area= 171 sf Storage= 44 cf

Plug-Flow detention time= 120.8 min calculated for 0.002 af (72% of inflow)
Center-of-Mass det. time= 48.7 min (900.5 - 851.8)

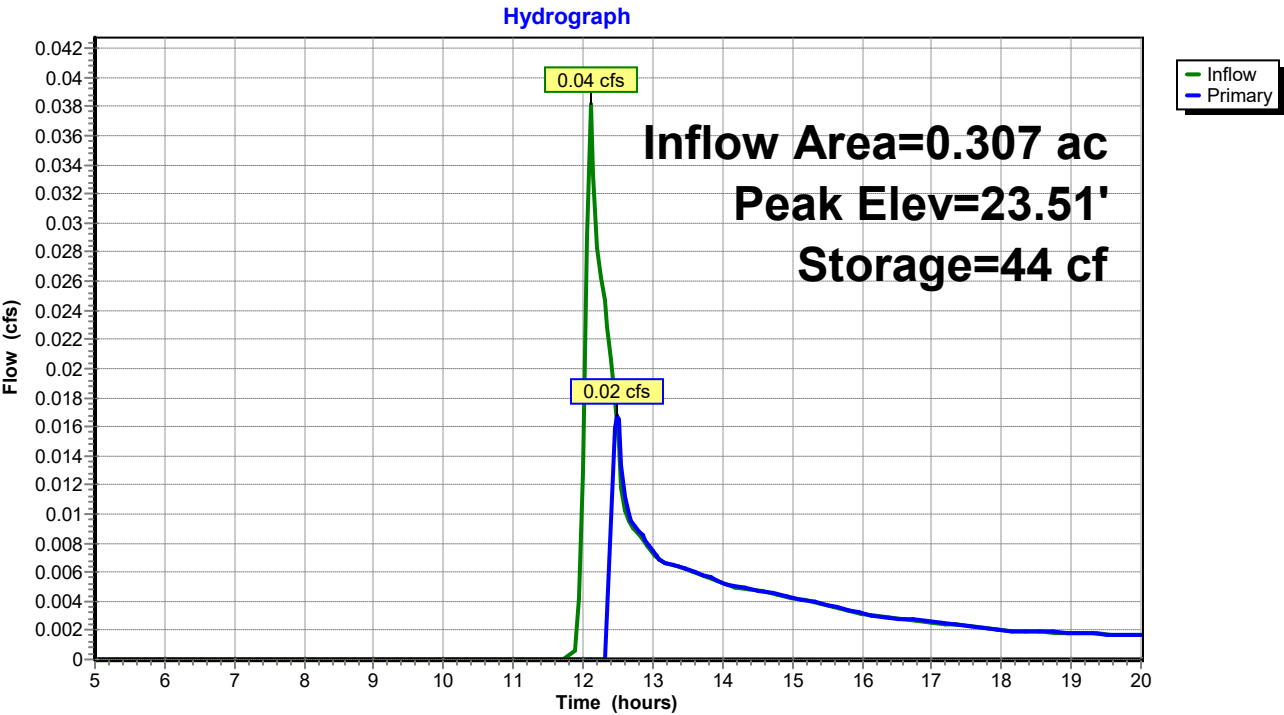
Volume	Invert	Avail.Storage	Storage Description
#1	23.00'	380 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.00	0	0	0
24.00	335	168	168
24.50	515	213	380

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	18.0" Horiz. Orifice/Grate C= 0.600 in 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.02 cfs @ 12.48 hrs HW=23.51' (Free Discharge)
↑ **1=Orifice/Grate** (Weir Controls 0.02 cfs @ 0.33 fps)

Pond 3P: Bioretention Filter Cell 2



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Type III 24-hr WQ Rainfall=1.00"

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Summary for Pond 4P: CB-2

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 0.10" for WQ event
Inflow = 0.02 cfs @ 12.48 hrs, Volume= 0.002 af
Outflow = 0.02 cfs @ 12.48 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min
Primary = 0.02 cfs @ 12.48 hrs, Volume= 0.002 af
Routed to Pond 5P : Level Lip Spreader

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 18.81' @ 12.48 hrs

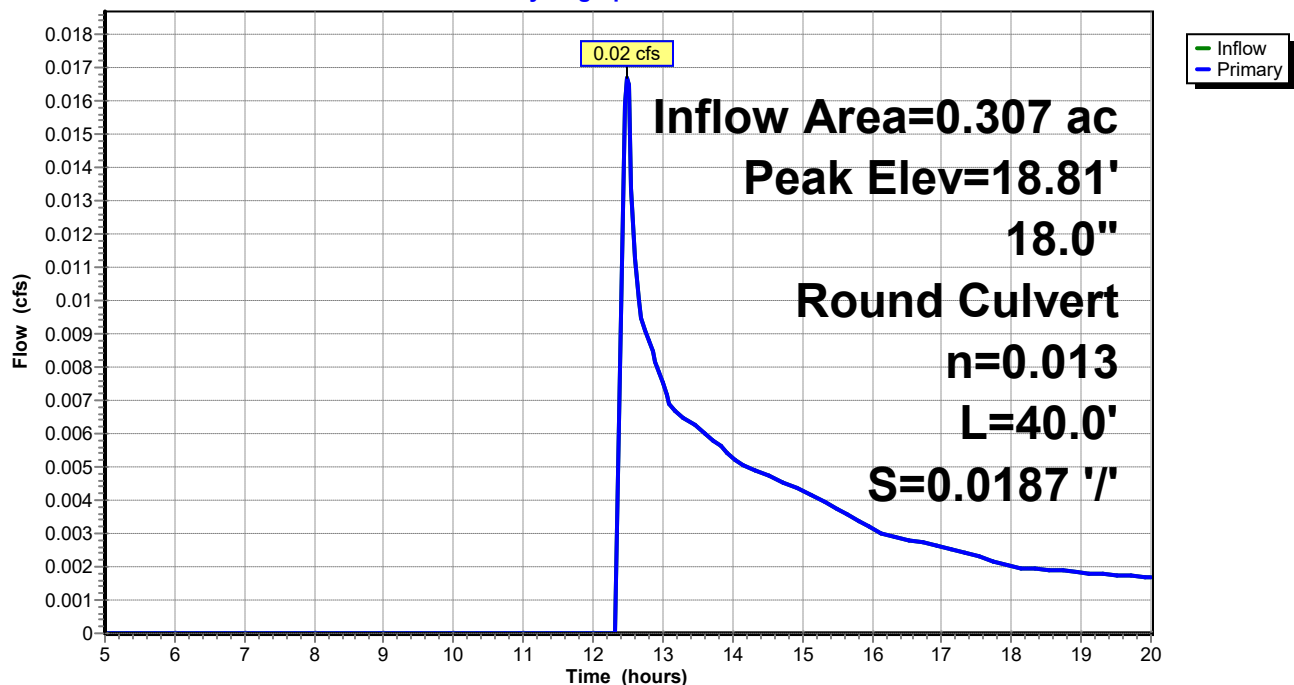
Device	Routing	Invert	Outlet Devices
#1	Primary	18.75'	18.0" Round Culvert L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.75' / 18.00' S= 0.0187 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.02 cfs @ 12.48 hrs HW=18.81' (Free Discharge)

↑1=Culvert (Inlet Controls 0.02 cfs @ 0.66 fps)

Pond 4P: CB-2

Hydrograph



UNE-PostDrainage-VD Working

Type III 24-hr WQ Rainfall=1.00"

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Summary for Pond 5P: Level Lip Spreader

Inflow Area = 0.307 ac, 33.49% Impervious, Inflow Depth > 0.10" for WQ event
 Inflow = 0.02 cfs @ 12.48 hrs, Volume= 0.002 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Routed to Reach 2R : Reach 2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 17.95' @ 20.00 hrs Surf.Area= 163 sf Storage= 106 cf
 Flood Elev= 20.00' Surf.Area= 168 sf Storage= 115 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

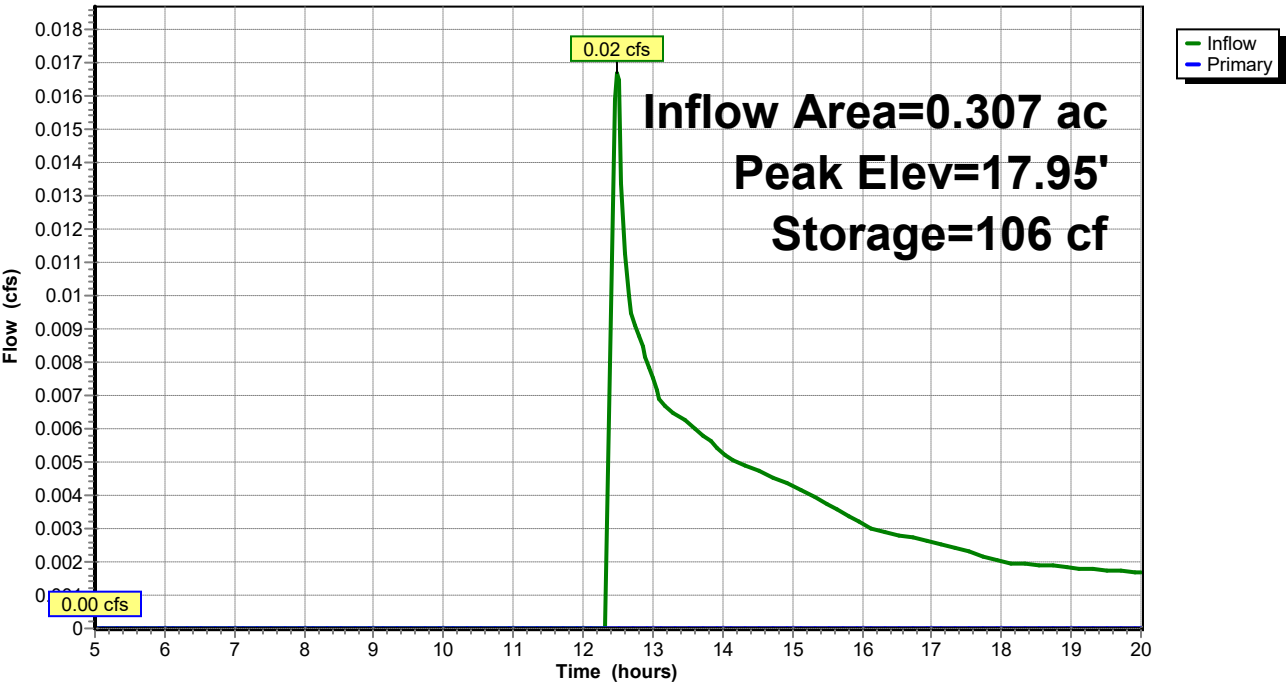
Volume	Invert	Avail.Storage	Storage Description	
#1	17.00'	115 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
17.00	61	0.0	0	0
18.00	168	100.0	115	115

Device	Routing	Invert	Outlet Devices
#0	Primary	18.00'	Automatic Storage Overflow (Discharged without head)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=17.00' (Free Discharge)

Pond 5P: Level Lip Spreader

Hydrograph



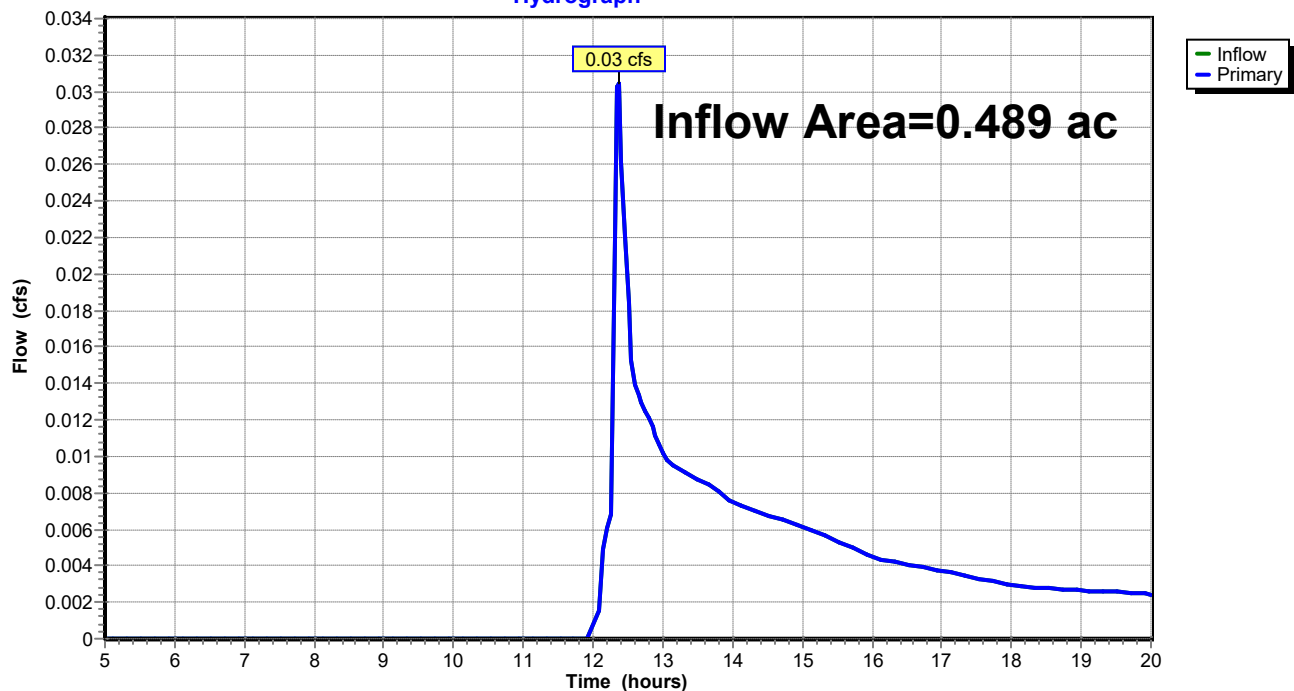
Summary for Link DP1: DP1

Inflow Area = 0.489 ac, 28.87% Impervious, Inflow Depth > 0.09" for WQ event
 Inflow = 0.03 cfs @ 12.36 hrs, Volume= 0.004 af
 Primary = 0.03 cfs @ 12.36 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min
 Routed to Reach SP1 : SACO RIVER / OCEAN

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP1: DP1

Hydrograph



Summary for Link DP2: DP2

Inflow Area = 0.709 ac, 15.44% Impervious, Inflow Depth > 0.03" for WQ event
 Inflow = 0.01 cfs @ 12.38 hrs, Volume= 0.002 af
 Primary = 0.01 cfs @ 12.38 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min
 Routed to Reach SP1 : SACO RIVER / OCEAN

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP2: DP2

Hydrograph

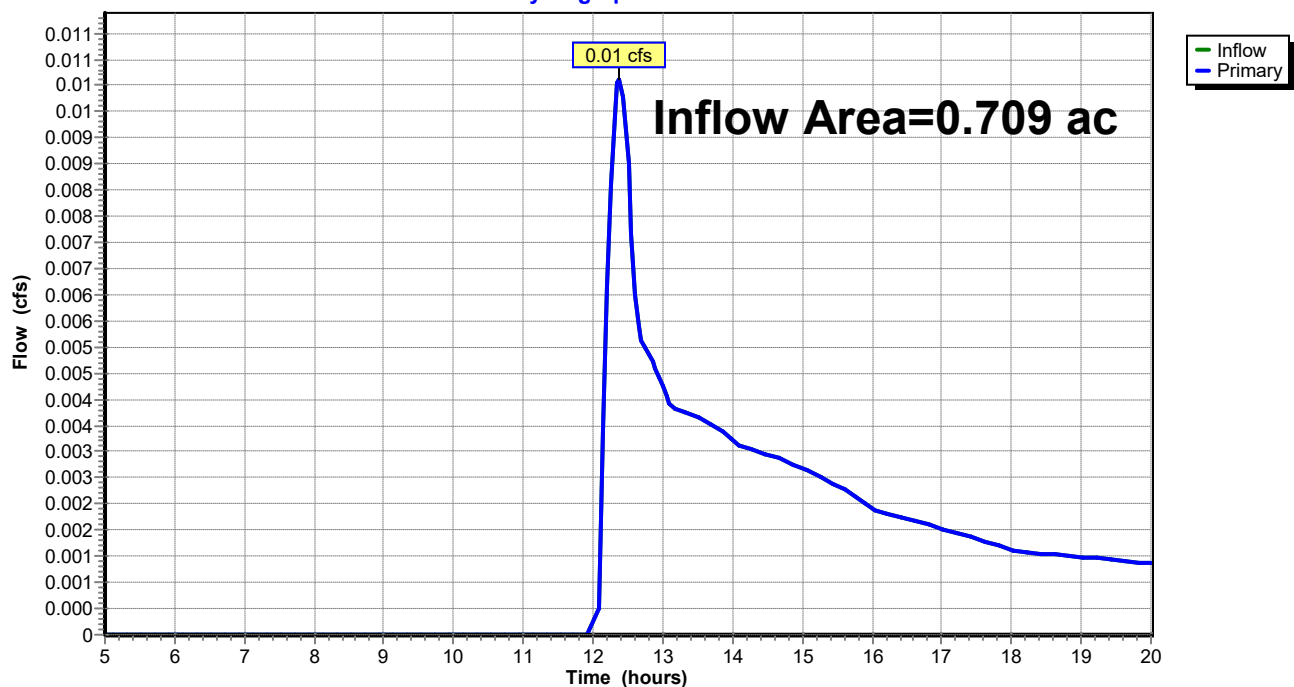


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- 102 Link DP1: DP1
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PROPOSED PIPES (BIORETENTION FILTER CELLS)

				AREAS													Q25					Q	Q (Prov)
From	Inv	To	Inv	Paved 0.98	Open 'C' 0.61	Total (sf)	C	A (ac)	CA (ac)	ΣCA (ac)	Tc (min)	i25 (in/hr)	(req) (CFS)	Type	Pipe n	Leng (ft)	Dia (in)	Slope (%)	Vel ¼ Full (ft/sec)	Vel (ft/sec)	(prov) (CFS)	> Q (Req'd)	
SF-A	18.75	18" Outfall	18.00	3,935	5,897	9,832	FLOW FROM HYDROLOGY MODEL							1.33	HDPE	0.012	40	18	1.88%	6.18	8.82	15.58	good
SF-B	13.75	15" Outfall	12.00	3,768	9,597	13,365	FLOW FROM HYDROLOGY MODEL							1.56	HDPE	0.012	48	15	3.65%	7.63	10.89	13.36	good

Appendix D

Inspection and Maintenance Plan

Owner Responsible for Maintenance

All maintenance plans for stormwater management measures must include the following:

The name, address, and telephone number of the person or persons responsible for the preventative and corrective maintenance of the stormwater management measure. If the plan identifies a party other than the owner or developer as having responsibility for maintenance, i.e., a public entity or homeowners' association, the plan must include a copy of the other party's written agreement to assume this responsibility. This agreement must include a copy of any ordinance or regulation that requires the owner or developer to dedicate the stormwater management measure and/or its maintenance to the other party.

Information of the Person Responsible for Maintenance:

Name:

Address:

Telephone:

If an entity other than the above listed property owner or the developer will have the responsibility for stormwater pond maintenance, then they will provide a copy of the designated party's written agreement to assume this responsibility.

**University of New England
Biddeford, Maine
August 2024**

**INSPECTION AND MAINTENANCE PLAN
OF STORMWATER MANAGEMENT FACILITIES**

Stormwater Management Facilities include swales, paved surfaces, manholes and catch basins, drain pipe, riprapped aprons, level spreaders, wooded buffers, and underdrained soil filters. Periodic inspection and maintenance of these site features and devices is necessary to prevent erosion, protect roadways and other paved areas, and remove pollutants from stormwater runoff. Best management practices and stormwater facilities should be inspected as noted below, and after a rainfall event of 1" or more in 24 hours.

University of New England Facilities Department is responsible for the inspections and maintenance of stormwater facilities associated with this project.

RECERTIFICATION REQUIREMENT:

Within three months of the expiration of each five-year interval from the date of issuance of the permit, the Owner or Association shall certify the following to the Maine Department of Environmental Protection (the department):

- a) All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.
- b) 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 facilities.
- c) The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the department and the maintenance log is being maintained and kept on file with Town Engineers office.
- d) A copy of the certification along with any required mitigation shall be provided to the Town Engineer.

SWALES, DITCHES, CURBS AND PAVED AREAS:

Swales, ditches, curbs and paved areas are easily inspected during a site walk or even a ride-by. Since visual inspection is easy, their condition should be assessed during and/or after significant rainfall events such as thunder showers and periods of heavy or extended rainfall and during periods of significant snowmelt. Any damage or unusual condition such as sedimentation of a ditch, erosion, damaged curb or dying vegetation should be recorded, dated and initialed by the inspector when observed. Even if there is no damage, the inspector should make record of these inspections at least twice annually.

Paved areas should be visually inspected monthly during the winter. The inspector should pay particular attention to the build up of sand around catch basin grates and remove accumulations that block the free flow of surface runoff to the catch basins. The date and initials of the inspector should be recorded on the forms provided as well as a notation of any cleanup effort that was made and the

approximate volume of sand that was removed.

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, 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.

CATCH BASINS, FIELD INLETS AND DRAIN MANHOLES:

Catch Basins and field inlets are precast concrete structures with sumps and cast iron grates used to collect stormwater and trap heavy sediments. Drain Manholes are similar structures constructed with a channel instead of a sump and a solid cast iron cover instead of a grate. Drain Manholes exist at changes in direction and/or size of storm drain pipe. Catch Basins, field inlets and drain manholes provide access to the closed storm drain system for inspection and maintenance.

Throughout the winter / spring sanding period, inspect catch basins and field inlets monthly and after every significant rainfall event or period of heavy snowmelt. Clean catch basin and field inlet sumps when sediment level is within 12 inches of the outlet pipe invert. At a minimum, remove floating debris and hydrocarbons at the time of the inspection. The removed material must be disposed of in accordance with the Maine Solid Waste Disposal Rules. Confined space entry safety procedures shall be practiced should entry into these structures be required.

Record dates of inspections, observations and maintenance measures implemented (if any) on the forms provided and initial the entry.

DRAIN PIPES:

Drain pipes are road culverts and pipes connecting drain manholes. Inspect drain pipes when inspecting other stormwater maintenance facilities. At least annually make a visual inspection of the pipe. During the daylight you should be able to see light through most pipes as they have been laid to a straight line and grade. In some cases (e.g. pipe runs to a drain manhole, or is blocked) you will need a light to inspect pipes.

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 stormwater filter or wetland areas.

Riprap 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.

Record inspections on the forms provided noting condition of pipe and any maintenance procedures implemented.

LEVEL SPREADERS:

Level Spreaders are shallow basins or ditches constructed at the ends of ditches or pipe outlets to disperse or "spread" concentrated flow thinly over a receiving area. Level Spreaders are constructed along the natural contour of the land to create a level "lip" on the outlet side. The integrity of the level lip is critical to the proper performance of this device.

Inspect the Level Spreader at least once each season and following significant rainfall events (1 inch or more of rain in 12 hours). Record inspections on the forms provided noting your observations and any corrective action taken. Any sign of erosion or blockage shall be immediately repaired to assure a vigorous growth of vegetation and stability of stone berms for the stability of the level spreader for proper function. Minor regrading, releveled of the stone "lip," and reseeding of the level lip on an annual basis should be anticipated. Mow level lips at least twice during the growing season. Maintenance may also include removal of sediment buildup especially on the inlet end.

UNDERDRAINED SOIL FILTERS:

An underdrained soil filter is a landscaped depression with an underdrained soil bed or soil filter that exfiltrates the stormwater. The depression is designed to temporarily store runoff, which will drain through the soil filter into the underdrains; excess runoff will flow into structures or over earthen spillways.

Soil Filter Inspection: The soil filter should be inspected after every major storm in the first few months to ensure proper function. Thereafter, the filter should be inspected at least once every six months to ensure that it is draining within 48 hours; and that, after storms that fill the system to overflow, it drains in no less than 24 hours. If the filter drains too rapidly, (i.e. prior to 24 hours), then an adjustable orifice shall be installed on the underdrain outlet pipe. The orifice shall be adjusted such that the filter completely drains within 24 to 72 hours.

Underdrain System: The soil filter outlet consists of a layer of planting loam and sand with a stone and perforated pipe underdrain. Outlet inspections shall include flushing of the underdrain through the cleanouts at the end of the pipes. Trash, sediment, and debris shall be removed from the vicinity of the outlet and must be disposed of in accordance with the Maine Solid Waste Disposal Rules.

Soil Filter Replacement: If the filter fails to drain within 72 hours, the surface of the pond shall be rototilled to promote aeration of the filter media and vegetation shall be re-established. If aeration of the surface soil fails to promote filtration of impounded water within 72 hours, then the filter media shall be replaced as necessary. The stone underdrain shall also be replaced at this time, along with the perforated pipe.

Sediment Removal: Sediment and plant debris should be removed from the pretreatment structure at least annually.

Mowing: Filters with grass cover should be mowed no more than 2 times per growing season to maintain grass heights less than 12 inches.

Fertilization: Fertilization of the underdrained filter area should be avoided unless absolutely necessary to establish vegetation.

Harvesting and Weeding: Harvesting and pruning of excessive growth will need to be done occasionally. Weeding to control unwanted or invasive plants may also be necessary. Add new mulch as necessary for bioretention cells.

Underdrained soil filters shall not be used for snow storage area. Vehicular equipment used to maintain or rehabilitate underdrained soil filters should work from the basin perimeter and not enter the basin area, as this will compact the soil surface and reduce the design infiltration rate. Record all maintenance on forms provided.

SEDIMENT DISPOSAL:

Any sediment or debris removed during maintenance of the stormwater system must be disposed of in accordance with the Maine Solid Waste Disposal Rules.

UNIVERSITY OF NEW ENGLAND			
BIDDEFORD, MAINE			
INSPECTION / MAINTENANCE LOG			
SWALES, DITCHES, CURBS AND PAVED SURFACES			
I: INSPECTED - C: CLEANED - S: SWEEPED - R: REPAIRED			
DATE	INITIALS	ACTION	COMMENT
5/10/19	RST	I, C	EXAMPLE: Removed sand around CB's 19 and 20. Heavy rain over the weekend.

UNIVERSITY OF NEW ENGLAND			
BIDDEFORD, MAINE			
INSPECTION / MAINTENANCE LOG			
CATCH BASINS, FIELD INLETS, AND DRAIN MANHOLES			
I: INSPECTED - C: CLEANED - R: REPAIRED			
DATE	INITIALS	ACTION	COMMENT
6/13/19	JKL	I, C	EXAMPLE: Called ACME to clean catch basins.

UNIVERSITY OF NEW ENGLAND			
BIDDEFORD, MAINE			
INSPECTION / MAINTENANCE LOG			
DRAIN PIPES			
I: INSPECTED - C: CLEANED - R: REPAIRED			
DATE	INITIALS	ACTION	COMMENT
4/19/18	JKL	I, C	EXAMPLE: Called ACME to clean debris from culvert inlets along Main Road and Loop Road.

UNIVERSITY OF NEW ENGLAND
BIDDEFORD, MAINE

INSPECTION / MAINTENANCE LOG

LEVEL SPREADERS

I: INSPECTED - C: CLEANED - R: REPAIRED

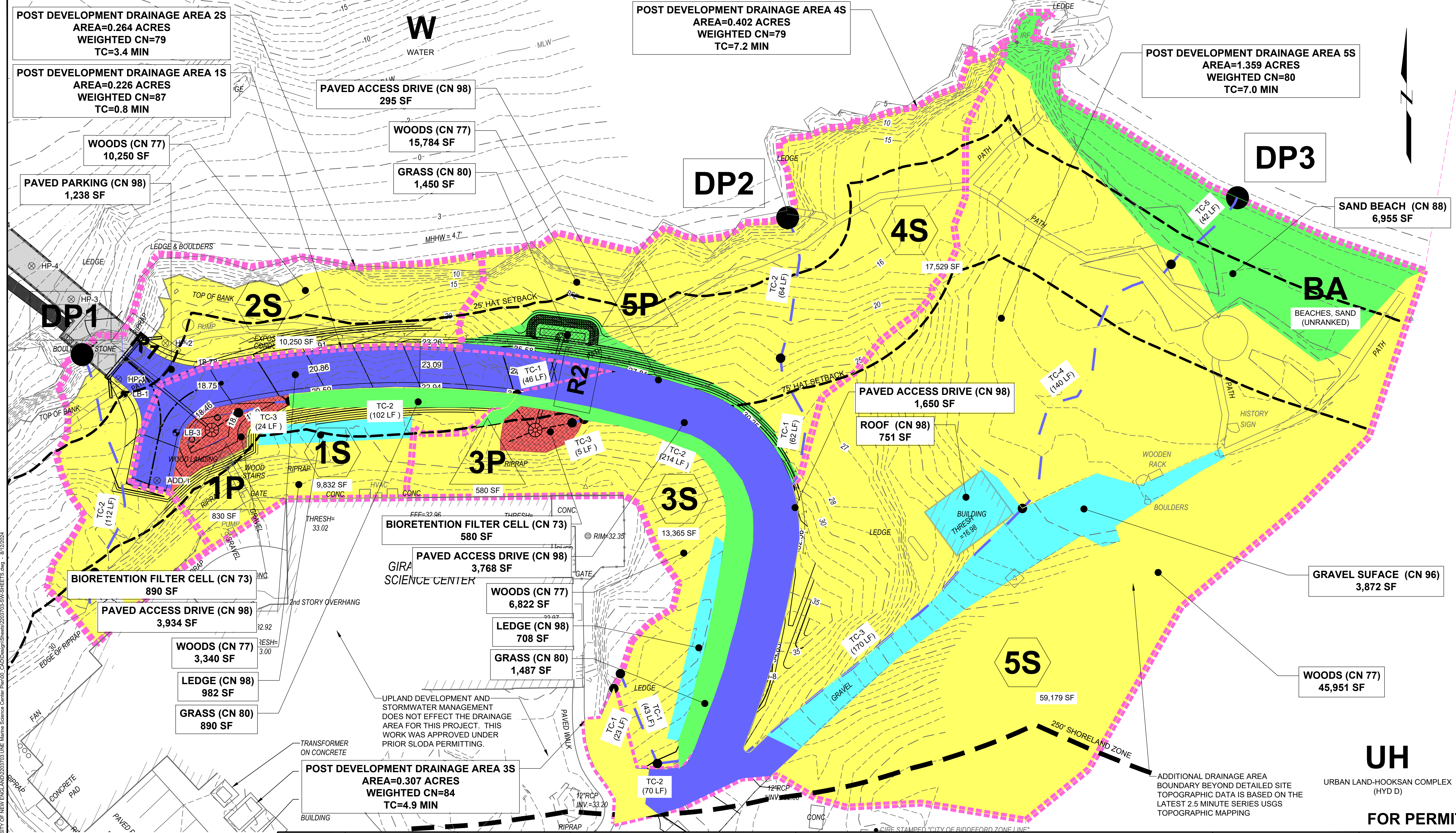
[illegible]

UNIVERSITY OF NEW ENGLAND**BIDDEFORD, MAINE****INSPECTION / MAINTENANCE LOG****UNDERDRAINED SOIL FILTERS****I: INSPECTED - C: CLEANED - R: REPAIRED**

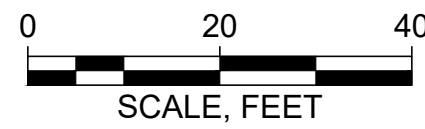
DATE	INITIALS	Unit #	ACTION	COMMENT
7/6/19	PQR	LA2	I, C	EXAMPLE: Cleared sediment and plant debris from inlet area, mowed filter area, crest, and sideslopes.

**STORMWATER MANAGEMENT SYSTEM
MAINTENANCE PROGRAM
SUMMARY CHECKLIST**

Item	Commentary	Frequency			
		Month	Semi-Annual	Annual	Long-Term
All Pond and Filter side slopes	Inspect slopes for sloughing, erosion or undesirable tree growth. Mow slopes to control vegetation, repair any structure flaws identified	X Mow Summer		X	
All Pond and Filter Sediment Removal	Remove sediment when it occupies 15% of volume.				X 5 Years
Open Swale, Ditches & Inlet Structures	Inspect for debris accumulation, erosion and excessive vegetation. Mow monthly, remove debris, repair and revegetate any area of erosion	X Mow		X	
Pavement	Review for damage and buildup of debris and sand.	X	X Sweep		
Level Spreaders	Review level lip for stability and grass growth, remove sediment and debris		X		
Catchbasin and Drain Manholes	Inspect grates to assure optimum water flows into the structures. Inspect sumps for blockage and sediment accumulation. Clean out sumps .	X Inspect		X Sediment removal	
Pipelines	Inspect for sediment build-up in pipe. Flush and remove as required.			X	
Underdrain Soil Filter	Mow twice per year. Inspect for erosion.		X		



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does not measure
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not original scale.

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Designed:	DJB
Drawn:	JAM
Checked:	BJB
Approved:	BMM
P.E. No:	13033
GEI Project	2203703



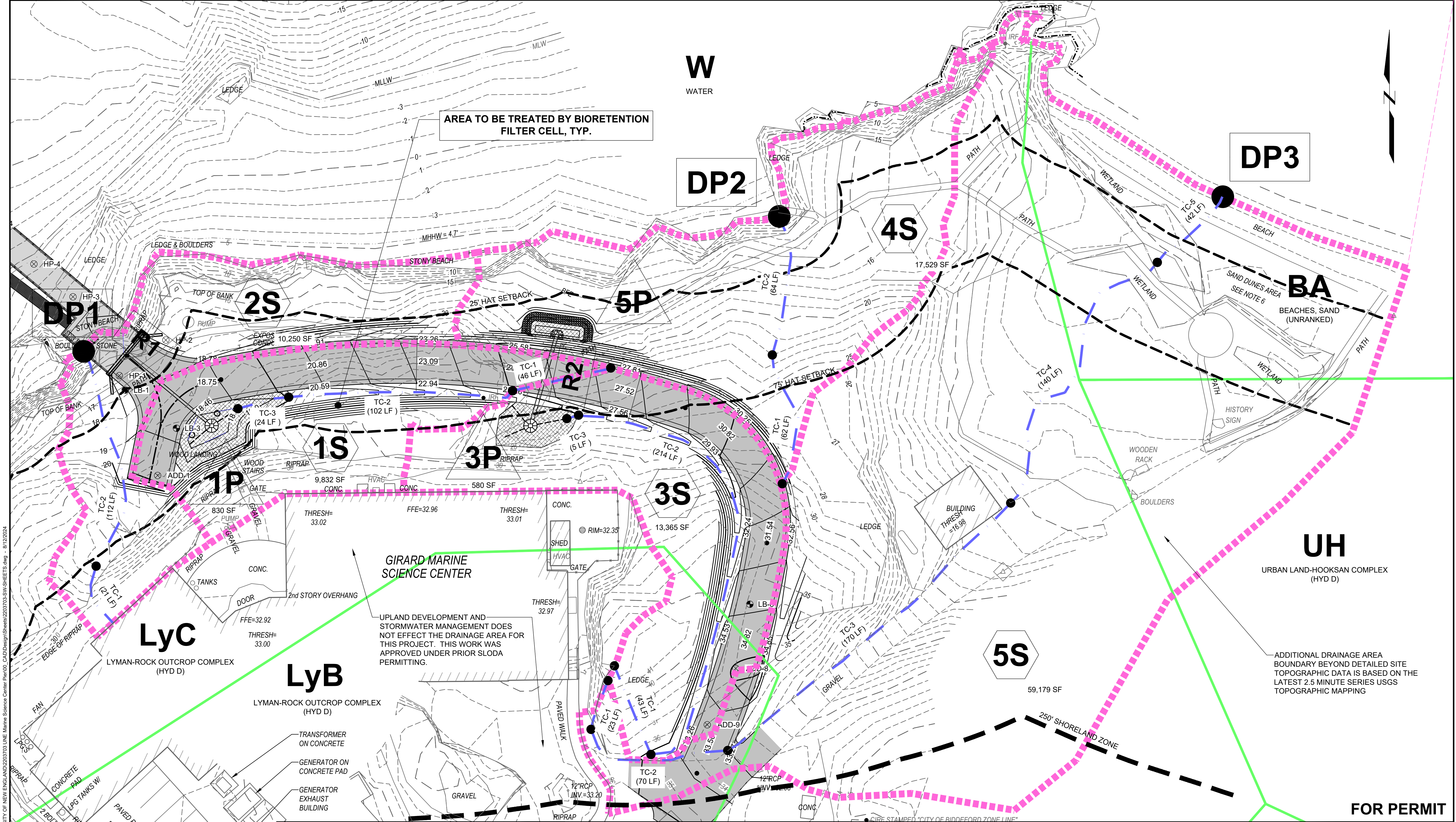
UNE
UNIVERSITY OF
NEW ENGLAND
11 HILLS BEACH RD.
BIDDEFORD, MAINE

**UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER**
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

NO	DATE	ISSUE/REVISION	APP

SHEET NAME
**POST DEVELOPMENT
DRAINAGE PLAN**

SHEET NO.
SW-02



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ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

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*PROJECT SCALE IN FEET

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If this scale bar does not measure 1" then drawing is not original scale.

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Designed:	DJB
Drawn:	JAM
Checked:	BJB
Approved:	BMM
P.E. No:	13033
GEI Project	2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

NO	DATE	ISSUE/REVISION	APP

SHEET NAME
TREATMENT AREA
PLAN

SHEET NO.
SW-03

FOR PERMIT

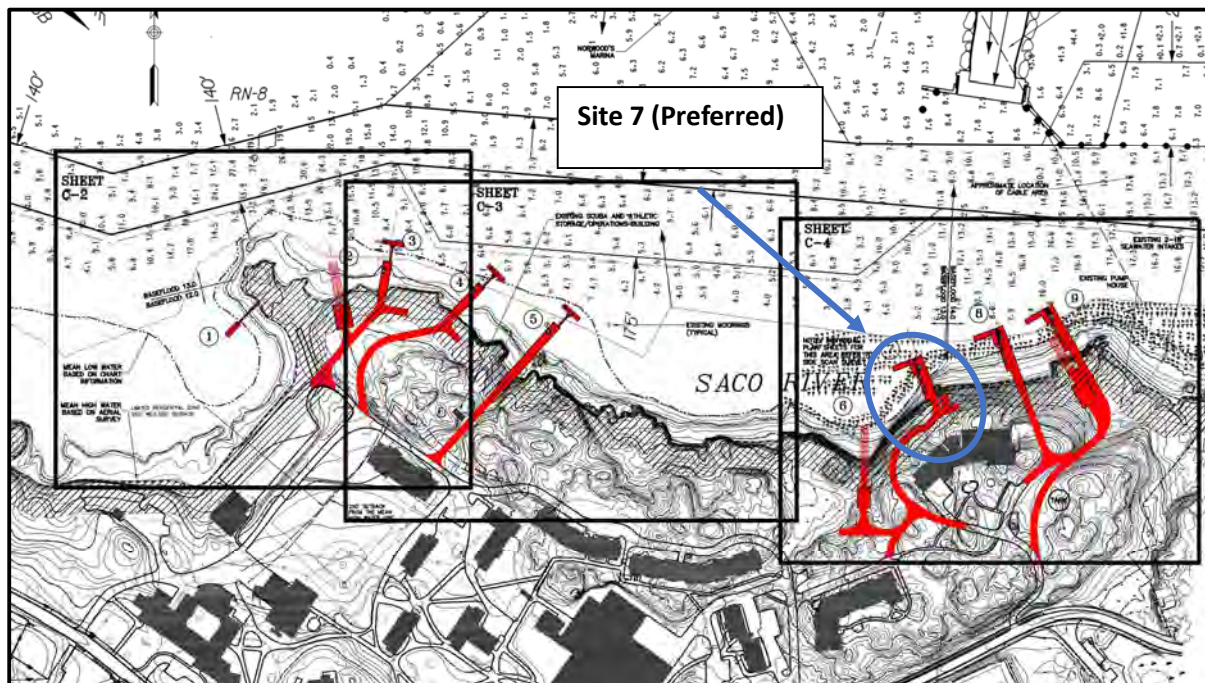
**Attachment 8
Alternatives Analysis
and Memo**

Alternatives Analysis

The Plans provided in attachments 5 and 6 detail the preferred alternative. This design was arrived at after extensive study of alternative locations and layouts for the pier over multiple years time. Alternatives considered in developing the proposed project are briefly described below.

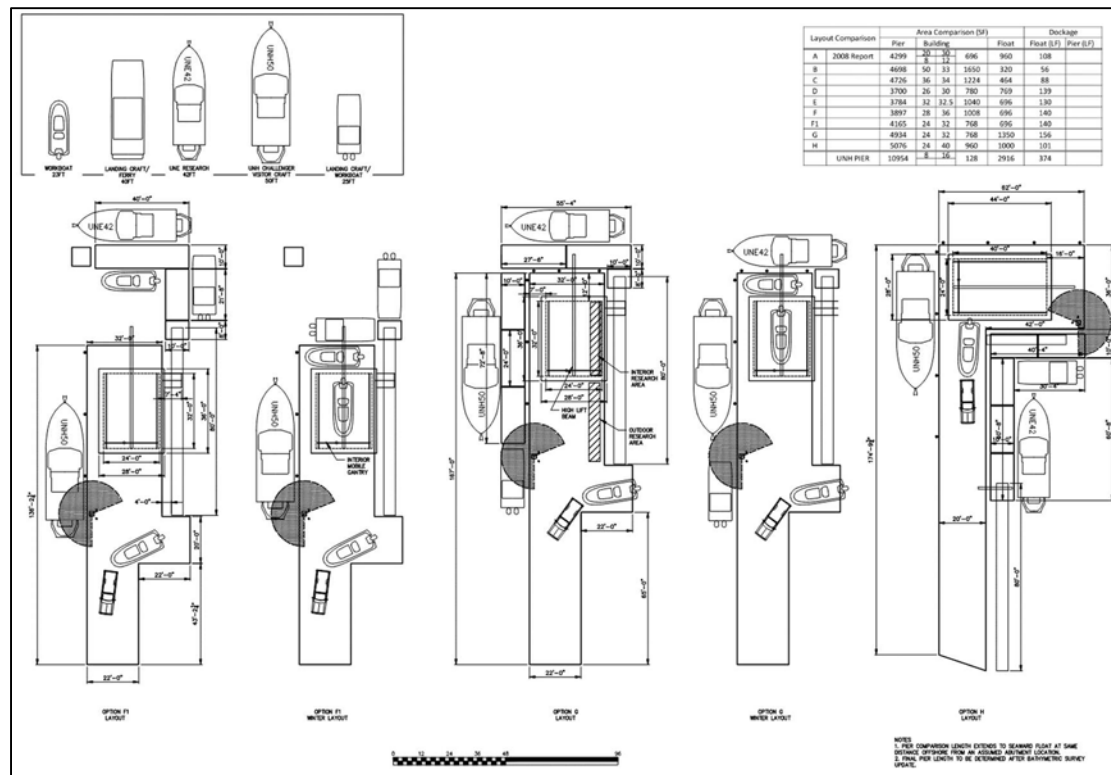
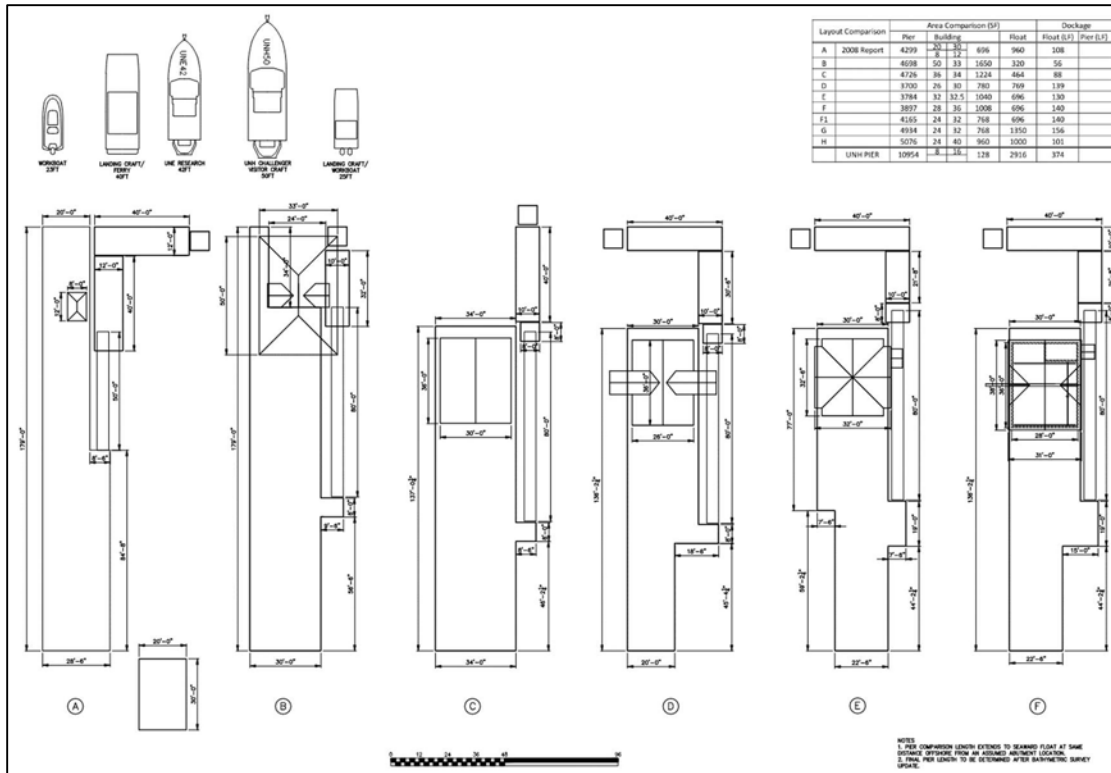
2008-2010 Pier Feasibility Study

In 2008-2010, UNE completed a concept planning study for the proposed pier. In this study, nine alternative designs were developed for water access facilities along the UNE waterfront consisting of various configurations of piers, boat ramps, and upland access and support facilities. The alternatives were evaluated on a range of criteria including technical criteria, functionality, constructability, regulatory impacts, cost of construction, and others to identify a preferred facility location. The nine alternatives evaluated through this study are shown in the figure below. At the conclusion of this study, Site 7 (directly in front of the Marine Science Center building) was identified as the preferred facility location to develop a new pier facility that would consist of a pile-supported pier extending from shore out into the Saco River. This location is optimal for access to and from the MSC facility and on the water, and allows for all-tide berthing with a smaller structure and less impact than several adjacent alternatives that were considered. At the conclusion of this study it was determined that Site 7 was the preferred alternative to move forward with further planning and design.



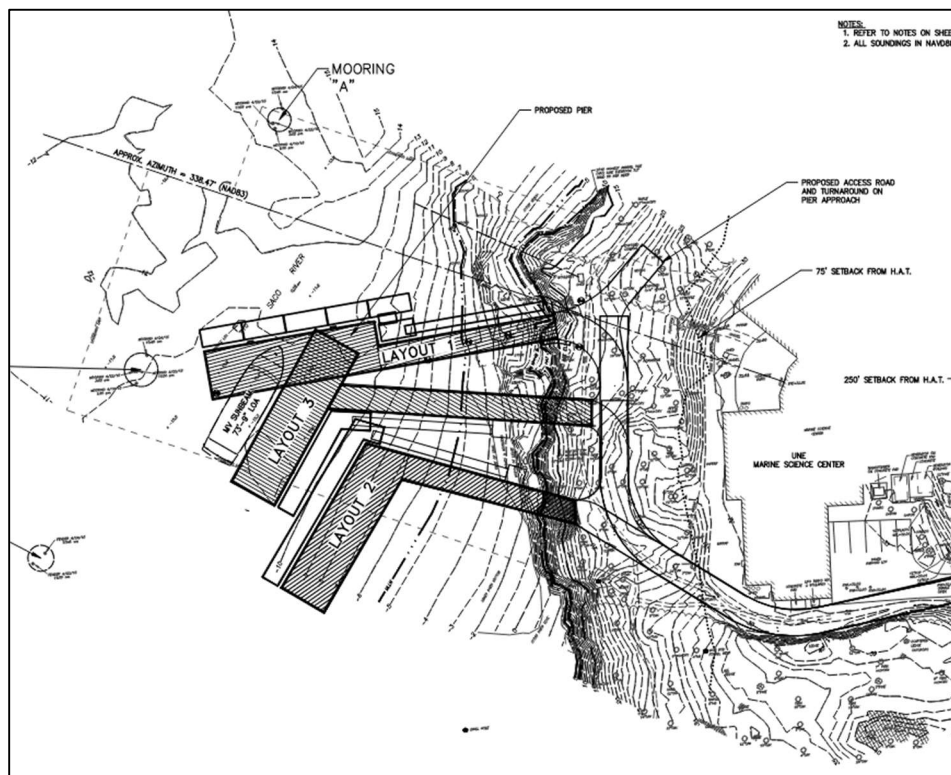
2015-2016 Pier Layout Study

After completion of the pier feasibility study described above, UNE undertook additional effort to study alternative pier layouts that would address the functional needs of the facility as well as the site exposure, berthing conditions, access requirements, and associated site impacts. During this study, numerous alternative pier layouts were considered which are depicted in the two figures that follow.



Further alternative development was completed in 2016 to address a realignment of the pier head parallel to the predominant direction of flow in the River for improved berth functionality. These alternatives considered input of the Biddeford Harbormaster and his knowledge of boating and

conditions on the Saco River after review of earlier layouts during a meeting in early 2016. The figure below depicts three alternatives considered during the study.



2023 Layout Refinement

During design refinement undertaken in 2023, the preferred alternative was identified as a combination of the pier approach from Layout 1, and the pier head from Layout 3, of the 2016 layout study. The Layout 1 pier approach represents the least impactful and most feasible option for upland site access. The Layout 3 pier head provides more desirable berthing conditions by aligning the main berth with flow directions in the River, and reaches sufficient depth to provide all-tide access for the range of vessels anticipated to use the facility. The layout was then refined somewhat to reduce the size of the structure to keep the dimensions to the minimum necessary to accomplish the functional goals of the project. During this refinement, the dimensions of the pier head were reduced from the initially proposed 28-foot wide by 100-foot long, to the currently proposed 23-foot 4 inches wide by 80-foot long. The dimensions of the float dock system were reduced somewhat, and the layout of fender piles was refined to reflect a functional design with minimum necessary dimensions and impacts.

The preferred alternative as currently presented represents a facility of the smallest dimensions possible to provide a functional facility that provides all-tide access for the range of vessels anticipated to use the facility, and ADA compliant access to the floating dock and gangway system and berthed vessels. While it could be possible to further reduce site impacts by further reducing the dimensions of the facility, any reduction beyond the size that is currently proposed would impact the proposed uses of the facility.

Do Nothing Alternative

A Do Nothing Alternative is the least impactful option, but would fail to address the goal of providing all-tide access to support UNE's marine research and educational programming through the marine science center. The existing seasonal floats and gangway located on the UNE campus upstream of the MSC building do not effectively meet these needs. Therefore, a Do Nothing alternative is not considered to be a feasible long-term solution.

Memo

To: Andrew Philippe, Director of Campus Planning

From: Daniel Bannon, P.E., CFM and Barney Baker, P.E.

c: UNE – Alan Thibeault
Site Design Associates – Tom Saucier, P.E.
GEI Consultants, Inc. - John Gareau, E.I.

Date: November 28, 2023

Re: Proposed GMSC Pier Location
University of New England, Girard Marine Science Center Pier
Biddeford, Maine
GEI Project No. 2203703

Summary and Purpose

The University of New England (UNE) proposes to construct a new pier on the Saco River adjacent to the Girard Marine Science Center (GMSC) to support research and educational programming. The project has been in development for more than 10 years and has gone through extensive planning and alternatives analysis in arriving at the design that is proposed. In October 2023, UNE staff held a meeting with several key stakeholders including the Biddeford and Saco Harbormasters, who raised questions as to the viability of relocating the pier further toward the east, downstream from the proposed location, in a revised alignment. The purpose of this memo is to summarize the process that has been undertaken for selecting the proposed pier location and to evaluate the advantages or disadvantages of the suggested alternative location compared to the proposed design.

Planning History

UNE has undertaken multiple studies to investigate locations and configurations for the proposed GMSC pier. These studies considered factors and constraints including but not limited to proximity to campus facilities, available water depths, site exposure to currents and wave action, upland site impacts, coastal wetland and habitat impacts, impacts to harbor uses such as fishing, recreational boating, and moorings, and estimated cost of construction. The proposed pier represents the preferred balance of these factors. The past studies that resulted in this design are briefly summarized below.

In 2008-2010, UNE completed a concept planning study to investigate opportunities for construction of improved water access to support marine science programs on campus. In this study, nine alternative design concepts were developed along the UNE waterfront consisting of various configurations of piers, boat ramps, and upland access and support facilities. The concept alternatives are shown in Fig. 1. The alternatives were evaluated on a range of criteria including technical criteria, functionality, constructability, regulatory impacts, costs of construction, and others to identify a preferred facility location. At the conclusion of this study, Site 7 (directly in front of the GMSC building) was identified as the preferred location to develop a new pier facility that would consist of a pile-supported pier extending from shore out into the Saco River. This location was determined to provide the best balance of site constraints and desired functions with good access from the GMSC, ability to achieve adequate water depths to allow for all-tide berthing of the anticipated vessels, and a location of river frontage semi-sheltered from currents and wave action.

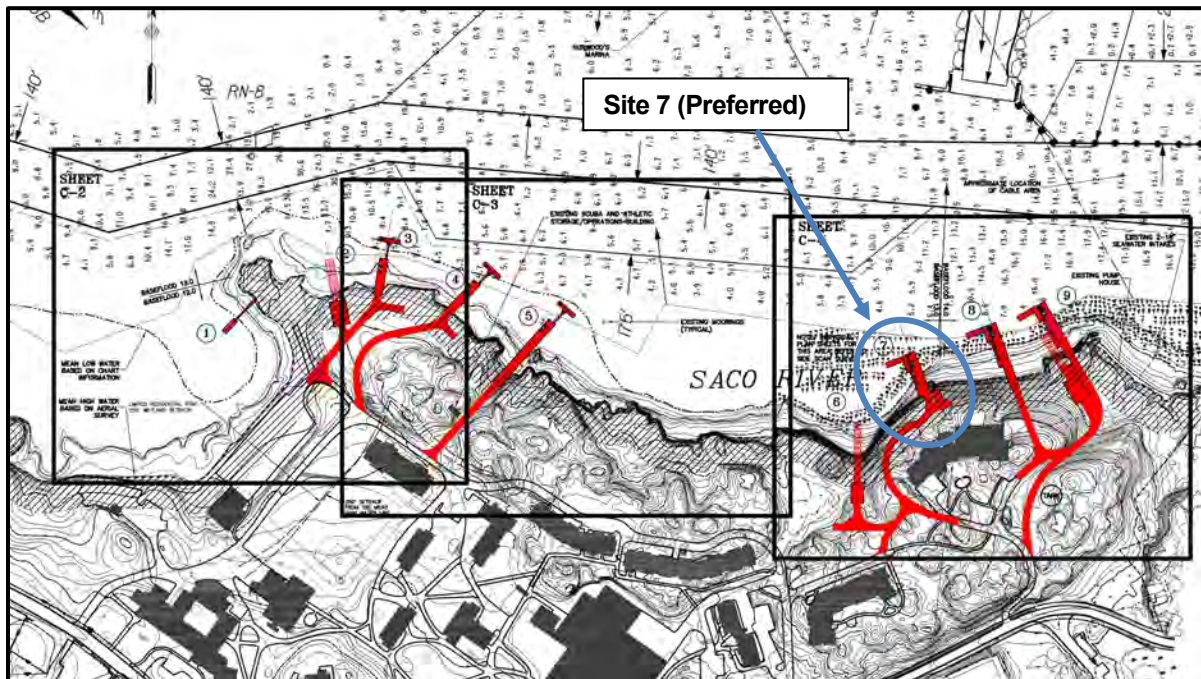


Fig. 1 – Alternative Sites Evaluated in 2008-2010 Study

After completing the pier feasibility study and identifying Site 7 as the preferred pier location, UNE undertook additional effort in 2015-2016 to study alternative pier layouts that would address the functional and vessel needs of the marine science curriculum as well as the site exposure, berthing conditions, access requirements, and associated site impacts. During this work, numerous alternative pier layouts were considered. Figs. 2 and 3 demonstrate some of the alternative layouts that were considered. This process allowed for consideration of desired pier dimensions and features, configurations of fixed structures and floating docks, pedestrian access needs, and other design criteria.

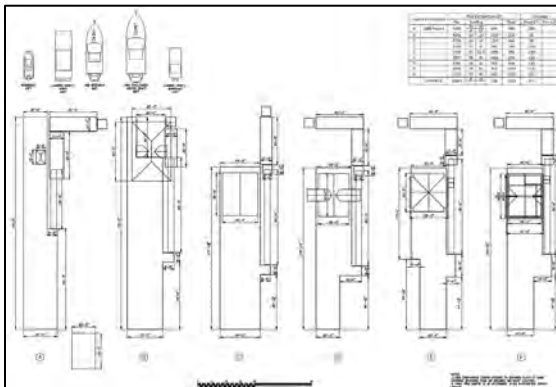


Fig. 2 – Sample of pier layout alternatives evaluated in 2015-2016 (1 of 2)

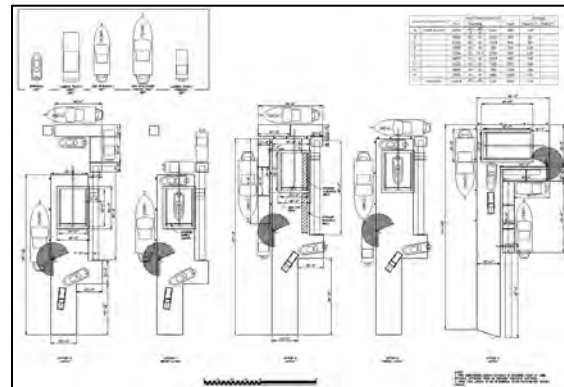


Fig. 3 – Sample of pier layout alternatives evaluated in 2015-2016 (2 of 2)

In February 2016, the proposed pier was reviewed with the Biddeford City Manager and key city representatives that included the Biddeford Harbormaster and Assistant Harbormaster and representatives from development staff and the Saco River Corridor Commission. Further input was gathered on river currents, recreational boating, and fishing activities resulting in the development of the three layout alternatives shown in Fig. 4 (labeled as Layout 1, Layout 2, and Layout 3). The

Harbormasters suggested that a layout with pier head oriented along the predominant direction of current such as shown in Layouts 2 and 3 would be preferable for vessels berthed at the facility. The Harbormasters also suggested that locating the pier closer to shore to minimize impacts to existing moorings and fishing activities would be preferable. These suggestions were taken into account in the next stages of design. A summary of the pier layout alternatives considered is provided in the attached memo from Baker Design Consultants dated March 22, 2016 titled “Consideration of an Alternate Pier Configuration as recommended by the City of Biddeford”.

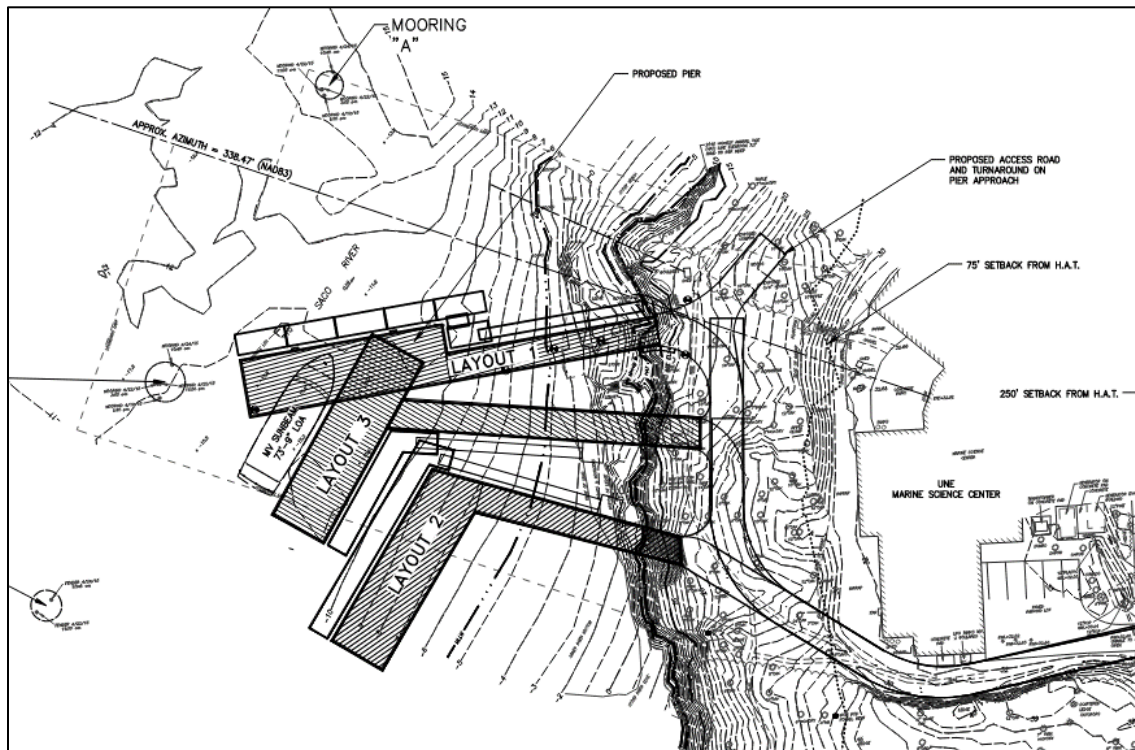


Fig. 4 – Pier layout alternatives developed in 2016 to address Harbormaster feedback

Final Design

In 2022, UNE resumed formal design development for the proposed GMSC Pier. At the start of this process, a layout was developed based on the 2016 layouts shown in Fig. 4 that reflected a combination of the pier head from Layout 3 and the pier approach from Layout 1. This new layout represented the optimal balance of site and functional constraints and upland access, with a pier head orientation that provides a main berth that is aligned with flow directions in the river, and sufficient depth to provide all-tide access for the range of vessels anticipated to use the facility.

The pier dimensions were refined through the design process to keep the structure to the minimum dimensions necessary to achieve the intended functions. This process resulted in a 22% reduction in footprint of the fixed pier, a 47% reduction in the footprint of floating docks, and a 17% reduction in the quantity of piles. Design development was advanced to 75% complete based on this design. The 75% design layout is shown in Figs. 5 and 6.



Fig. 5 – Proposed Pier Layout Vicinity Plan

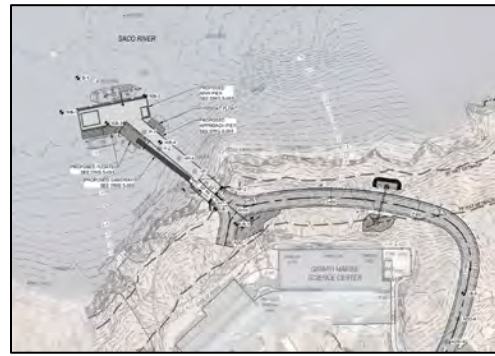


Fig. 6 – Proposed Pier Layout Site Plan

Alternative Location Analysis

In October 2023, UNE staff held a meeting to review the project with several key local stakeholders. During this meeting, the Biddeford and Saco Harbormasters suggested an alternative concept for the pier location that would relocate the pier further downstream from the proposed location as approximately shown in Fig. 7. In support of this alternative location, the Harbormasters cite deeper water, less impact to existing moorings, a location with more favorable water currents, and concerns of sediment deposition and potential need for dredging in the proposed pier location. Additionally, the Harbormasters have raised concerns about potential ice exposure given the history of icing issues at the Camp Ellis Pier directly across the River.

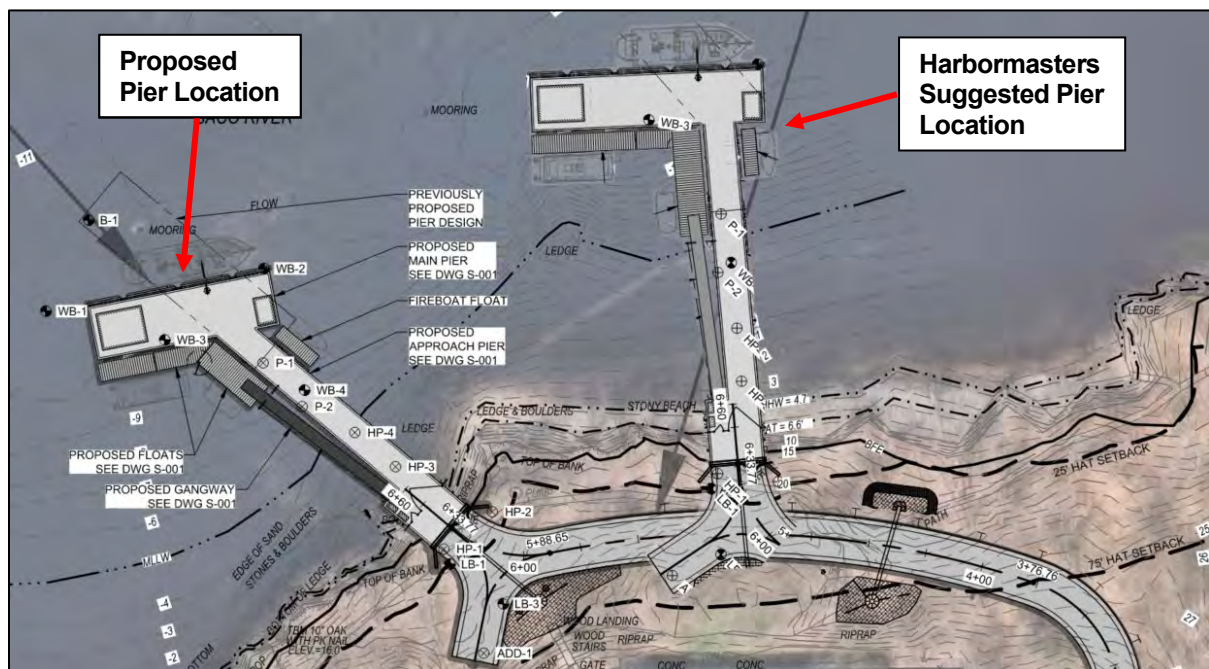


Fig. 7 – Alternative Suggested Pier Location

Review of Suggested Alternative Location

GEI has reviewed the suggested alternative layout and provided an evaluation of factors relating to the advantages and disadvantages of the proposed design versus the suggested alternative.

Water Depth

One reason for suggesting the alternative pier location is greater available water depths.

In the proposed design there is 5 to 6 feet of depth at mean lower low water (MLLW) at the main berth on the outer face of the pier which is sufficient for the proposed vessels using the facility. The suggested alternative location does have greater depth at the main berth, approximately 11 to 12 feet at MLLW. While this additional depth could allow larger vessels to use the pier, it is not needed to support the currently proposed and/or future envisioned uses.

The proposed design has 3.5 to 5 feet of depth at MLLW at the proposed floats on the inside of the pier, with sufficient distance to the MLLW line and a generally soft substrate near the floats to minimize risk of damage from vessels grounding out. In the suggested alternate location, the subtidal bottom slopes up rapidly behind the pier head. The available depth at the floats varies from 2 to 12 feet at MLLW, however the floats are in close proximity to a shallow ledge outcrop and there are concerns of hazardous conditions for vessels accessing these floats. In order to provide safe navigation to the floats the pier would need to be moved further downstream and/or extended further out into the River adding to its size, footprint, and cost.

From the standpoint of required water depths and navigational safety, the proposed design is preferred.

Exposure to Currents

The Saco River experiences currents due to tidal influence and riverine flows. To understand currents on the River, GEI has reviewed data gathered by the US Army Corps of Engineers as part of their study of erosion at Camp Ellis¹. Figs. 8 through 11 demonstrate trends in current through differing stages of the tide. The magnitude of the current's velocity is represented by the length of the yellow arrows, with a reference arrow of 50 cm/s provided in the figures, while the current direction is indicated by the direction of the arrow. As can be seen from this data, the proposed pier location benefits from the natural shape of the shoreline which generally results in lower current velocities at the proposed location than at the downstream constriction of the River where the suggested alternate location would be located.

The lower current velocities at the proposed pier location compared to the suggested alternate result in more favorable conditions for vessels berthing at the pier, greater safety for vessels and users, and reduced structural loading on the pier. For these reasons, the proposed pier location is preferred from the standpoint of exposure to currents.

¹ Saco River and Camp Ellis Beach Section 111 Shore Damage Mitigation Study, Appendix C – Data Collection and Modeling Report, prepared by Woods Hole Group and Aubrey Consulting for the US Army Corps of Engineers, October 2006

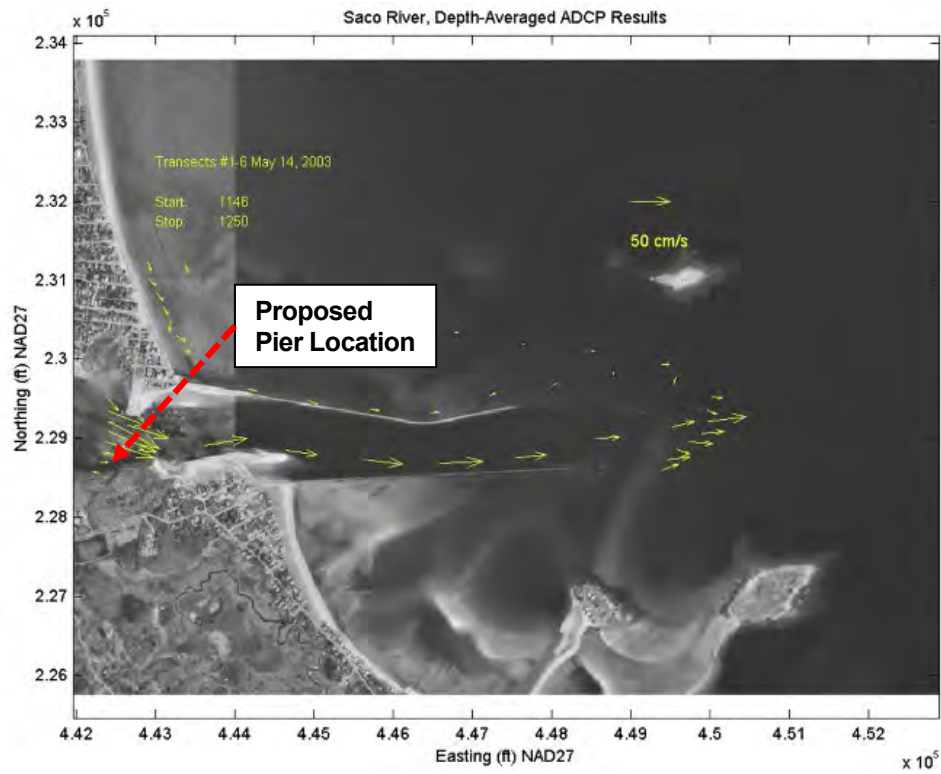


Fig. 8 – Sample of USACE Current Monitoring Data

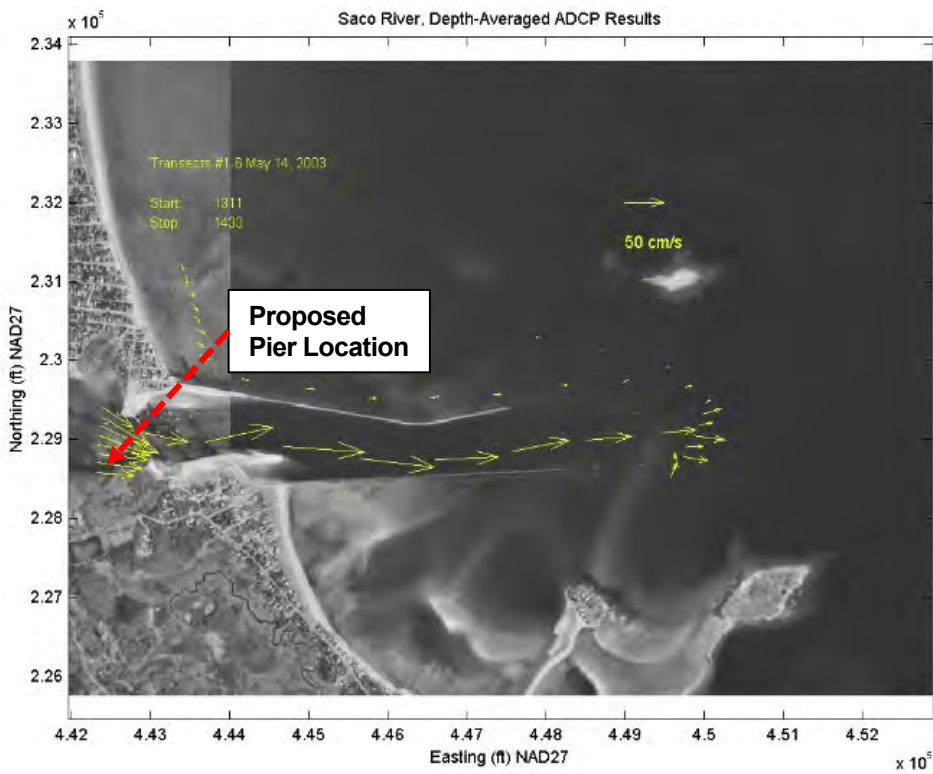


Fig. 9 – Sample of USACE Current Monitoring Data

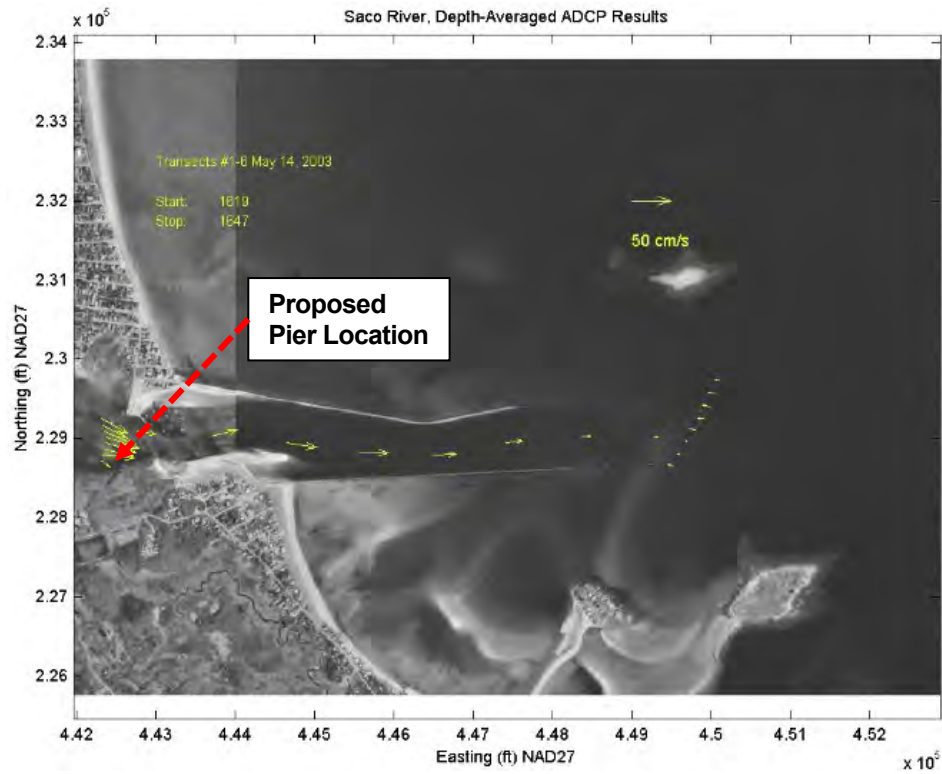


Fig. 10 – Sample of USACE Current Monitoring Data

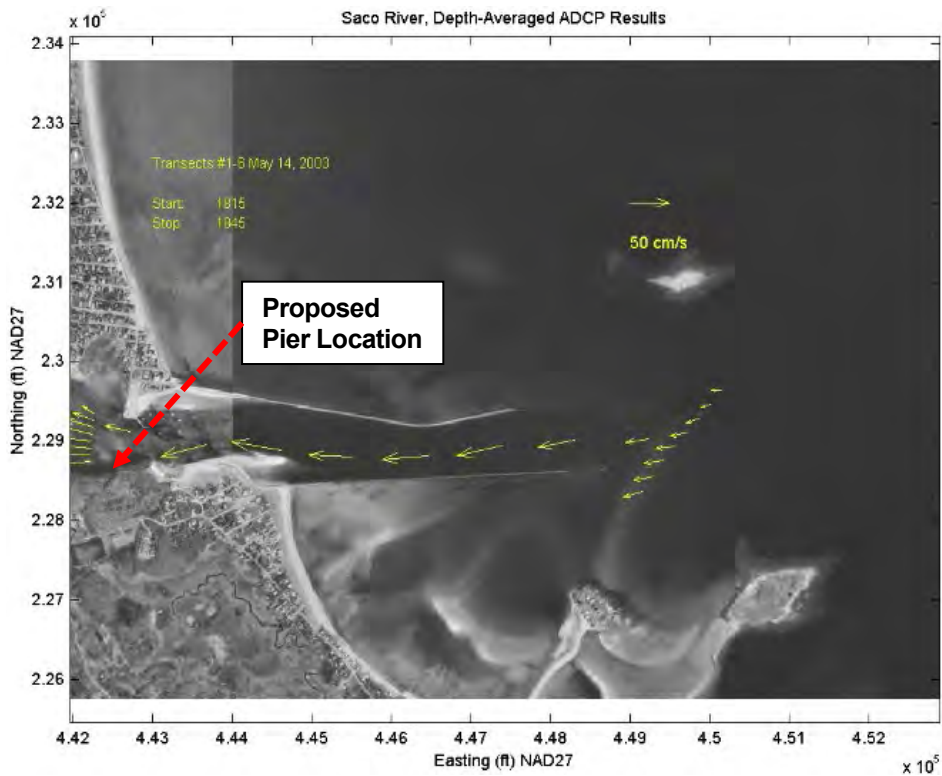


Fig. 11 – Sample of USACE Current Monitoring Data

Location Relative to River Sediment Deposition

The Harbormasters commented during the October 2023 meeting that the proposed pier location may be subject to sediment deposition that may impact pier navigation over time and require dredging in the future to restore water depths. As part of the project development, bathymetric surveys were completed in the pier area in May 2015 and again in November 2022. Fig. 9 provides an overlay of these two surveys (2022 contours are shown blue, 2015 contours are shown grey and red). In comparing these two surveys, there is negligible difference between the surveys that were taken 7.5 years apart. While there are minor differences that can be observed in contour locations and shapes, these could be attributed to the bathymetric survey accuracy and method of modeling the three-dimension surfaces used to create the contours. None of the differences are significant enough to suggest that there are large scale trends of deposition in the project area. Based upon this review, there is no indication that sediment deposition will be a substantial concern in the proposed area of the pier, and it does not appear that the suggested alternate pier location offers an advantage.

The proposed pier location does not appear to be in an area that is subject to notable sediment deposition and remains the preferred location.

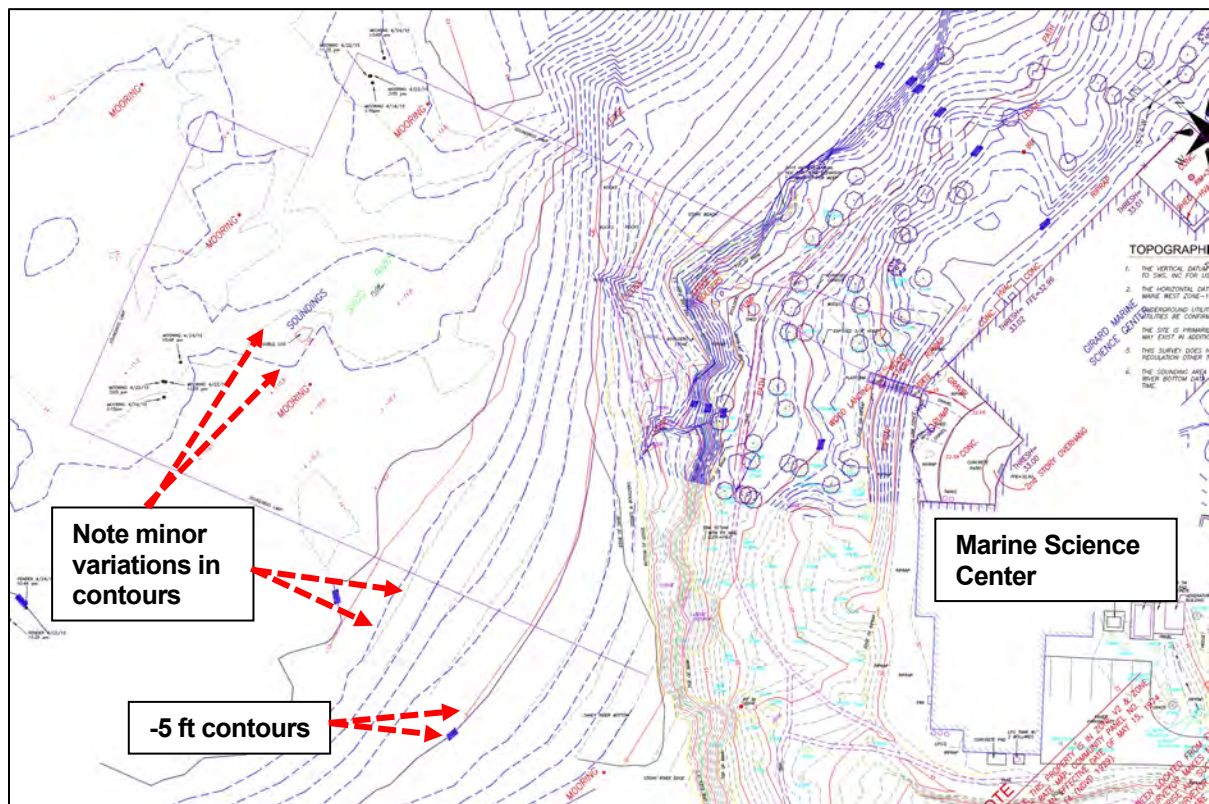


Fig. 12 – Comparison of 2022 (blue) and 2015 (grey and red) bathymetric contours

Exposure to Icing

The Harbormasters have raised concerns about exposure of the pier to winter icing. Icing on the Saco River is also a concern of UNE and the design team. The River is known to experience ice floes during the winter season that have historically been damaging to vessels at Camp Ellis. In terms of designing the fixed pier structure, the exposure to ice loading has been considered and the pile

supported pier structure will be able to sustain the forces from ice. The primary concern of the design team with winter icing is related to the impact on floating docks and berthed vessels. The ability to keep the facility in operation throughout the winter months when exposed to icing is still being evaluated by UNE. Additional steps are planned to monitor the site through winter conditions to better understand the extent of icing and potential impacts. The results of this investigation will inform the facility operations and vessel berthing plans. Methods being considered to mitigate the risks of ice impact to floats and vessels may involve the installation of additional temporary or permanent protective measures and/or limiting use of the pier during times when icing is anticipated. Irrespective of the ice protection and operational measures that may ultimately be included, the proposed pier location has less velocity exposure to icing than the suggested alternate location given its location and therefore reduced exposure. For this reason, the proposed design is preferred.

GEI has designed the fixed pier structure to resist the impact associated with river icing. Irrespective of pier location, the UNE will need to plan facility operation during periods of icing to manage risk associated with reduced facility use.

Impact to Moorings

The proposed pier layout is in close proximity to one existing known mooring which will likely need to be relocated to allow for the proposed construction. The suggested alternative is also in close proximity to one existing known mooring which would also need to be relocated if this alternative was used. Therefore, from the standpoint of mooring impacts, the proposed design and the alternative are believed to be similar.

To address anticipated impacts to moorings, GEI and UNE are prepared to work with City staff as necessary to allow for mooring adjustments to accommodate the proposed pier.

Conclusions and Closing

GEI has reviewed the concerns raised by the Saco and Biddeford Harbormasters and evaluated their impact on the proposed design, reviewed the history of planning that led to the current design location and layout, and reviewed the potential advantages and disadvantages offered by the suggested alternative pier location. While we respectfully value the input and suggestions for a layout alternative, it is our opinion that the proposed design represents the preferred balance of project requirements and site constraints. Compared to the suggested alternative, the proposed design achieves adequate water depth, provides safe navigation, results in a structure of smaller overall dimensions with less coastal wetland impact, does not appear to be subject to significant sediment deposition, and locates the pier in a location that is less exposed to current and icing impacts. For these reasons, GEI recommends that the current design and pier location be maintained.

We would be happy to discuss any elements of this memo at your convenience. Please contact Dan Bannon (dbannon@geiconsultants.com) or Barney Baker (bbaker@geiconsultants.com) with any questions.

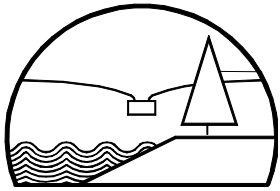
Attachment

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\\geiconsultants.com\data\Data_Storage\Working\UNIVERSITY OF NEW ENGLAND\2203703 UNE Marine Science Center Pier\11_SUBMISSIONS\2023-11-29 -Revised Memo on Suggested Alternative Location of Pier\UNE MSC Pier - MEMO_Alternative Pier Location_2023-11-28.docx

Attachment 1

2016 Pier Alternatives Memo



BAKER DESIGN CONSULTANTS
Civil, Marine and Structural Engineering

Project: **15-07 UNE Pier Layout Alternatives**

Date: March 22, 2016

To: Alan Thibeault; University of New England

Copy: Tom Saucier; Site Design Associates
Dan Bannon; Baker Design Consultants,

Subject: Consideration of an Alternate Pier Configuration as recommended by the City of Biddeford

\\BDC-SRV\PROJECTS\15\15-07 UNE MSC WATERFRONT\DESIGN\ALTERNATE PIER LOCATION STUDY\15-07 UNE PIER ALTERNATIVES MEMO MARCH 2016.DOCX

MEMO

Introduction

Baker Design Consultants (BDC) completed a pier feasibility study in 2010 study for the University. The work first defined the type of pier and parameters necessary to support the Marine Science program and then looked at the entire Saco River shoreline of the Biddeford Campus for suitable sites. Concept pier layouts for nine (9) sites were prepared and then compared in a matrix format that looked at the ability of the pier to meet the program objectives, the respective shore and waterside development challenges, the environmental impacts associated with each solution and the approximate cost and scope for construction. The pier was added to the long-term facility plan for the University.

In September 2015, BDC was retained to develop the design for a new pier at the site that had been most favorably rated in the 2010 study. Site No. 7 met the operational objectives for the pier and was located close to the Marine Science Facility pier with access to deep-water. The design has advanced through several stages of UNE MSC faculty review to define an optimum footprint and access for the pier. This was followed by site survey and geotechnical borings to verify water depths and subsurface conditions at the proposed pier location. Initial contact with the regulatory agencies has been made, but no permits applications have been filed to date. The Biddeford Harbormasters were invited to the site to review the pending (now complete) geotechnical exploration and the pier was discussed briefly at this meeting.

In February, Barney Baker and Alan Thibeault met with the City Manager and key city representatives that included the Harbormasters and representatives from development staff and the Saco River Corridor Commission. Preliminary plans for the pier were reviewed and discussed with an opportunity for staff to share comments on the proposed design. The Harbormasters were particularly keen advocates for design adjustments based on their knowledge and experience with the Harbor. All City staff was supportive of the pier and recognized the benefits it will provide to the Marine Science program at UNE.

This memo considers comments made by City staff on the current design and considers two Alternate Layouts to evaluate the changes requested. Refer to the appended drawings that show the three (3) Layouts discussed in this memo. Sheet C-1 shows the pier site in the relation to other features in the Saco River Basin.

Sheet C-1 - Saco River Basin

Sheet 1 of 4- Layout 1- Current Design

Sheet 2 of 4- Layout 2- Incorporating all City Recommendations

Sheet 3 of 4- Layout 3- Modification proposed by BDC

Sheet 4 of 4- Composite showing all 3 Layouts

Recommendations for Pier changes made by the City.

The City suggested changes to the proposed pier (Layout 1) at the February 2016 review meeting are outlined below with comments from Baker Design Consultants (BDC Response). These collectively advocate for the pier to be relocated inshore, upstream and realigned to be more parallel with the shore.

Alternate Pier configurations (Layout 2 and Layout 3) are appended. These were prepared to investigate and illustrate the changes that would be necessary to incorporate the recommended pier changes. The Table on page 4 provides a summary comparison of the proposed design (Layout 1) with the Alternate Layouts.

1. Place the pier closer to shore to minimize existing moorings impacts.

The Harbormasters were concerned that the proposed pier (Layout 1) impacted the location of several moorings and that this would create specific hardship for individual mooring holders and harbor management in general. The Harbor masters made general reference to several mooring holders, but did not have access to a plan to show where these were located.

BDC Response. Both Alternate Layouts (2 & 3) move the pier closer towards shore. Refer to tabulated mooring clearances in the Table that follows for each Layout considered.

The moorings in the pier area at the time of the April 2015 survey were put on the plan and a general search was made of google earth aerial photographs going back several years for others that might not have been in the water at the time of the field survey.

The three recorded moorings nearest the pier site are identified on the attached plans as Mooring "A", "B", and "C". For each of the pier layout alternates considered, the distance from the approximate mooring center point to the nearest point on the pier is tabulated. A clear distance in excess of 110 to 120-ft is considered an acceptable mooring clearance to the pier

2. Consider pier impacts to nearshore fishing.

The Harbormasters indicated the nearshore at the pier location was used by fishermen that use small boats to fish along the southern shore of the river from upstream to downstream. The proposed pier would require boaters to move out and around the pier and may be perceived as a barrier to the fishing activity. It was pointed out that any new pier at any waterfront location will have a similar impact on near shore navigation, but moving the pier inshore would reduce the necessary detour.

BDC Response: It is acknowledged that while the pier would influence nearshore navigation, it was well clear of the designated federal channel and boats moving around the pier would not conflict with channel traffic. The nearshore fisherman in small boats could pass under the approach section of the pier at all states of the tide in Layout No. 3 but would be restricted at low water by floats and gangway in Layouts 1 & 2.

3. Relocate pier further upstream and change orientation to reduce current exposure.

The Harbormasters confirmed that the channel restriction located just seaward of the pier created fast currents that ran parallel to shore. Based on their knowledge of the harbor, they suggested the pier would be better rotated upstream parallel to the current and moved upstream and inshore from the Layout 1 location. This would put the pier in water with less tidal current and make docking easier and safer.

BDC Response. BDC indicated they had studied a 2006 study by the Army Corps of Engineers of currents at the pier location and had already oriented the pier upstream and away from the highest tidal currents while maintaining deep water access to both sides of the pier. It is recognized that moving the pier upstream reduces the current exposure, but because the water shoals, the vessel berthing is less efficient. BDC feels strongly that dredging is a last resort because of high cost, unreliable timeframes for periodic maintenance.

Alternate Layouts 2 & 3 benefit from the local knowledge and recommendation of the Harbormasters by effectively placing the pier in calmer water with an improved docking angle to the current. However, in both alternate configurations there is a decrease in the pier face docking provided by the pier. Layout 3 also would require dredging to maintain float access. Refer to the attributes for each Layout in the Table that follows.

4. Reduce length of pier access road to reduce visual impact on shore.

This comment was made in consideration of tree cutting, vegetation removal, and regrading that would be necessary to create an access road to the pier. The road access is located within the 250' Shoreland Zone. The visual impact will be carefully reviewed by the Saco River Corridor Commission. It was suggested that the access road length to the pier could be reduced by relocating the pier upstream from the current Layout 1 location.

BDC Response. Preliminary road alignment and profiles are provided for each layout in the appended drawings and compared in the Table on page 4. In each case, the access road extends around the existing Marine Science Center building to provide equipment and vehicle access to the pier. At the pier abutment it is necessary to provide a vehicle turnaround. Options that locate the pier approach further upstream require a sloped pier approach connector in order to accommodate the steeper grades at the shore. This undesirable feature is alleviated by providing a turn-around space on the Pierhead.

Alternatives Study Results summary

In summarizing the results of this Alternatives Study, the following points can be made.

- The local knowledge and insight provided by the City is both timely and helpful. The input provided both validates the Layout 1 design development to date and creates the opportunity to make small design improvements to reduce the tidal current exposure at the pier.
- Layout 2 does not work because of the steep shoreside access and the need to consider dredging in order to effectively use both sides of the pier.
- Layout 3 benefits from inside docking of small vessels, reduces access road impacts on shore with minimal concessions in water depth. However, the footprint of the pier (and cost) is increased and it is necessary to slope the connector pier to make the shore transition work. While the geotechnical fieldwork connected to date would be useful, additional geotechnical work is needed to verify subsurface conditions.

Moving forward, we recommend that Layout 3 be considered by UNE staff as a viable alternative for consensus approval with City stakeholders in advance of further design and regulatory discussion.

Please contact me with any questions.



Barney Baker, PE
Principal
JN 15-07

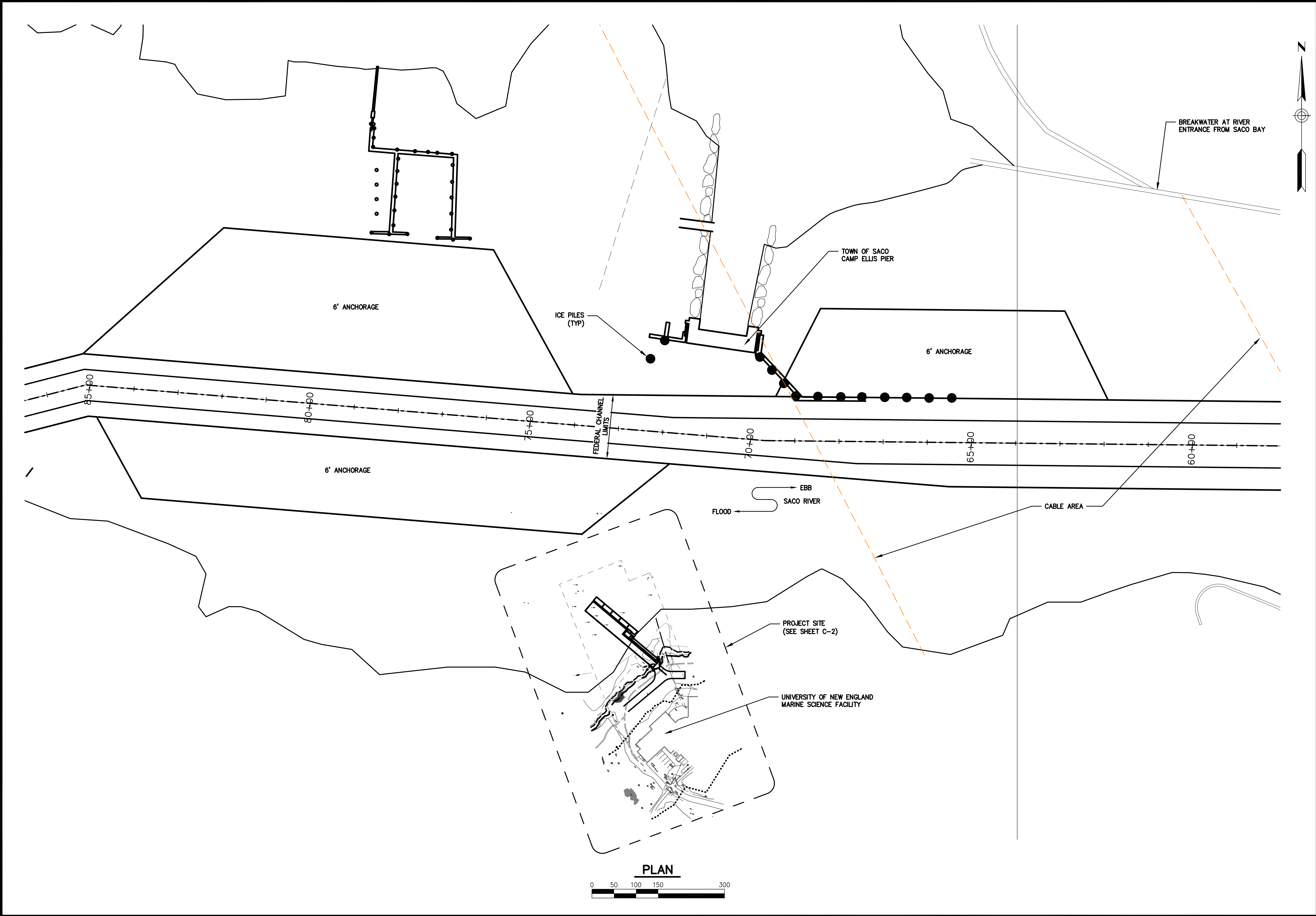
Table 1 – Pier Layout Alternatives Comparison

This Table below compares the proposed pier design (Layout 1) with two alternative layouts (Layouts 2 and 3) that were developed with consideration of City recommendations and key criteria that relate to size and type of impacts, facility safety and functionality that were used in the original site analysis.

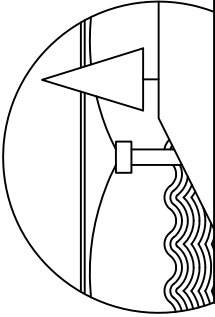
	LAYOUT 1 Proposed Design	LAYOUT 2 Alternate	LAYOUT 3 Alternate
Outer face of Pier, Distance from HAT	193'	110'	152'
Orientation of Berth	40 DEG WNW	10 DEG WSW	11 DEG WSW
Setback to nearest mooring	A - 110' B - 37' C - 133'	A - 176' B - 120' C - 127'	A - 121' B - 76' C - 117'
Impacted moorings	B	None	B
Setback to federal anchorage	147'	248'	204'
Water Depth Available at MLLW (no dredging)	Downstream Face – 6' Upstream Face – 5.5'	Seaward Face – 4.5' Landward Face – 1'	Seaward Face – 5.5' Landward Face – 5'
Berthing Available	Downstream Face – 100' Upstream Face – 100'	Seaward Face – 104' Landward Face* – 84' <i>*Dredging Required</i>	Seaward Face – 110' Landward Face – 57'
Length of pier approach connector	100'	102'	147'
Slope of Pier Approach	No slope	1V:20H	1V:25H
Length of access road	390'	295'	330'
Access Road Gradient	200' @ 2% 150' @ 10% 40' @ 0%	200' @ 2% 95' @ 10%	200' @ 2% 110' @ 10% 20' @ 0%
Length of pedestrian route from MSC building to Pier	120'	230'	170'
*Dredging Required	No	*Yes	No
Berthed vessel alignment to currents	~40 deg	Parallel	Parallel
Pier Area	Approach – 1,400 SF Pier Head – 2,800 SF Total – 4,200 SF	Approach – 1,300 SF Pier Head – 2,800 SF Total – 4,100 SF	Approach – 2,100 SF Pier Head – 2,800 SF Total – 4,900 SF
Pier Support Conditions	Pier approach supported on shallow ledge, ability to span across transition area and support pier head on deep piles.	Pier head and majority of piles may be located in transition area with challenging geotechnical conditions. Need to confirm with additional geotechnical information.	Pier head likely located beyond transition area where the majority of piles can be driven to ledge without socketing. Need to confirm with additional geotechnical information.
Availability of geotechnical information	Geotechnical program completed	Pier is located a significant distance from any borings/probes, additional subsurface investigation required	Pier is located near the original boring/probe locations, but subsurface information will need to be supplemented with additional data.

Appendix A – Concept Plans

\\bdc-srv\projects\15\15-07 une msc waterfront\cac\15-07 une msc waterfront civil3d (djb-nov-2015).dwg 1/25/2016



SHEET TITLE:		DESIGNED BY:					
SACO RIVER BASIN		DRAWN BY:					
PROJECT:		CHECKED BY:					
UNIVERSITY OF NEW ENGLAND UNE MSC WATERFRONT		SCALE:					
BIDDEFORD, MAINE		AS SHOWN					
DATE		CONTRACT NO.		SHEET NO.		REV.	
FEBRUARY 2015		15-07		C-1		A	
				NO.		INT.	
		A		PROGRESS REVIEW		BUB	
		6-25-15		DATE		BUB	



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Civil, Marine, and Structural Engineering

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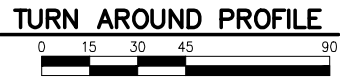
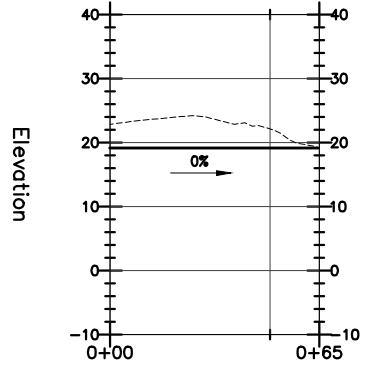
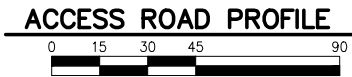
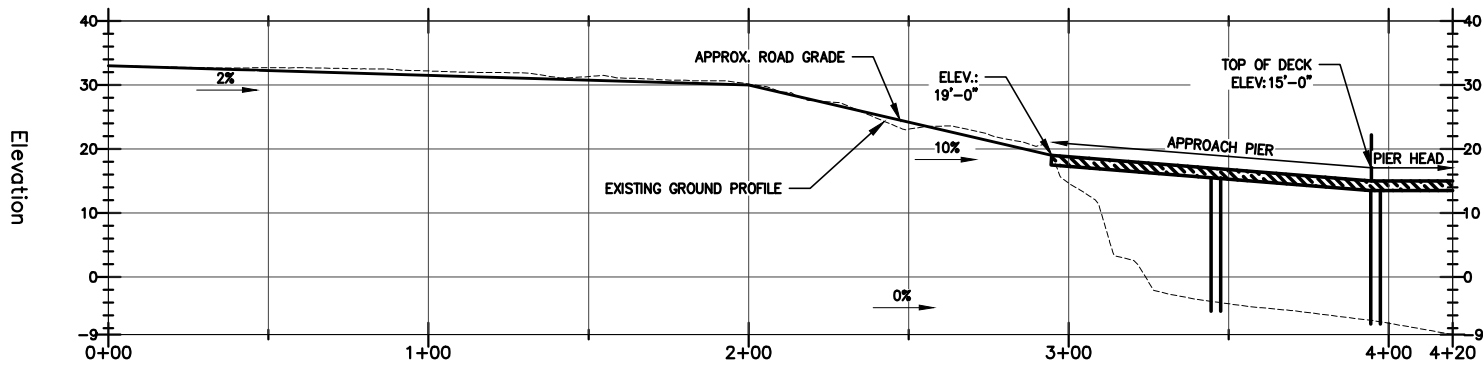
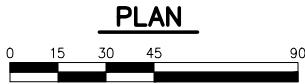
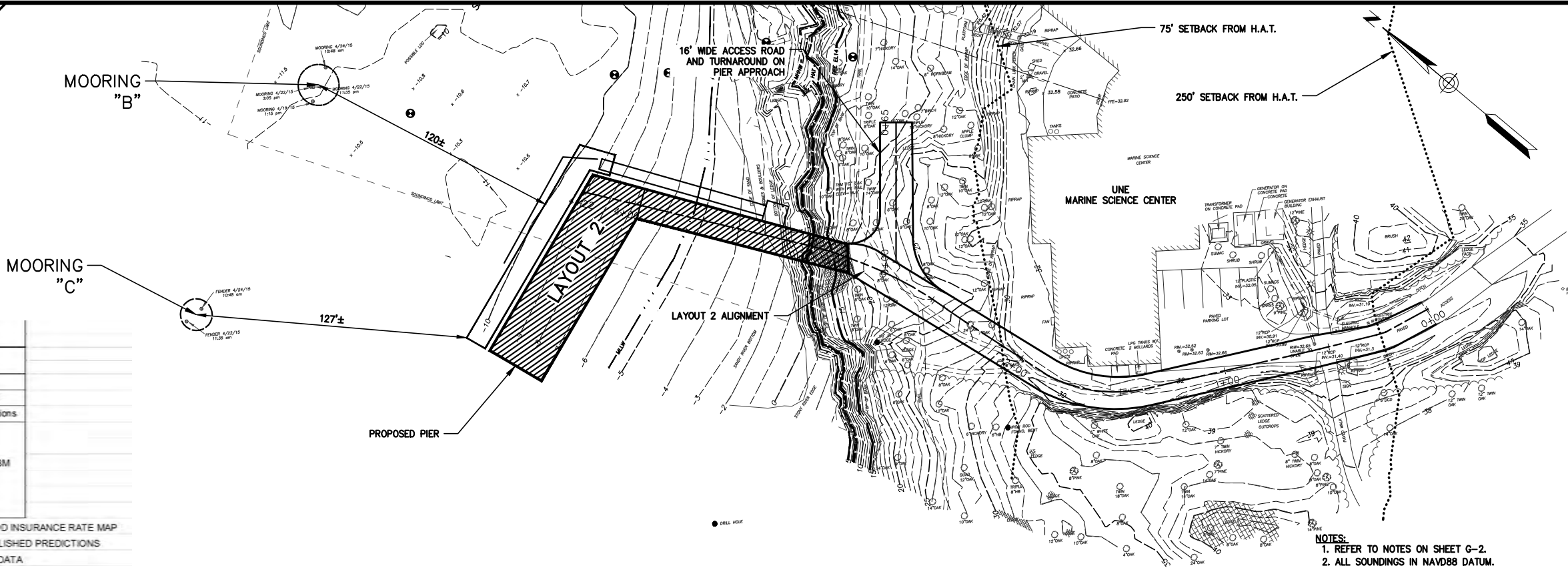
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PROJECT ELEVATIONS (BY DATUM)		
ELEVATION	NAVD88 (ft)	Notes
FEMA Base Flood	13.27	FEMA Zone V2
FEMA Base Flood	14.00	Preliminary Zone VE
Highest Annual Tide	6.65	2013 MEDEP Predictions
MHHW	4.65	BASED ON TIDAL BM "Portland"
MHW	4.22	
NAVD88	0.00	
NGVD29		
MLW	-4.91	
MLLW	-5.25	

1. BASE FLOOD INFORMATION TAKEN FROM FEMA FLOOD INSURANCE RATE MAP

2. HIGHEST ANNUAL TIDE TAKEN FROM MAINE DEP PUBLISHED PREDICTIONS

3. TIDAL INFORMATION TAKEN FROM NOAA PUBLISHED DATA



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Civil, Marine, and Structural Engineering
7 Geneva Road • Portland, ME 04103 • 917.846.9774 • info@bakerdesign.com

DATE	MARCH 2016
CONTRACT NO.	15-07
SHEET NO.	2 OF 4
REV	A

STATE OF MAINE
BARNEY J. BAKER
No. 5737
LICENSED PROFESSIONAL ENGINEER

DESIGNED BY:	DJB
DRAWN BY:	KET
CHECKED BY:	DJB
SCALE:	AS SHOWN

PIER LAYOUT 2
ACCESS ROAD PLAN AND PROFILE
PROJECT: UNIVERSITY OF NEW ENGLAND
UNE MSC WATERFRONT
RIDGEBURY, MAINE

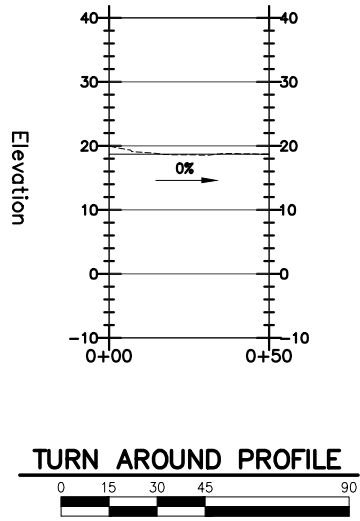
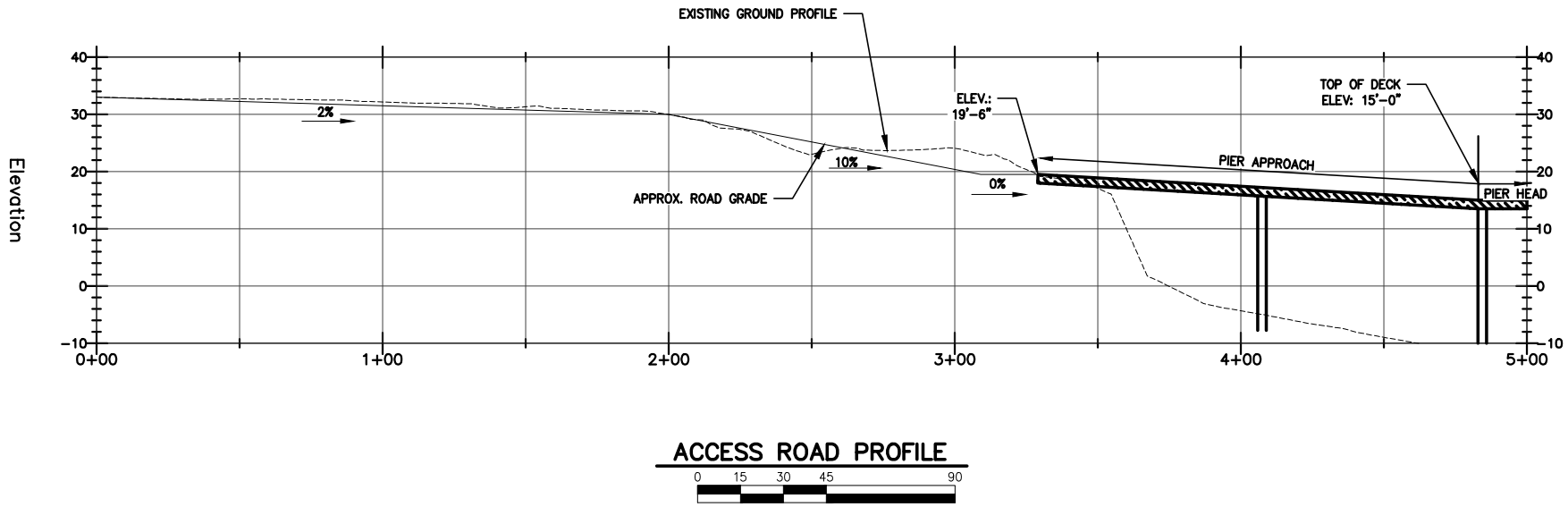
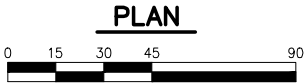
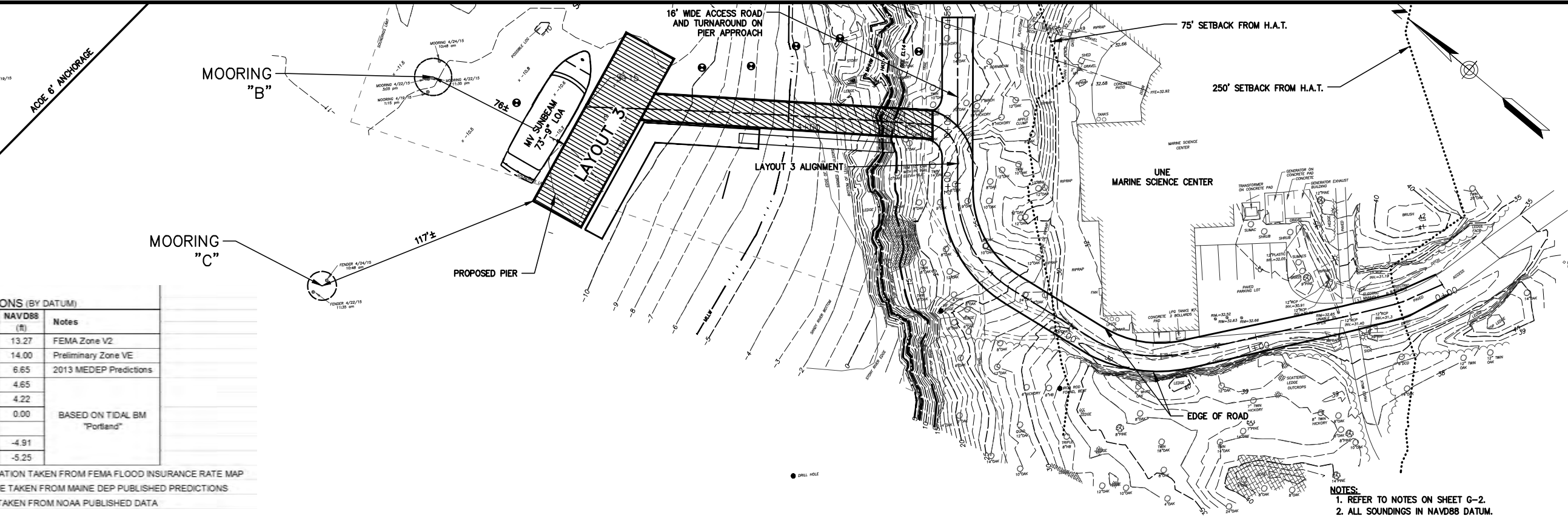
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PROJECT ELEVATIONS (BY DATUM)		
ELEVATION	NAVD88 (ft)	Notes
FEMA Base Flood	13.27	FEMA Zone V2
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MHHW	4.65	BASED ON TIDAL BM "Portland"
MHW	4.22	
NAVD88	0.00	
NGVD29		
MLW	-4.91	
MLLW	-5.25	

1. BASE FLOOD INFORMATION TAKEN FROM FEMA FLOOD INSURANCE RATE MAP

2. HIGHEST ANNUAL TIDE TAKEN FROM MAINE DEP PUBLISHED PREDICTIONS

3. TIDAL INFORMATION TAKEN FROM NOAA PUBLISHED DATA



SHEET TITLE: PIER SITE PLAN LAYOUT 3 SKETCH		PROJECT: UNIVERSITY OF NEW ENGLAND MSC WATERFRONT BIDDEFORD, MAINE	
DATE: MARCH 2016		CONTRACT NO. 15-07	
SHEET NO. 3 OF 4		REV. A	
DESIGNED BY: DJB	DRAWN BY: KET	CHECKED BY: DJB	SCALE: AS SHOWN
STATE OF MAINE BARNEY J. BAKER No. 5737 LICENSED PROFESSIONAL ENGINEER			
ALTERNATIVES: MEMO		SUBMISSION	
NO. A		DATE 3-15-16	
B/B		INT.	
BAKER DESIGN CONSULTANTS Civil, Marine, and Structural Engineering 7 Spruce Road • Freeport • Maine • 04032 • 207-846-9724 • info@bakdesignconsultants.com			

PROJECT ELEVATIONS (BY DATUM)

ELEVATION	NAVD88 (ft)	Notes
FEMA Base Flood	13.27	FEMA Zone V2
FEMA Base Flood	14.00	Preliminary Zone VE
Highest Annual Tide	6.65	2013 MEDEP Predictions
MHHW	4.65	BASED ON TIDAL BM "Portland"
MHW	4.22	
NAVD88	0.00	
MLW	-4.91	
MLLW	-5.25	

1. BASE FLOOD INFORMATION TAKEN FROM FEMA FLOOD INSURANCE RATE MAP
2. HIGHEST ANNUAL TIDE TAKEN FROM MAINE DEP PUBLISHED PREDICTIONS
3. TIDAL INFORMATION TAKEN FROM NOAA PUBLISHED DATA

NOTES:

1. REFER TO NOTES ON SHEET G-2.
2. ALL SOUNDINGS IN NAVD88 DATUM.

PLAN

Scale: 0 15 30 45 90

ELEVATION	NAVD88 (ft)	Notes
FEMA Base Flood	13.27	FEMA Zone V2
FEMA Base Flood	14.00	Preliminary Zone VE
Highest Annual Tide	6.65	2013 MEDEP Predictions
MHHW	4.65	BASED ON TIDAL BM "Portland"
MHW	4.22	
NAVD88	0.00	
NGVD29		
MLW	-4.91	
MLLW	-5.25	

1. BASE FLOOD INFORMATION TAKEN FROM FEMA FLOOD INSURANCE RATE MAP
2. HIGHEST ANNUAL TIDE TAKEN FROM MAINE DEP PUBLISHED PREDICTIONS
3. TIDAL INFORMATION TAKEN FROM NOAA PUBLISHED DATA

NOTES:

1. REFER TO NOTES ON SHEET G-2.
2. ALL SOUNDINGS IN NAVD88 DATUM.

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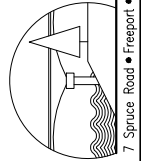
DESIGNED BY:	BJB
DRAWN BY:	KET
CHECKED BY:	BJB
SCALE:	AS SHOWN

SHEET TITLE: **PIER SITE PLAN
ALTERNATIVES SKETCHES**

PROJECT: **UNIVERSITY OF NEW ENGLAND
UNE MSC WATERFRONT**
BIDDEFORD, MAINE

DATE FEBRUARY 2015	
CONTRACT NO. 15-07	
SHEET NO. 4 OF 4	REV. A

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Attachment 9
Permits



Saco River Corridor Commission

"Communities Working Together To Protect Our Rivers"

COMMISSION ORDER IN THE MATTER OF

UNIVERSITY OF NEW ENGLAND
11 HILLS BEACH ROAD
BIDDEFORD, ME 04005
PERMIT #20-491

SACO RIVER CORRIDOR ACT
FINDINGS OF FACT AND ORDER

The Saco River Corridor Commission, created by the Maine State Legislature in the Saco River Corridor Act, 38 M.R.S.A. §951, et seq., (the Act), at a meeting held on August 28th, 2024, at the Porter Town Hall in Porter, Maine, and after a review of the application and supporting documents makes the following findings of fact:

PROJECT DESCRIPTION

1. The applicant is seeking a permit to construct a research pier with associated development, including a dock and float system, shed, and access road.

SITE LOCATION/DESCRIPTION

2. The property is described in the York County Registry of Deeds, Book 1484, Page 145.
3. Location: Lot 4 (Map 52) at 11 Hills Beach Road in Biddeford, Maine.
4. The 49.9-acre lot has approximately 3,500 feet of frontage on the Saco River
5. Most project activities are proposed within 250 feet of the high water line.
 - a. The proposed pier, dock and float system, and shed (located on the pier) extend below the mean high water line of the Saco River.
 - b. The access road begins slightly beyond the 250-foot buffer; as it turns parallel to the river, it enters the 75-foot buffer and only extends into the 25-foot buffer, where it connects to the pier at the shoreline of the Saco River. The proposed turnaround area is located outside of the 25-foot buffer.
6. The property is located in the General Development District.
7. The 100-year floodplain is limited to the immediate shoreline.

ANALYSIS

Pier Structure

8. The applicant proposes to construct a permanent vehicle-rated pier structure extending from the shore into the Saco River. The proposed pier consists of an approximately 130-foot-long approach section and an 80-foot-long pier head section oriented parallel to the flow of the river. The proposed pier consists of a concrete superstructure on 25 concrete-filled steel pipe piles (7 of which will be socketed to ledge, with the remaining 18 to be driven to ledge), with 30 untreated timber piles for vessel berthing and floating docks, and a pile-supported gangway lifting beam

which will allow the gangway to be removed from the water temporarily. All of the piles are located below the highest annual tide line.

9. The direct impact from all piles totals 84 square feet, while the indirect impact below the highest annual tide line from the pier footprint is 3,579 square feet.
10. A concrete abutment connecting the pier to the access road is located above the highest annual tide line.

Floating Dock System & Gangway

11. The proposed floating dock system consists of one 8 x 24-foot float, one 8 x 26-foot, 10-inch float, and one 12 x 30-foot gangway landing float to provide all-tide vessel access on the west side of the pier. A 6 x 20-foot floating dock (relocated from an existing upstream location on the property) is also proposed to provide a tie-up location for the City of Biddeford Fire Boat on the east side of the pier.
12. The applicant additionally proposes an 80 x 5-foot gangway on the west side of the pier to provide ADA-compliant access to the float system.
13. All floating docks are located below the mean lower low water line and are proposed to be restrained and guided by the timber piles. The proposal will allow vessels to tie up to the pier during all tide levels.
14. The floating dock system has a total indirect impact of 848 square feet, and the gangway has a total indirect impact of 357 square feet.

Pier Buildings

15. An 8 x 10-foot shed is proposed on the east side of the pier head to provide storage for small equipment and to house utility features (electric panels).

Access Drive

16. The applicant proposes to construct a 16-foot-wide paved access road with 2-foot-wide paved shoulders extending from the road near the Marine Science Center around the east side of the Marine Science Center to the proposed pier, as well as associated grading, drainage, and stormwater management features.
17. A turnaround is proposed adjacent to the pier to allow vehicles, including fire trucks, to redirect and exit via the access road.
18. The applicant reports that vehicles will use the existing parking spaces adjacent to the Marine Science Center and that no parking is proposed adjacent to the pier.
19. The applicant states that the proposed access road will provide construction access for the project and allow more staging to take place on land, minimizing impacts to the water.
20. They report that upland work includes stormwater management features that have been designed to meet Maine DEP Chapter 500 standards.

Summary of Statement of Necessity

21. The proposed pier will provide students and researchers year-round access to the river and ocean, including a "living laboratory" located on Ram Island in Saco Bay, which is currently inaccessible during the winter and spring when the seasonal dock and float system aren't in use. The applicant states that the pier will facilitate research activities and scientific and practical exchanges with local, regional, and national marine researchers and industry partners. They note

that the marine research afforded by the proposed year-round access will allow UNE to gather data to guide Maine's response to climate change and inform data-driven decisions impacting aquaculture, fisheries, marine law and policy, and related fields.

General Background

22. The applicant reports that the area where the pier will be located is ledge, with adjacent areas consisting of undeveloped sparsely wooded areas and coastal wetlands.
23. The applicant addressed the §959-A.(A-K) standards in the project description. Where applicable, the staff has added additional details gathered from site plans. In summary:
 - a. Degradation of Air and Water Quality – no anticipated impacts.
 - i. Vegetation swales and two bioretention filtration ponding areas are proposed along the access road as part of the stormwater management plans.
 - b. Harmful Alteration of Wetlands – no anticipated significant impacts (84 square feet of direct impact as noted above in Item 9.)
 - c. Increase in Erosion and Sedimentation –
 - i. The soils in the project area are not highly erodible, and the pier is located over exposed ledge and ledge with overburden.
 - ii. All construction and site alterations will be done in accordance with Maine Erosion and Sedimentation Control Best Management Practices, and the site will be permanently stabilized following completion of construction.
 - iii. Site plans note that the siltation boom will be installed for the duration of the construction process.
 - d. Danger of Increased Flood Damage –
 - i. The structure has been designed to withstand flood impacts, and its elevation takes into account rising sea levels.
 - e. Obstruction of Flood Flow – no significant impacts
 - f. Damage to Fish and Wildlife Habitat – no significant impacts
 - g. Despoliation of Scenic Rural, and Open Space Character of the Corridor –
 - i. The project's limit of disturbance encompasses 0.92 acres, with vegetation removal taking place in that envelope to provide a cleared area for the access drive and stormwater facilities.
 - ii. 44 trees, including stumps, are proposed for removal within the project area.
 - iii. 10 to 25 feet of clearing is proposed on average along either side of the access road. Clearing in several areas is greater to accommodate stormwater structures.
 - iv. The remaining open space will be maintained, natural surroundings will be preserved, and scenic views from neighboring properties will not be obstructed.
 - v. Given the water-dependent nature of the project, it will be visible from the river.
 - h. Overcrowding – no significant impacts
 - i. Excessive noise – no significant impacts
 - j. Obstruction to Navigation –
 - i. The structures will be no closer than 208 feet from the Army Corps of Engineers anchorage area.
 - ii. Site plans note that construction activities will not impact the federal navigation channel at any time.

- k. Interference with Educational, Scenic, Scientific, Historic, or Archaeological Values of the Areas Designated and Approved for Inclusion within the Resource Protection District
 - i. The project is not located in the Resource Protection District, and the applicant states that it will enhance the area's educational value.
- 24. At the August 14th, 2024, Rules Committee meeting, the Committee expressed concerns about the diminution of the vegetated buffer as a result of the proposed access road construction. They noted that the removal of vegetation in that area could increase the visual impact of the existing Marine Science Center and of the access road itself. The Committee suggested that, if possible (depending on site conditions), the applicant should propose additional plantings between the access road and the shoreline.
- 25. In response to the Rules Committee comments:
 - a. The applicant's agent submitted an updated vegetation plan, which reduced the number of trees proposed for removal by five trees, most of which were in the 25-foot buffer. The updated vegetation plan also clarified the number of trees 8 inches in diameter and greater within the 25-foot buffer that would remain post-construction.
 - b. The applicant's agent stated that it was not possible to reduce the width of the access drive to less than the currently proposed 20 feet due to the National Fire Protection Association codes.
 - c. The applicant's agent submitted the Stormwater Inspection and Maintenance plans for the project, which will include routine inspections of the systems post-construction to ensure proper function.
- 26. Staff notes from the August 23rd, 2024, site visit state:
 - a. The area has many smaller shrubby vegetation. Numerous large trees are also present, and they are proposed for removal.
 - b. A cleared opening would be created between the River and the Marine Science Center.
 - c. The proposed clearing (for the road) extends no closer than 25 feet from the mean high water line. However, little vegetation would remain in some areas.
- 27. At the August 28th, 2024, Commission meeting:
 - a. Public comments were heard and considered for impacts on the Commission's standards.
 - b. The applicant presented an updated revegetation plan using native plantings for a 1:1 replacement ratio.
 - c. The Commission questioned the status of other agencies' review of the project.
 - i. The applicant's agent stated that the US Fish and Wildlife Service had advised that the work window be limited to November to April.
 - d. The applicant's representatives estimated that the finished pier, including railings, would be approximately 26 feet above the water at low tide.
 - e. The applicant's agent clarified that the previously proposed classroom on the pier head had been removed from the proposal.

RELEVANT STANDARDS OF THE ACT

§957-A. Resource Protection District | §957-C. General Development District | §959-A. Requirements for granting permits | §962. General Performance Standards | Chapter 102: Standard Conditions of Approval | Chapter 103: Standards to Address the Environmental Factors

UNIVERSITY OF NEW ENGLAND
PERMIT #20-491
PAGE 5

BASED ON THE ABOVE FINDINGS, as determined at a duly noticed Commission Meeting, the Commission draws the following conclusions:

1. The applicant has shown the proposed design to be within the meaning of the Act.
2. The proposed use will not unreasonably involve any of the factors enumerated in §959-A(1)(A)-(K) of the Act.

THEREFORE, the Commission APPROVES the application of the University of New England, #20-491, for a permit to construct a research pier with associated development on the property owned by them, provided the activity is carried out according to the application and UPON THE FOLLOWING CONDITIONS:

1. Standard Conditions of Approval (copy attached).
2. All in-water portions of the existing research pier shall be removed.

This decision, including any of its conditions, may be appealed pursuant to 38 M.R.S. §968, except that no appeal pursuant to 38 M.R.S. §968 shall be taken from a decision of the Commission which decision was made without a public hearing until a request for reconsideration has been submitted to the Commission, and the Commission has made a final determination in the matter. Any person wishing to file an appeal or to request reconsideration must do so within 30 days of the Commission's written decision and order. Requests for reconsideration must be submitted in accordance with applicable Commission regulations. To be valid, all permits must meet all federal, state, and local ordinances and regulations.

DONE AND DATED AT CORNISH, MAINE, THIS 13TH DAY OF SEPTEMBER 2024.

SACO RIVER CORRIDOR COMMISSION

BY: Ben Pinault
Benjamin Pinault, Chairperson

9/13/24
Dated



Registry of Deeds Notarization Form

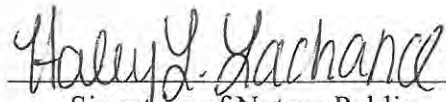
Saco River Corridor Commission Permit #20-491 University of New England

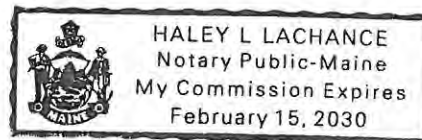
Acknowledgment

State of Maine

County of York

This record was acknowledged before me on this 13th day of September 2024 by Benjamin Pinault.


Signature of Notary Public



Haley Lachance

Notary Public, State of Maine

My commission expires: February 15, 2030



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

UNIVERSITY OF NEW ENGLAND	) NATURAL RESOURCES PROTECTION ACT
Biddeford, York County	) COASTAL WETLAND ALTERATION
COMMERCIAL PIER SYSTEM	) WATER QUALITY CERTIFICATION
L-18314-4P-BE-N (approval)	) FINDINGS OF FACT AND ORDER

Pursuant to the provisions of 38 M.R.S. §§ 480-A–480-JJ, Section 401 of the Clean Water Act (33 U.S.C. § 1341), and Chapters 310, 315, and 335 of Department rules, the Department of Environmental Protection (Department) has considered the application of UNIVERSITY OF NEW ENGLAND (applicant) with the supportive data, agency review comments, public comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. PROJECT DESCRIPTION:

A. History of Project: In Department Order #L-18314-22-A-N, dated April 12, 1993, the Department granted after-the-fact approval to the University of New England for an expansion of the main campus. In Department Order #L-18314-22/31-J-M, dated December 19, 1996, the Department approved the construction of athletic facilities, a service road, a pier system, and seasonal floating dock on the Saco River. In Department Order #L-18314-22-L-A, dated May 31, 2000, the Department approved the construction of the Marine Science and Research Center and included a modification to the pier and floating dock. In Department Order #L-18314-22-AY-M/L-18314-4P-AZ-M, dated July 13, 2017, the Department approved the addition of two six-foot wide by 16-foot long seasonal floats attached seaward and perpendicular to the existing permanent floats oriented parallel to shore. A second, seasonal pier system was installed on Jordan Point in 2016. In Department Order #L-18314-22-BC-M/4P-BD-N, dated December 7, 2023, the Department approved the replacement of the second seasonal pier with a permanent pier system consisting of a six-foot wide by 63-foot long fixed pier, an existing four-foot wide by 48-foot long seasonal aluminum gangway, and an existing 10-foot long by 60-foot wide seasonal float system. The completed project resulted in 16 square feet of direct impacts and 1732 square feet of indirect impacts to the coastal wetland.

B. Summary: The applicant proposes to construct a new commercial size pier to provide all-tide access for the Marine Science Center and dock space for the City of Biddeford fireboat used for public safety. The proposed permanent pier structure will be built in three sections: section one consist of a 23-foot wide by 30-foot deck with a security gate, that connects to the second 14-foot wide by 100-foot long pier structure that seaward into the river, and the third pier section a 23-foot wide an 80-foot long pier head that will be oriented parallel to shore and a five-foot wide by 80-foot long permanent gangway perpendicular to the shore. The pier head and gangway will be flanked by four permanent floats running end to end parallel to shore; an 8-foot wide by

24-foot long float an 8-foot wide by 27-foot long float, a 12-foot wide by 30-foot long gangway landing float to provide all-tide access on the west side of the pier and a six-foot wide by 20-foot float to provide a tie-up location for the City of Biddeford's Fire Boat on the east side of the pier, both perpendicular to the shore. The pier system will be supported by 25 concrete-filled steel pipe piles and a concrete abutment which connects the pier to the proposed access road. The project as proposed will result in 84 square feet of direct impacts to the coastal wetland due to pilings, and 3,579 square feet of indirect impacts to the coastal wetland due to shading from the pier, ramp, and floats. The large size of the pier and gangway will accommodate an outdoor covered classroom, ADA-compliant access and fireboat tiedown float, and vehicular access to the pier for transportation of research and emergency equipment. Between this proposed pier and the currently existing pier system, cumulative direct impacts to the coastal wetland will total 100 square feet, and cumulative indirect impacts to the coastal wetland will total 5,311 square feet.

In addition to the proposed pier system, an upland access road connecting the existing road to the proposed pier will be constructed, including associated site grading, drainage, and stormwater management features. Work on the access road will result in approximately 475 square feet of impacts adjacent to the coastal wetland. Upland work proposed will not exceed 40,000 square feet of additional disturbed area and thus is exempt from permitting pursuant to M.R.S 38 §488(27)(A).

The proposed project is shown on a set of plans, the first of which is titled "University of New England Marine Science Center Pier", completed by GEI Consultants, Inc. and dated April 22, 2024. The project site is located at 11 Hills Beach Road in the Town of Biddeford.

C. Current Use of the Site: The project site is located on an approximately 50-acre parcel of land that is developed with various university buildings and a permanent pier system. The parcel is identified as Lot 4 on Map 52 of the City of Biddeford's tax maps.

D. Public Interest: The Department received emails from one individual between September 4 and December 11, 2024. The interested person expressed concerns related to the Town's project review process. Additionally, the interested person stated that the applicant did not consider alternative locations for the pier that would be less impactful to the resource. After reviewing the application, the Department determined that the applicant provided a sufficient alternative analysis which is further discussed in Section 4.

The interested person submitted a public hearing request on July 1, 2024. The request was reviewed by the Department and a response sent on August 20, 2024, citing that the application did not meet the Chapter 2 criteria for the Board to hold a hearing.

2. EXISTING SCENIC, AESTHETIC, RECREATIONAL OR NAVIGATIONAL USES:

The Natural Resources Protection Act (NRPA), in 38 M.R.S. § 480-D(1), requires the applicant to demonstrate that the proposed project will not unreasonably interfere with existing scenic, aesthetic, recreational and navigational uses.

In accordance with Chapter 315, *Assessing and Mitigating Impacts to Scenic and Aesthetic Uses* (06-096 C.M.R. ch. 315, effective June 29, 2003), the applicant submitted a copy of the Department's Visual Evaluation Field Survey Checklist as Appendix A to the application along with a description of the property and the proposed project. The applicant also submitted several photographs of the proposed project site and surroundings including an aerial photograph of the project site.

The proposed project is located in the Saco River, which is a scenic resource visited by the general public, in part, for the use, observation, enjoyment and appreciation of its natural and cultural visual qualities. Given the piers on abutting properties and the existing pier on the same parcel, the proposed pier will not substantially alter the visual aesthetic of the riverbank from the river. The proposed pier system is of similar size, scale, and design as nearby pier systems, including a commercial marina with slips located directly across the river and visible from the project site.

The Department staff utilized the Department's Visual Impact Assessment Matrix in its evaluation of the proposed project and the Matrix showed an acceptable potential visual impact rating for the proposed project. Based on the information submitted in the application and the visual impact rating, the Department determined that the location and scale of the proposed activity is compatible with the existing visual quality and landscape characteristics found within the viewshed of the scenic resource in the project area.

The Department of Marine Resources (DMR) reviewed the project and stated that the proposed project should not cause any significant adverse impact to navigation or recreation based on the nature of the project and its location.

The Department finds that the proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses of the river.

3. SOIL EROSION:

The NRPA, in 38 M.R.S. § 480-D(2), requires the applicant to demonstrate that the proposed project will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

Construction will take place from the upland and by barge. Access by land will occur on existing roads, and the proposed new road will be started early in construction to provide an additional route for construction access, material deliveries, and staging. When the site is being accessed by barge, the contractor will avoid the nearby federal navigation

channel and adjacent waterfront facilities during construction activity. Any work within the resource will be conducted in compliance with the standard November 8th-April 9th in-water work window discussed in Finding 4. A certified erosion control contractor will be on site.

The Department finds that the activity will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

4. HABITAT CONSIDERATIONS:

The NRPA, in 38 M.R.S. § 480-D(3), requires the applicant to demonstrate that the proposed project will not unreasonably harm significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine or marine fisheries or other aquatic life.

The project site consists of ledge in the upper intertidal, grading to rockweed-covered rocky shore then to mixed coarse and fine sediments. Eelgrass resources were documented in the subtidal near the project area prior to 1997 but have not been mapped in recent years.

In its review, the Department of Marine Resources (DMR) stated that the project as proposed would have direct impacts to marine resources and habitat in the footprint of the pier, and recommended that if piles are driven outside of the winter work window of November 8th-April 9th. The mouth of the Saco River is utilized by diadromous fish species including Atlantic Salmon, alewife, and sea run brook trout. Atlantic and short nose sturgeon may be present year round in this area.. DMR further recommended that the applicant use a vibratory hammer or a bubble screen for noise mitigation.

The applicant concurred that work will only occur during the winter work window.

According to the Department's Geographic Information System (GIS) database there are no mapped Essential or Significant Wildlife Habitats located at the site. The Maine Department of Inland Fisheries and Wildlife (MDIFW) reviewed the proposed project and stated that the project is located adjacent to but outside of Tidal Waterfowl and Wading Bird Habitat (TWWH), a designated Significant Wildlife Habitat. MDIFW stated that minimal impacts to piping plover and Blanding's turtle habitat are anticipated and provided general recommendations including minimizing vegetation removal and soil disturbance, and that time spent in the water should be minimized to the greatest extent practicable.

The applicant responded to these comments, and agreed to minimize vegetation removal, soil disturbance, and time spent in the water.

The Department finds that the activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic

or adjacent upland habitat, travel corridor, freshwater, estuarine or marine fisheries or other aquatic life provided in-water work is only conducted between November 8th-April 9th of any given year

5. WATER QUALITY CONSIDERATIONS:

The applicant proposes to use lumber treated with chromated copper arsenate (CCA) to construct the pier. To protect water quality, all CCA-treated lumber must be cured on dry land in a manner that exposes all surfaces to the air for 21 days prior to the start of construction.

Provided that CCA-treated lumber is cured as described above, the Department finds that the proposed project will not violate any state water quality law, including those governing the classification of the State's waters.

6. WETLANDS AND WATERBODIES PROTECTION RULES:

The proposed project will result in 84 square feet of direct impacts and 4,784 square feet of indirect impacts to the coastal wetland from the new pier system. The overall cumulative impacts from the existing pier and proposed project will be 100 square feet of direct impacts to the coastal resource and 5,311 square feet of indirect impacts to the coastal resource. Coastal wetlands are wetlands of special significance.

The *Wetlands and Waterbodies Protection Rules*, 06-096 C.M.R. ch. 310 (last amended November 11, 2018), interpret and elaborate on the Natural Resources Protection Act (NRPA) criteria for obtaining a permit. The rules guide the Department in its determination of whether a project's impacts would be unreasonable. A proposed project would generally be found to be unreasonable if it would cause a loss in wetland area, functions and values and there is a practicable alternative to the project that would be less damaging to the environment. Each application for a NRPA permit that involves a coastal wetland alteration must provide an analysis of alternatives in order to demonstrate that a practicable alternative does not exist.

A. Avoidance. An applicant must submit an analysis of whether there is a practicable alternative to the project that would be less damaging to the environment and this analysis is considered by the Department in its assessment of the reasonableness of any impacts. Additionally, for activities proposed in, on, or over wetlands of special significance the activity must be among the types listed in Chapter 310, § 5(A) or a practicable alternative less damaging to the environment is considered to exist and the impact is unreasonable. A pier is a water dependent use and its proposed construction is among the activities specifically provided for in Chapter 310, § 5(A)(1)(c). Additionally, any project related to health and safety is among the activities specifically provided for in Chapter 310, § 5(A)(1)(a).

The applicant submitted an alternatives analysis for the proposed project completed by Site Design Associates and dated June 17, 2024, with a last revision date of December

10, 2024. The purpose of the proposed project is to provide all-tide, year-round access to the resource for research and education operations associated with the Arthur P. Girard Marine Science Center (GMSC) at the University of New England. A secondary project purpose is to provide docking space for the City of Biddeford's fireboat for emergency response and safety. The applicant plans to launch a variety of research vessels from the proposed pier, including a 31-foot long research vessel and potentially larger ones in the future. The City's fireboat is 19 feet long. The applicant considered not building the new pier system and instead utilizing the existing pier on the parcel; however, this existing pier is seasonal, including the floats that are hauled out of the water each winter limiting year-round access that is required to support the a Universities' marine science programs. Additionally, the existing pier does not provide a docking area for the City of Biddeford's fireboat. Therefore, this alternative was rejected. The applicant considered a seasonal gangway and l floats; however, research and access to the water is required for emergency response from the City and for year-round, all-tide access to the resource for educational purposes. Finally, the applicant considered using public facilities including marinas, boat launches and moorings to moor and launch research vessels; however, access to the water can be time-sensitive due to course schedules or the need to access the water during certain tide cycles. With shuttling of staff, students, and equipment, and the lack of reliable parking, this alternative was rejected. The private marinas in the area have long waitlists for private slips and do not have the capacity to handle the frequent use and group size that the University requires to meet their education and research mission

B. Minimal Alteration. In support of an application and to address the analysis of the reasonableness of any impacts of a proposed project, an applicant must demonstrate that the amount of coastal wetland to be altered will be kept to the minimum amount necessary for meeting the overall purpose of the project. During the planning phase of this project, the applicant selected the pier location with the shortest length necessary to reach adequate water depths for all -tide access. In addition, the dimensions of the pier head were reduced from 28-feet wide by 100-feet long to the currently proposed 23-feet wide by 80-feet long to reduce impacts to the coastal resource.

C. Compensation. In accordance with Chapter 310, § 5(C)(6)(b), compensation may be required to achieve the goal of no net loss of coastal wetland functions and values. This project will not result in over 500 square feet of fill in the resource, which is the threshold over which compensation is generally required. Further, the proposed project will not have an adverse impact on marine resources or wildlife habitat as determined by DMR and MDIFW. For these reasons, the Department determined that compensation is not required.

The Department finds that the applicant has avoided and minimized coastal wetland impacts to the greatest extent practicable, and that the proposed project represents the least environmentally damaging alternative that meets the overall purpose of the project.

7. OTHER CONSIDERATIONS:

The Department finds, based on the design, proposed construction methods, and location, the proposed project will not inhibit the natural transfer of soil from the terrestrial to the marine environment, will not interfere with the natural flow of any surface or subsurface waters, and will not cause or increase flooding. The proposed project is not located in a coastal sand dune system, is not a crossing of an outstanding river segment, and does not involve dredge spoils disposal or the transport of dredge spoils by water.

BASED on the above findings of fact, and subject to the conditions listed below, the Department makes the following conclusions pursuant to 38 M.R.S. §§ 480-A–480-JJ and Section 401 of the Clean Water Act (33 U.S.C. § 1341):

- A. The proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational, or navigational uses.
- B. The proposed activity will not cause unreasonable erosion of soil or sediment.
- C. The proposed activity will not unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.
- D. The proposed activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine, or marine fisheries or other aquatic life provided winter work windows are utilized as described in Finding 3.
- E. The proposed activity will not unreasonably interfere with the natural flow of any surface or subsurface waters.
- F. The proposed activity will not violate any state water quality law including those governing the classifications of the State's waters provided that CCA-treated lumber is cured as described in Finding 5.
- G. The proposed activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties.
- H. The proposed activity is not on or adjacent to a sand dune.
- I. The proposed activity is not on an outstanding river segment as noted in 38 M.R.S. § 480-P.

THEREFORE, the Department APPROVES the above noted application of UNIVERSITY OF NEW ENGLAND to construct a research pier as described in Finding 1, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations:

1. Standard Conditions of Approval, a copy attached.

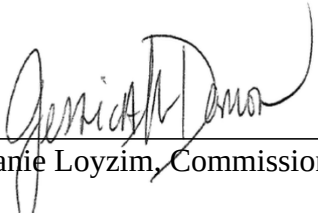
2. The applicant shall take all necessary measures to ensure that their activities or those of their agents do not result in measurable erosion of soil on the site during the construction of the project covered by this approval.
3. Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.
4. Construction is only allowed from November 8th-April 9th of any given year.
5. All CCA-treated lumber shall be cured on dry land in a manner that exposes all surfaces to the air for 21 days prior to the start of construction.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED IN AUGUSTA, MAINE, THIS 11TH DAY OF APRIL, 2025.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____

For:  Melanie Loyzin, Commissioner

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

PCS/L18314BEN/ATS#92653



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW ENGLAND DISTRICT
NEW ENGLAND DISTRICT OFFICE
696 VIRGINIA ROAD
CONCORD MASSACHUSETTS 01742-2751

March 28, 2025

Regulatory Division

Andrew Phillippe
University of New England
11 Hills Beach Road
Biddeford, Maine 04005
Via Email: aphilippe@une.edu

Dear Mr. Phillippe:

This letter is in response to the application you submitted to the U.S. Army Corps of Engineers (USACE), New England District on June 21, 2024 for a Department of the Army general permit verification. We have assigned this project file number NAE-2024-01628, which you should reference in all correspondence with this office.

A review of the information provided indicates the proposed work includes the construction of a permanent pier consisting of a 28-foot long by 24-foot-wide landing; a 90-foot long by 14-foot-wide approach pier; and an 80-foot long by 24-foot-long pier. Additionally, your project includes a floating dock system consisting of an 80-foot long by 5-foot-wide gangway; a 30-foot long by 12-foot wide float; a 24-foot long by 8-foot wide float; and a 27-foot long by 8-foot wide float, and a 20-foot long by 6-foot wide float. The project is located in the Saco River; at 11 Hills Beach Road, at Latitude 43.458630° and Longitude -70.389050°; in Biddeford, York County, Maine. The work is shown on the enclosed plans titled "University of New England Marine Science Center Pier", on 38 sheets, and dated 8/14/2024.

Based on the information you have provided; we verify that the activity is authorized under General Permit 2. *Structures, Floats, and Lifts* of the October 14, 2020, federal permit known as the Maine General Permits (GPs). If the extent of the project area and/or nature of the authorized impacts to waters are modified, a revised application must be submitted to this office for written approval before work is initiated. You can find a copy of these permits at:

<https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/>

Any deviation from the terms and conditions of the permit, or your submitted plans, may subject the permittee to the enforcement provisions of our regulations. Therefore, in the event changes to this project are contemplated, it is recommended you coordinate with this office prior to proceeding with the work. This office must approve any changes before you undertake them. You must perform this work in compliance

with the terms and conditions of the GPs listed above, and also in compliance with the following special conditions:

1. The permittee shall complete and return the enclosed Work-Start Notification Form to this office at least two weeks prior to the anticipated construction start date.
2. The permittee shall complete and return the enclosed Completion Certification Form to this office at least one month following the completion of the authorized work.
3. You must maintain the activity herein in good condition and in conformance with the terms and conditions of this authorization. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with a general condition of these GPs. Should you wish to cease to maintain the authorized activities, or should you desire to abandon it without a good faith transfer, you must obtain a modification of this authorization from this office, which may require restoration of the area.
4. All construction shall be completed in accordance with the limits of construction and construction sequences detailed on the enclosed plan drawings, titled "University of New England Marine Science Center Pier," on a total of 38 sheets, and dated 8/14/2024. If you change the plans or construction methods for work within or adjacent to the Saco River, please contact us immediately to discuss modification of this authorization. The USACE must approve any changes before you undertake them.
5. A "soft start" is required to allow animals an opportunity to leave the project vicinity before sound pressure levels increase. In addition to using a soft start at the beginning of the workday for pile driving, one must also be used at any time following cessation of pile driving for a period of 30 minutes or longer.
 - a) For impact pile driving: Pile driving will commence with an initial set of three strikes by the hammer at 40% energy, followed by a one-minute wait period, then two subsequent 3-strike sets at 40% energy, with one-minute waiting periods, before initiating continuous impact driving.
 - b) For vibratory pile installation: Pile driving will be initiated for 15 seconds at reduced energy followed by a one-minute waiting period. This sequence of 15 seconds of reduced energy driving, one-minute waiting period will be repeated two additional times, followed immediately by pile-driving at full rate and energy.
6. The work authorized herein shall not be conducted during the time of year (TOY) restriction of April 10 to November 7 in order to minimize adverse impacts to the Atlantic sturgeon, shortnose sturgeon.

This verification is valid until October 14, 2025. You must commence or be under contract to commence the work authorized herein by October 14, 2025 and complete

the work by October 14, 2026. If not, you must contact this office to determine the need for further authorization before beginning or continuing the activity. It is recommended that you contact this office before this authorization expires to discuss if permit reissuance is a possibility.

This GP verification and any associated authorizations does not preclude the necessity to obtain any other federal, state, or local permits, licenses, and/or certifications, which may be required.

If you have any questions related to this verification or have issues accessing documents referenced in this letter, please contact Jana Jacobson, Project Manager at (207) 233-2117, or by email at Jana.L.Jacobson@usace.army.mil. This agency continually strives to improve our customer service. To better serve you, please complete the Customer Service Survey located at: <https://regulatory.ops.usace.army.mil/customer-service-survey/>.

Sincerely,

Jon T. Coleman
Team Leader
Technical Regional Execution Center
North Atlantic Division

Enclosures

Cc (w/enclosures):
Tom Saucier, Site Design Associates (via tsaucier@sitedesignassociates.biz)

Attachment 10
MHPC Clearance



JANET T. MILLS
GOVERNOR

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

KIRK F. MOHNEY
DIRECTOR

May 15, 2023

Mr. Tom Saucier, P.E.
Site Design Associates
23 Whitney Way
Topsham, Maine 04086

Project: MHPC# 0500-23 University of New England; 11 Hills Beach Road
Permanent Pier and Float System
Town: Biddeford, ME

Dear Mr. Saucier:

In response to your recent request, I have reviewed the information received April 13, 2023 to initiate consultation on the above referenced projects in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

Dr. Arthur Spiess of my staff has carefully reviewed our February 7, 2000 letter concerning areas of archaeological site significance on the UNE campus, and the Phase III report that formed the background of these recommendations. We note that some of the areas of the proposed access road and the head of the pier fall outside of the areas found not to be contributing to the overall significance of the archaeological site(s) on the UNE campus (specifically areas 99.1, 99.2 and 99.8. Moreover, the intensity of previous archaeological testing along the now-proposed access road (especially within area 99.1).

Based on the information submitted, I have concluded that the proposed work will have **no adverse effect** upon historic properties.

However, our finding is conditional upon the following:

- 1) We recommend that one or more archaeologists monitor the initial clearing of soil from the route of the access road and be allowed enough time to recover information from any subsoil features that are present. It would be most important to monitor the access road from the curve in the road to be located just east of the north wall of the marine science center to the head of the proposed pier.

Please contact Megan M. Rideout at (207) 287-2992 or megan.m.rideout@maine.gov if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohney
State Historic Preservation Officer

Attachment 11
Notice to Proceed
With External Reviews



City of Biddeford, Maine

The Office of
City Manager

James A. Bennett

Email: james.bennett@biddefordmaine.org

August 19, 2024

University of New England
11 Hills Beach Road
Biddeford, Maine 04005

Attention: Mr. Alan Thibeault, VP of University Operations

RE: Notice to Proceed with External Reviews

Dear Mr. Thibeault,

On August 9, 2024, I received written clarification from Mr. Wayne Duffett, PE of TECAssociates that UNE's proposed Research Pier and Float System has complied with City Code 74-35 subsections (c) 1-10. Those sections are as follows:

- (1) A formal boundary survey that has been documented at the Registry of Deeds.
- (2) A copy of the boundary survey showing the littoral zone, established by extending property lines seaward.
- (3) A location map from a portion of a USGS topographic map or coastal chart.
- (4) Distance to navigable channels or any federal navigation project.
- (5) Mean high- and low-water boundary.
- (6) A plan view on the drawing(s) that shows the location and dimensions of the applicant's structure(s) in relation to the applicant's property lines.
- (7) A typical cross section/side view of the applicant's structures on the drawing(s).
- (8) Evidence that owners of abutting properties have been notified of the applicant's intended project.
- (9) Evidence that the 1) Maine Historic Preservation Commission, 2) Aroostook Band of Micmac, 3) Passamaquoddy Tribe of Indians: Pleasant Point; Indian Township, 4) Houlton Band of Maliseet Indians, and 5) Penobscot Indian Nation have been notified of the applicant's intended project.
- (10) Completed applications to the Army Corps of Engineers, Department of Environmental Protection and Biddeford Code Enforcement. A regulatory permit from the Saco River Corridor Commission may also be required in some instances.

Based on this information and in harmony with my earlier communications, please consider this as formal notification from the City of Biddeford that the application has been found in compliance with

205 Main Street, Biddeford, ME 04005 P: 207.284.9313 F: 207.571.0678 www.biddefordmaine.org

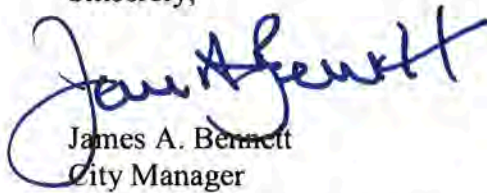
*The City of Biddeford is an equal opportunity provider. To file a complaint, write to
Diana Depaolo, Human Resource Director, 205 Main Street Biddeford, ME 04005, or call (207) 286-0593.*

the above mention City Code. That finding allows the application to proceed in the next steps of the review process; namely formal review by all agencies except those that are part of the City of Biddeford. After each and all of those processes are complete, the City will move forward with the final review(s) by agents and Committees of the City.

While I don't believe it is necessary, let me empathically state that this communication does not in any form, imply that the City has in any way made a determination that the location submitted has been approved. Said approval will considered after completion of all process and in compliance with applicable laws, regulations. This includes all local ordinances.

Please feel free to reach out to me if you have any questions

Sincerely,

A handwritten signature in blue ink, appearing to read "James A. Bennett". The signature is stylized with a large initial "J" and a long horizontal stroke.

James A. Bennett
City Manager

CC: Biddeford Mayor and City Council

Attachment 12
Photo of shed



Attachment 13
Light Fixture Information



URBAN SERIES

URBAN LUMINAIRE

FEATURES

- Decorative transitional style lighting fixture series is suitable for walkway lighting and wall mounting
- Two unique shade and style options
- LED turtle-friendly option available
- Integral Surge and Thermal Protection



*3000K and warmer CCTs only

CONTROL TECHNOLOGY



SPECIFICATIONS

CONSTRUCTION

- The drivers shall be located in the top cast housing and shall be accessible without tools by hinging the lower shade assembly. The driver and all electrical components shall be on a tray
- The lower shade shall be made from a one-piece aluminum spinning
- The housing is designed for LED thermal management without the use of metallic screens, cages, or fans. The top casting shall be able to be pendent mounted in place with a stainless steel safety pin and then permanently held in place with four stainless steel bolts

ELECTRICAL

- 100V through 277V, 50 Hz to 60 Hz (UNV), or 347V or 480V input
- Power factor is ≥ 0.90 at full load
- Dimming drivers are standard with connections for external dimming equipment available upon request
- Component-to-component wiring within the luminaire may carry no more than 80% of rated load and is listed by UL for use at 600VAC at 50°C or higher
- Plug disconnects are listed 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
- Button photocell available
- Ambient operating temperature -40°C to 40°C

ELECTRICAL (CONTINUED)

- Surge protection - 20KA
- 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. A luminaire equipped with the device may be reliably operated in any ambient temperature up to 55°C (131°F). 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

- Available with Energeni for optional set dimming, timed dimming with simple delay, or timed dimming based on time of night visit

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 605.2 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



Shown with arm

CERTIFICATIONS

- NRTL Certified, UL8750, UL 1598 and CSA22.2#250. 13-14 for wet locations
- IDA approved
- This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available.

WARRANTY

- 5 year warranty

KEY DATA	
Lumen Range	3,300–13,000
Wattage Range	27.8–137.5
Efficacy Range (LPW)	61–87



URBAN SERIES

URBAN LUMINAIRE

DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

ORDERING GUIDE

Example: URB-CAP-21-36L-120-5K7-UNV-4-NRNW-BLT

CATALOG #

Model	Lens Option	Engine-Watts	CCT/CRI ¹	Voltage	Optics ²	Electrical Options
URB Urban	CAP-21 21" Capitol	18L-25 25W, LED array	3K7 3000K, 70 CRI	UNV 120-277V	FR Type I	PCU Button Photocell, Universal
	MRDS-21 21" Miramar deep shade	18L-39 39W, LED array	4K7 4000K, 70 CRI	347 347V	2 Type II	
	MAR-21 21" Maritas	18L-50 50W, LED array	5K7 5000K, 70 CRI	480 480V	3 Type III	
	CAP-26 26" Capitol	18L-70 70W, LED array	3K8 3000K, 80 CRI		4F Type IV forward	
	MRSS-26 26" Miramar shallow shade	18L-90 90W, LED array	4K8 4000K, 80 CRI		4W Type IV wide	
	MRDS-26 26" Miramar deep shade	18L-110 110W, LED array	5K8 5000K, 80 CRI		5QN Type V square narrow	
	MAR-26 26" Maritas	36L-120 120W, LED array	AM Monochromatic Amber, 595nm		5QW Type V square wide	
		36L-135 135W, LED array			5RW Type V rectangular wide	
		36L-155 155W, LED array			5W Type V round wide	
		36L-175 175W, LED array			BC Backshield (available for FR, 2, 3, 4, 4W Optics)	

Control Options	Mounting Style	Style	Finish	Options
GENI-XX Energeni ³	PM Pendant mount	NRNW No rings	BLT Black Matte Textured	BC Backlight Control
XX - Please specify	SM Side mount	3RNW Three rings	BLS Black Gloss Smooth	
	YM3 Yoke mount, 3" OD		DBT Dark Bronze Matte Textured	
	YM4 Yoke mount, 4" OD		DBS Dark Bronze Gloss Smooth	
	YM5 Yoke mount, 5" OD		GTT Graphite Matte Textured	
			LGS Light Grey Gloss Smooth	
			PSS Platinum Silver Smooth	
			WHT White Matte Textured	
			WHS White Gloss Smooth	
			VGT Verde Green Textured	
			Color Option	
			CC Custom Color	

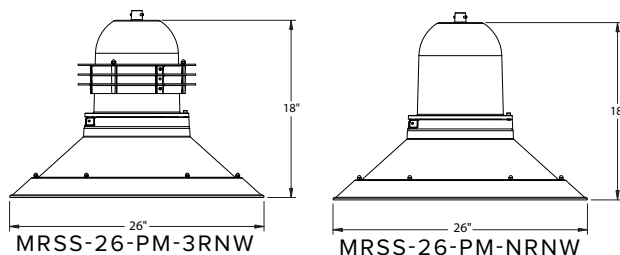
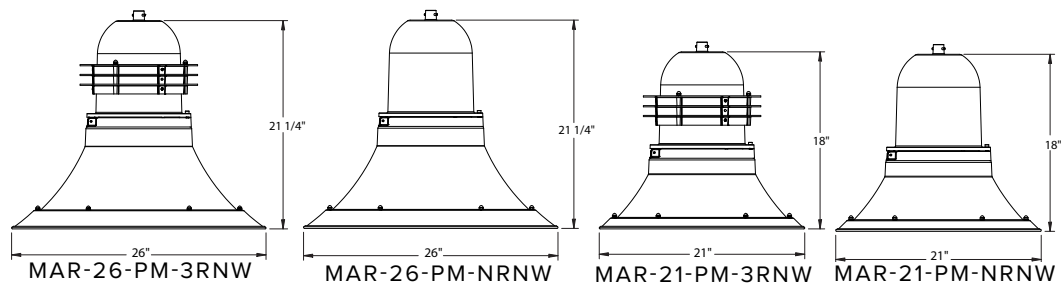
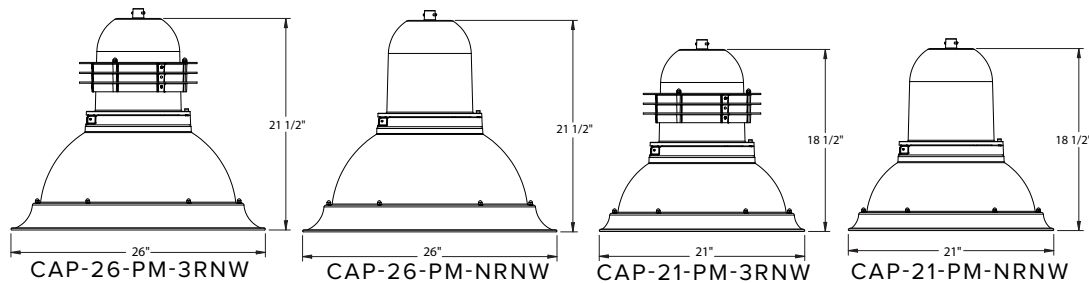
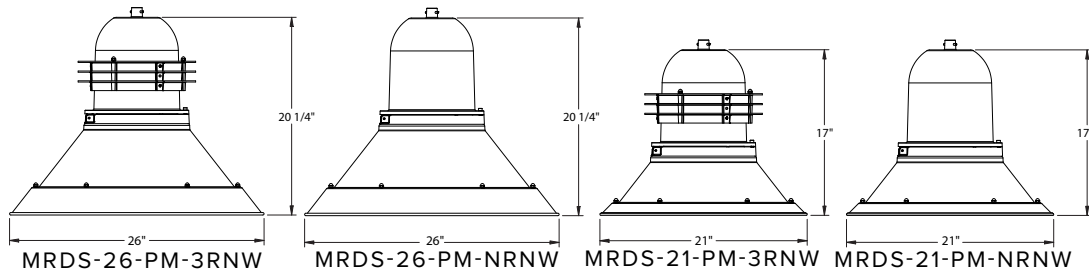
- Notes:
- 1 26" only
- 2 To rotate optics left or right 90 degrees, specify L or R after the optical distribution example: 4L
- 3 When ordering Energeni, specify the routine setting code (Example GENI-04). See Energeni brochure and Energeni instructions for setting table and options. Not available with sensor options
- 4 This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available on our website.



URBAN SERIES

URBAN LUMINAIRE

PENDANT MOUNT



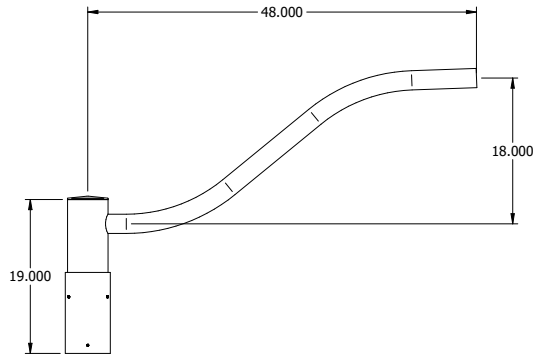


URBAN SERIES

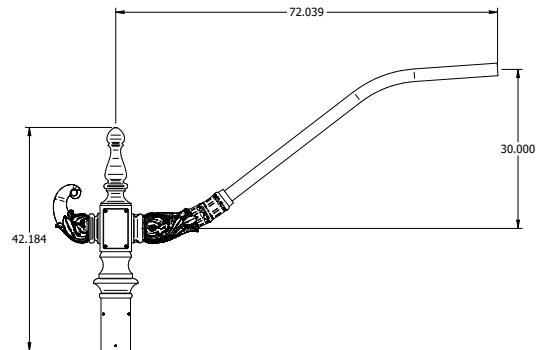
URBAN LUMINAIRE

SIDE MOUNT

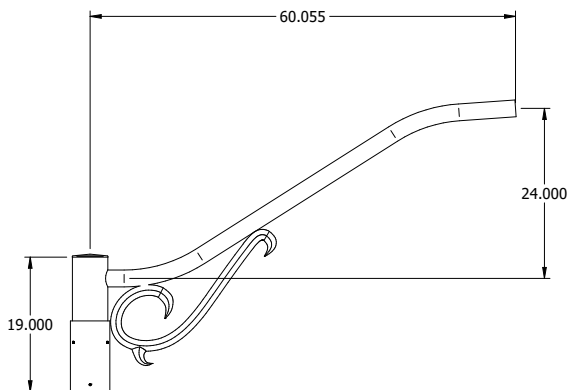
* Arms ordered separately, arms mount over an open top pole, they do not mount to a tenon.



AA-10 COBRA



AA-10B COBRA BALBOA



AA-10S COBRA SCROLL

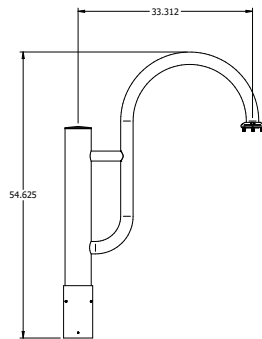


URBAN SERIES

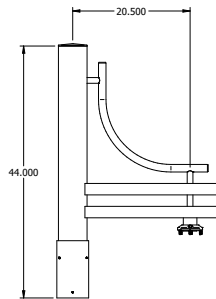
URBAN LUMINAIRE

PENDANT MOUNT

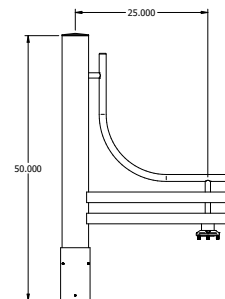
* Arms ordered separately, arms mount over an open top pole, they do not mount to a tenon.



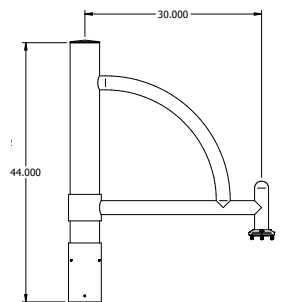
AA-41 RAILROAD STRAP



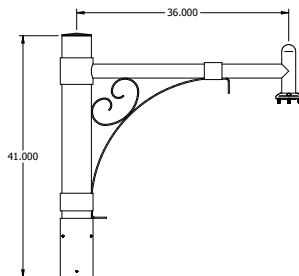
AA-10 SMALL PIERWALK



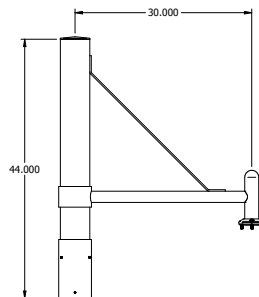
AA-38 LARGE PIERWALK



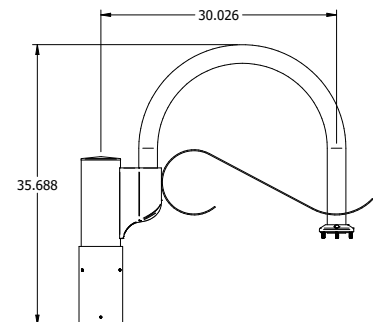
AA-49 RADIUS



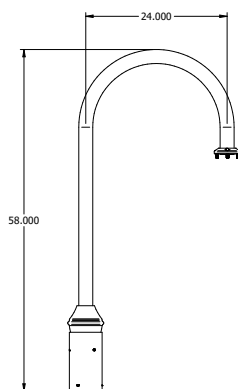
AA-27 STRATFORD



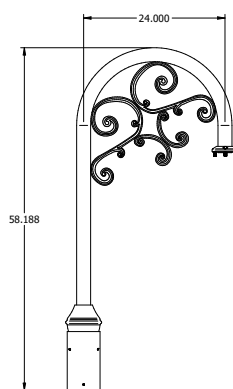
AA-44 STRUT



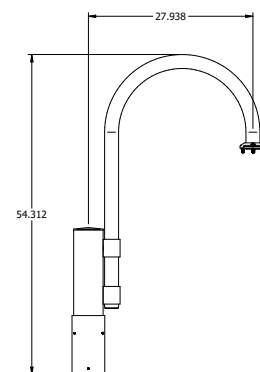
AA-45 TWIN EAGLES



AA-39 RAILROAD



AA-39S RAILROAD SCROLL



AA-42 RAILROAD SCS



URBAN SERIES

URBAN LUMINAIRE

DELIVERED LUMENS

DELIVERED LUMENS				5K7 (5000K nominal, 70 CRI)					4K7 (4000K nominal, 70 CRI)					3K7 (3000K nominal, 70 CRI)				
# of LEDs	NOMINAL WATTAGE (W)	SYSTEM WATTS (W)	DISTRIBUTION TYPE	LUMENS	LPW	B	U	G	LUMENS	LPW	B	U	G	LUMENS	LPW	B	U	G
18	25	27.8	FR	3428	123	0	0	0	3496	126	0	0	0	3233	116	0	0	0
			2	3236	117	1	0	1	3300	119	1	0	1	3052	110	1	0	1
			3	3164	114	1	0	1	3226	116	1	0	1	2983	107	1	0	1
			4F	3257	117	0	0	1	3321	120	0	0	1	3071	110	0	0	1
			4W	3114	112	1	0	1	3176	114	1	0	1	2937	106	1	0	1
			5QM	3398	122	2	0	0	3465	125	2	0	0	3204	115	2	0	0
			5QN	3431	124	2	0	0	3499	126	2	0	0	3236	116	2	0	0
			5QW	2937	106	2	0	1	2995	108	2	0	1	2770	100	0	0	0
			5RW	3150	113	2	0	2	3212	116	2	0	2	2970	107	2	0	2
	5W	3207	116	2	0	1	3271	118	2	0	1	3024	109	2	0	1		
	39	45.1	FR	4977	110	0	0	0	5076	113	0	0	0	4694	104	0	0	0
			2	4699	104	1	0	1	4791	106	1	0	1	4431	98	1	0	1
			3	4593	102	1	0	1	4684	104	1	0	1	4332	96	1	0	1
			4F	4729	105	0	0	1	4822	107	0	0	1	4459	99	0	0	1
			4W	4522	100	1	0	1	4611	102	1	0	1	4264	95	1	0	1
			5QM	4934	110	2	0	0	5032	112	2	0	0	4653	103	2	0	0
			5QN	4982	111	2	0	0	5081	113	2	0	0	4698	104	2	0	0
			5QW	4522	100	3	0	1	4611	102	3	0	1	4264	95	3	0	1
			5RW	4573	101	2	0	2	4664	104	2	0	2	4313	96	2	0	2
	5W	4657	103	2	0	1	4749	105	2	0	1	4391	97	2	0	1		
	50	57.5	FR	6019	105	0	0	0	6138	107	0	0	0	5676	99	0	0	0
			2	5682	99	1	0	1	5794	101	1	0	1	5358	93	1	0	1
			3	5555	97	1	0	1	5665	99	1	0	1	5238	91	1	0	1
			4F	5718	100	0	0	1	5831	101	0	0	1	5392	94	0	0	1
			4W	5468	95	1	0	1	5576	97	1	0	1	5156	90	1	0	1
			5QM	5967	104	2	0	0	6085	106	2	0	0	5627	98	2	0	0
			5QN	6025	105	2	0	0	6144	107	2	0	0	5682	99	2	0	0
			5QW	5468	95	3	0	1	5576	97	3	0	1	5156	90	3	0	1
			5RW	5531	96	2	0	2	5640	98	2	0	2	5215	91	2	0	2
	5W	5632	98	2	0	1	5743	100	2	0	1	5311	92	2	0	1		
	70	62.4	FR	6650	107	0	0	0	6781	109	0	0	0	6271	100	0	0	0
			2	6277	101	1	0	1	6401	103	1	0	1	5919	95	1	0	1
			3	6137	98	1	0	1	6258	100	1	0	1	5787	93	1	0	1
			4F	6317	101	0	0	1	6442	103	0	0	1	5957	95	0	0	1
			4W	6041	97	1	0	1	6160	99	1	0	1	5696	91	1	0	1
			5QM	6592	106	2	0	0	6722	108	2	0	0	6216	100	2	0	0
			5QN	6656	107	2	0	0	6788	109	2	0	0	6277	101	2	0	0
			5QW	6041	97	3	0	1	6160	99	3	0	1	5696	91	3	0	1
			5RW	6110	98	2	0	2	6231	100	2	0	2	5762	92	2	0	2
	5W	6221	100	2	0	1	6344	102	2	0	1	5867	94	2	0	1		
DELIVERED LUMENS CHART CONTINUED ONTO NEXT PAGE																		

Notes:

1 Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application.

* Available in the 26" Urban only



URBAN SERIES

URBAN LUMINAIRE

DELIVERED LUMENS (CONTINUED)

# of LEDs	NOMINAL WATTAGE (W)	SYSTEM WATTS (W)	DISTRIBUTION TYPE	5K7 (5000K nominal, 70 CRI)					4K7 (4000K nominal, 70 CRI)					3K7 (3000K nominal, 70 CRI)				
				LUMENS	LPW	B	U	G	LUMENS	LPW	B	U	G	LUMENS	LPW	B	U	G
18	90	82.3	FR	7681	93	0	0	0	7833	95	0	0	0	7244	88	0	0	0
			2	7251	88	1	0	1	7394	90	1	0	1	6838	83	1	0	1
			3	7089	86	1	0	1	7229	88	1	0	1	6685	81	1	0	1
			4F	7297	89	0	0	1	7442	90	0	0	1	6882	84	0	0	1
			4W	6978	85	1	0	1	7116	86	1	0	1	6580	80	1	0	1
			5QM	7614	93	2	0	0	7765	94	2	0	0	7180	87	2	0	0
			5QN	7689	93	2	0	0	7841	95	2	0	0	7251	88	2	0	0
			5QW	6978	85	3	0	1	7116	86	3	0	1	6580	80	3	0	1
			5RW	7058	86	2	0	2	7197	87	2	0	2	6656	81	2	0	2
			5W	7187	87	2	0	1	7329	89	2	0	1	6777	82	2	0	1
	110	98.7	FR	8346	85	0	0	0	8511	86	0	0	0	7870	80	0	0	0
			2	7878	80	1	0	1	8034	81	1	0	1	7429	75	1	0	1
			3	7702	78	1	0	1	7854	80	1	0	1	7263	74	1	0	1
			4F	7929	80	0	0	1	8085	82	0	0	1	7477	76	0	0	1
			4W	7582	77	1	0	1	7731	78	1	0	1	7150	72	1	0	1
			5QM	8273	84	2	0	0	8437	86	2	0	0	7802	79	2	0	0
			5QN	8354	85	2	0	0	8519	86	2	0	0	7878	80	2	0	0
			5QW	7582	77	3	0	2	7731	78	3	0	2	7150	72	3	0	2
			5RW	7668	78	2	0	2	7820	79	2	0	2	7231	73	2	0	2
			5W	7808	79	2	0	1	7963	81	2	0	1	7363	75	2	0	1
36	120	124.9	FR	12463	100	0	0	0	12709	102	0	0	0	11752	94	0	0	0
			2	11765	94	1	0	1	11997	96	1	0	1	11094	89	1	0	1
			3	11501	92	1	0	1	11728	94	1	0	1	10846	87	1	0	1
			4F	11840	95	0	0	1	12074	97	0	0	1	11165	89	0	0	1
			4W	11321	91	1	0	1	11545	92	1	0	1	10676	85	1	0	1
			5QM	12354	99	2	0	0	12598	101	2	0	0	11650	93	2	0	0
			5QN	12475	100	2	0	0	12722	102	2	0	0	11764	94	2	0	0
			5QW	11321	91	3	0	2	11545	92	3	0	2	10676	85	3	0	2
			5RW	11451	92	2	0	2	11677	93	2	0	2	10798	86	2	0	2
			5W	11660	93	2	0	1	11890	95	2	0	1	10995	88	2	0	1
	135	137.5	FR	13255	96	0	0	0	13517	98	0	0	0	12500	91	0	0	0
			2	12513	91	1	0	1	12760	93	1	0	1	11799	86	1	0	1
			3	12232	89	1	0	1	12474	91	1	0	1	11535	84	1	0	1
			4F	12593	92	0	0	1	12841	93	0	0	1	11875	86	0	0	1
			4W	12041	88	1	0	1	12279	89	1	0	1	11355	83	1	0	1
			5QM	13140	96	2	0	0	13399	97	2	0	0	12391	90	2	0	0
			5QN	13268	97	2	0	0	13531	98	2	0	0	12512	91	2	0	0
			5QW	12041	88	3	0	2	12279	89	3	0	2	11355	83	3	0	2
			5RW	12179	89	2	0	2	12420	90	2	0	2	11485	84	2	0	2
			5W	12401	90	2	0	1	12646	92	2	0	1	11695	85	2	0	1
			TCR	13051	95	0	0	0	13308	97	0	0	0	12307	90	0	0	0

DELIVERED LUMENS CHART CONTINUED ONTO NEXT PAGE

Notes:

- 1 Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application.
- * Available in the 26" Urban only



URBAN SERIES

URBAN LUMINAIRE

DELIVERED LUMENS (CONTINUED)

# of LEDs	NOMINAL WATTAGE (W)	SYSTEM WATTS (W)	DISTRIBUTION TYPE	5K7 (5000K nominal, 70 CRI)					4K7 (4000K nominal, 70 CRI)					3K7 (3000K nominal, 70 CRI)				
				LUMENS	LPW	B	U	G	LUMENS	LPW	B	U	G	LUMENS	LPW	B	U	G
36	155	150.6	FR	13992	93	0	0	0	14268	95	0	0	0	13194	88	0	0	0
			2	13208	88	1	0	1	13469	89	1	0	1	12455	83	1	0	1
			3	12912	86	1	0	1	13167	87	1	0	1	12176	81	1	0	1
			4F	13293	88	0	0	1	13555	90	0	0	1	12535	83	0	0	1
			4W	12711	84	1	0	1	12962	86	1	0	1	11986	80	1	0	1
			5QM	13870	92	2	0	0	14144	94	2	0	0	13079	87	2	0	0
			5QN	14006	93	2	0	0	14283	95	2	0	0	13208	88	2	0	0
			5QW	12711	84	3	0	2	12962	86	3	0	2	11986	80	3	0	2
			5RW	12856	85	2	0	2	13110	87	2	0	2	12123	80	2	0	2
			5W	13091	87	2	0	1	13349	89	2	0	1	12345	82	2	0	1
	175	167.3	FR	14784	88	0	0	0	15076	90	0	0	0	13942	83	0	0	0
			2	13956	83	1	0	1	14232	85	1	0	1	13161	79	1	0	1
			3	13644	82	1	0	1	13913	83	1	0	1	12866	77	1	0	1
			4F	14045	84	0	0	1	14323	86	0	0	1	13245	79	0	0	1
			4W	13430	80	1	0	1	13696	82	1	0	1	12665	76	1	0	1
			5QM	14655	88	2	0	0	14945	89	2	0	0	13820	83	2	0	0
			5QN	14799	88	2	0	0	15091	90	2	0	0	13956	83	2	0	0
			5QW	13430	80	3	0	2	13696	82	3	0	2	12665	76	3	0	2
			5RW	13584	81	2	0	2	13852	83	2	0	2	12810	77	2	0	2
			5W	13832	83	2	0	1	14105	84	2	0	1	13044	78	2	0	1

Notes:

1 Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application.

* Available in the 26" Urban only

ELECTRICAL DATA

# LED's	Nominal Wattage (W)	Input Voltage (Volts)	Oper. Current (Amps)	System Power (W)
18	25	120	0.23	27.8
		277	0.10	
		347	0.08	
		480	0.06	
	39	120	0.38	45.1
		277	0.16	
		347	0.13	
		480	0.09	
	50	120	0.48	57.7
		277	0.21	
		347	0.17	
		480	0.12	
	70	120	0.52	62.4
		277	0.23	
		347	0.18	
		480	0.13	
	90	120	0.69	82.3
		277	0.30	
		347	0.24	
		480	0.17	
	110	120	0.82	98.7
		277	0.36	
		347	0.28	
		480	0.21	
36	120	120	1.04	124.9
		277	0.45	
		347	0.36	
		480	0.26	
	135	120	1.15	137.5
		277	0.50	
		347	0.40	
		480	0.29	
	155	120	1.26	150.6
		277	0.54	
		347	0.43	
		480	0.31	
	175	120	1.39	167.3
		277	0.60	
		347	0.48	
		480	0.35	



URBAN SERIES

URBAN LUMINAIRE

PROJECTED LUMEN MAINTENANCE

Ambient Temperature	OPERATING HOURS					
	0	25,000	*TM-21-11 36,000	50,000	100,000	L70 (Hours)
25°C / 77°F	1.00	0.97	0.96	0.95	0.91	408,000
40°C / 104°F	0.99	0.96	0.95	0.94	0.89	356,000

Notes:

* Projected per IESNA TM-21-11. Data references the extrapolated performance projections for the 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	32°F	1.03
10°C	50°F	1.01
20°C	68°F	1.00
25°C	77°F	1.00
30°C	86°F	0.99
40°C	104°F	0.98
50°C	122°F	0.97

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

EPA

EPA: X.XX sqft		PM	SM	YM
CAP	21	1.04	1.14	1.39
	26	1.39	1.49	1.79
MAR	21	1.00	1.10	1.35
	26	1.25	1.35	1.65
MRDS	21	1.00	1.10	1.35
	26	1.25	1.35	1.65
MRSS	26	1.17	1.27	1.57

FOR ALL CONFIGURATIONS LINE DRAWINGS PLEASE SEE:

URB-HD-P.PDF

URB-HD-S.PDF

URB-HD-YM.PDF



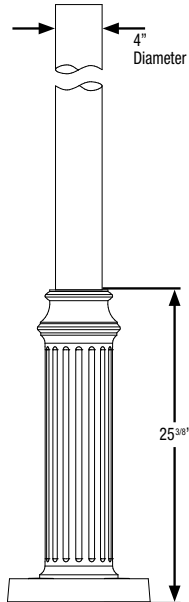
RSA-B-KENS Series Poles

ROUND STRAIGHT ALUMINUM

DATE: _____ LOCATION: _____

TYPE: _____ PROJECT: _____

CATALOG #: _____



APPLICATIONS

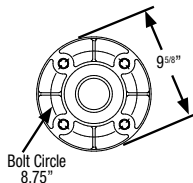
- Lighting installations for side and top mounting of luminaires with effective projected area (EPA) not exceeding maximum allowable loading of the specified pole in its installed geographic location

CONSTRUCTION

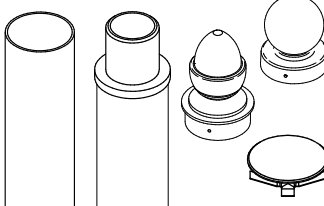
- SHAFT: One-piece straight aluminum with fluted or smooth cross section; Extruded shafts of 6061-T6 aluminum in 1/8", 3/16", or 1/4" thickness. Decorative base of 356 cast aluminum.
- POLE CAP OR FINALS: Cap or decorative finials available for side mounted luminaires. Open top or tenons provided for post top mounted luminaires.
- HAND HOLE: Hand hole provided in cast base; Mounting provisions for grounding lug located behind cover
- ANCHOR BOLTS: Four galvanized anchor bolts provided per pole with minimum yield of 55,000 psi (ASTM F1554). Galvanized hardware with two washers and two nuts per bolt for leveling

FINISH

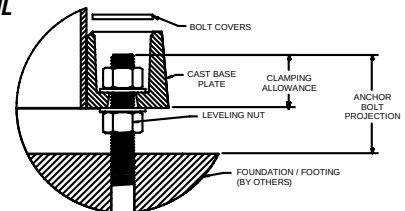
- Durable thermoset polyester powder coat paint finish with nominal 3.0 mil thickness
- Powder paint finish coat available in twelve standard colors; Custom colors available; RAL number preferable.



TENONS & POLE CAPS



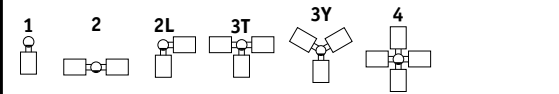
BASE DETAIL



ORDERING EXAMPLE:

RSA-B-KENS		S/F	16	40	A/B/C	2L	B3	DBT	VM2
SERIES		STYLE	HEIGHT	SHAFT	THICKNESS	MOUNTING		FINISH	OPTIONS
RSA-B-KENS Round Straight Aluminum Pole Beacon		S Smooth F Fluted	Reference page 2 Ordering matrix 12'	Reference page 2 Ordering matrix 40	Reference page 2 Ordering matrix B	1 Single arm mount 2 Two fixtures at 180° 2L Two fixtures at 90° 3T Three fixtures at 90° 3Y Three at 120° 4 Four fixtures at 90° OT Open top (includes pole cap) TN3 Tenon 3 x 3 TN4 Tenon 3 x 4 CAP Cap ARC Acorn Finial BAL Ball Finial		BLT Black Matte Textured BLS Black Gloss Smooth DBT Dark Bronze Matte Textured DBS Dark Bronze Gloss Smooth GTT Graphite Matte Textured LGS Light Grey Gloss Smooth PSS Platinum Silver Smooth WHT White Matte Textured WHS White Gloss Smooth VGT Verde Green Textured Color Option CC Custom Color	GFI' 20 Amp GFCI Receptacle and Cover EHH' Extra Handhole C05' .5" Coupling C07' .75" Coupling C20' 2" Coupling VM2 2nd mode vibration damper LAB Less Anchor Bolts
MOUNTING ORIENTATION									
1 2 2L 3T 3Y 4 Denotes handhole location									

MOUNTING ORIENTATION



1 Specify option location using logic found on page 2 (Option Orientation)

ACCESSORIES- Order Separately

Catalog Number	Description
VM2SXX	2nd mode vibration damper

DRILL PATTERN

- B1 Cruzer, "AM" arm
 B3 2 bolt (2-1/2" spacing), Viper "A" arm
 S2 2 bolt (3-1/2" spacing), Viper "AD" arm

Submitted by Swaney Lighting		Catalog Number: RSAB-KENS-S12-40B-OT-BLS	Type: A
		Notes:	SLA24-58713



RSA-B-KENS Series Poles

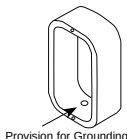
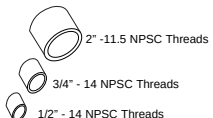
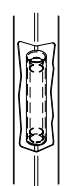
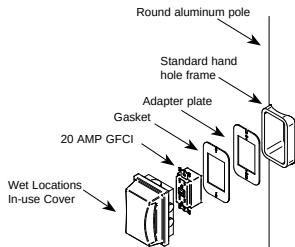
ROUND STRAIGHT ALUMINUM

DATE:	LOCATION:
TYPE:	PROJECT:
CATALOG #:	

ORDERING INFORMATION Cont.

Catalog Number	Height		Nominal Shaft Dimensions	Wall Thickness	Bolt Circle (suggested)	Bolt Square	Base Plate Size	Anchor Bolt Size	Bolt Projection	Pole weight (lbs)
	Feet	Meters								
RSA-B-KENS-S-10-40-A	10	3.0	4" Round	0.125"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	39
RSA-B-KENS-S-12-40-A	12	3.7	4" Round	0.125"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	43
RSA-B-KENS-S-14-40-A	14	4.3	4" Round	0.125"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	46
RSA-B-KENS-S-16-40-A	16	4.9	4" Round	0.125"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	50
RSA-B-KENS-S-18-40-A	18	5.5	4" Round	0.125"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	53
RSA-B-KENS-S-20-40-A	20	6.1	4" Round	0.125"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	57
RSA-B-KENS-S-10-40-B	10	3.0	4" Round	0.188"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	47
RSA-B-KENS-S-12-40-B	12	3.7	4" Round	0.188"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	53
RSA-B-KENS-S-14-40-B	14	4.3	4" Round	0.188"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	58
RSA-B-KENS-S-16-40-B	16	4.9	4" Round	0.188"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	63
RSA-B-KENS-S-18-40-B	18	5.5	4" Round	0.188"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	69
RSA-B-KENS-S-20-40-B	20	6.1	4" Round	0.188"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	74
RSA-B-KENS-S-22-40-B	22	6.7	4" Round	0.188"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	79
RSA-B-KENS-S-24-40-B	24	7.3	4" Round	0.188"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	84
RSA-B-KENS-S-10-40-C	10	3.0	4" Round	0.25"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	56
RSA-B-KENS-S-12-40-C	12	3.7	4" Round	0.25"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	62
RSA-B-KENS-S-14-40-C	14	4.3	4" Round	0.25"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	69
RSA-B-KENS-S-16-40-C	16	4.9	4" Round	0.25"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	76
RSA-B-KENS-S-18-40-C	18	5.5	4" Round	0.25"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	83
RSA-B-KENS-S-20-40-C	20	6.1	4" Round	0.25"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	90
RSA-B-KENS-S-22-40-C	22	6.7	4" Round	0.25"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	97
RSA-B-KENS-S-24-40-C	24	7.3	4" Round	0.25"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	104
RSA-B-KENS-F-10-40-B	10	3.0	4" Fluted	0.188"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	50
RSA-B-KENS-F-12-40-B	12	3.7	4" Fluted	0.188"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	55
RSA-B-KENS-F-14-40-B	14	4.3	4" Fluted	0.188"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	61
RSA-B-KENS-F-16-40-B	16	4.9	4" Fluted	0.188"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	67
RSA-B-KENS-F-18-40-B	18	5.5	4" Fluted	0.188"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	72
RSA-B-KENS-F-20-40-B	20	6.1	4" Fluted	0.188"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	78
RSA-B-KENS-F-22-40-B	22	6.7	4" Fluted	0.188"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	84
RSA-B-KENS-F-24-40-B	24	7.3	4" Fluted	0.188"	8-3/4"	6.19"	11-5/8" x 25-3/8" Tall	3/4 x 30 x 3	2-3/4"	90

NOTE: Factory supplied template must be used when setting anchor bolts. Current will deny any claim for incorrect anchorage placement resulting from failure to use factory supplied template and anchor bolts.

EHH - EXTRA HANDHOLE  Provision for Grounding	C05 - C07 - C20 - COUPLING  2" - 11.5 NPT Threads 3/4" - 14 NPT Threads 1/2" - 14 NPT Threads	VM2 - VIBRATION DAMPER 2ND MODE  Factory installed, internal damper designed to alter pole resonance to reduce movement and material fatigue caused by 2nd mode vibration.	GFI - 20 AMP GFCI RECEPTACLE & COVER  Round aluminum pole Standard hand hole frame Adapter plate Gasket 20 AMP GFCI Wet Locations, In-use Cover
OPTION ORIENTATION Follow the logic below when ordering location specific options. For each option, include its orientation (in degrees) and its height (in feet). Example: Option C07 should be ordered as: RSA-B-KENS-F16-40B-TN3-DBT-C05-0-5 (.5" coupling on the handhole/arm side of pole, 15 feet up from the pole base) 1" spacing required between option. Consult factory for other configurations.		VM2SXX - VIBRATION DAMPER 2ND MODE Field installed, internal damper designed to alter pole resonance to reduce movement and material fatigue caused by 2nd mode vibration. VM2S08 - 8' VM2S12 - 12' VM2S16 - 16' VM2S20 - 20' VM2S24 - 24'	

For more information about pole vibration and vibration dampers, please consult Pole Vibration Application Guide.
Due to our continued efforts to improve our products, product specifications are subject to change without notice.



RSA-B-KENS Series Poles

ROUND STRAIGHT ALUMINUM

DATE:

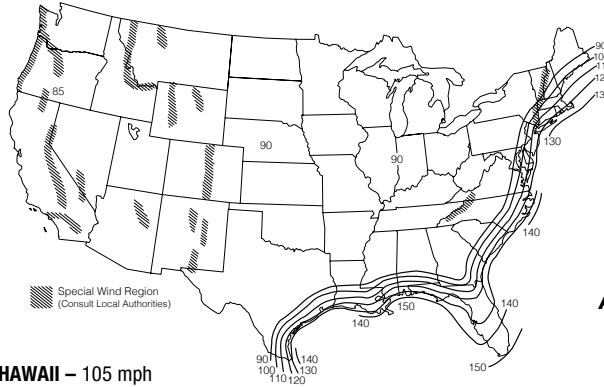
LOCATION:

TYPE:

PROJECT:

CATALOG #:

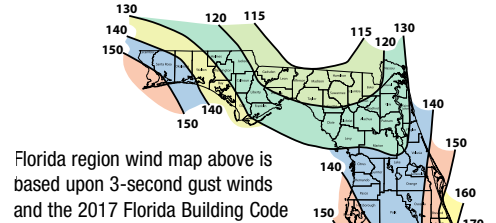
ASCE7-05 WIND MAP



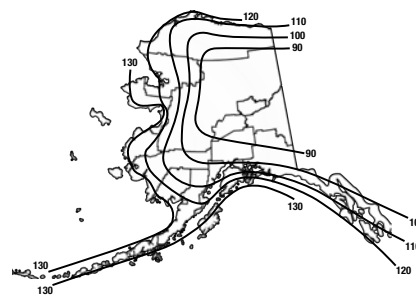
HAWAII – 105 mph
PUERTO RICO – 145 mph

*PRINTED WITH PERMISSION FROM ASCE

FLORIDA REGION WIND MAP



ALASKA REGION WIND MAP



ASCE 7-05 wind map EPA Load Rating - 3 second gust wind speeds										
Catalog Number	85	90	100	105	110	120	130	140	145	150
RSA-B-KENS-S-10-40-A	12.2	10.8	8.7	7.8	7.0	5.8	4.9	4.2	3.9	3.6
RSA-B-KENS-S-12-40-A	9.0	7.9	6.2	5.5	4.9	3.9	3.3	2.8	2.6	2.4
RSA-B-KENS-S-14-40-A	6.8	5.9	4.5	3.9	3.4	2.6	2.2	1.8	1.6	1.5
RSA-B-KENS-S-16-40-A	5.1	4.4	3.2	2.7	2.3	1.6	1.3	1.0	0.9	0.8
RSA-B-KENS-S-18-40-A	3.8	3.1	2.1	1.7	1.3	0.8	0.5	NR	NR	NR
RSA-B-KENS-S-20-40-A	2.6	2.1	1.2	0.8	0.5	NR	NR	NR	NR	NR
RSA-B-KENS-S-10-40-B	18.0	16.1	13.0	11.8	10.6	8.9	7.5	6.5	6.0	5.6
RSA-B-KENS-S-12-40-B	13.6	12.1	9.7	8.7	7.8	6.4	5.4	4.6	4.3	4.0
RSA-B-KENS-S-14-40-B	10.6	9.3	7.3	6.5	5.8	4.7	3.9	3.3	3.0	2.8
RSA-B-KENS-S-16-40-B	8.3	7.3	5.6	4.9	4.3	3.3	2.7	2.3	2.1	1.9
RSA-B-KENS-S-18-40-B	6.5	5.6	4.1	3.5	3.0	2.2	1.8	1.4	1.3	1.2
RSA-B-KENS-S-20-40-B	5.0	4.2	2.9	2.4	2.0	1.3	1.0	0.7	0.6	0.5
RSA-B-KENS-S-22-40-B	3.7	3.0	1.9	1.5	1.1	0.5	NR	NR	NR	NR
RSA-B-KENS-S-24-40-B	2.7	2.1	1.1	0.7	NR	NR	NR	NR	NR	NR
RSA-B-KENS-S-10-40-C	23.3	20.8	16.9	15.3	13.9	11.6	9.9	8.5	7.9	7.4
RSA-B-KENS-S-12-40-C	17.7	15.8	12.7	11.5	10.4	8.6	7.3	6.2	5.8	5.4
RSA-B-KENS-S-14-40-C	14.0	12.4	9.8	8.8	7.9	6.5	5.4	4.6	4.3	4.0
RSA-B-KENS-S-16-40-C	11.2	9.9	7.7	6.8	6.1	4.8	4.1	3.4	3.1	2.9
RSA-B-KENS-S-18-40-C	8.9	7.8	5.9	5.2	4.5	3.5	2.9	2.4	2.2	2.0
RSA-B-KENS-S-20-40-C	7.0	6.1	4.5	3.8	3.3	2.4	1.9	1.5	1.4	1.2
RSA-B-KENS-S-22-40-C	5.5	4.7	3.3	2.7	2.2	1.5	1.1	0.8	0.7	0.6
RSA-B-KENS-S-24-40-C	4.3	3.5	2.3	1.8	1.3	0.7	NR	NR	NR	NR
RSA-B-KENS-F-10-40-B	17.9	16.0	12.9	11.6	10.5	8.7	7.2	6.1	5.6	5.1
RSA-B-KENS-F-12-40-B	13.5	12.0	9.5	8.5	7.6	6.2	5.0	4.1	3.7	3.3
RSA-B-KENS-F-14-40-B	10.4	9.2	7.2	6.3	5.6	4.4	3.5	2.7	2.4	2.1
RSA-B-KENS-F-16-40-B	8.1	7.1	5.4	4.7	4.1	3.0	2.2	1.6	1.3	1.0
RSA-B-KENS-F-18-40-B	6.3	5.4	3.9	3.3	2.8	1.9	1.2	0.6	NR	NR
RSA-B-KENS-F-20-40-B	4.7	3.9	2.7	2.2	1.7	0.9	NR	NR	NR	NR
RSA-B-KENS-F-22-40-B	3.4	2.8	1.6	1.2	0.8	NR	NR	NR	NR	NR
RSA-B-KENS-F-24-40-B	2.4	1.8	0.8	NR	NR	NR	NR	NR	NR	NR

Florida Building Code 2017 EPA Load Rating - 3 second gust wind speeds										
Catalog Number	115	120	130	140	150	160	170	180		
RSA-10-40-A-S-KENS	9.0	8.2	6.9	5.8	4.9	4.1	3.8	3.6		
RSA-12-40-A-S-KENS	6.5	5.8	4.8	3.9	3.2	2.6	2.5	2.4		
RSA-14-40-A-S-KENS	4.7	4.1	3.2	2.5	1.9	1.4	1.2	1.1		
RSA-16-40-A-S-KENS	3.2	2.8	2.0	1.4	0.9	0.5	NR	NR		
RSA-18-40-A-S-KENS	2.1	1.7	1.0	0.5	NR	NR	NR	NR		
RSA-20-40-A-S-KENS	1.1	0.8	NR	NR	NR	NR	NR	NR		
RSA-10-40-B-S-KENS	13.6	12.4	10.5	8.9	7.6	6.6	6.3	5.5		
RSA-12-40-B-S-KENS	10.1	9.2	7.6	6.4	5.4	4.5	4.3	4.0		
RSA-14-40-B-S-KENS	7.6	6.9	5.6	4.6	3.7	3.0	2.9	2.7		
RSA-16-40-B-S-KENS	5.7	5.1	4.0	3.2	2.4	1.8	1.6	1.4		
RSA-18-40-B-S-KENS	4.2	3.6	2.7	2.0	1.4	0.8	0.6	NR		
RSA-20-40-B-S-KENS	2.9	2.4	1.6	1.0	0.5	NR	NR	NR		
RSA-22-40-B-S-KENS	1.9	1.4	0.7	NR	NR	NR	NR	NR		
RSA-24-40-B-S-KENS	0.9	0.6	NR	NR	NR	NR	NR	NR		
RSA-10-40-C-S-KENS	17.6	16.2	13.7	11.7	10.1	8.8	8.2	7.3		
RSA-12-40-C-S-KENS	13.3	12.1	10.2	8.6	7.3	6.2	5.8	5.4		
RSA-14-40-C-S-KENS	10.3	9.3	7.7	6.4	5.3	4.5	4.3	4.0		
RSA-16-40-C-S-KENS	7.9	7.1	5.8	4.7	3.8	3.0	2.7	2.5		
RSA-18-40-C-S-KENS	6.0	5.4	4.2	3.3	2.5	1.9	1.7	1.5		
RSA-20-40-C-S-KENS	4.5	3.9	2.9	2.1	1.4	0.9	0.7	0.5		
RSA-22-40-C-S-KENS	3.2	2.7	1.9	1.1	0.5	NR	NR	NR		
RSA-24-40-C-S-KENS	2.2	1.7	0.9	NR	NR	NR	NR	NR		
RSA-10-40-B-F-KENS	13.6	12.4	10.5	8.9	7.6	6.6	5.7	4.9		
RSA-12-40-B-F-KENS	10.1	9.2	7.6	6.4	5.4	4.5	3.8	3.2		
RSA-14-40-B-F-KENS	7.6	6.9	5.6	4.6	3.7	3.0	2.4	1.9		
RSA-16-40-B-F-KENS	5.7	5.1	4.0	3.2	2.4	1.8	1.3	0.9		
RSA-18-40-B-F-KENS	4.2	3.6	2.7	2.0	1.4	0.8	NR	NR		
RSA-20-40-B-F-KENS	2.9	2.4	1.6	1.0	0.5	NR	NR	NR		
RSA-22-40-B-F-KENS	1.9	1.4	0.7	NR	NR	NR	NR	NR		
RSA-24-40-B-F-KENS	0.9	0.6	NR	NR	NR	NR	NR	NR		

Submitted by Swaney Lighting		Catalog Number: RSAB-KENS-S12-40B-OT-BLS Notes:	Type: A SLA24-58713
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RSA-B-KENS Series Poles

ROUND STRAIGHT ALUMINUM

DATE: _____	LOCATION: _____
TYPE: _____	PROJECT: _____
CATALOG #: _____	

NOTES

Wind-speed Website disclaimer:

Current has no connection to the linked website and makes no representations as to its accuracy. While the information presented on this third-party website provides a useful starting point for analyzing wind conditions, Current has not verified any of the information on this third party website and assumes no responsibility or liability for its accuracy. The material presented in the windspeed website should not be used or relied upon for any specific application without competent examination and verification of its accuracy, suitability and applicability by engineers or other licensed professionals. Current does not intend that the use of this information replace the sound judgment of such competent professionals, having experience and knowledge in the field of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the results of the windspeed report provided by this website. Users of the information from this third party website assume all liability arising from such use. Use of the output of these referenced websites do not imply approval by the governing building code bodies responsible for building code approval and interpretation for the building site described by latitude/longitude location in the windspeed report. <http://windspeed.atcouncil.org>

- Allowable EPA, to determine max pole loading weight, multiply allowable EPA by 30 lbs.
- The tables for allowable pole EPA are based on the ASCE 7-05 Wind Map or the Florida Region Wind Map for the 2010 Florida Building Code. The Wind Maps are intended only as a general guide and cannot be used in conjunction with other maps. Always consult local authorities to determine maximum wind velocities, gusting and unique wind conditions for each specific application
- Allowable pole EPA for jobsite wind conditions must be equal to or greater than the total EPA for fixtures, arms, and accessories to be assembled to the pole. Responsibility lies with the specifier for correct pole selection. Installation of poles without luminaires or attachment of any unauthorized accessories to poles is discouraged and shall void the manufacturer's warranty
- Wind speeds and listed EPAs are for ground mounted installations. Poles mounted on structures (such as bridges and buildings) must consider vibration and coefficient of height factors beyond this general guide; Consult local and federal standards
- Wind Induced Vibration brought on by steady, unidirectional winds and other unpredictable aerodynamic forces are not included in wind velocity ratings. Consult Pole Vibration Application Guide for environmental risk factors and design considerations.
- Extreme Wind Events like, Hurricanes, Typhoons, Cyclones, or Tornadoes may expose poles to flying debris, wind shear or other detrimental effects not included in wind velocity ratings

Due to our continued efforts to improve our products, product specifications are subject to change without notice.



AA-37 Nautilus

ARMS

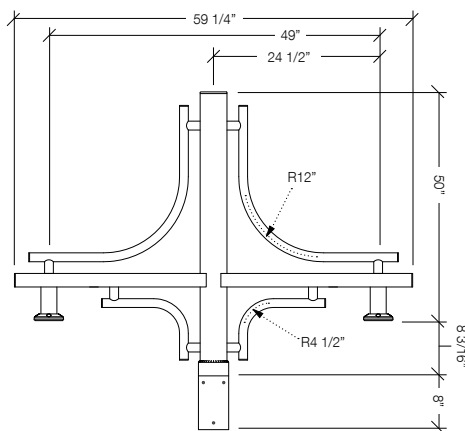
DATE: _____ LOCATION: _____

TYPE: _____ PROJECT: _____

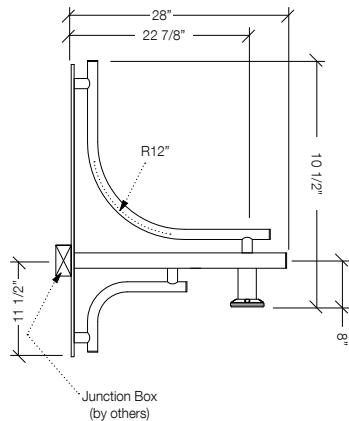
CATALOG #: _____

Sample AA-37 S 4 B P BBT
 Ordering A / B / C / D / E / F

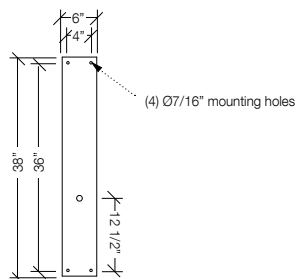
DETAILS



WALL BRACKET DETAILS



WALL PLATE DETAILS



A. MODEL

AA-37 Nautilus

B. POST SHAFT PROFILE

W wall mount

S smooth

F fluted

C. POST SHAFT DIAMETER

4 4"

5 5"

6 6"

OTHER _____

D. ARRANGEMENT

B see arrangement table below

E. LUMINAIRE MOUNTING

P pendant

F. COLOR **BLS - Black Gloss Smooth**

BBT basic black textured

BMT black matte textured

WHT white textured

MBT metallic bronze textured

BZT bronze textured

DBT dark bronze textured

GYS gray smooth

DPS dark platinum smooth

GNT green textured

MST metallic silver textured

MTT metallic titanium textured

OWI old world iron

RAL _____

Construction: All cast aluminum parts shall be low copper alloy A356. All extruded aluminum parts shall be alloy 6061-T6, 6063-T5 or equal.

EPA (effective projected area): EPA is de-fined as (projected surface area X drag factor) and measured in ft². Allowable post, luminaire arm, luminaire and accessory EPAs are derived from the most current published AASHTO (American Association of State Highway and Transportation Officials) standard, currently AASHTO 2001 (50yr design life). Customer assumes all responsibility for selecting the appropriate post for installation (consult factory for assistance). Luminaire arm, luminaire and accessory EPA must be equal to or less than allowable EPA of post. Consult a professional engineer for compliance with local codes and standards.

Fasteners: All fasteners shall be Corrosion Resistant. When tamper resistant fasteners are required, spanner HD (snake eye) style shall be provided (special tool required, available at additional cost).

Finish: Finish shall be a Beacote V polyester powder-coat electro-statically applied and thermocured. Beacote V finish shall consist of a five stage iron phosphate chemical pretreatment regimen with a polymer primer sealer, oven dry off, and top coated with a thermoset super TGIC polyester powder-coat finish. The finish shall meet the AAMA 605.2 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-pound.

Limited Warranty: Beacon Products warrants its products, to the original purchaser, against defects in materials and workmanship for proper usage for a period of 5 years after date of production, when properly installed, maintained and appropriately specified. See Warranty Information on www.beaconproducts.com for complete details and exclusions.

2CC - 2" Cast Coupling

		arrangement (EPA index ft ² / weight (lbs))									
		A	B	C	D	E	F	G	H	I	J
shaft Ø	weight	18	-	-	-	-	-	-	-	-	-
	EPA	-	3.37	5.04	5.04	-	5.19	5.19	-	-	-
Ø4"	weight	-	26	36	38	-	46	48	-	-	-
	EPA	-	3.80	5.47	5.47	4.49	5.62	5.62	6.07	6.85	6.85
Ø5"	weight	-	30	40	42	40	50	52	50	60	62
	EPA	-	4.22	5.89	5.89	4.91	6.04	6.04	6.49	7.27	7.27
Ø6"	weight	-	34	44	46	44	54	56	54	64	66
	EPA	-	4.22	5.89	5.89	4.91	6.04	6.04	6.49	7.27	7.27



Banner Arms

ARMS

DATE: _____

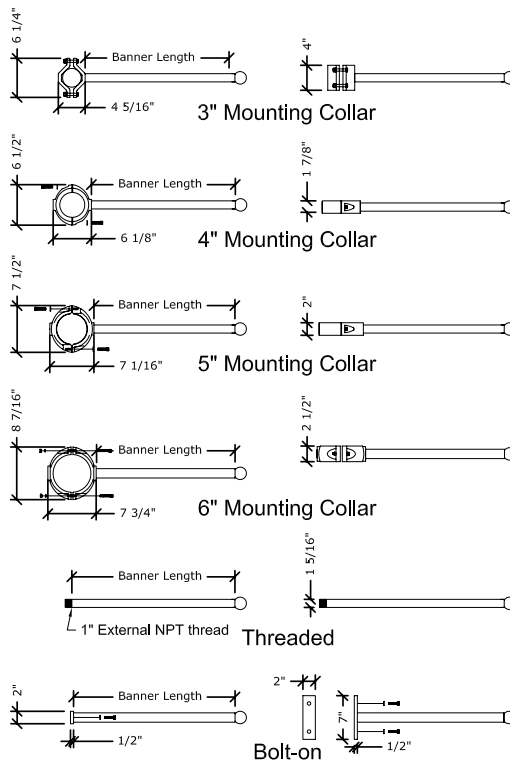
LOCATION: _____

TYPE: _____

PROJECT: _____

CATALOG #: _____

Banner Arm Mounting Styles



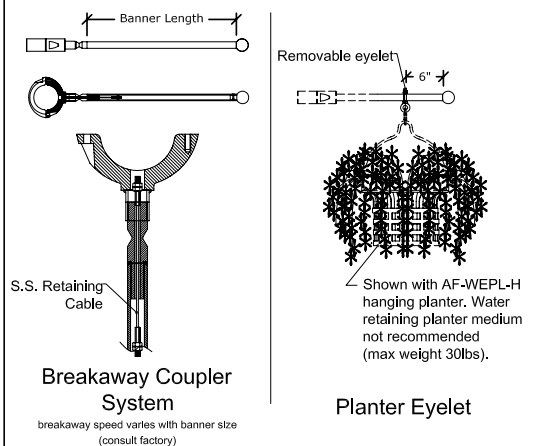
Specifications

Construction:
All cast aluminum parts shall low copper alloy A356. All extruded aluminum parts shall be alloy 6061-T6, 6063-T5 or equal.

Fasteners:
All fasteners shall be stainless steel. When tamper resistant fasteners are required, spanner HD (snake eye) style shall be provided (special tool required, available at additional cost), consult factory for availability.

Finish:
Finish shall be Beacote III polyester powdercoat electrostatically applied and thermocured. Poles shall be subjected to chemical pre-treatment prior to painting by immersion process.

Options



Ordering Example:
AA-0024 / 4"MTC / BA / BKT

AA-00

Length
☐ 18 18"
☐ 20 20"
☐ 22 22"
☐ 24 24"
☐ 30 30"

Mounting
☐ 3"MTC mounting collar for 3" shaft
☒ 4"MTC mounting collar for 4" shaft
☐ 5"MTC mounting collar for 5" shaft
☐ 6"MTC mounting collar for 6" shaft
☐ BO bolted connection
☐ TO threaded connection

Options
☐ BA breakaway coupler system
☐ PA removable planter eyelet*
☐ 2X two banner arms at 180°

Finish
☐ BB black
☐ BZ bronze
☐ BG green
☐ BW white
☐ BY gray
☐ RAL RAL-
☐ OTHER

Consult factory for premium and verde finishes. Custom colors available.

BLS - Black Gloss Smooth

Notes:
* Consult factory



Domus
POLES & BASES

DATE: _____ LOCATION: _____

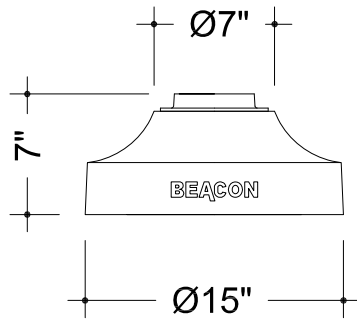
TYPE: _____ PROJECT: _____

CATALOG #: _____

RSAB-BC-60-BLS-DOMU

Sample *DOMU* 5 *BBT*
Ordering _____ / _____ / _____
A B C

DETAILS



A. MODEL

DOMU Domus

B. POST SHAFT DIAMETER

3 3"
4 4"
5 5"
6 6"

C. COLOR

BBT basic black textured
BMT black matte textured
WHT white textured
MBT metallic bronze textured
BZT bronze textured
DBT dark bronze textured
GYS gray smooth
DPS dark platinum smooth
GNT green textured
MST metallic silver textured
MTT metallic titanium textured
OWI old world iron
RAL _____

BLS - Black Gloss Smooth

Construction: All cast aluminum parts shall be low copper alloy A356. All extruded aluminum parts shall be alloy 6061-T6, 6063-T5 or equal. Standard fluted shaft profile shall be 16-flat flutes for 3"OD and 12-flat flutes for 4", 5", & 6"OD.

Base Covers: require specification of smooth or fluted shafts of the size required to meet wind load requirements

Vibration Dampeners: Vibration dampener pads shall be provided when required by customer or deemed necessary by Beacon Products. Please consult factory for bridge mounted applications.

EPA (effective projected area): EPA is defined as (projected surface area X drag factor) and measured in ft². Allowable post, luminaire arm, luminaire and accessory EPAs are derived from the most current published AASHTO (American Association of State Highway and Transportation Officials) standard, currently AASHTO 2001 (50yr design life). Customer assumes all responsibility for selecting the appropriate post for installation (consult factory for assistance). Luminaire arm, luminaire and accessory EPA must be equal to or less than allowable EPA of post. Consult a professional engineer for compliance with local codes and standards.

Anchor Bolt: Anchor bolts, sized as required, double hex nuts and flat washers shall be hot dipped galvanized steel. A bolt circle template shall be provided for installation.

Fasteners: All fasteners shall be Corrosion Resistant. When tamper resistant fasteners are required, spanner HD (snake eye) style shall be provided (special tool required, available at additional cost).

Finish: Finish shall be a Beacote V polyester powder-coat electrostatically applied and thermocured. Beacote V finish shall consist of a five stage iron phosphate chemical pretreatment regimen with a polymer primer sealer, oven dry off, and top coated with a thermoset super TGIC polyester powder coat finish. The finish shall meet the AAMA 605.2 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-pound.

Limited Warranty: Beacon Products warrants its products, to the original purchaser, against defects in materials and workmanship for proper usage for a period of 5 years after date of production, when properly installed, maintained and appropriately specified.

Due to our continued efforts to improve our products, product specifications are subject to change without notice.

Attachment 14
Drawings

UNIVERSITY OF NEW ENGLAND MARINE SCIENCE CENTER PIER

BIDDEFORD, MAINE



SOURCE:
MAINE ROAD MAP, GOOGLE IMAGES, ACCESSED SEPTEMBER 2023.

STATE MAP
(NOT TO SCALE)



SOURCE:
USGS TOPOGRAPHICAL MAP OF BIDDEFORD, MAINE 2022

SITE LOCATION MAP
(NOT TO SCALE)

SHEET INDEX

SHEET NO.	DRAWING NO.	TITLE
1	G-001	COVER SHEET
2	G-002	GENERAL NOTES
3	G-003	VICINITY PLAN
4	B-001	BORING LOCATION PLAN
5	B-002	BORING LOGS (1 OF 3)
6	B-003	BORING LOGS (2 OF 3)
7	B-004	BORING LOGS (3 OF 3)
8	B-005	INTERPRETIVE SUBSURFACE PROFILE
9	C-001	EXISTING CONDITIONS PLAN
10	C-002	DEMOLITION AND CONSTRUCTION STAGING
11	C-003	SITE PLAN
12	C-004	GRADING AND DRAINAGE PLAN
13	C-005	EROSION CONTROL PLAN
14	C-006	ACCESS ROAD PLAN AND PROFILE STA 1+00 TO MATCHLINE STA 4+00
15	C-007	ACCESS ROAD PLAN AND PROFILE MATCHLINE STA 4+00 TO STA 6+00
16	C-008	ACCESS ROAD TYPICAL SECTION
17	C-009	ACCESS ROAD SECTIONS 2+00 TO 3+75
18	C-010	ACCESS ROAD SECTIONS 4+00 TO 5+75
19	C-011	SITE DETAILS I
20	C-012	EROSION CONTROL NOTES
21	C-013	EROSION CONTROL DETAILS I
22	C-014	EROSION CONTROL DETAILS II
23	C-015	REVEGETATION PLAN
24	C-016	REVEGETATION NOTES, DETAILS AND SCHEDULES
25	S-001	PIER LAYOUT PLAN
26	S-002	PIER PLANS AND ELEVATIONS
27	S-003	TYPICAL PIER SECTIONS (1 OF 2)
28	S-004	TYPICAL PIER SECTIONS (2 OF 2)
29	S-005	PILE PLAN
30	S-006	PRECAST PILE CAP PLAN (1 OF 2)
31	S-007	PRECAST PILE CAP PLAN (1 OF 2)
32	S-008	PRECAST DECK PLANK PLAN
33	S-009	MISCELLANEOUS DETAILS (1 OF 5)
34	S-010	MISCELLANEOUS DETAILS (2 OF 5)
35	S-011	MISCELLANEOUS DETAILS (3 OF 5)
36	S-012	MISCELLANEOUS DETAILS (4 OF 5)
37	S-013	MISCELLANEOUS DETAILS (5 OF 5)
38	S-014	ABUTMENT DETAILS
39	F-001	FLOAT PLAN AND DETAILS

PROJECT INFO:

ZONING DISTRICT: INSTITUTIONAL (IN) ZONE WITH LIMITED RESIDENTIAL (LR) SHORELAND OVERLAY
EXISTING AND PROPOSED USE: MARINE RESEARCH CENTER
WATERSHED: SACO RIVER
WITHIN MS4 URBANIZED AREA: YES
WITHIN 100-YEAR FLOOD ZONE: NO
PUBLIC ROAD PROPOSED: NO
PRIVATE ROAD PROPOSED: YES
PUBLIC SEWER CONNECTION: YES, EXISTING
PUBLIC STORM DRAIN CONNECTION: NO

PERVIOUS COVERAGE: EXISTING= 105,843 SF
PROPOSED=95,194 SF

IMPERVIOUS COVERAGE: EXISTING=5,546 SF
PROPOSED=16,195 SF

BUILDING ROOF SQUARE FOOTAGE=751 WITHIN LIMIT OF DISTURBANCE

WAIVERS REQUESTED:
ARTICLE XI.II. SECTION 5.B.1.A. - SEE COVER LETTER
ARTICLE XI.II. SECTION 5.B.1.E.3. - SLOPES STEEPER THAN 2:1 IN LEDGE



THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, IS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF GEI CONSULTANTS AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF GEI CONSULTANTS.

PREPARED FOR:

UNIVERSITY OF NEW ENGLAND
11 HILLS BEACH ROAD
BIDDEFORD, MAINE
(207)283-0171



PREPARED BY:

GEI CONSULTANTS, INC.
5 MILK STREET
PORTLAND, ME 04101
(207)797-8901



FOR PERMIT

7	4/16/2025	BIDDEFORD PERMIT APP.	DJB		DWG. NO. G-001
6	9/17/2024	REVISED PERMIT SET	DJB		SHEET NO. 1 OF 39
5	6/27/2024	REVISED PERMIT SET	DJB		
4	9/14/2023	DEP PERMIT SET	DJB		
3	6/28/2023	75% DESIGN SUBMISSION	DJB		
NO.	DATE	ISSUE/REVISION	APP		

BANNON, DAN | geciconsultants.com\data\data - 4/16/2025

- COORDINATION OF WORK:**
- THE CONTRACTOR SHALL SCHEDULE ALL ACTIVITIES SO AS TO LIMIT IMPACT TO MARINE AND LANDSIDE USES.
 - WORK SHALL BE COORDINATED WITH THE OWNER AND THEIR REPRESENTATIVES:
UNE:A:A:A: ANDREW PHILIPPE 207-602-2365 (OFFICE) 207-400-6166 (CELL)
GEI:A:A:B: DANIEL BANNON 207-347-2372 (OFFICE) 207-671-2583 (CELL)
SDA:A:A:C: TOM SAUCIER 207-449-4275
 - WORK IS SUBJECT TO THE FOLLOWING TIME OF YEAR AND TIMING OF ACTIVITY RESTRICTIONS:
 - TO BE DEFINED UPON PERMIT APPROVAL.
 - CONTRACTOR ACCESS TO THE SITE BY WATER SHALL AT NO TIME IMPACT USE OF THE ADJACENT FEDERAL NAVIGATION CHANNEL.
 - THE OWNER WILL PERMIT THE CONTRACTOR TO HAVE A LAYDOWN AREA ON THE UPLAND PROPERTY FOR USE DURING CONSTRUCTION. AN APPROXIMATE LAYDOWN AREA IS SHOWN ON SHEET C-005. THE FINAL LOCATION AND DIMENSIONS OF THE LAYDOWN AREA SHALL BE APPROVED BY THE OWNER.

- SITE ENVIRONMENTAL CONTROLS:**
- ALL WORK SHALL BE PERFORMED IN COMPLIANCE WITH CITY, STATE, AND FEDERAL PERMITS. COPIES OF PERMIT APPROVALS ARE PROVIDED IN THE PROJECT MANUAL.

- OSHA REQUIREMENTS:**
- PURSUANT TO 26 M.R.S.A. §565, THE CONTRACTOR SHALL ADHERE TO THE OCCUPATIONAL SAFETY AND HEALTH STANDARDS AS PROMULGATED BY THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AT 29-CFR PART 1926 AS MOST RECENTLY AMENDED.

- EROSION CONTROL:**
- EROSION AND SEDIMENTATION CONTROL MEASURES ARE PROPOSED TO CONTROL ACCELERATED EROSION AND SEDIMENTATION AND REDUCE ADVERSE IMPACTS FROM RUNOFF AND EROSION AT THE WORK SITE.
 - APPLICATION OF TEMPORARY AND PERMANENT EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MAINE EROSION AND SEDIMENT CONTROL BMP'S PUBLISHED BY MAINE DEP AND AVAILABLE AT: [HTTPS://WWW.MAINE.GOV/DEP/LAND/EROSION/ESCBMPS/](https://www.maine.gov/dep/land/erosion/escbmps/)
 - THE WORK SHALL BE PERFORMED BY A CONTRACTOR THAT IS CERTIFIED BY MAINE DEP IN EROSION AND SEDIMENT CONTROL MEASURES. A CERTIFIED INDIVIDUAL SHALL BE ONSITE DURING ALL CONSTRUCTION ACTIVITY.
 - EROSION AND SEDIMENTATION DUE TO RUNOFF, TIDAL EXPOSURE, AND WAVE ACTION SHALL BE CONTROLLED BY STAGING CONSTRUCTION ACTIVITY TO MINIMIZE AREA AND TIME OF DISTURBANCE. APPLICATION OF SILT FENCE, BARRIERS, AND OTHER EROSION CONTROL MEASURES, AND PRESERVING NATURAL VEGETATION WHENEVER POSSIBLE.
 - THE CONTRACTOR'S SEQUENCE OF OPERATIONS AND SCHEDULE FOR WORK ACTIVITIES SHALL ACT TO MINIMIZE EXPOSURE TO EROSION.
 - THE CONTRACTOR SHALL TAKE CARE TO LIMIT THE AREA OF SOIL DISTURBANCE TO THE MINIMUM NECESSARY TO COMPLETE THE WORK.
 - EROSION CONTROL MEASURES, SEEDING, AND VEGETATION SHALL BE INSPECTED WEEKLY AND AFTER RAINSTORMS, RUNOFF EVENTS, AND STORM EVENTS UNTIL FINAL ACCEPTANCE. REPAIRS SHALL BE MADE WHEN NO LONGER SERVICEABLE DUE TO DAMAGE OR ACCUMULATION OF SEDIMENT.
 - AT THE COMPLETION OF CONSTRUCTION, ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND CONTOUR, UNLESS OTHERWISE INDICATED ON THE PLANS.

- SITE PREPARATION:**
- CONTRACTOR SHALL INSTALL ALL SIGNAGE PRIOR TO INITIATION OF CONSTRUCTION ACTIVITIES. INCLUDE OWNER PROJECT SIGNAGE AND FEDERAL AND STATE MANDATED WORK PLACE SIGNAGE.
 - CONTRACTOR SHALL HAVE IN-PLACE TRASH AND SANITARY FACILITIES FOR THE WORK PLACE.
 - DISCOVERY OF INCONSISTENT SITE INFORMATION OR CONDITIONS ARE TO BE IMMEDIATELY CONVEYED TO THE OWNER AND ENGINEER PRIOR TO COMMENCING OR CONTINUING CONSTRUCTION.
 - THE CONTRACTOR SHALL NOTIFY DIG SAFE PRIOR TO COMMENCING ANY WORK.
 - LOCATIONS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY LOCATIONS OF UTILITIES AS MAY BE REQUIRED. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES OCCURRING AS A RESULT OF THE CONTRACTOR'S FAILURE TO LOCATE AND PROTECT UNDERGROUND UTILITIES. ALL REPAIRS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE.
 - CONTRACTOR SHALL MAINTAIN AND PROTECT ALL EXISTING UTILITIES AND DRAINAGE AT ALL TIMES. THE CONTRACTOR SHALL REPAIR ANY DAMAGE AND RESTORE TO THE PRE-EXISTING CONDITION AT NO COST TO THE OWNER.
 - CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES AND SHALL PERFORM THE WORK IN A MANNER THAT AVOIDS DAMAGE TO EXISTING STRUCTURES. STRUCTURES INCLUDE, BUT ARE NOT LIMITED TO, BUILDINGS, PIERS, BULKHEADS, FLOATS, PIER UTILITIES AND FIXTURES, AND RIPRAP SLOPES. CONTRACTOR SHALL REPAIR ANY DAMAGE AT NO ADDITIONAL COST TO THE CITY.
 - CONTRACTOR SHALL SUPPLY ALL NECESSARY TEMPORARY UTILITIES FOR CONSTRUCTION INCLUDING, BUT NOT LIMITED TO: WATER, POWER, LIGHTING, DATA, AND TELEPHONE.
 - CONTRACTOR SHALL READ AND UNDERSTAND ALL REGULATORY CONDITIONS ASSOCIATED WITH THE PROJECT AND SHALL COMPLY WITH ALL ENVIRONMENTAL REQUIREMENTS AND PERMIT CONDITIONS.
 - CONTRACTOR SHALL PROVIDE A CONFINED CONCRETE TRUCK WASHDOWN AREA AT A LOCATION TO BE APPROVED BY THE ENGINEER. WASHDOWN AREA SHALL INCLUDE PROTECTION TO PAVEMENT, A PERIMETER WALL AND A FILTER FABRIC LINER. NO RUNOFF CONTAINING CEMENT OR OTHER SUSPENDED SOLIDS WILL BE PERMITTED. ALL MATERIALS SHALL BE COMPLETELY REMOVED UPON COMPLETION OF CONSTRUCTION AND DISPOSED OF AT AN APPROVED DISPOSAL LOCATION.

- CODES:**
- MAINE DOT STANDARD SPECIFICATIONS, MARCH 2020 ED. WITH SUPPLEMENTAL SPECIFICATIONS THROUGH JUNE 16,2023.
 - MAINE UNIFORM BUILDING AND ENERGY CODE (MUBEC).
 - AMERICAN CONCRETE INSTITUTE (ACI) 318-14; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, 2014 ED.
 - CONCRETE REINFORCING STEEL INSTITUTE (CRSI):
 - AMERICAN INSTITUTE FOR STEEL CONSTRUCTION (AISC) STEEL CONSTRUCTION MANUAL, 15TH ED.
 - ALUMINUM ASSOCIATION, ALUMINUM DESIGN MANUAL, 2015 ED.
 - AMERICAN WOOD COUNCIL, NATIONAL DESIGN SPECIFICATIONS (NDS) FOR WOOD CONSTRUCTION, 2015 ED.

- SITE CONTROL AND BASELINES:**
- PROJECT BASE PLAN HAS BEEN DEVELOPED FROM A COMPILATION OF MULTIPLE SURVEYS AS DESCRIBED UNDER "SURVEY AND PROPERTY NOTES".
 - ELEVATIONS ARE PROVIDED IN NAVD88 VERTICAL DATUM UNLESS OTHERWISE NOTED.
 - THE CONTRACTOR SHALL INSTALL SURVEY CONTROL AS NECESSARY TO PERFORM THE WORK. PERMANENT SURVEY CONTROL (AT LEAST 2 POINTS) SHALL BE ESTABLISHED FOR THE PROJECT AND PROTECTED FROM DAMAGE DURING CONSTRUCTION AND PROVIDED ON AS-BUILT DRAWINGS.
 - THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN PROJECT BASELINES AND CONTROL AS REQUIRED TO ENSURE ACCURATE LOCATION OF ALL ELEMENTS OF THE PROJECT.

- SURVEY AND PROPERTY NOTES:**
- LOCUS PARCEL IS DEPICTED ON CITY OF BIDDEFORD, TAX MAP 52, LOT 4 AND IS LOCATED IN THE INSTITUTIONAL (IN) ZONE. A PORTION OF THE SITE IS LOCATED IN THE LIMITED RESIDENTIAL (LR) SHORELAND OVERLAY DISTRICT.
 - THE RECORD OWNER IS THE UNIVERSITY OF NEW ENGLAND, BY DEED DATED APRIL 18, 1962, RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1484, PAGE 0145.
 - UPLAND TOPOGRAPHY AND BASE SURVEY INFORMATION DEPICTED HEREON ARE BASED ON THE FOLLOWING SURVEYS:
 - "TOPOGRAPHIC SURVEY, MARINE SCIENCE CENTER, UNIVERSITY OF NEW ENGLAND" BY OWEN HASKELL, INC. DATED DEC. 13, 2022.
 - "TOPOGRAPHIC SURVEY AT MARINE SCIENCE CENTER" BY STATEWIDE SURVEYS, INC., DATED MAY 4, 2015.
 - HYDROGRAPHIC DATA DEPICTED HEREON IS BASED ON 2022 SURVEY BY OWEN HASKELL SURVEY.
 - FEDERAL CHANNEL LIMITS ARE DEPICTED BASED ON THE PLAN, "SACO RIVER, SACE AND BIDDEFORD, MAINE, CONDITION SURVEY" PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS, DATED JULY 3, 2021.
 - HORIZONTAL COORDINATES ARE BASED ON NAD83 MAINE STATE PLANE WEST ZONE -1801 AND ARE EXPRESSED IN FEET. ELEVATIONS ARE BASED ON NAVD88 VERTICAL DATUM AND CONTROL POINTS PROVIDED BY UNE.
 - UTILITY INFORMATION DEPICTED HEREON IS BASED ON FEBRUARY 2023 UTILITY LOCATION SURVEY PERFORMED BY BLOOD HOUND, LLC UNDERGROUND UTILITY LOCATORS AND MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTACT DIG SAFE (1-888-DIG-SAFE) AND VERIFY EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION OR EXCAVATION.
 - PORTIONS OF THE PROPERTY ARE DEPICTED AS BEING IN A SPECIAL FLOOD HAZARD AREA BASED ON FEMA PRELIMINARY FRM 23031C0459G DATED APRIL 14, 2017. THE SITE IS LOCATED IN A VE ZONE HAVING BASE FLOOD ELEVATION OF 14 FT NAVD88.
 - SUBSURFACE INFORMATION IS BASED ON EXPLORATIONS PERFORMED IN 2015 AND 2022 CONSISTING OF BORINGS, PROBES, AND TEST PITS. REFER TO SHEETS B-001 - B-005 FOR SUBSURFACE INFORMATION.

- CONCRETE**
- CAST IN PLACE CONCRETE SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS BASED ON THE MAINE DOT STANDARD SPECIFICATION:

LOCATION	MDOT CLASS	f _c
ALL CONCRETE	CLASS LP	5,000 PSI
 - ALL REINFORCEMENT SHALL BE NEW DEFORMED BARS, GRADE 60 CONFORMING TO ASTM A615, HOT DIP GALVANIZED ACCORDING TO ASTM A767/A767M OR ASTM A1094/A1094M.
 - REINFORCEMENT ACCESSORIES SHALL BE DIELECTRIC COATED STEEL OR APPROVED PLASTIC.
 - GROUT SHALL BE A HIGH STRENGTH, NON-SHRINK GROUT WITH SALT WATER RESISTANCE.
 - CONCRETE COVER SHALL BE A MINIMUM OF 3 INCHES UNLESS NOTED OTHERWISE.
 - ALL EXPOSED EDGES OF CONCRETE AT COLD JOINTS SHALL HAVE A ROUGHENED FINISH AND BE COATED WITH EPOXY BONDING AGENT PRIOR TO CASTING ADJACENT POUR.
 - PROVIDE 1 INCH CHAMFER ON ALL EXPOSED EDGES UNLESS NOTED OR DIRECTED OTHERWISE.
 - TOP SURFACE OF EXPOSED CONCRETE SHALL RECEIVE A BROOM FINISH.
 - COAT FINISHED SURFACES OF CONCRETE WITH A 100% SILANE PENETRATING CONCRETE SEALER SUITABLE FOR USE IN A MARINE ENVIRONMENT. SEALER SHALL BE LISTED ON THE MAINE DOT QUALIFIED PRODUCTS LIST.
 - REINFORCEMENT DEVELOPMENT AND LAP SPICE LENGTHS SHALL BE IN ACCORDANCE WITH ACI 318.
 - CONCRETE MIX DESIGN SHALL INCLUDE THE USE OF CORROSION INHIBITING ADMIXTURE AT DOSAGE SUITABLE FOR USE IN AN AGGRESSIVE MARINE ENVIRONMENT. CORROSION INHIBITOR SHALL BE LISTED ON THE MAINE DOT QUALIFIED PRODUCTS LIST.

- EPOXY ANCHORS**
- ANCHOR ROD, WASHERS, AND NUTS SHALL CONFORM TO ASTM F1554, GRADE 36, AND SHALL BE HOT DIP GALVANIZED.
 - THE MINIMUM EDGE DISTANCE AND MINIMUM SPACING FOR ALL ANCHORS SHALL BE 6 BOLT DIAMETERS.
 - ALL HOLES SHALL BE DRILLED TO THE RECOMMENDED DIAMETER PER MANUFACTURERS REQUIREMENTS USING CARBIDE DRILL BITS MEETING ANSI B212.5-1994.
 - HOLES SHALL BE BRUSHED WITH NYLON BRUSH AND BLOWN CLEAN USING OIL-FREE COMPRESSED AIR A MINIMUM OF TWO TIMES.
 - ALL HOLES SHALL BE FREE OF STANDING WATER BEFORE INSTALLING ANCHORS.
 - EPOXY SHALL HAVE MINIMUM BOND STRENGTH OF 1,600 PSI @ 14 DAYS.

- EARTHWORK**
- EARTHWORK MATERIALS SHALL MEET THE FOLLOWING SPECIFICATIONS:

AGGREGATE BASE	TYPE A (MDOT 703.06A)
AGGREGATE SUBBASE	TYPE D (MDOT 703.06C)
WALL BACKFILL	CRUSHED STONE ¾" (MDOT 703.13)
DRAINAGE STONE	CRUSHED STONE 2 INCH (MDOT 703.31)
ORDINARY BORROW	SEE #2 BELOW.
 - ORDINARY BORROW SHALL BE EXISTING GRANULAR SOIL WITH MAXIMUM 4 INCH STONE SUBJECT TO APPROVAL BY THE ENGINEER. ALL DEBRIS OR OTHER DELETERIOUS MATERIALS SHALL BE REMOVED FROM ORDINARY BORROW PRIOR TO REUSE.

- STEEL**
- STEEL ANGLE, STRAPS, AND MISCELLANEOUS FABRICATIONS SHALL BE ASTM A36 HOT DIP GALVANIZED AFTER FABRICATION, UNLESS OTHERWISE NOTED.
 - ALL FASTENERS SHALL BE HOT-DIP GALVANIZED OR STAINLESS STEEL.
 - ALL BOLTS SHALL CONFORM TO ASTM A307. MINIMUM SIZE SHALL BE ½ INCH UNLESS OTHERWISE NOTED.

- HEAVY TIMBER**
- UNLESS OTHERWISE SPECIFIED, ALL TIMBER FRAMING TO BE USED SHALL BE NO. 1 AND BETTER SOUTHERN PINE AS GRADED BY SPIB AND WITH DESIGN VALUES PER NDS 2015.
 - ALL TIMBER SHALL BE NEW AND SUPPLIED WITH NOMINAL DIMENSIONS UNLESS OTHERWISE NOTED.
 - ALL NEW SOUTHERN YELLOW PINE TIMBER MEMBERS TO WHICH THE PUBLIC MAY BE EXPOSED SHALL BE TREATED WITH ALKALINE COPPER QUATERNARY (ACQ) IN ACCORDANCE WITH AWP& AWPB W/ MINIMUM RETENTION OF 0.60 LBS. PER CUBIC FOOT. ALL OTHER SOUTHERN YELLOW PINE MEMBERS SHALL BE CCA TREATED TO 2.5 PCF RETENTION.
 - ALL EXPOSED EDGES SHALL BE PLANED OR SANDED TO PROVIDE SMOOTH SURFACE FREE OF ROUGH EDGES OR DEFECTS.
 - ALL EXPOSED FASTENERS SHALL BE COUNTERSUNK.
 - DOCK WASHERS SHALL BE PROVIDED BENEATH NUT OR BOLT HEAD OF ALL TIMBER BOLTED CONNECTIONS. TIMBER BOLTS SHALL BE CONSIDERED AN ACCEPTABLE ALTERNATIVE TO HEX HEADED BOLTS WITH DOCK WASHERS.
 - STANDARD WASHERS SHALL BE PERMISSIBLE WHERE CONNECTED PARTS INCLUDE STEEL PLATES, ANGLES, BRACKETS, OR BACKER PLATES.

- TIMBER PILES**
- TIMBER PILES SHALL BE TROPICAL GREENHEART AND SHALL CONFORM TO ASTM D25.
 - PROVIDE PROTECTION TO PILE TIP AND BUTT TO AVOID DAMAGE DURING DRIVING.
 - PILES SHALL BE ORDERED MINIMUM 5 FT LONGER THAN TABULATED LENGTHS TO ALLOW FOR INSTALLATION VARIABILITY AND CUTOFF.
 - ALL TIMBER PILES SHALL BE DRIVEN TO THE MINIMUM EMBEDMENT OR CAPACITY CRITERIA INDICATED IN THE PILE SCHEDULE. FENDER PILES MAY BE INSTALLED TO THE REQUIRED DEPTH USING A VIBRATORY HAMMER. IN THE EVENT THAT A VIBRATORY HAMMER IS UNABLE TO ACHIEVE THE MINIMUM REQUIRED EMBEDMENT, THE CONTRACTOR WILL BE RESPONSIBLE FOR COMPLETING FINAL SET USING AN IMPACT HAMMER.
 - GREENHEART PILES SHALL BE BANDED WITH ½" INCH STAINLESS STEEL UTILITY STRAPPING PRIOR TO CUTOFF. REFER TO DETAIL ON SHEET S-009.

- ASPHALT**
- PAVING GRADES SHALL PITCH TO EXISTING STRUCTURES.
 - PAVEMENT SHALL CONSIST OF 4" OF HOT MIX ASPHALT PLACED IN TWO COURSES, SEE DETAIL.
 - CONTRACTOR TO SAW CUT PAVEMENT AT LIMIT OF REMOVAL.
 - CONTRACTOR TO PROVIDE SMOOTH TRANSITIONS BETWEEN NEW AND EXISTING ASPHALT.
 - CONTRACTOR TO SEAL JOINT BETWEEN NEW AND EXISTING ASPHALT WITH BITUMINOUS JOINT SEALANT.

- GEOTEXTILE**
- GEOTEXTILE SEPARATION FABRIC SHALL BE MIRAFI FW700 OR EQUIVALENT.
 - OVERLAP ALL SEAMS MINIMUM 2 FT.
 - INSTALL PER MANUFACTURERS RECOMMENDATIONS.

- STEEL PIPE PILES**
- STEEL PIPE PILES SHALL CONFORM TO ASTM A252, GRADE 3.
 - ALL PILES SHALL BE SEAMLESS.
 - AN OPEN CUTTING SHOE IS REQUIRED.
 - PIPE PILES SHALL BE COATED WITH FUSION BONDED EPOXY, COLOR BROWN. MINIMUM COATING THICKNESS SHALL BE 18-20 MIL. COATING SHALL EXTEND FROM TOP OF PILE DOWN TO MINIMUM 5-FEET BELOW GRADE.
 - DAMAGE TO ANY STEEL COATING SHALL BE TOUCHED UP BY THE CONTRACTOR USING APPROVED MATERIALS AND METHODS.
 - ALL PILES SHALL BE FILLED TO THE TOP WITH CONCRETE AFTER INSTALLATION. ROCK-SOCKETED PILES SHALL BE CLEANED OUT AND FILLED FOR THEIR ENTIRE LENGTH PRIOR TO CONCRETE FILLING. DRIVEN PILES SHALL BE CLEANED OUT TO MINIMUM 10-FEET BELOW ADJACENT MUDLINE.
 - REFER TO PILE SCHEDULE ON SHEET S-005 FOR ESTIMATED PILE LENGTHS, COATING LENGTHS, SIZES, AND SOCKETING REQUIREMENTS.

- TIMBER FLOATS**
- FLOAT MANUFACTURER SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS SIGNED AND SEALED BY A MAINE LICENSED PROFESSIONAL ENGINEER. MANUFACTURER SHALL BE RESPONSIBLE FOR FINAL DETERMINATION OF FLOAT FRAMING AND DRUM LAYOUT TO MEET BOUYANCY, LOADING, AND ENVIRONMENTAL EXPOSURE REQUIREMENTS IN ACCORDANCE WITH THE SPECIFICATIONS.
 - UNLESS OTHERWISE SPECIFIED, ALL TIMBER TO BE USED SHALL BE NO. 1 AND BETTER SOUTHERN PINE AS GRADED BY SPIB AND WITH DESIGN VALUES PER NPFA NATIONAL DESIGN SPECIFICATION OR THE EQUIVALENT FOR DOUGLAS FIR AS GRADED BY WCLIB AND WWP&.
 - ALL TIMBER SHALL BE NEW AND SUPPLIED WITH NOMINAL DIMENSIONS.
 - ALL TIMBER MEMBERS TO WHICH THE PUBLIC MAY BE EXPOSED SHALL BE TREATED WITH ALKALINE COPPER QUATERNARY (ACQ) IN ACCORDANCE WITH AWP& AWPB W/ MINIMUM RETENTION OF 0.40 LBS. PER CUBIC FOOT. ALL OTHER SOUTHERN YELLOW PINE MEMBERS SHALL BE CCA TREATED TO 2.5 PCF RETENTION.
 - DECKING SHALL BE NO. 1 SOUTHERN PINE, MINIMUM SIZE 2X6.
 - MISC. HARDWARE: GALVANIZED STEEL PLATES AND ALL BOLTS AND RELATED HARDWARE SHALL BE FASHIONED FROM STEEL AND GALVANIZED AFTER FABRICATION AND IN ACCORDANCE WITH REQUIREMENTS OF ASTM A123, AND/OR A153. BOLTS AND NUTS SHALL CONFORM TO ASTM A307.
 - CONNECTION HARDWARE SHALL BE FABRICATED FROM ASTM-A36 GRADE STEEL WITH MINIMUM THICKNESS ¼".
 - PROVIDE GUIDE/WEARING BRACKETS AT GANGWAY LANDING ON FLOAT "C" PER DETAIL A ON SHEET S-012. BRACKETS SHALL BE LOCATED IN FIELD TO BE CENTERED ON GANGWAY RANGE OF TRAVEL AT MID-TIDE ELEVATION.
 - TRANSITIONS BETWEEN FLOATING DOCKS SHALL INCLUDE ADA COMPLIANT TRANSITION PLATES ACROSS GAPS AT HINGE LOCATIONS.
 - FLOATING DOCKS SHALL MEET THE FOLLOWING LOADING AND FREEBOARD CRITERIA:

DEAD LOAD	20 INCH FREEBOARD
20 PSF UNIFORM LIVE LOAD	MINIMUM 8 INCH FREEBOARD
40 PSF UNIFORM LIVE LOAD	MINIMUM ZERO FREEBOARD

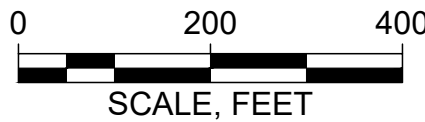
DEAD LOADS SHALL INCLUDE ALL COMPONENTS AND ATTACHMENTS INCLUDING WEIGHT OF ALUMINUM GANGWAY BEARING ON FLOAT "C".

- ALUMINUM GANGWAY**
- GANGWAY MANUFACTURER SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS SIGNED AND SEALED BY A MAINE LICENSED PROFESSIONAL ENGINEER. MANUFACTURER SHALL BE RESPONSIBLE FOR FINAL DETERMINATION OF GANGWAY FRAMING AND CONFIGURATION TO MEET STRUCTURAL, PERFORMANCE, AND ACCESSIBILITY REQUIREMENTS IN ACCORDANCE WITH THE SPECIFICATIONS.
 - GANGWAY SHALL MEET THE FOLLOWING LOADING AND DEFLECTION CRITERIA:
 - DEAD LOAD SHALL CONSIST OF WEIGHT OF THE ENTIRE GANGWAY STRUCTURE PLUS ANY UTILITIES AND ATTACHMENTS.
 - ALLOWABLE STRESSES IN DECK SURFACE, GANGWAY FRAMING, AND MOUNTING COMPONENTS SHALL NOT BE EXCEEDED AT A UNIFORM LIVE LOAD OF 100 PSF.
 - 50 PSF UNIFORM LIVE LOAD MAX. DEFLECTION L/360
 - 100 PSF UNIFORM LIVE LOAD MAX. DEFLECTION NOT TO EXCEED GANGWAY CAMBER
 - ALL HANDRAIL AND POSTS SHALL BE DESIGNED TO WITHSTAND A 200 LB LOAD APPLIED IN ANY DIRECTION OR A 50 LB/FT LOAD APPLIED ALONG THE HANDRAIL LENGTH.
 - GANGWAY HINGES SHALL BE CAPABLE OF TRAVELING FREELY AND WITHOUT BINDING THROUGH THE ENTIRE RANGE OF WATER LEVELS FROM MLLW TO BASE FLOOD ELEVATION PLUS TWO-FEET OF ADDITIONAL ELEVATION IN EITHER DIRECTION.

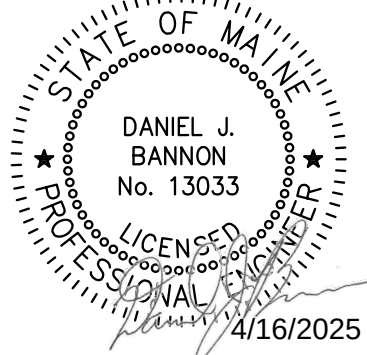
FOR PERMIT

Attention: 01" If this scale bar does not measure 1" then drawing is not original scale.	STATE OF MAINE DANIEL J. BANNON No. 13033 PROFESSIONAL ENGINEER 4/16/2025	Designed: DJB	GEI Consultants GEI CONSULTANTS, INC. 5 MILK STREET PORTLAND, ME 04101 (207)797-8901	UNE UNIVERSITY OF NEW ENGLAND 11 HILLS BEACH RD. BIDDEFORD, MAINE	UNIVERSITY OF NEW ENGLAND MARINE SCIENCE CENTER PIER 11 HILLS BEACH ROAD BIDDEFORD, YORK COUNTY, MAINE					SHEET NAME	SHEET NO.
		Drawn: JAM				7	4/16/2025	BIDDEFORD PERMIT APP.	DJB		
		Checked: BJB				6	9/17/2024	REVISED PERMIT SET	DJB		
		Approved: BMM				5	6/27/2024	REVISED PERMIT SET	DJB		
		P.E. No: 13033				4	9/14/2023	DEP PERMIT SET	DJB		
		GEI Project 2203703				3	6/28/2023	75% DESIGN SUBMISSION	DJB		
						2	2/15/2023	30% DESIGN SUBMISSION	DJB		
						1	12/9/2022	15% DESIGN SUB REV	DJB		
						0	11/11/2022	15% DESIGN SUBMISSION	DJB		
						NO	DATE	ISSUE/REVISION	APP		

G-002



Attention:
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Drawn:	JAM
Checked:	BJB
Approved:	BMM
P.E. No:	13033
GEI Project	2203703



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BIDDEFORD, MAINE

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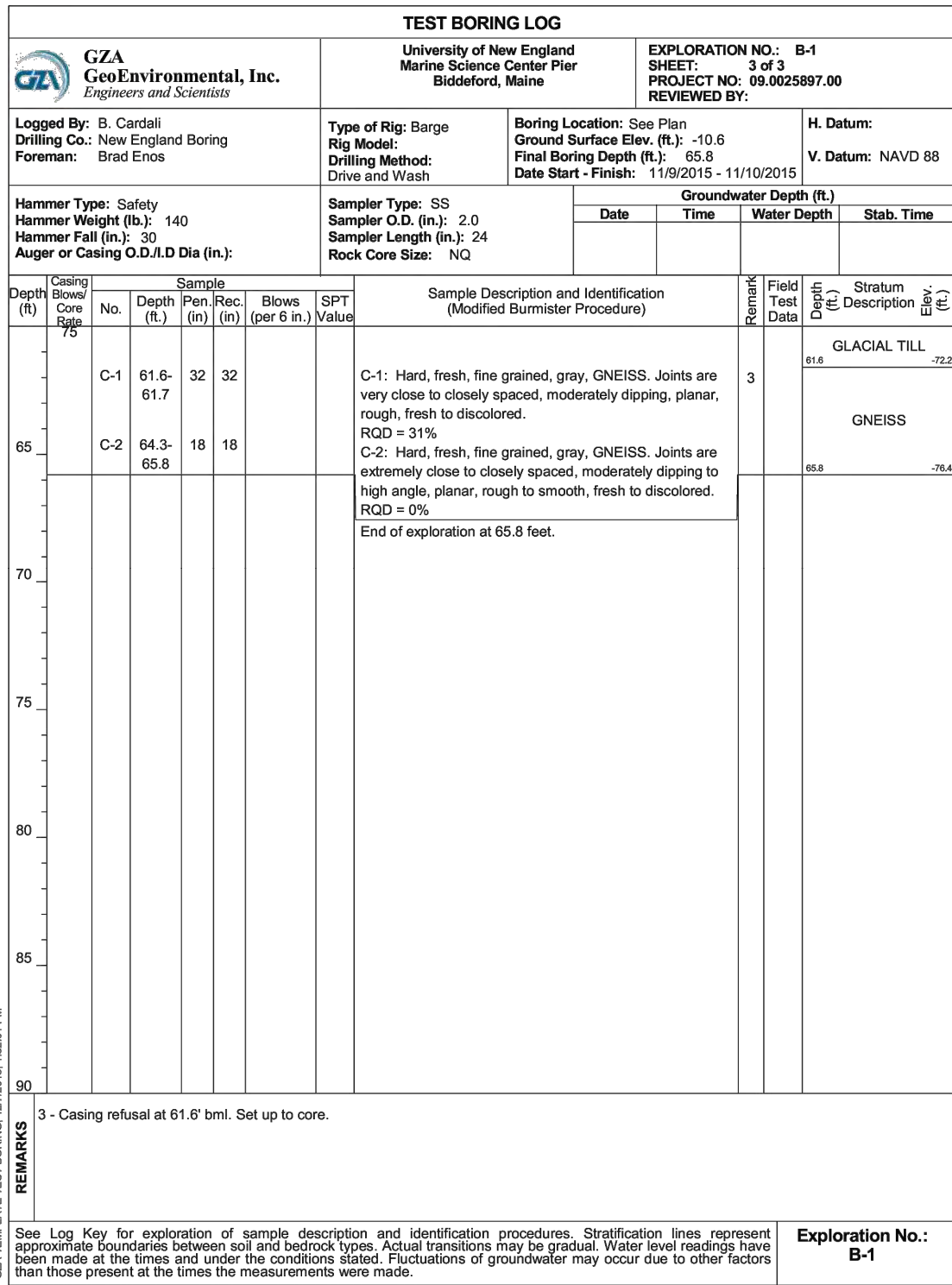
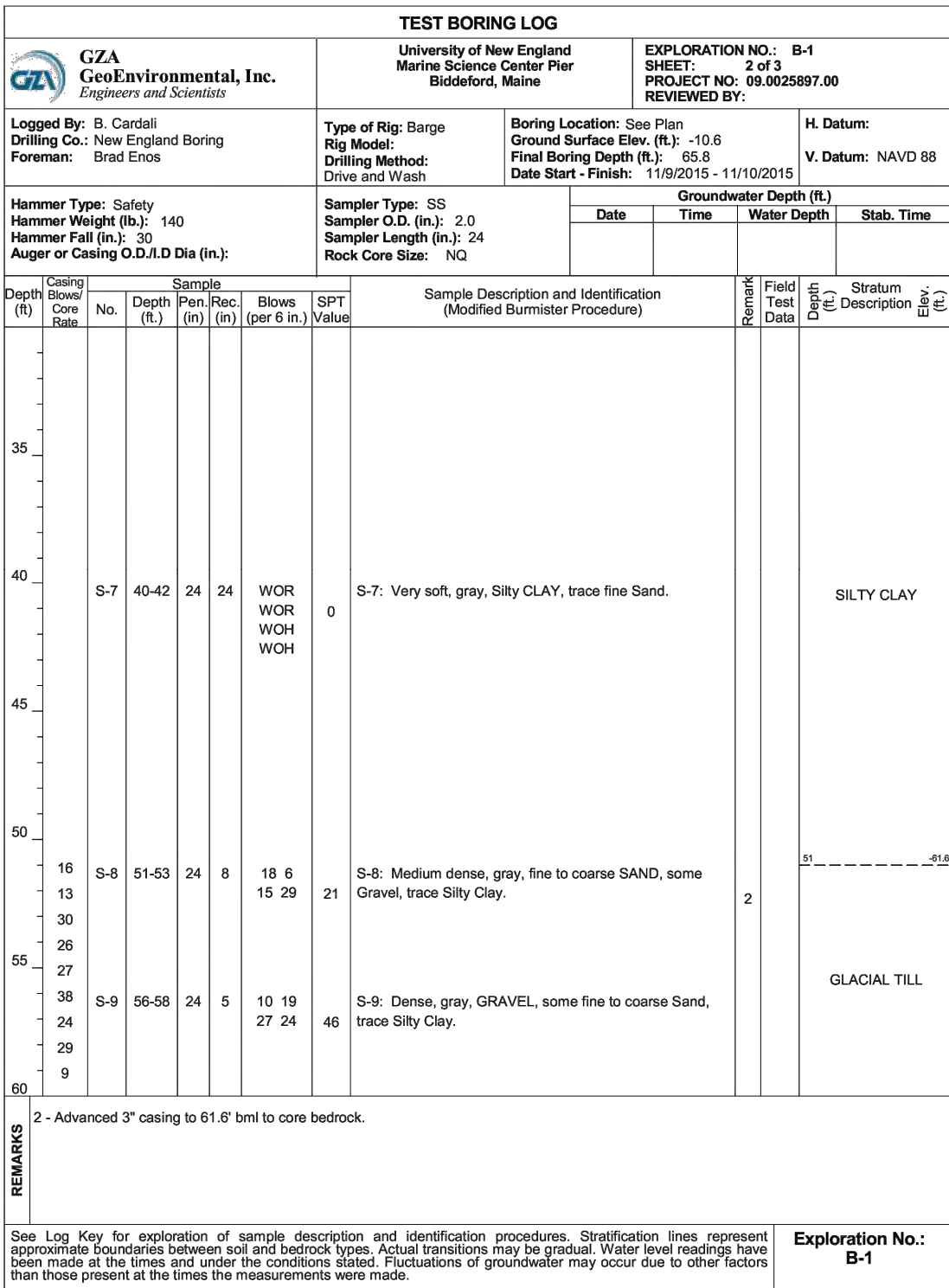
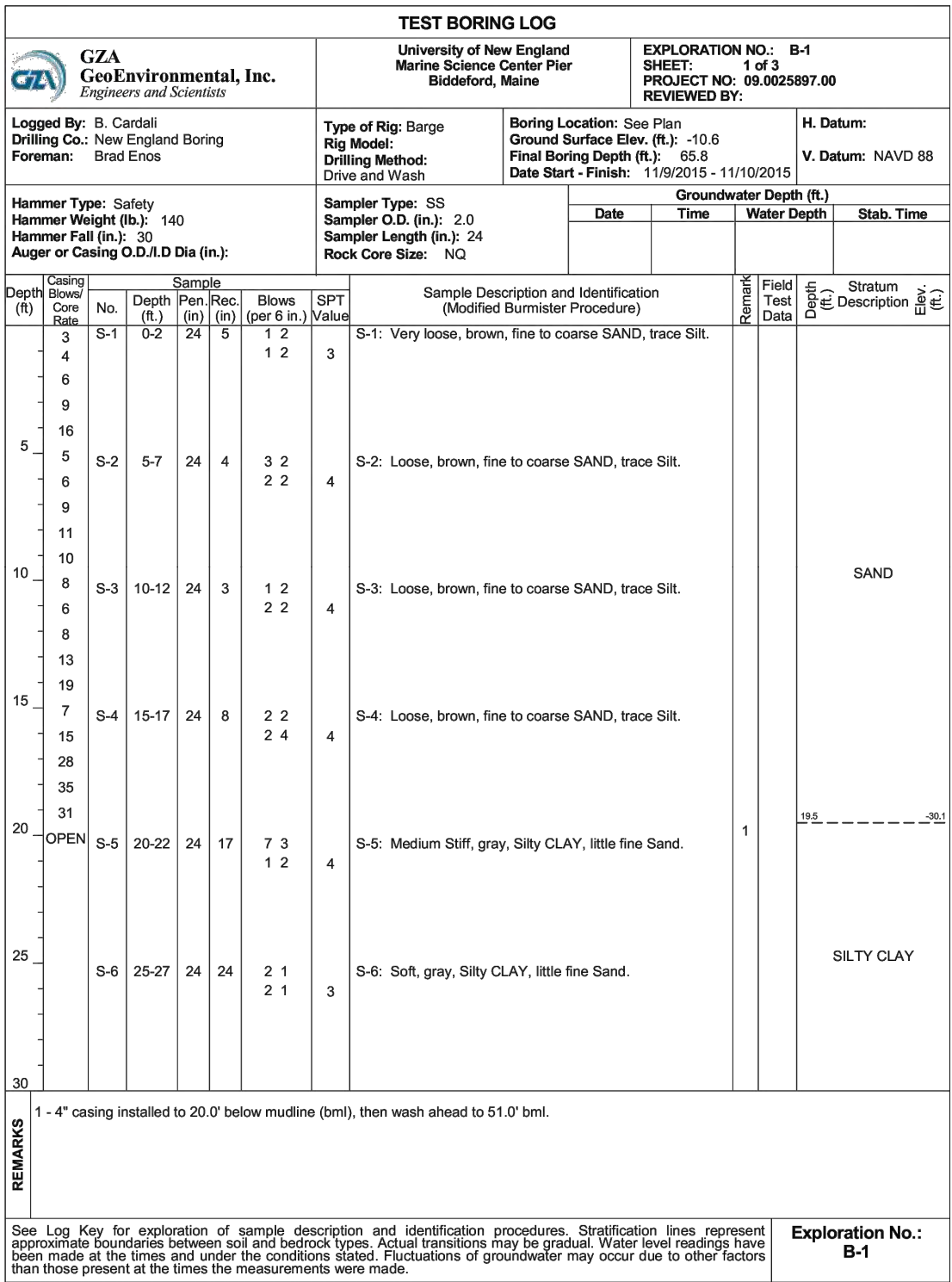
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

NO	DATE	ISSUE/REVISION	APP
7	4/16/2025	BIDDEFORD PERMIT APP.	DJB
6	9/17/2024	REVISED PERMIT SET	DJB
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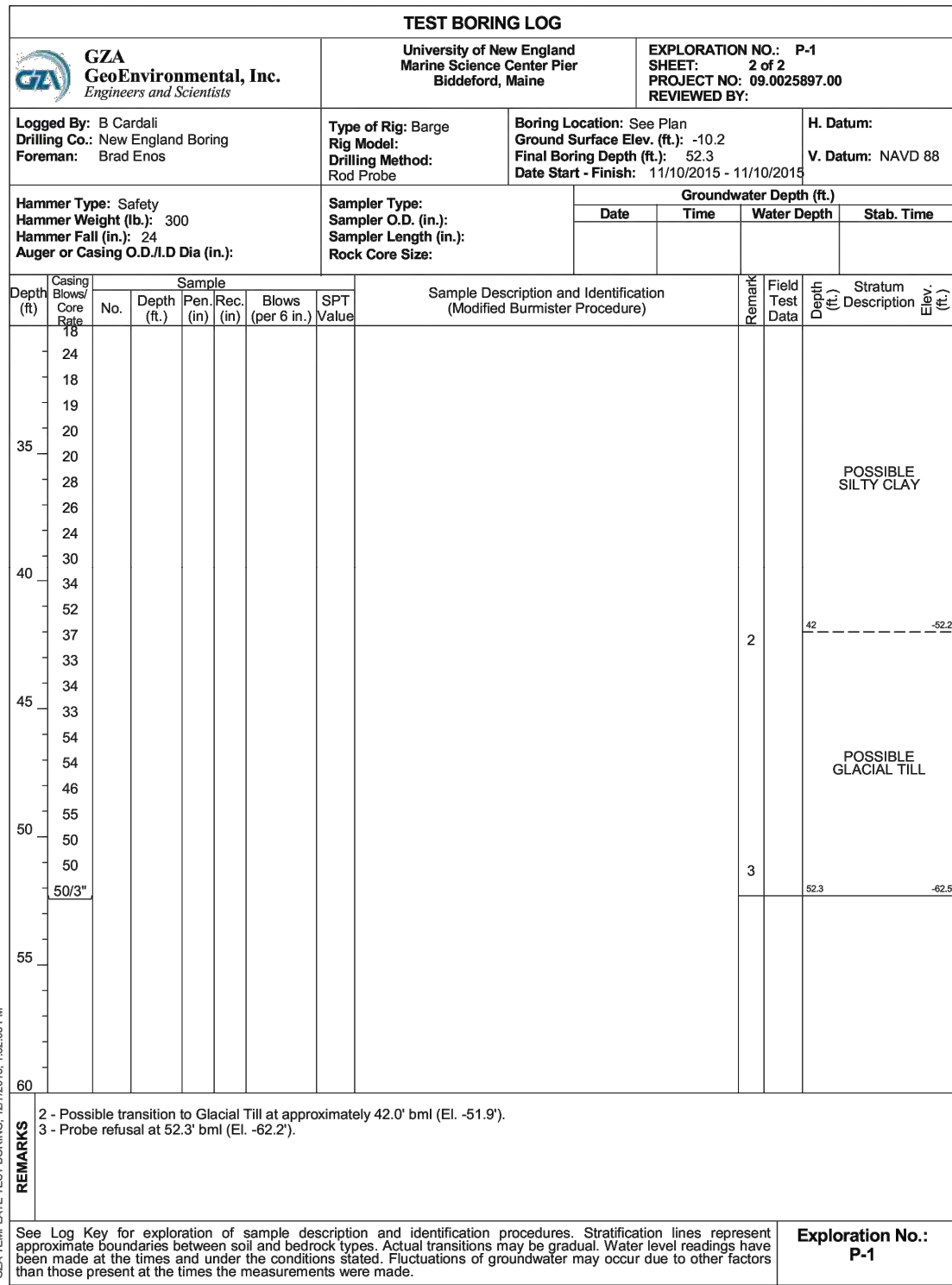
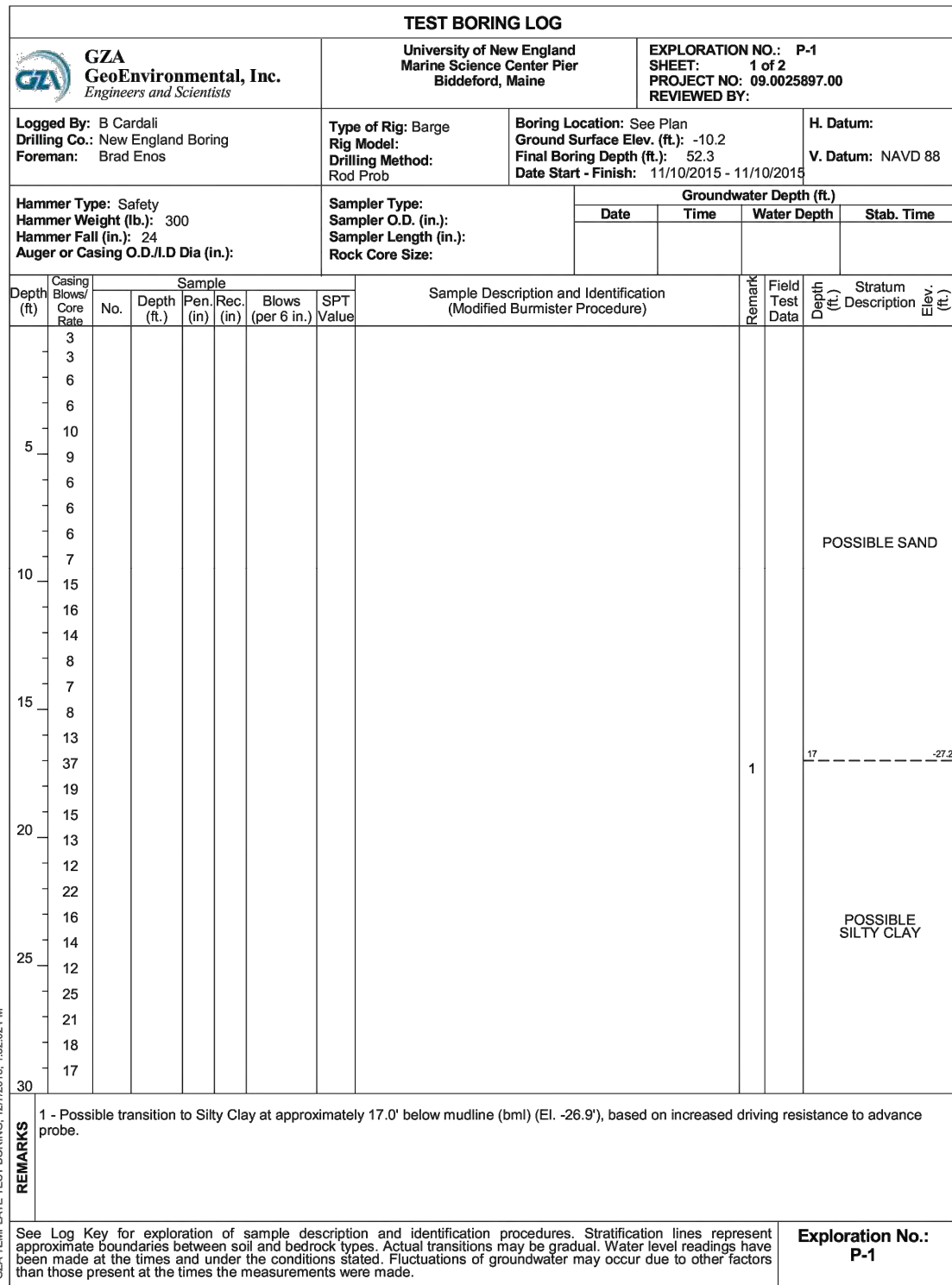
SHEET NAME	SHEET NO.
VICINITY PLAN	G-003

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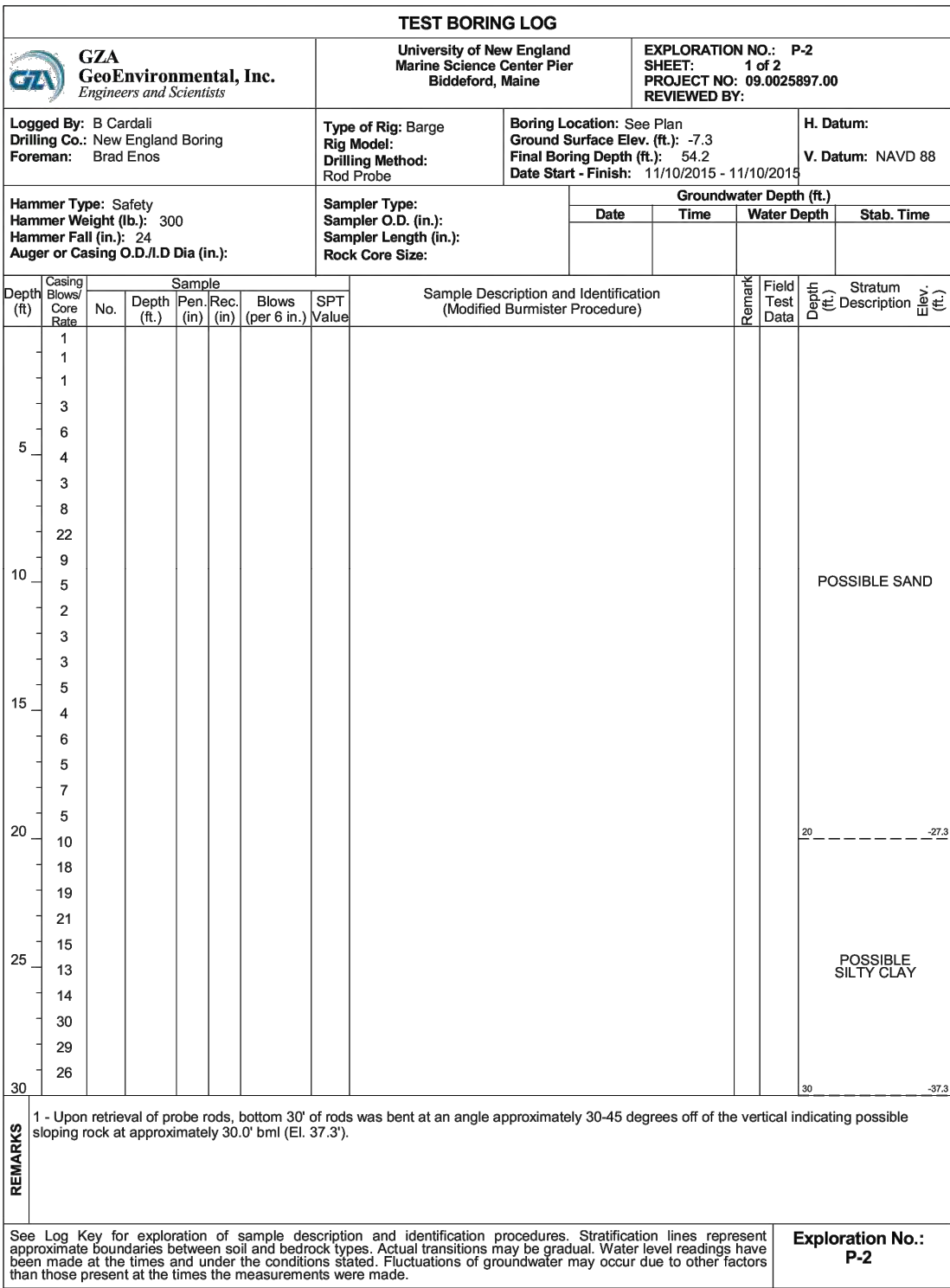
BANNON, DAN | geiconsultants.com\data/Data_Storage/Working/UNIVERSITY OF NEW ENGLAND/2203703 UNE Marine Science Center Pier100_CAD/Design/Sheets/2203703 B-002.dwg - 4/16/2025



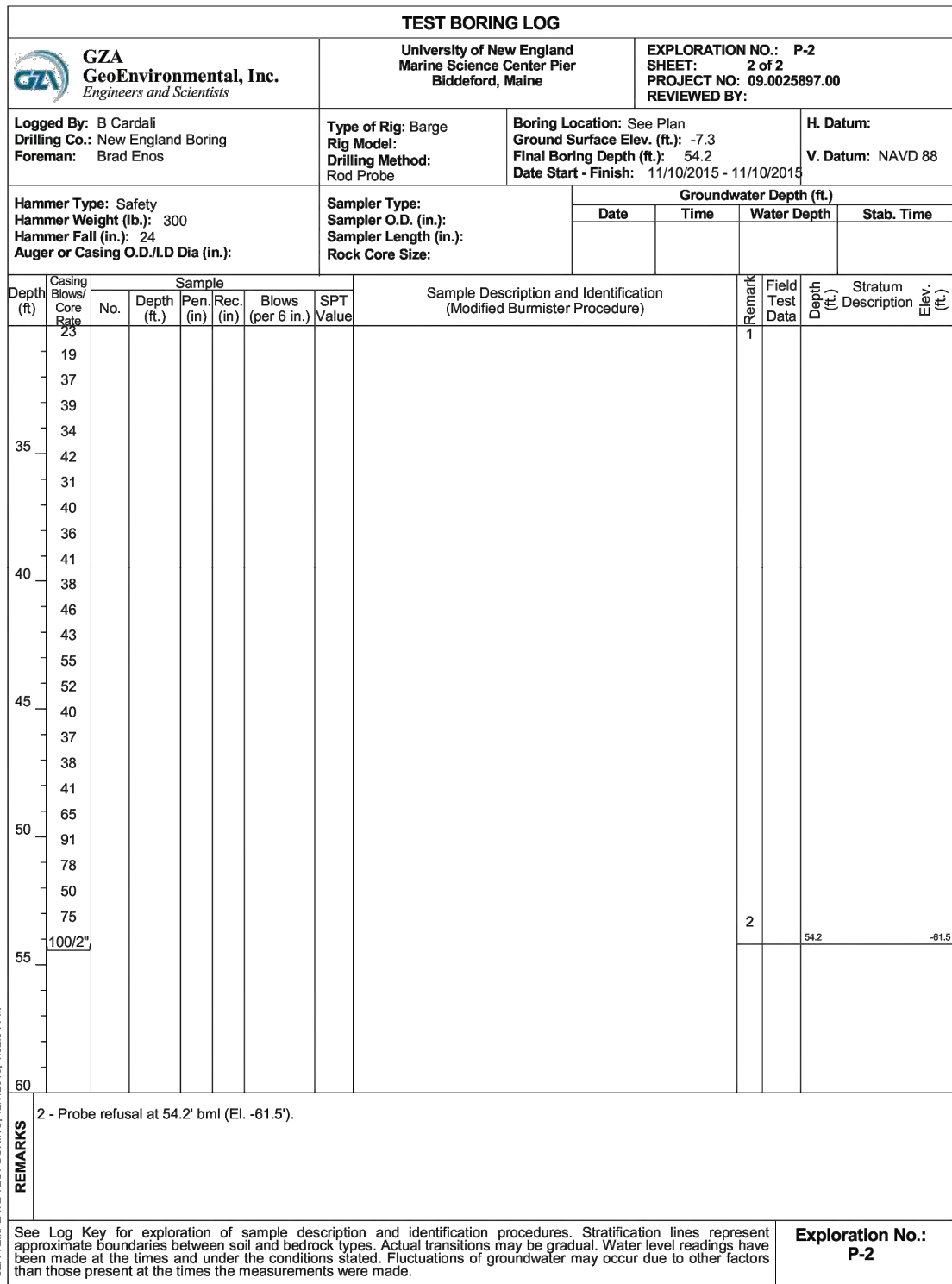
2015 BORING B-1



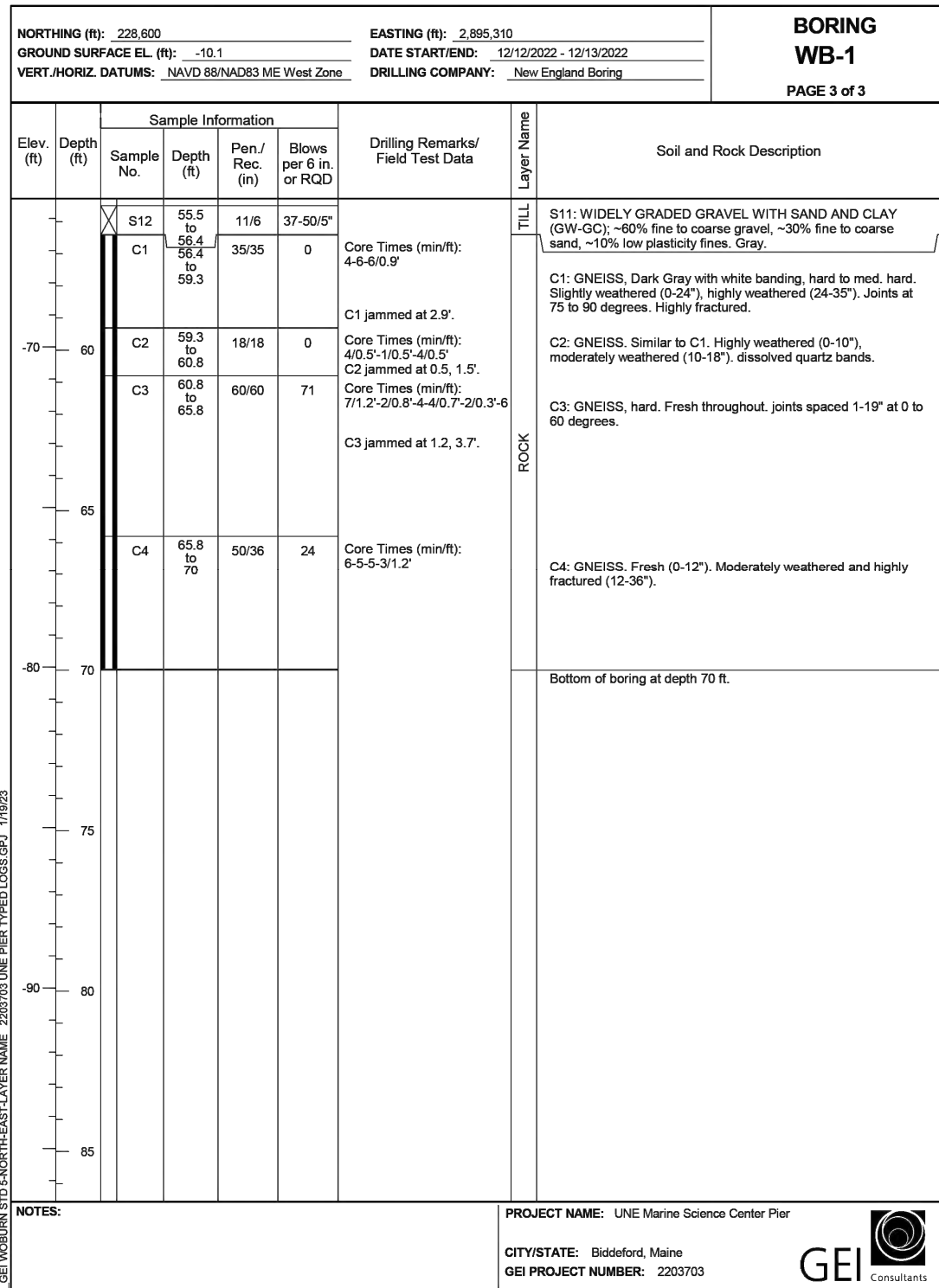
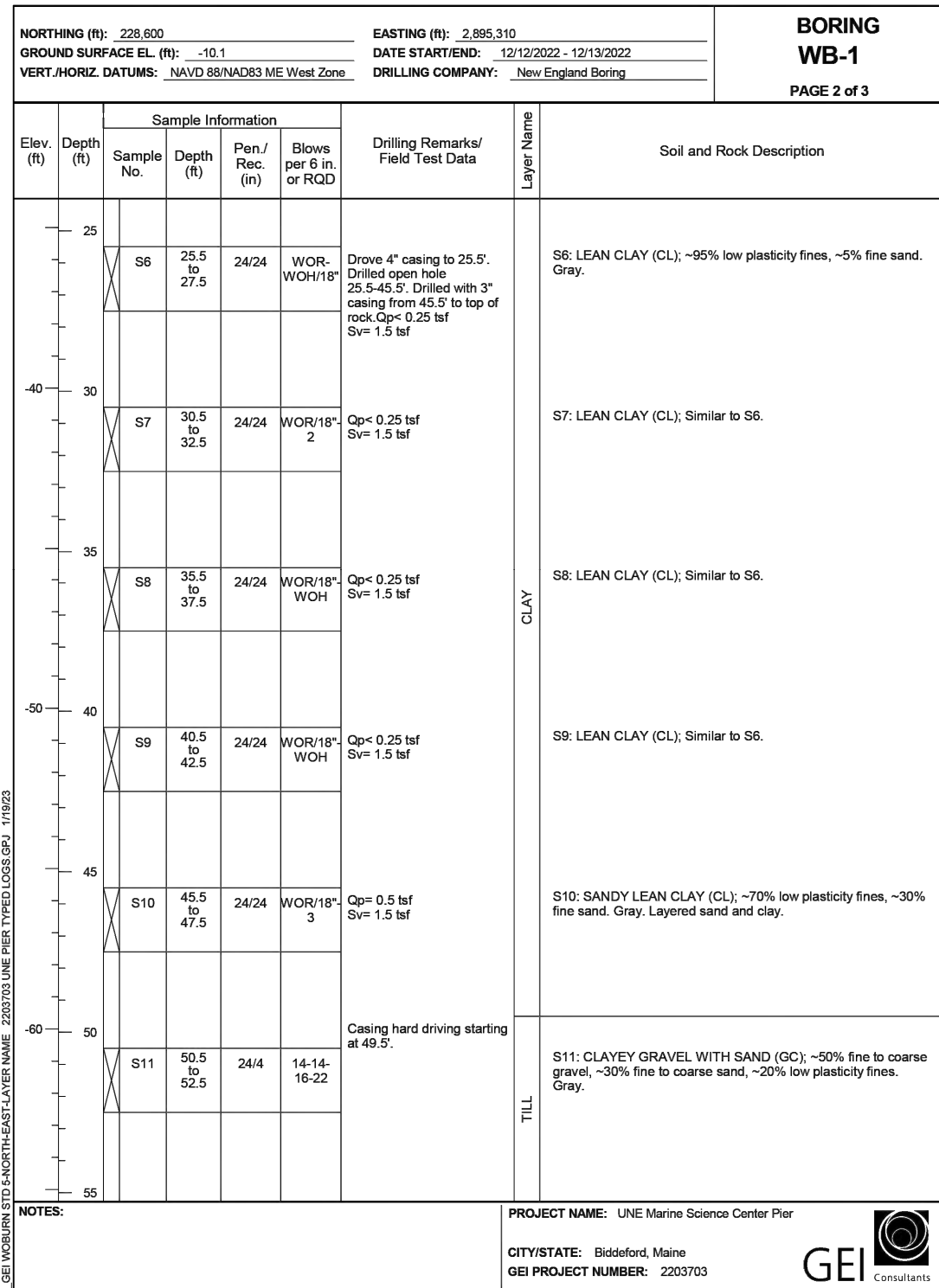
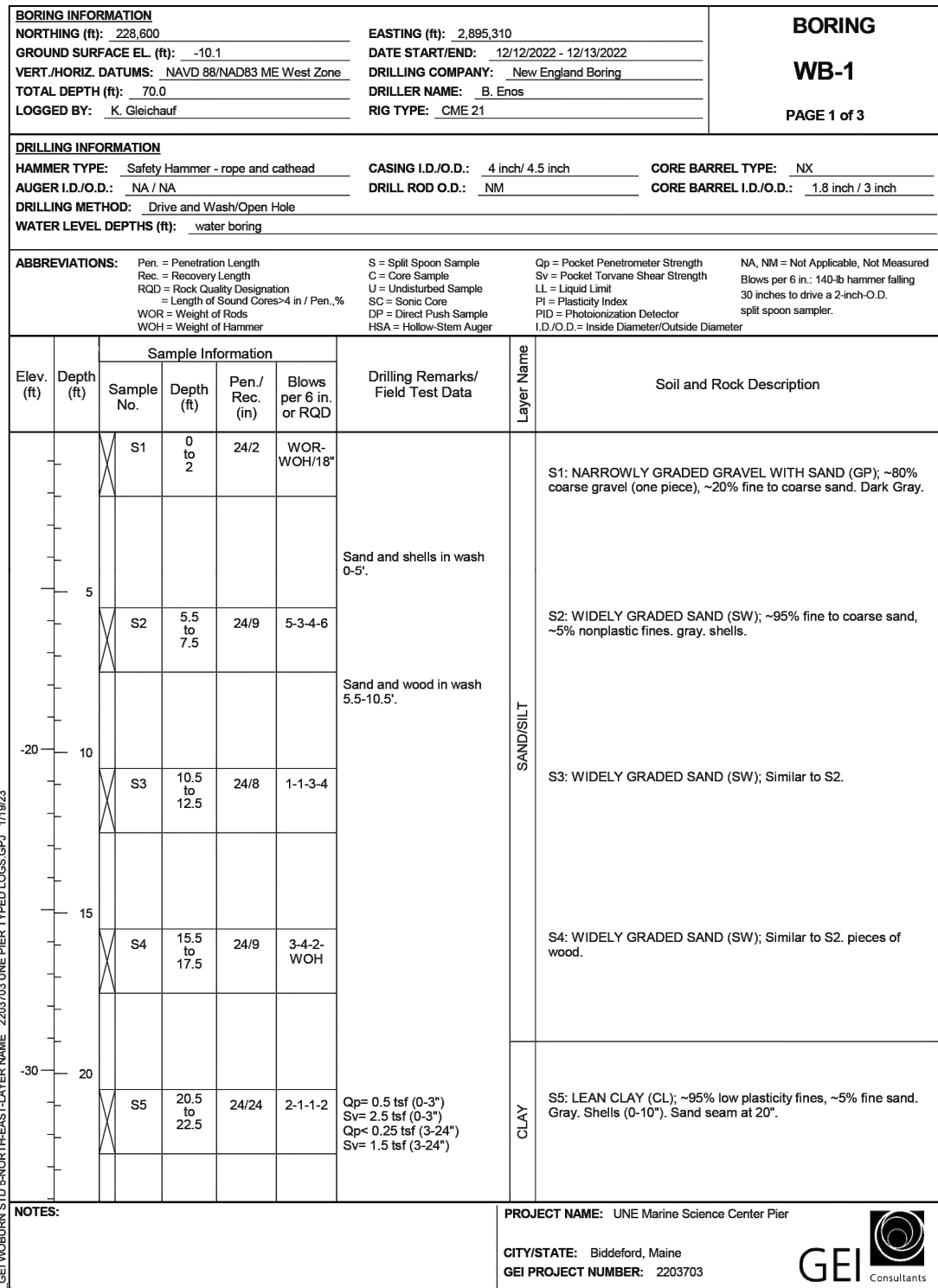
2015 PROBE P-1



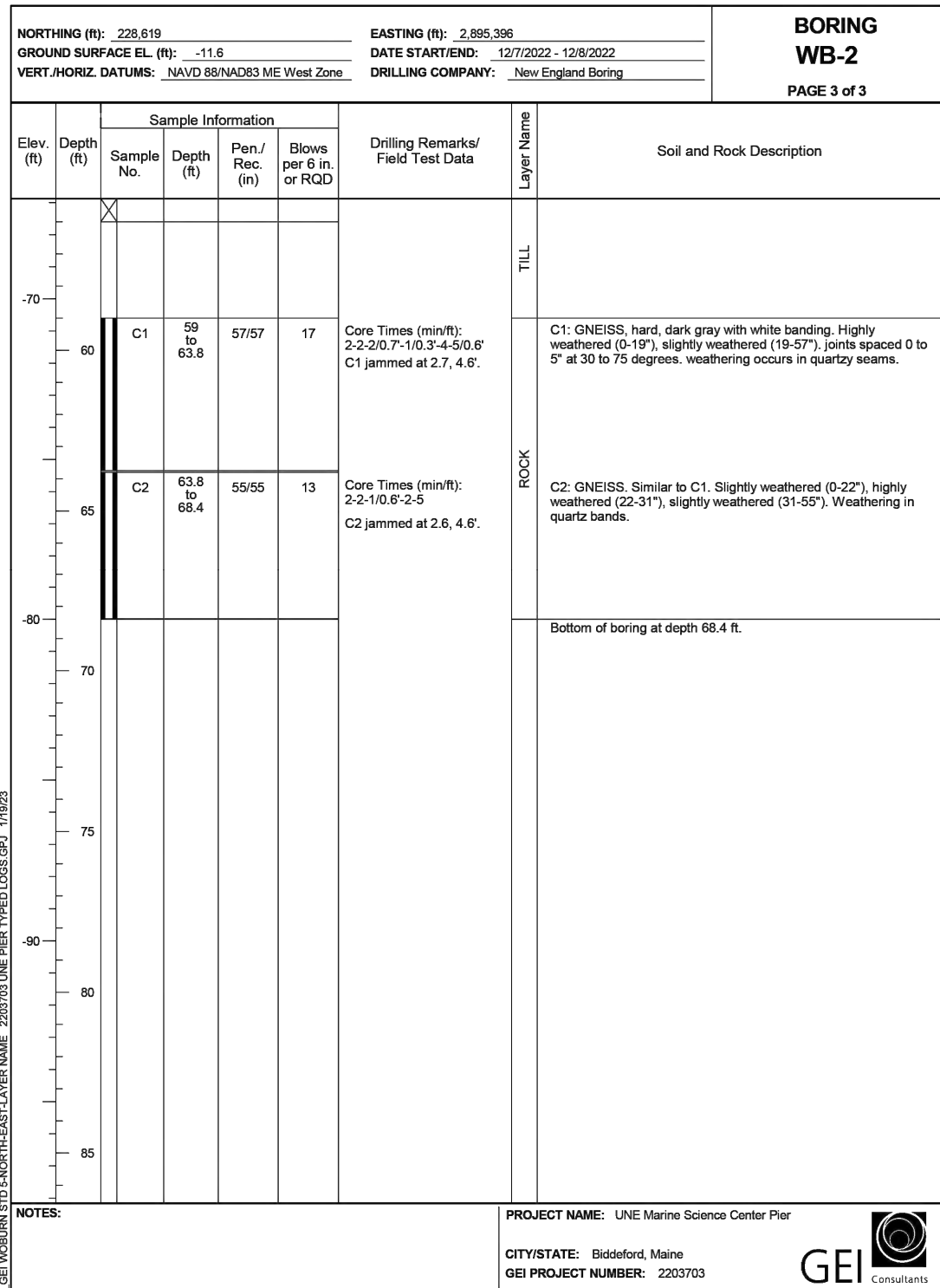
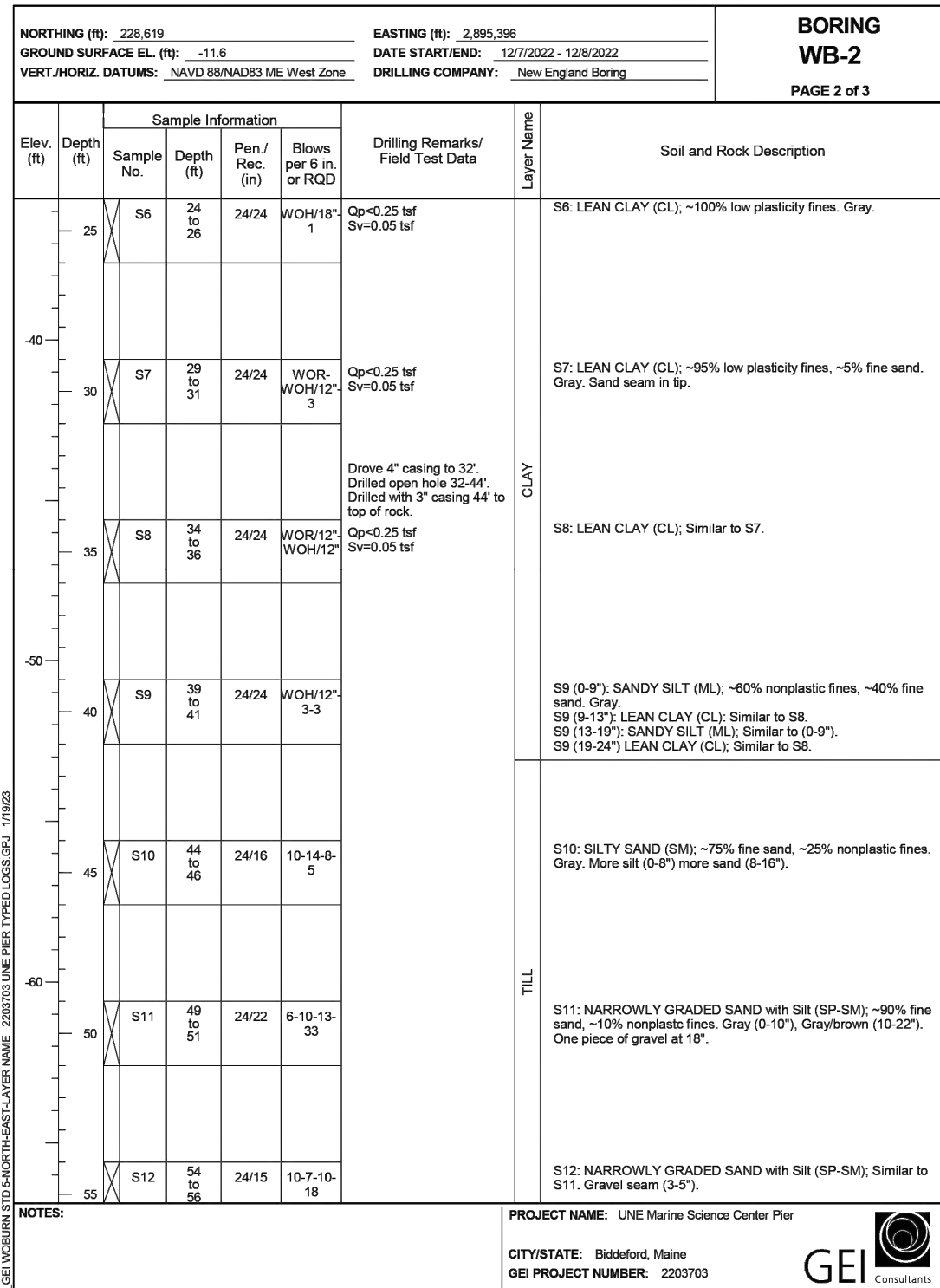
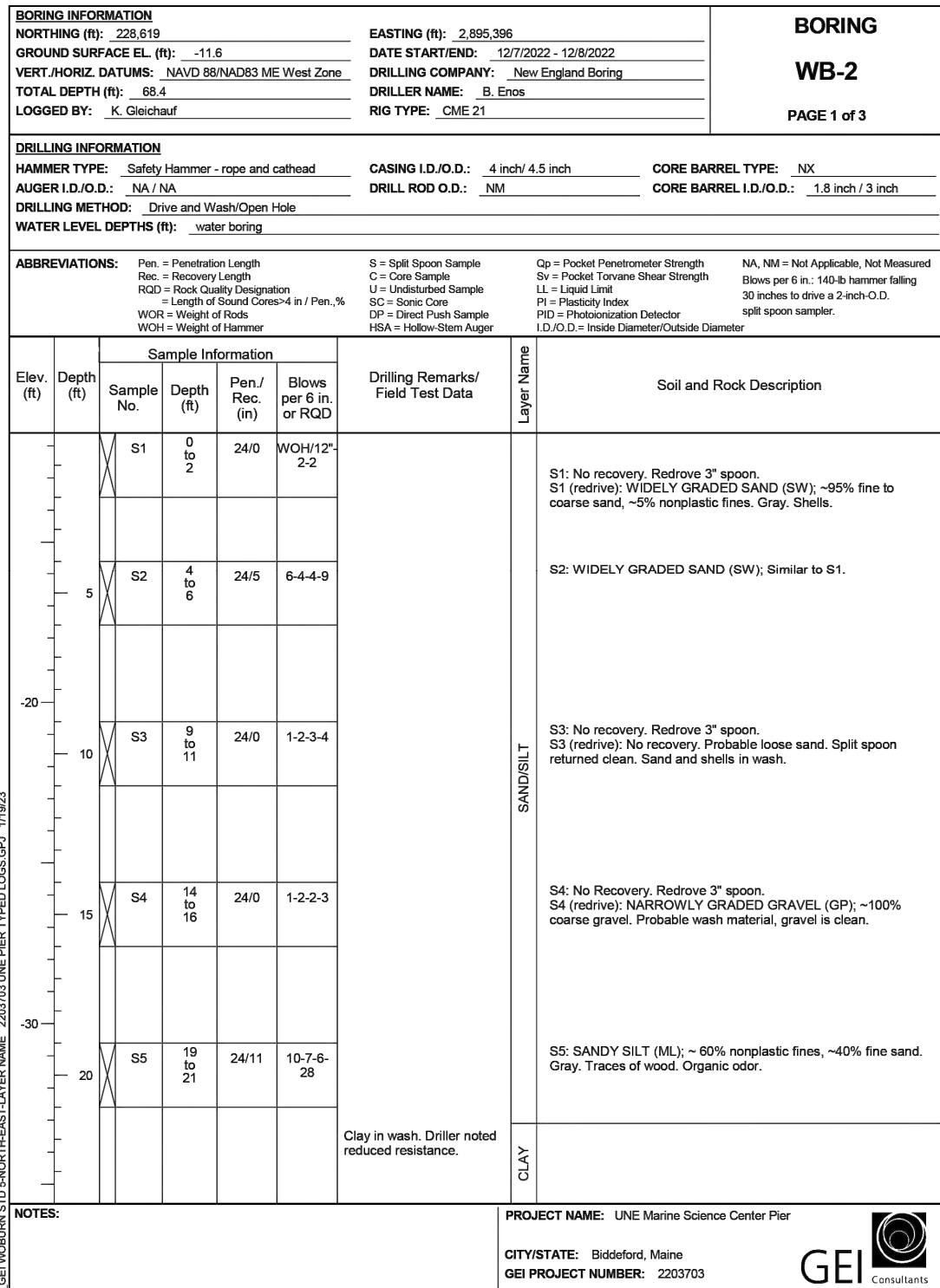
2015 PROBE P-2



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2022 BORING WB-1

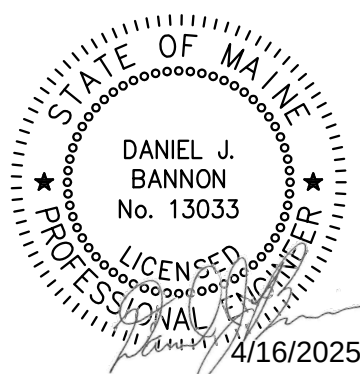


2022 BORING WB-2

ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.



Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



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BIDDEFORD, MAINE

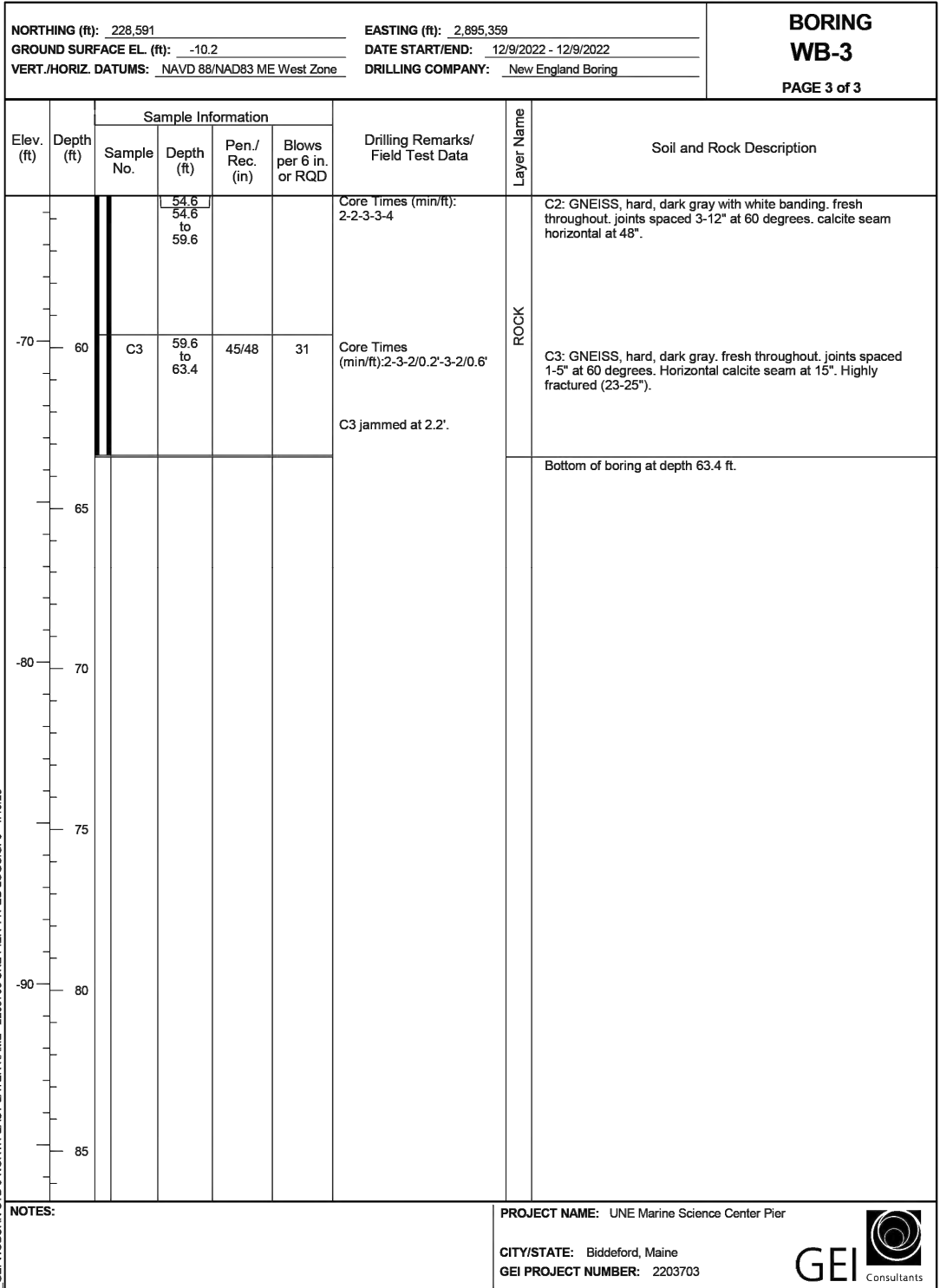
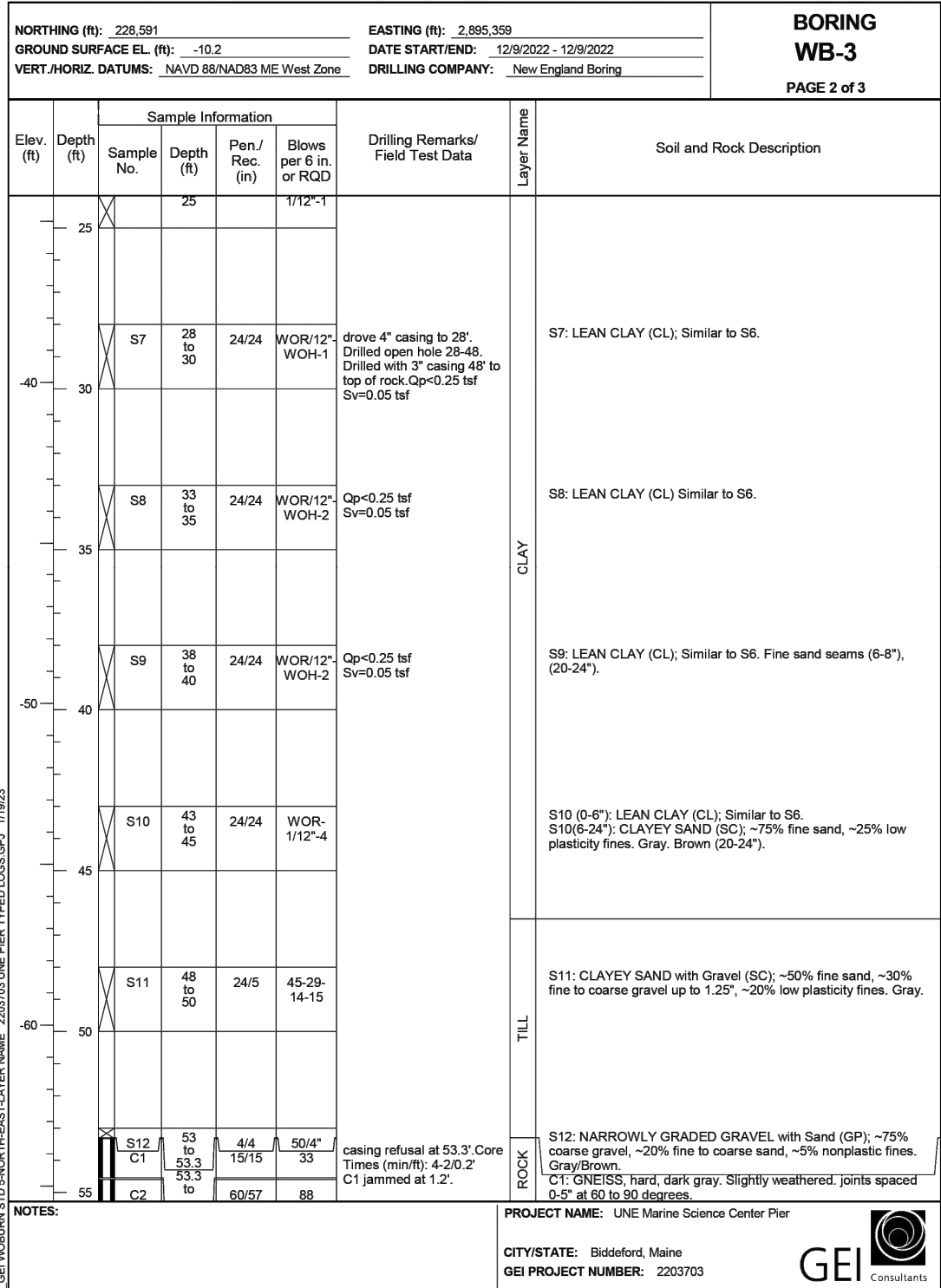
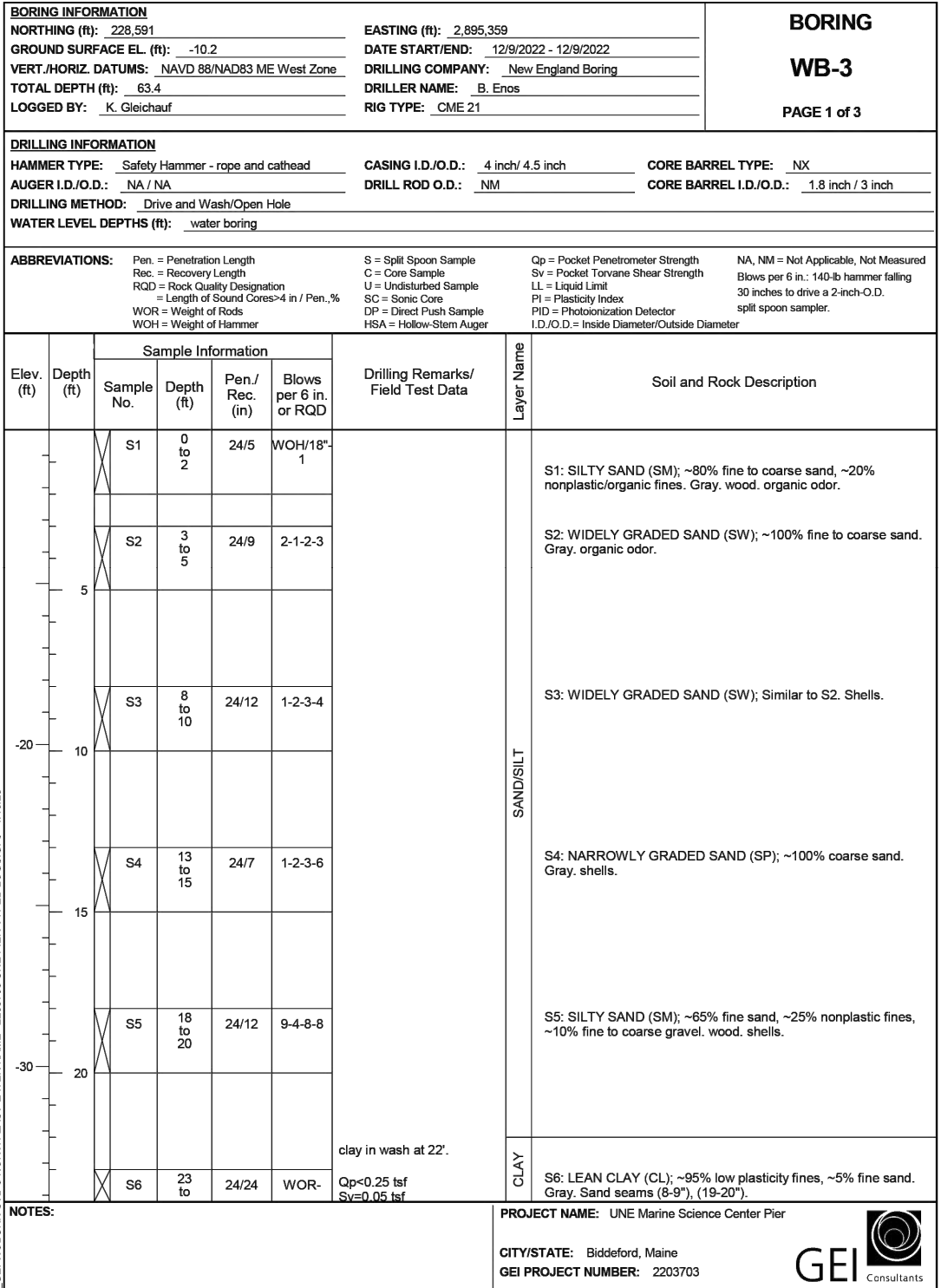
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11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

7	4/16/2025	BIDDEFORD PERMIT APP.	DJB
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0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

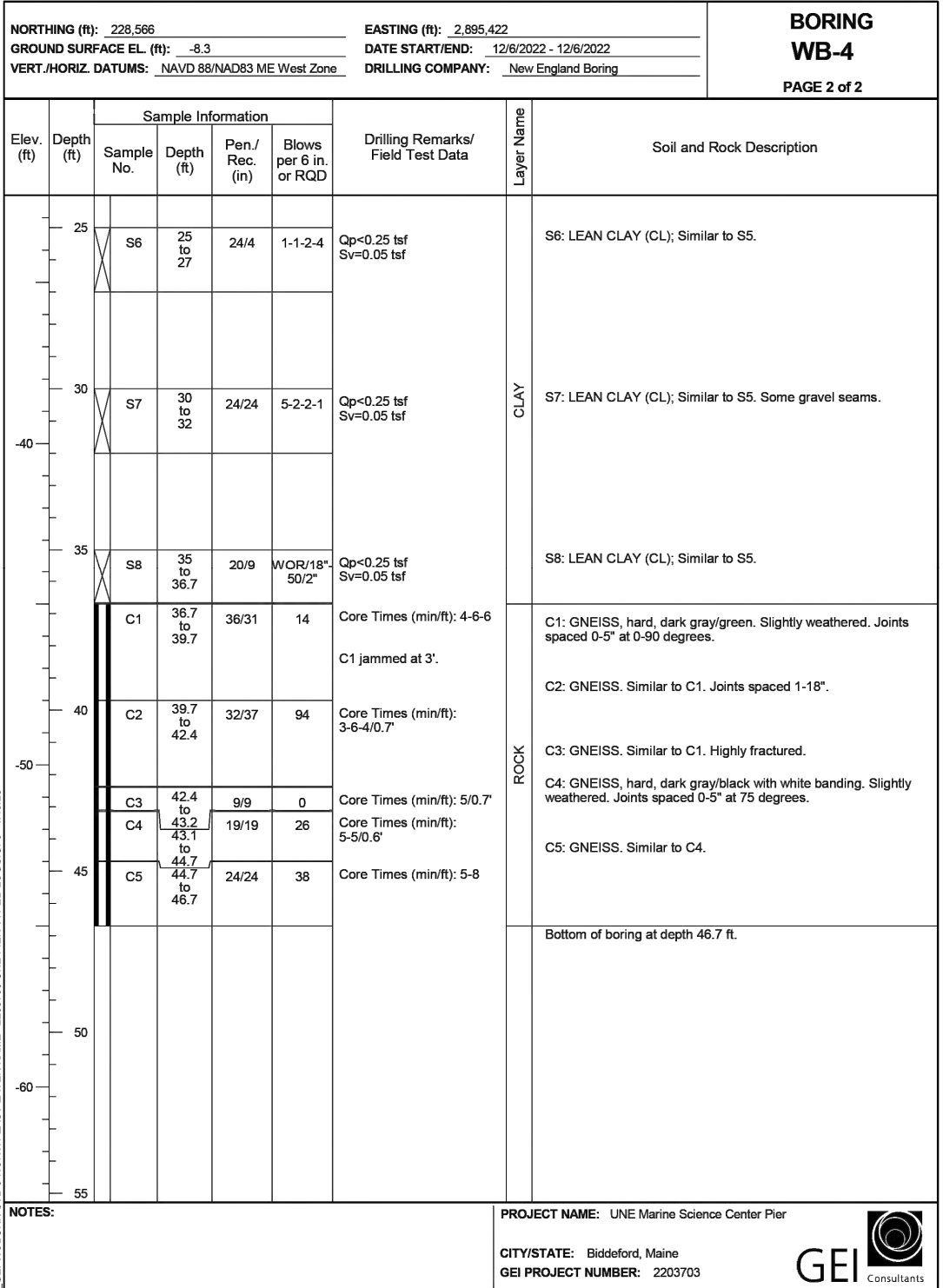
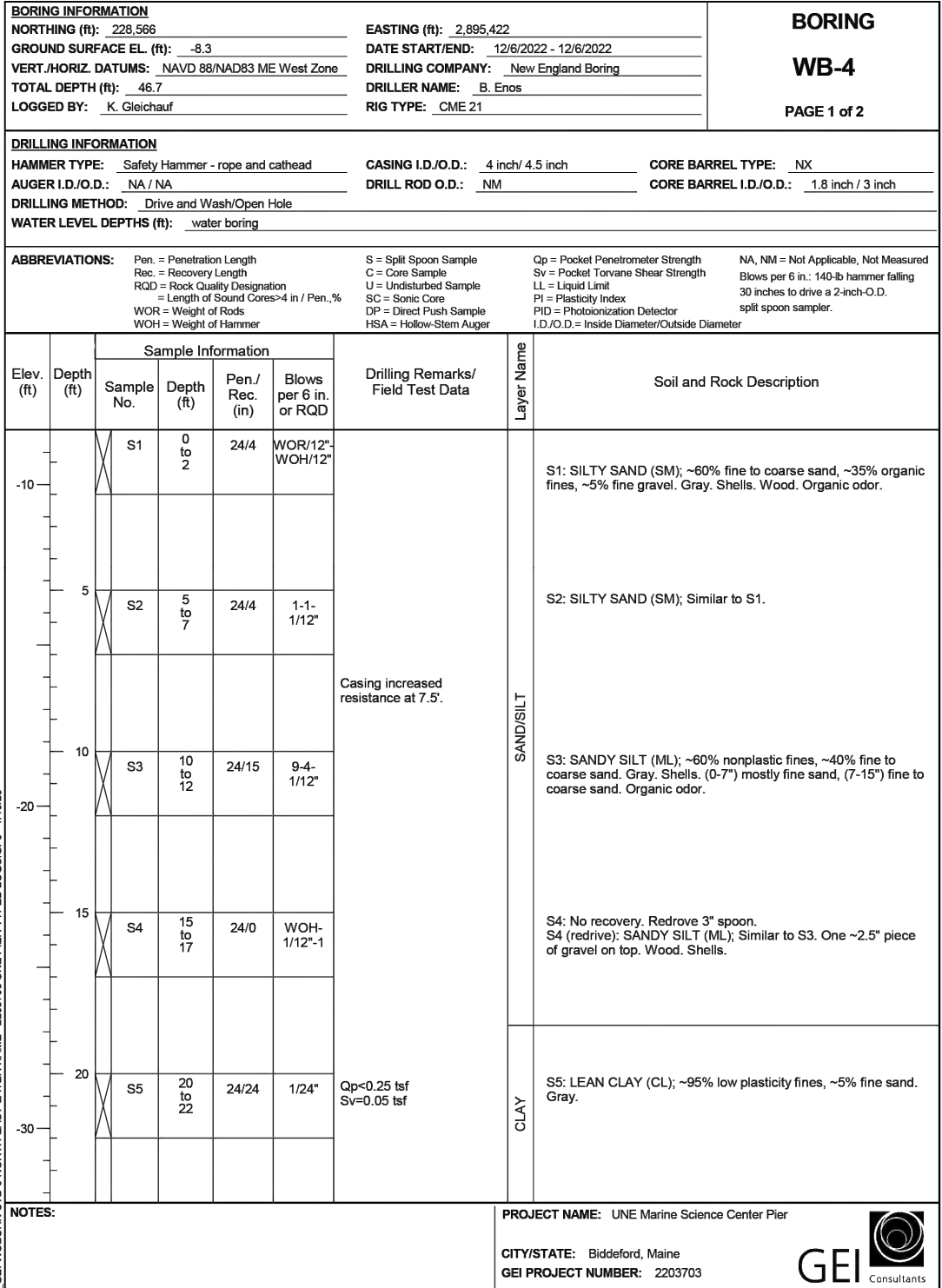
SHEET NAME
BORING LOGS
(SHEET 2 OF 3)

SHEET NO.
B-003

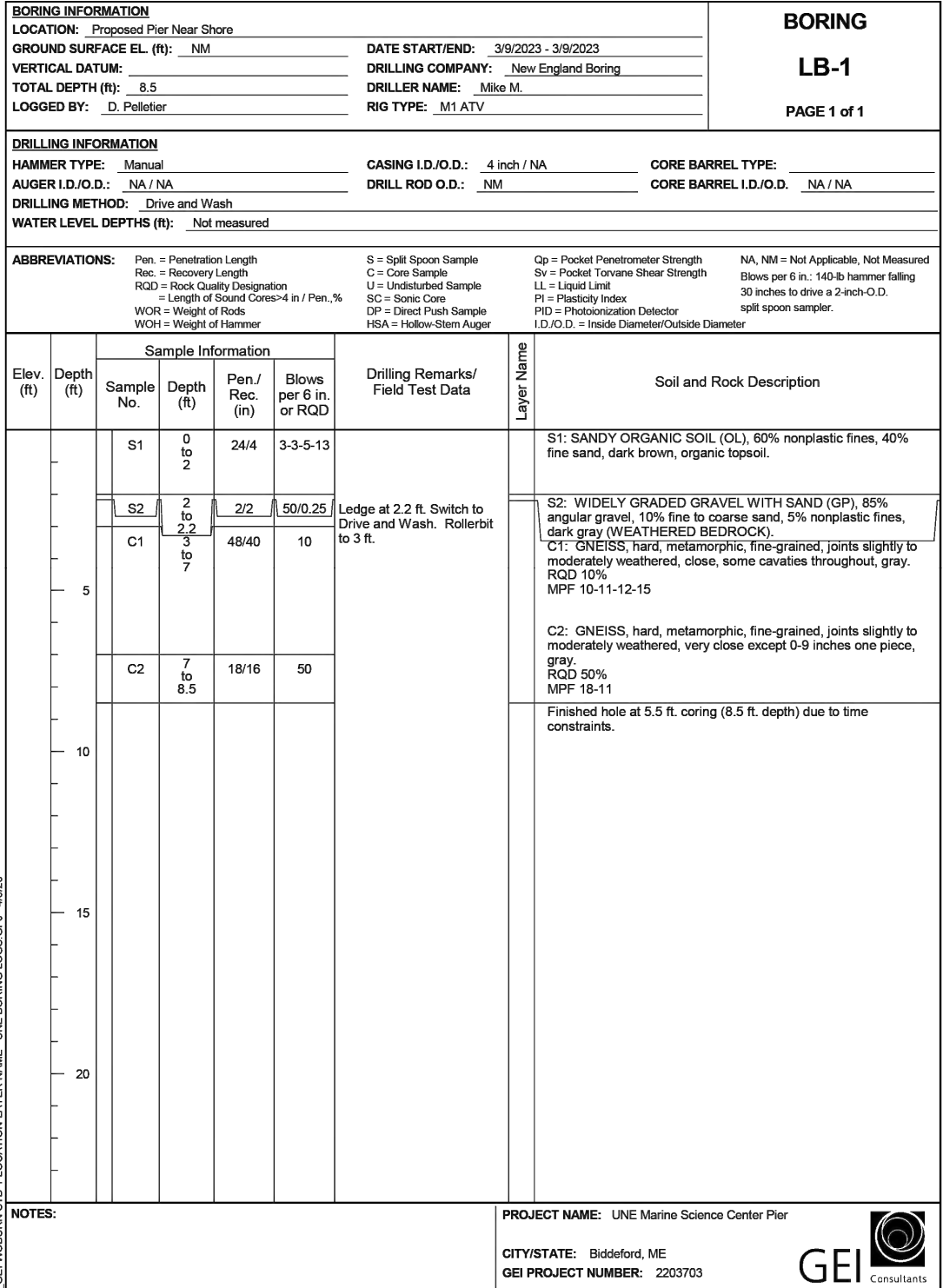
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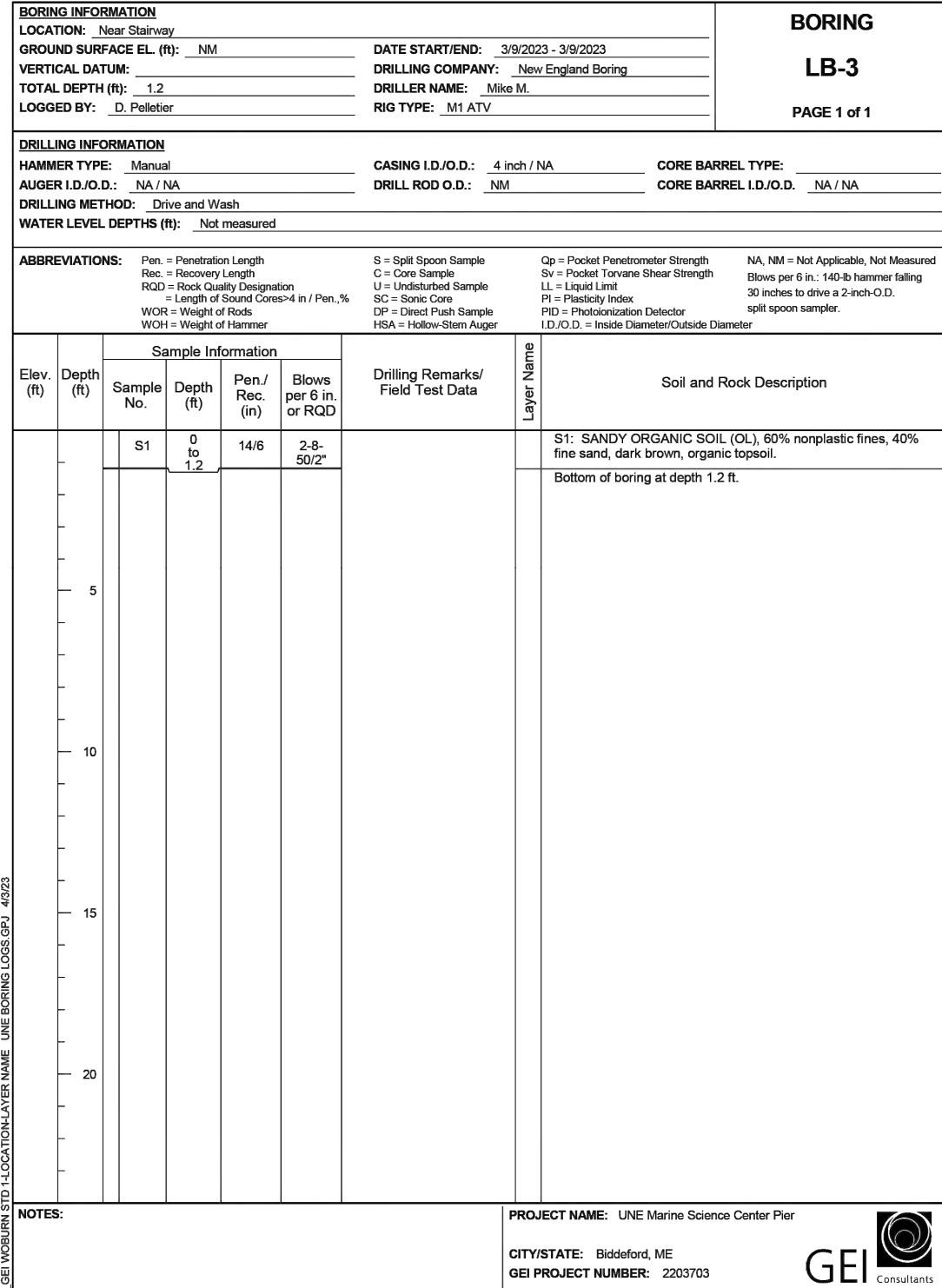
2022 BORING WB-3



2022 BORING WB-4



2023 BORING LB-1



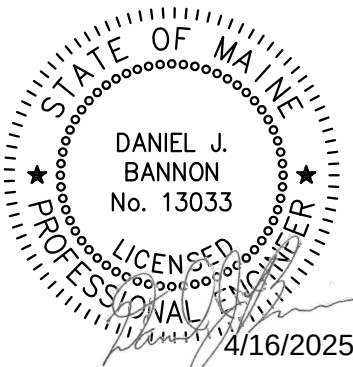
2023 BORING LB-3

FOR PERMIT

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HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
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Designed:	DJB
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Approved:	BMM
P.E. No:	13033
GEI Project	2203703



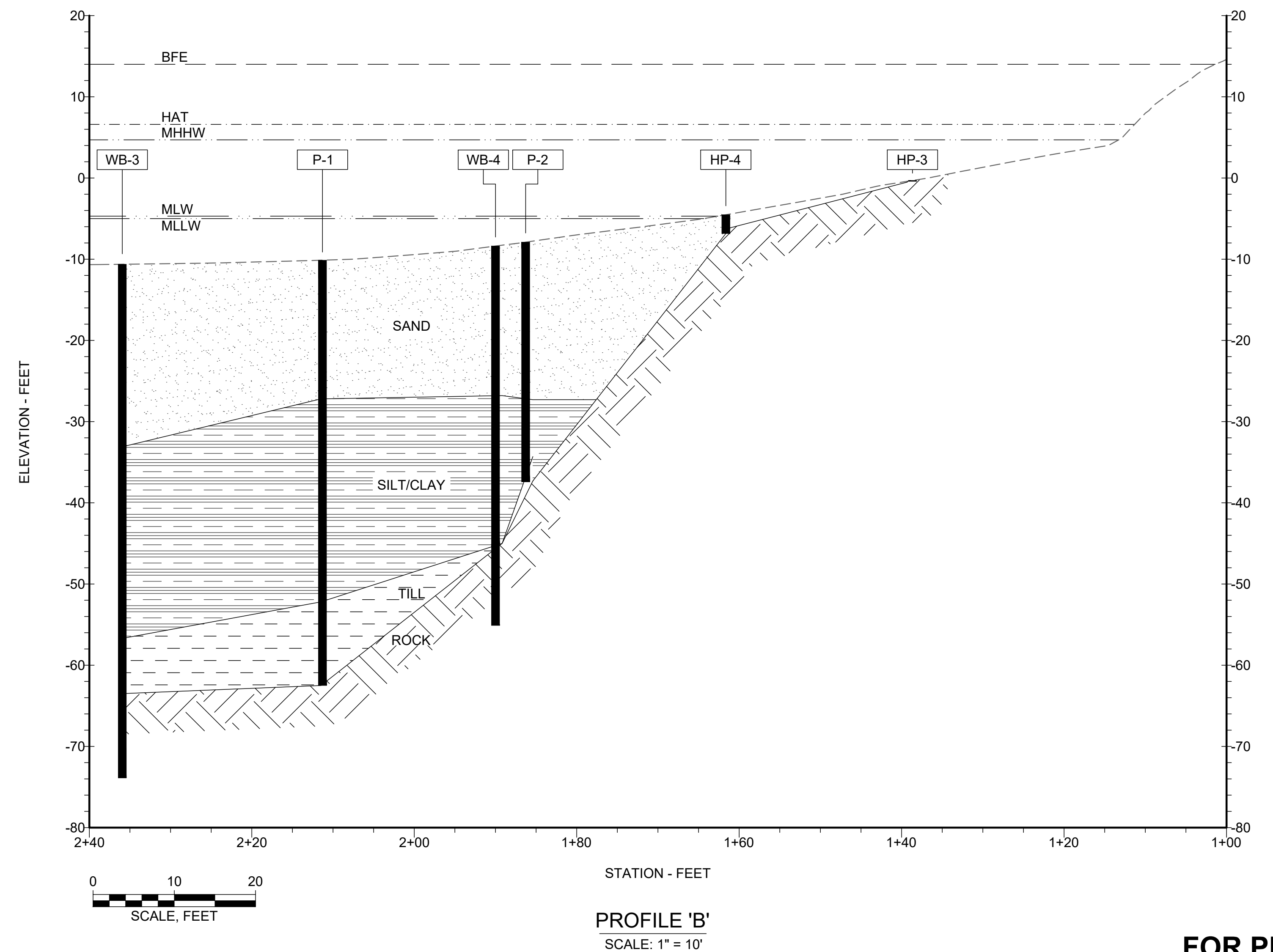
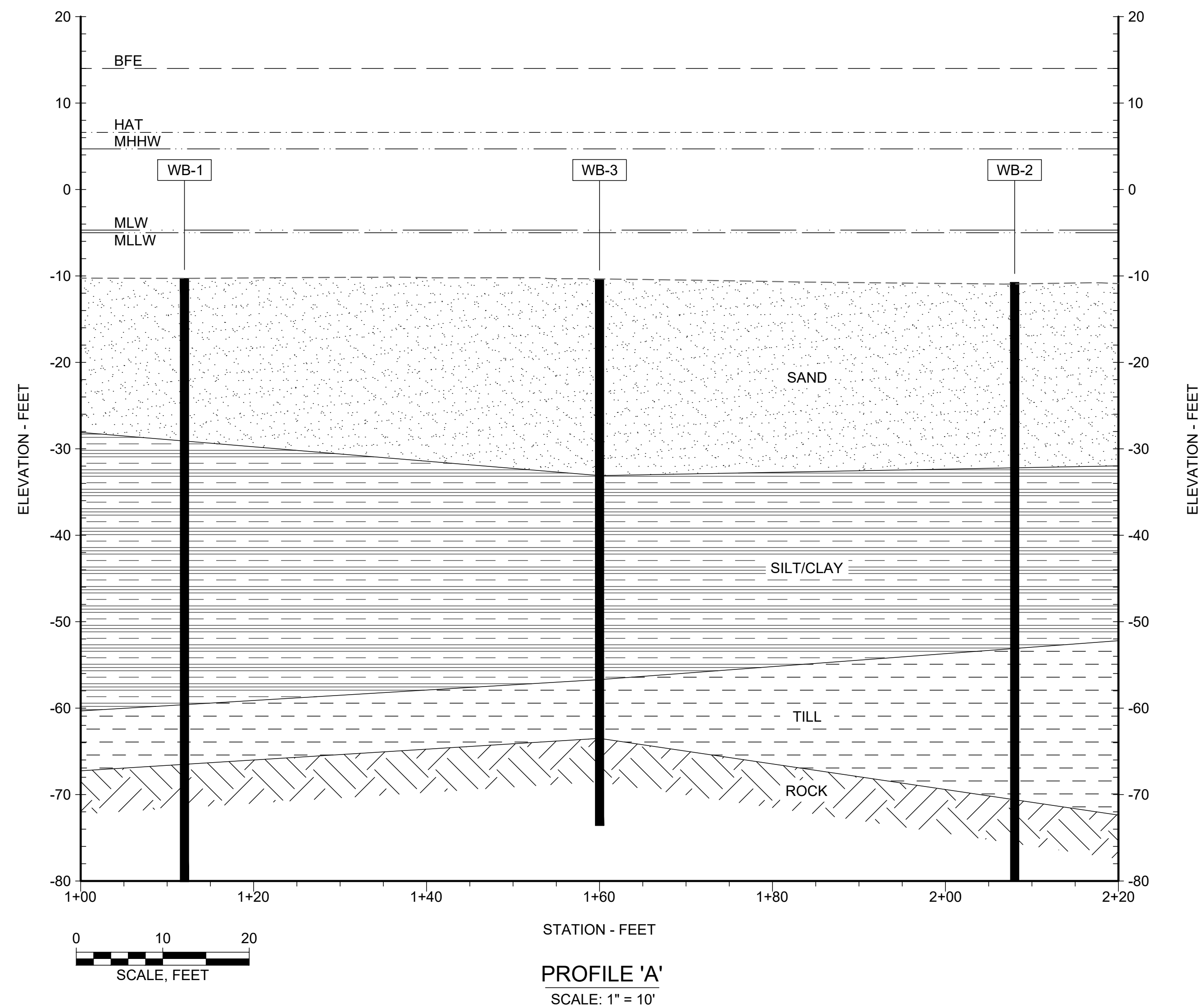
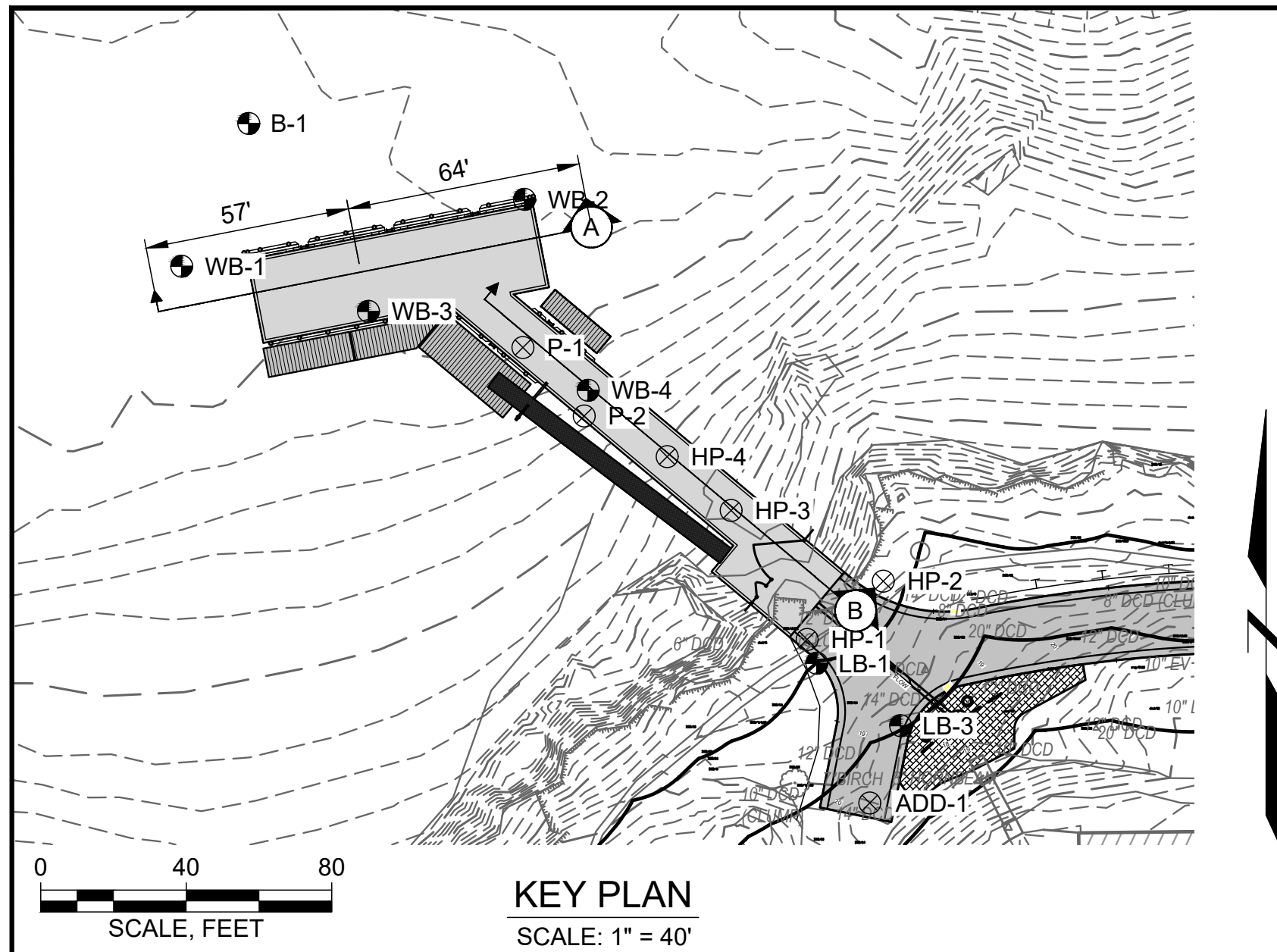
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NO	DATE	ISSUE/REVISION	APP	

SHEET NAME
BORING LOGS
(SHEET 3 OF 3)

SHEET NO.
B-004



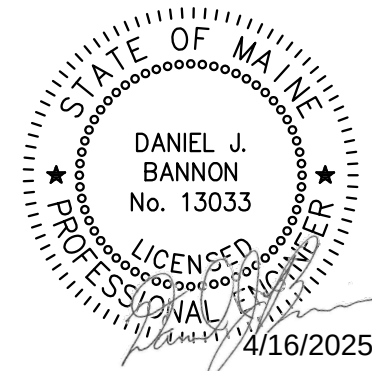
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BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:



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does not measure
1" then drawing is
not original scale.



<i>Designed:</i>	DJB
<i>Drawn:</i>	JAM
<i>Checked:</i>	BJB
<i>Approved:</i>	BMM
<i>P.E. No:</i>	13033
<i>GEI Project</i>	2203703



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11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

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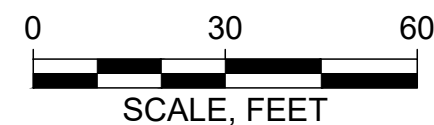
B-005

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- LEGEND:**
- EXISTING CONTOUR
 - HAT SETBACK
 - MLLW
 - MHHW
 - HAT
 - BFE
 - 250' SHORELAND ZONE
 - TOP OF BANK
 - LEDGE
 - STRUCTURES

- SURVEY AND PROPERTY NOTES:**
- LOCUS PARCEL IS DEPICTED ON CITY OF BIDDEFORD, TAX MAP 52, LOT 4 AND IS LOCATED IN THE INSTITUTIONAL (IN) ZONE. A PORTION OF THE SITE IS LOCATED IN THE LIMITED RESIDENTIAL (LR) SHORELAND OVERLAY DISTRICT.
 - THE RECORD OWNER IS THE UNIVERSITY OF NEW ENGLAND, BY DEED DATED APRIL 18, 1962, RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1484, PAGE 0145.
 - UPLAND TOPOGRAPHY AND BASE SURVEY INFORMATION DEPICTED HEREON ARE BASED ON THE FOLLOWING SURVEYS:
 - "TOPOGRAPHIC SURVEY, MARINE SCIENCE CENTER, UNIVERSITY OF NEW ENGLAND" BY OWEN HASKELL, INC., DATED DEC. 13, 2022.
 - "TOPOGRAPHIC SURVEY AT MARINE SCIENCE CENTER" BY STATEWIDE SURVEYS, INC., DATED MAY 4, 2015.
 - HYDROGRAPHIC DATA DEPICTED HEREON IS BASED ON 2022 SURVEY BY OWEN HASKELL SURVEY.
 - FEDERAL CHANNEL LIMITS ARE DEPICTED BASED ON THE PLAN, "SACO RIVER, SACE AND BIDDEFORD, MAINE, CONDITION SURVEY" PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS, DATED JULY 3, 2021.
 - HORIZONTAL COORDINATES ARE BASED ON NAD83 MAINE STATE PLANE WEST ZONE-1801 AND ARE EXPRESSED IN FEET. ELEVATIONS ARE BASED ON NAVD88 VERTICAL DATUM.
 - UTILITY INFORMATION DEPICTED HEREON IS BASED ON FEBRUARY 2023 UTILITY LOCATION SURVEY PERFORMED BY BLOOD HOUND, LLC UNDERGROUND UTILITY LOCATORS AND MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTACT DIG SAFE (1-888-DIG-SAFE) AND VERIFY EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION OR EXCAVATION.
 - PORTIONS OF THE PROPERTY ARE DEPICTED AS BEING IN A SPECIAL FLOOD HAZARD AREA BASED ON FEMA PRELIMINARY FIRM 23031C0459G DATED APRIL 14, 2017. THE SITE IS LOCATED IN A VE ZONE HAVING BASE FLOOD ELEVATION OF 14 FT NAVD88.
 - SUBSURFACE INFORMATION IS BASED ON EXPLORATIONS PERFORMED IN 2015 AND 2022 CONSISTING OF BORINGS, PROBES, AND TEST PITS. REFER TO SHEETS B-001 - B-005 FOR SUBSURFACE INFORMATION.
 - BENCHMARKS:



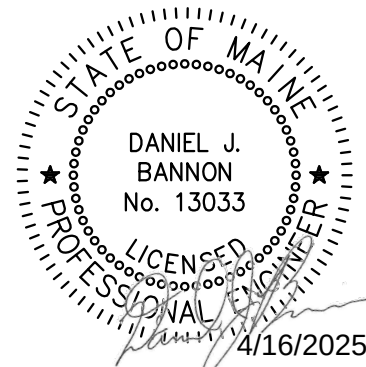
ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.



Designed:	DJB
Drawn:	JAM
Checked:	BJB
Approved:	BMM
P.E. No:	13033
GEI Project	2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

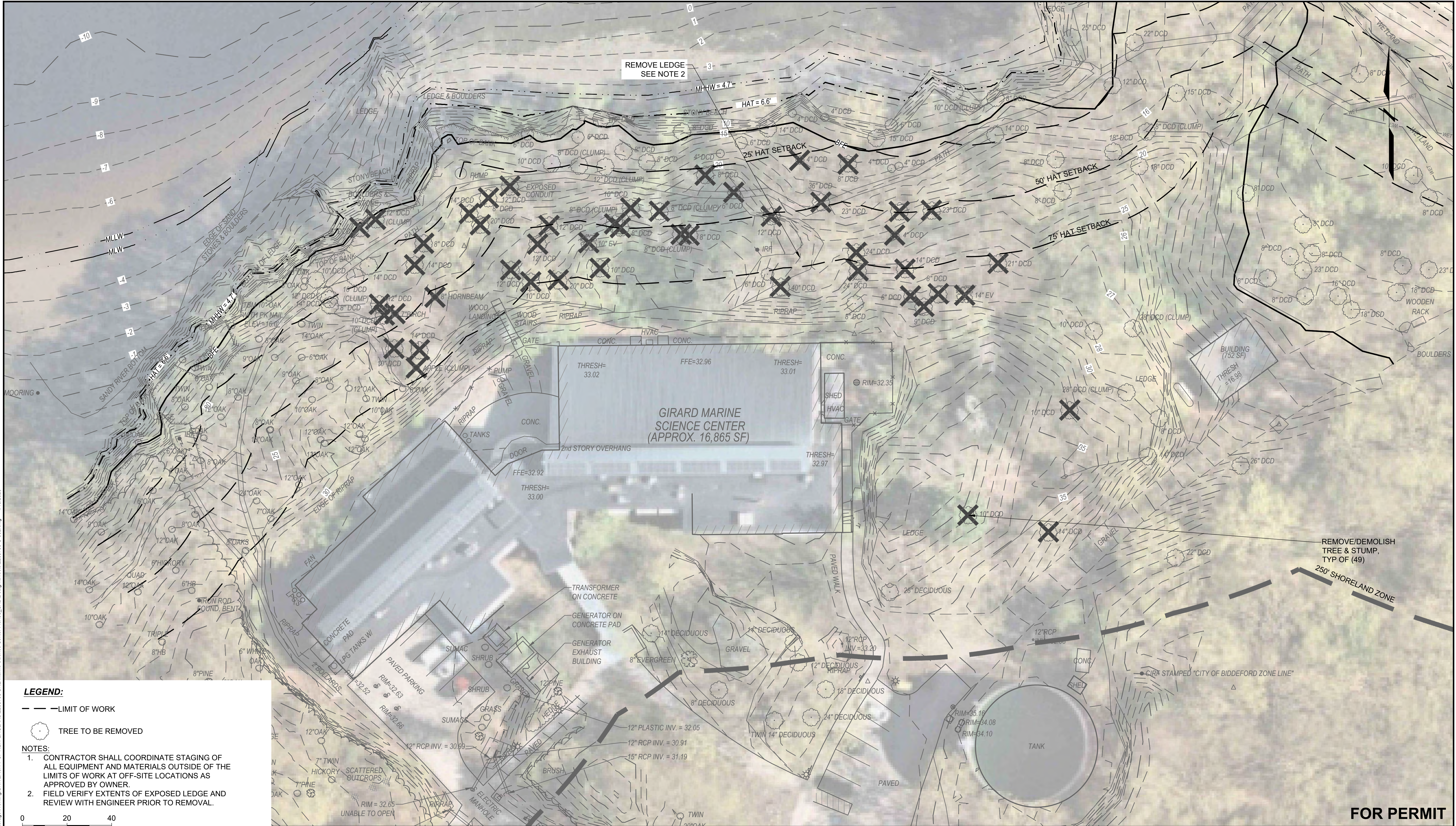
**UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER**

11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

7	4/16/2025	BIDDEFORD PERMIT APP.	DJB
6	9/17/2024	REVISED PERMIT SET	DJB
5	6/27/2024	REVISED PERMIT SET	DJB
4	9/14/2023	DEP PERMIT SET	DJB
3	6/28/2023	75% DESIGN SUBMISSION	DJB
2	2/15/2023	30% DESIGN SUBMISSION	DJB
1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

SHEET NAME	SHEET NO.
EXISTING CONDITIONS PLAN	C-001

BANNON, DAN | gjeiconsultants.com\data\data Storage\Working\UNIVERSITY OF NEW ENGLAND\2203703 UNE Marine Science Center Plan\00_CADD\Design\Sheets\2203703-C-002.dwg - 4/16/2025

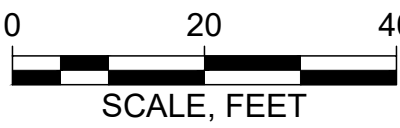


LEGEND:

- — — LIMIT OF WORK
- TREE TO BE REMOVED

NOTES:

- CONTRACTOR SHALL COORDINATE STAGING OF ALL EQUIPMENT AND MATERIALS OUTSIDE OF THE LIMITS OF WORK AT OFF-SITE LOCATIONS AS APPROVED BY OWNER.
- FIELD VERIFY EXTENTS OF EXPOSED LEDGE AND REVIEW WITH ENGINEER PRIOR TO REMOVAL.

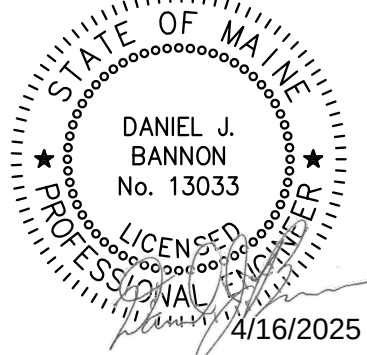


ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:

If this scale bar does not measure 1" then drawing is not original scale.



Designed:	DJB
Drawn:	JAM
Checked:	BJB
Approved:	BMM
P.E. No:	13033
GEI Project	2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

UNIVERSITY OF
NEW ENGLAND
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PIER

11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

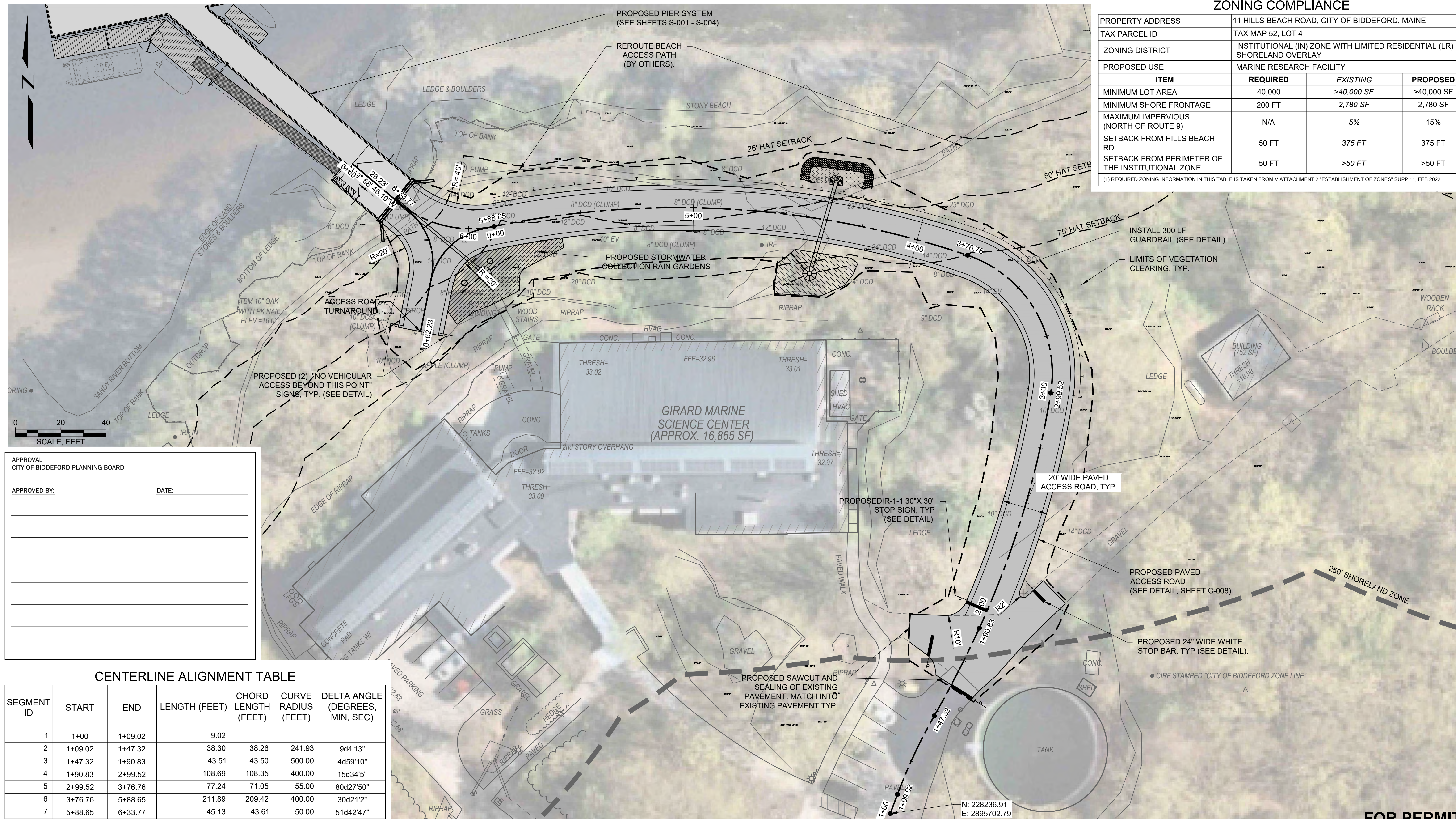
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1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB

SHEET NAME
**DEMOLITION AND
CONSTRUCTION
STAGING**

SHEET NO.

C-002

FOR PERMIT

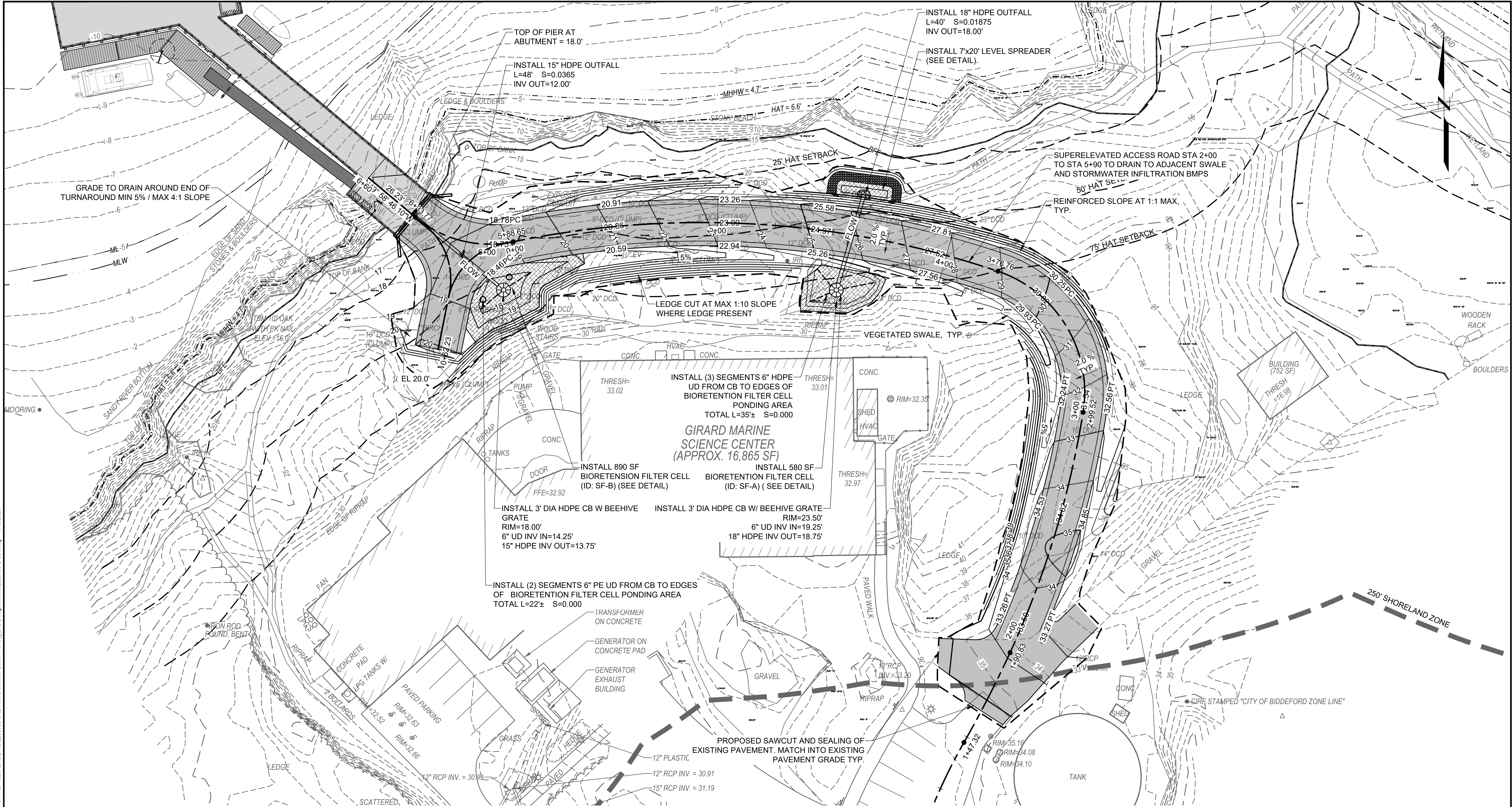


ZONING COMPLIANCE			
PROPERTY ADDRESS	11 HILLS BEACH ROAD, CITY OF BIDDEFORD, MAINE		
TAX PARCEL ID	TAX MAP 52, LOT 4		
ZONING DISTRICT	INSTITUTIONAL (IN) ZONE WITH LIMITED RESIDENTIAL (LR) SHORELAND OVERLAY		
PROPOSED USE	MARINE RESEARCH FACILITY		
ITEM	REQUIRED	EXISTING	PROPOSED
MINIMUM LOT AREA	40,000	>40,000 SF	>40,000 SF
MINIMUM SHORE FRONTAGE	200 FT	2,780 SF	2,780 SF
MAXIMUM IMPERVIOUS (NORTH OF ROUTE 9)	N/A	5%	15%
SETBACK FROM HILLS BEACH RD	50 FT	375 FT	375 FT
SETBACK FROM PERIMETER OF THE INSTITUTIONAL ZONE	50 FT	>50 FT	>50 FT

SEGMENT ID	START	END	LENGTH (FEET)	CHORD LENGTH (FEET)	CURVE RADIUS (FEET)	DELTA ANGLE (DEGREES, MIN, SEC)
1	1+00	1+09.02	9.02			
2	1+09.02	1+47.32	38.30	38.26	241.93	9d4'13"
3	1+47.32	1+90.83	43.51	43.50	500.00	4d59'10"
4	1+90.83	2+99.52	108.69	108.35	400.00	15d34'5"
5	2+99.52	3+76.76	77.24	71.05	55.00	80d27'50"
6	3+76.76	5+88.65	211.89	209.42	400.00	30d21'2"
7	5+88.65	6+33.77	45.13	43.61	50.00	51d42'47"
8	6+33.77	6+60	26.23			

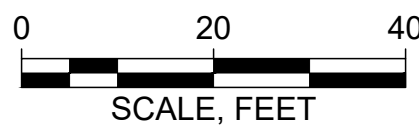
ELEVATION MLLW NAVD88* BFE +19.0 +14.0 HAT +11.6 +6.6 MHHW +6.7 +4.7 MHW +9.3 +4.3 MSL +4.8 -0.2 MLW +0.3 -4.7 MLLW 0.0 -5.0 *PROJECT DATUM			Attention: 0		
--	--	--	---	--	--

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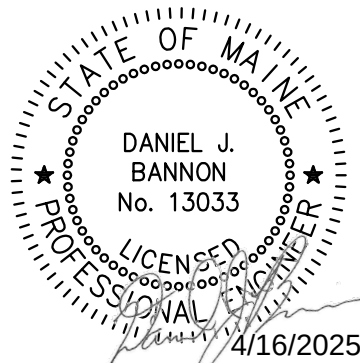


PLAN
SCALE: 1" = 20'

FOR PERMIT



Attention:
0 1"
If this scale bar
does not measure
1" then drawing is
not original scale.



Designed:	DJB
Drawn:	JAM
Checked:	BJB
Approved:	BMM
P.E. No:	13033
GEI Project	2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

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NEW ENGLAND
MARINE SCIENCE CENTER
PIER

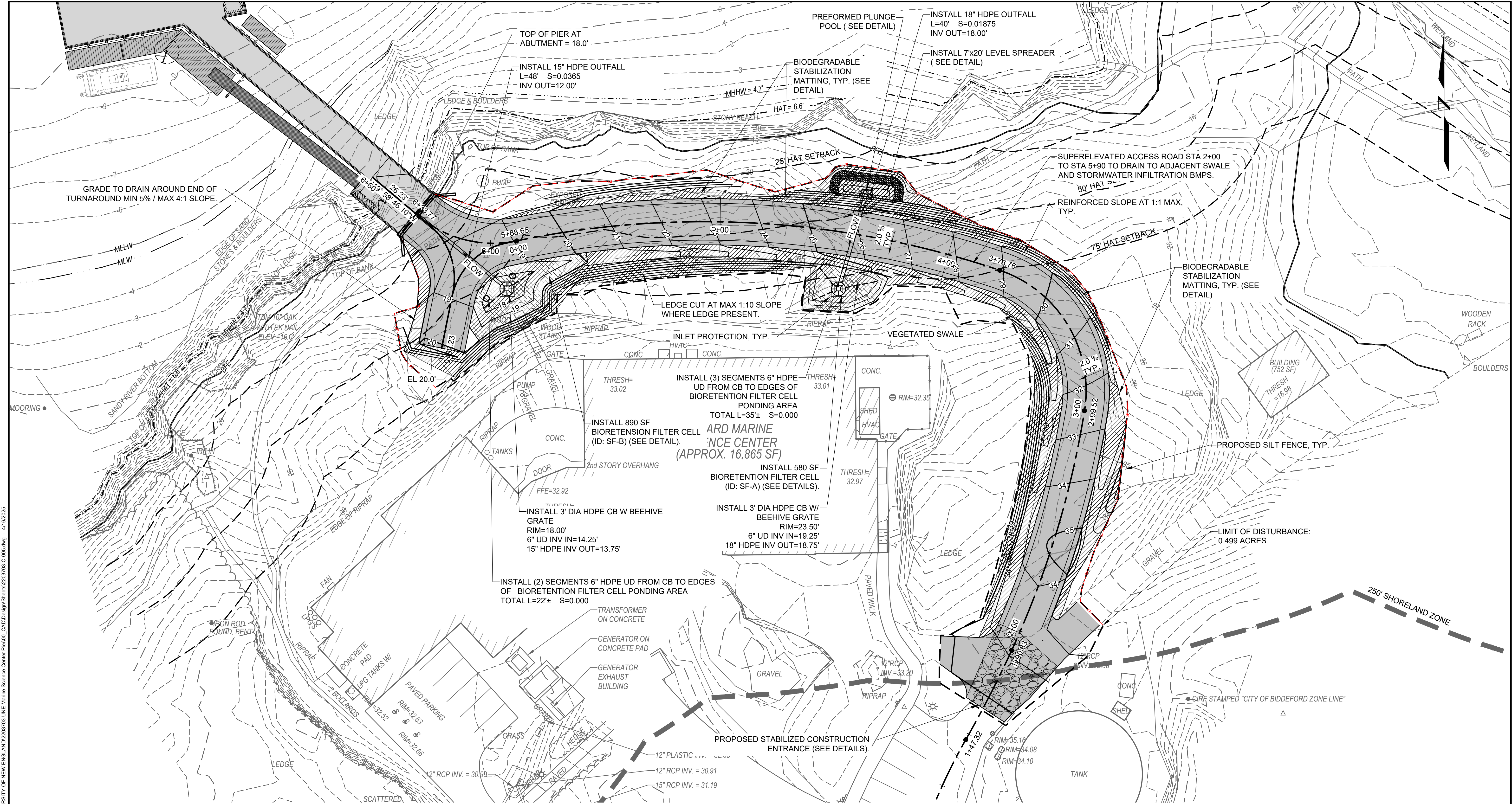
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

7	4/16/2025	BIDDEFORD PERMIT APP.	DJB
6	9/17/2024	REVISED PERMIT SET	DJB
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0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

SHEET NAME
**GRADING AND
DRAINAGE PLAN**

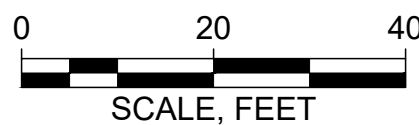
SHEET NO.

C-004

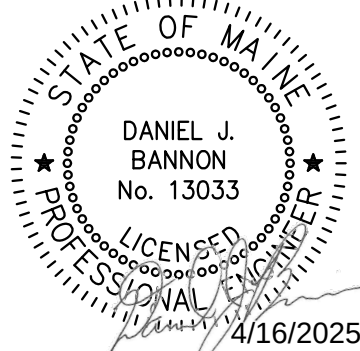


PLAN
SCALE: 1" = 20'

NOTE:
CONTRACTOR SHALL INSTALL BIODEGRADABLE
STABILIZATION MATTING WHEREVER PROPOSED
SLOPES EXCEED 5H:1V.



Attention:
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GEI Project	2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

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11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

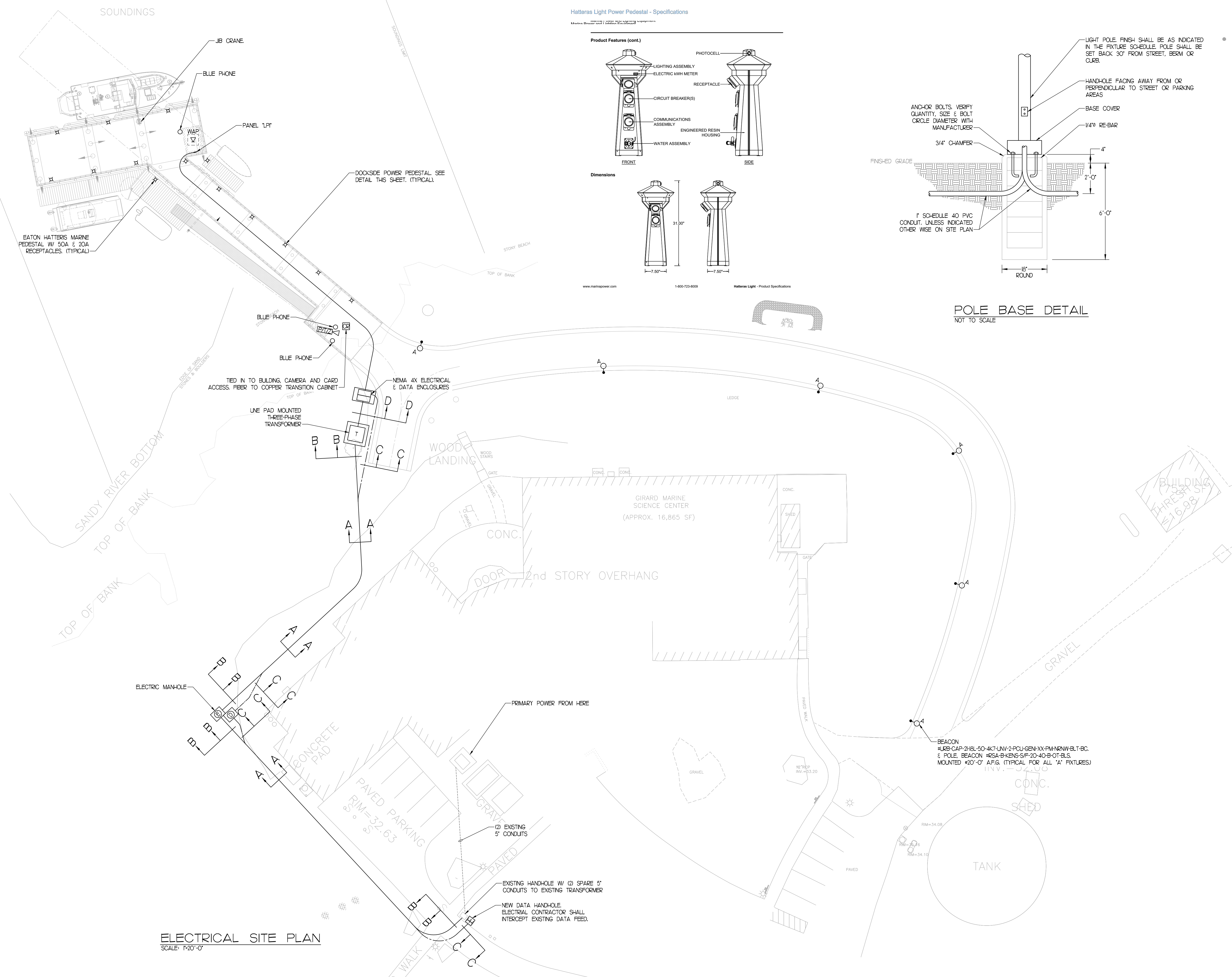
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5	6/27/2024	REVISED PERMIT SET	DJB
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1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

SHEET NAME
**EROSION CONTROL
PLAN**

SHEET NO.

C-005

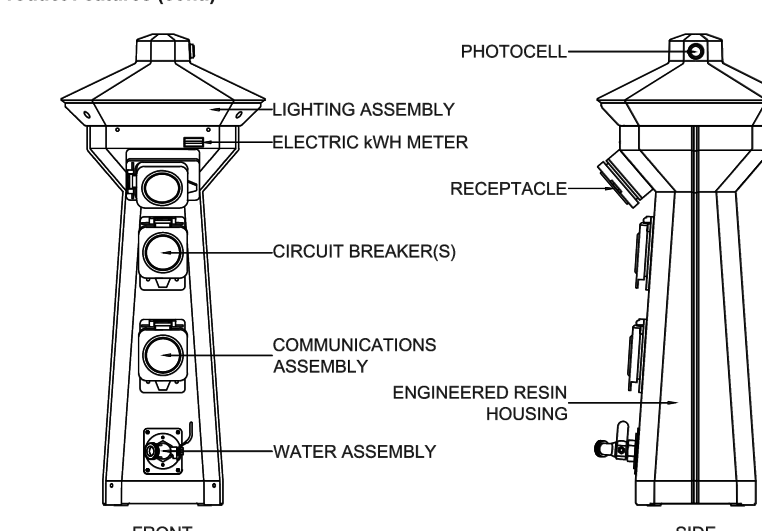
FOR PERMIT



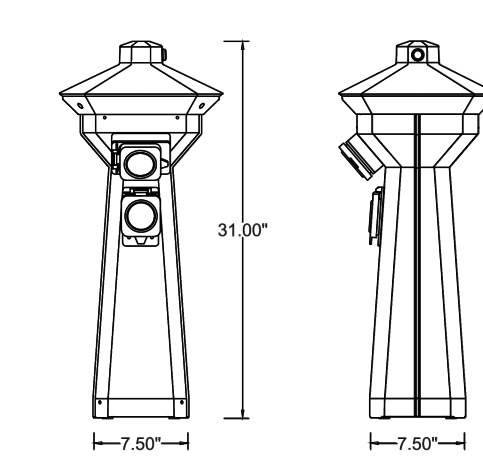
Hatteras Light Power Pedestal - Specifications

www.hatteraspower.com

Product Features (cont.)



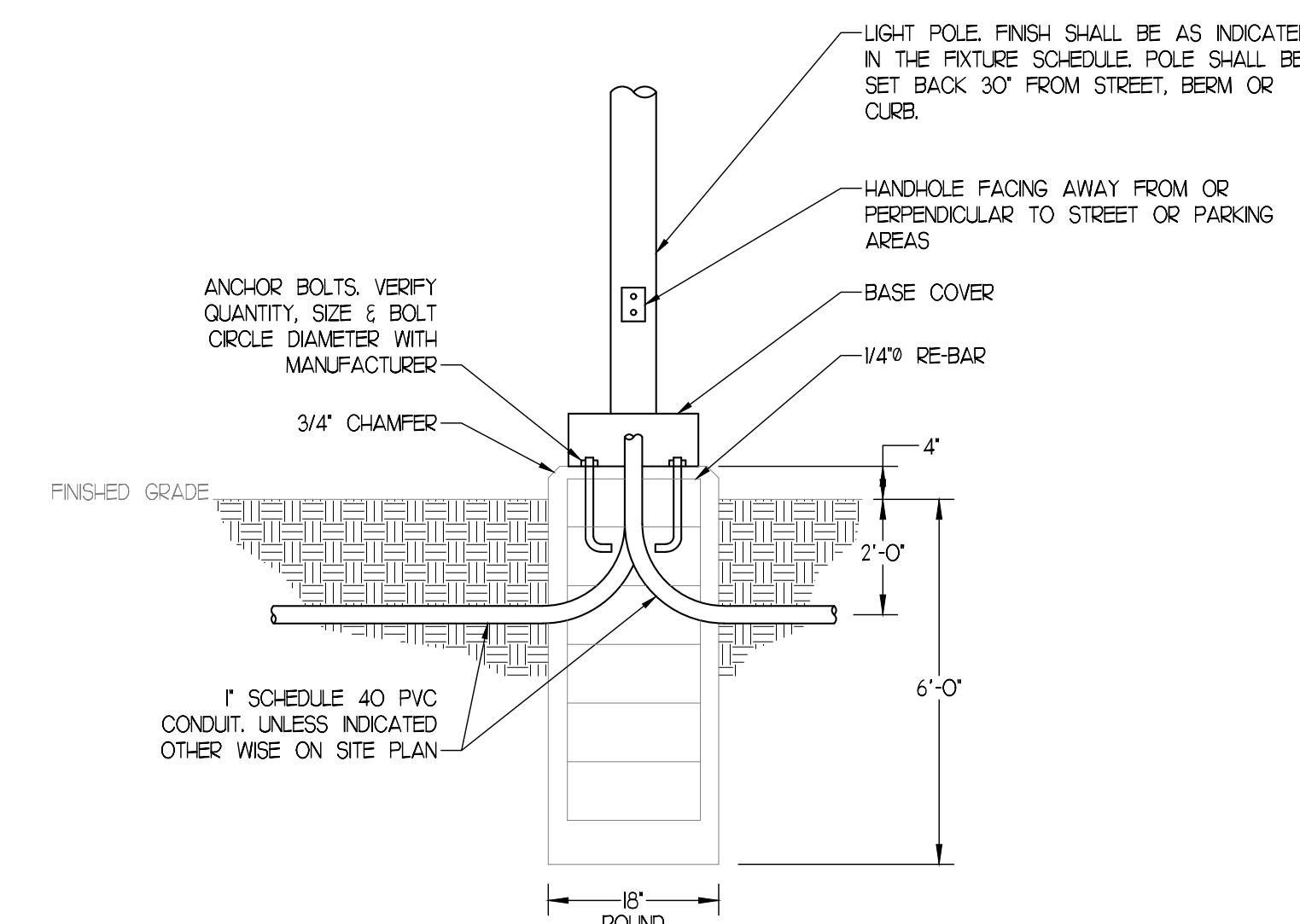
Dimensions



www.hatteraspower.com

1-800-723-8009

Hatteras Light - Product Specifications

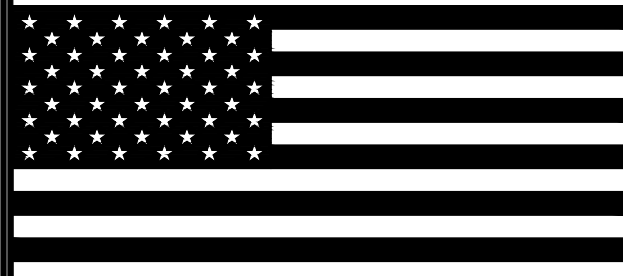


POLE BASE DETAIL
NOT TO SCALE

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



est. 1972
VINCENT A. DIORIO, INC.
CONSULTING ENGINEERS
89 Access Rd. Suite 18
Norwood, MA 02062
(781)255-9754 | vadjr@vadeng.com
www.vadeng.com



REVISIONS:

REV.	DATE	DESCRIPTION

CLIENT:

UNIVERSITY OF
NEW ENGLAND

PROJECT:

MARINE SCIENCE
CENTER PIER

11 HILLS BEACH ROAD
BIDDEFORD, MAINE

DRAWING TITLE

ELECTRICAL SITE PLAN

DRAWN:

CWQ

CHECKED:

VAD Jr

SCALE:

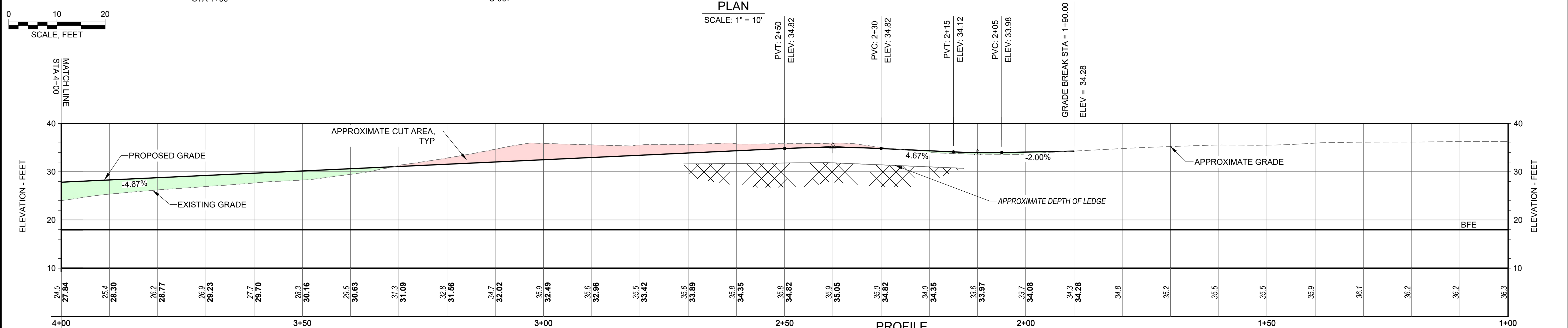
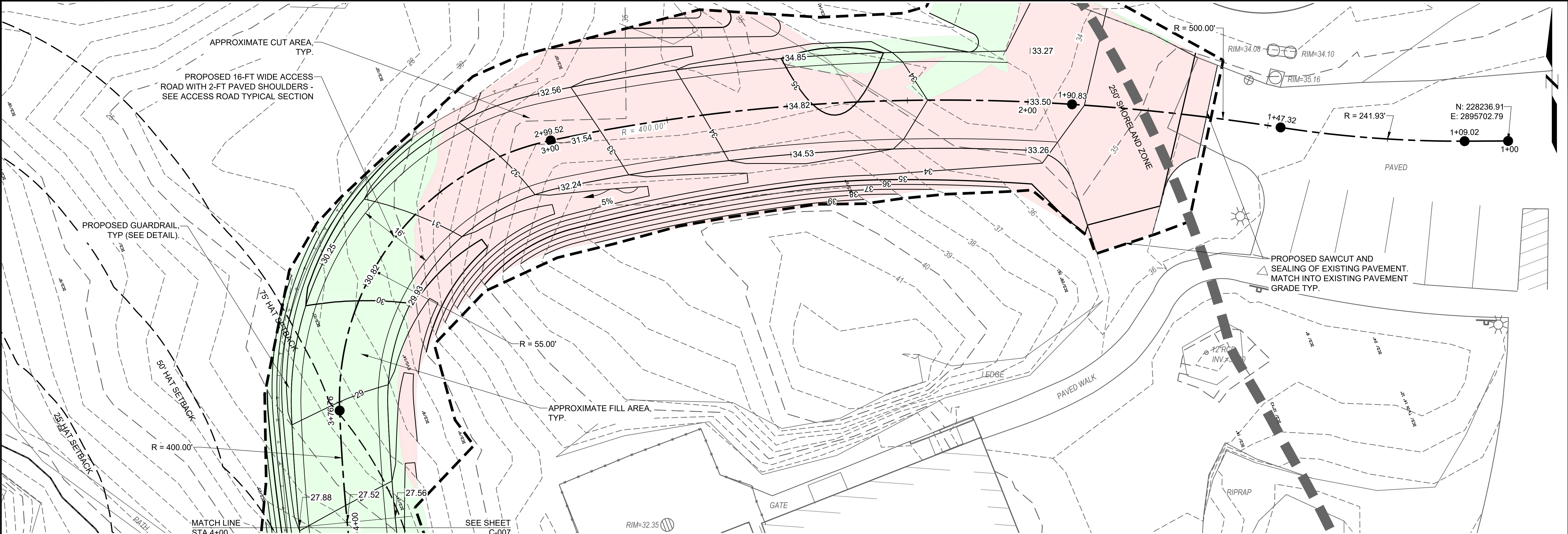
AS INDICATED

DATE:

APRIL 15, 2025

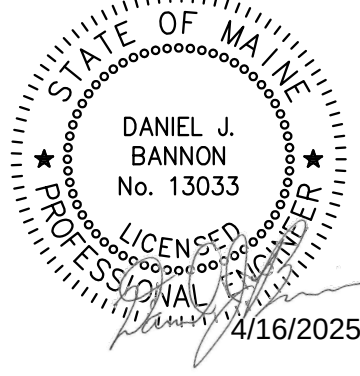
ES1.1

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CUT/FILL ANALYSIS	
STRUCTURE	QUANTITY (CY)
CUT	2174.50
FILL	782.30
NET (FILL)	1392.20

Attention:
0 1"
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P.E. No:	13033
GEI Project	2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

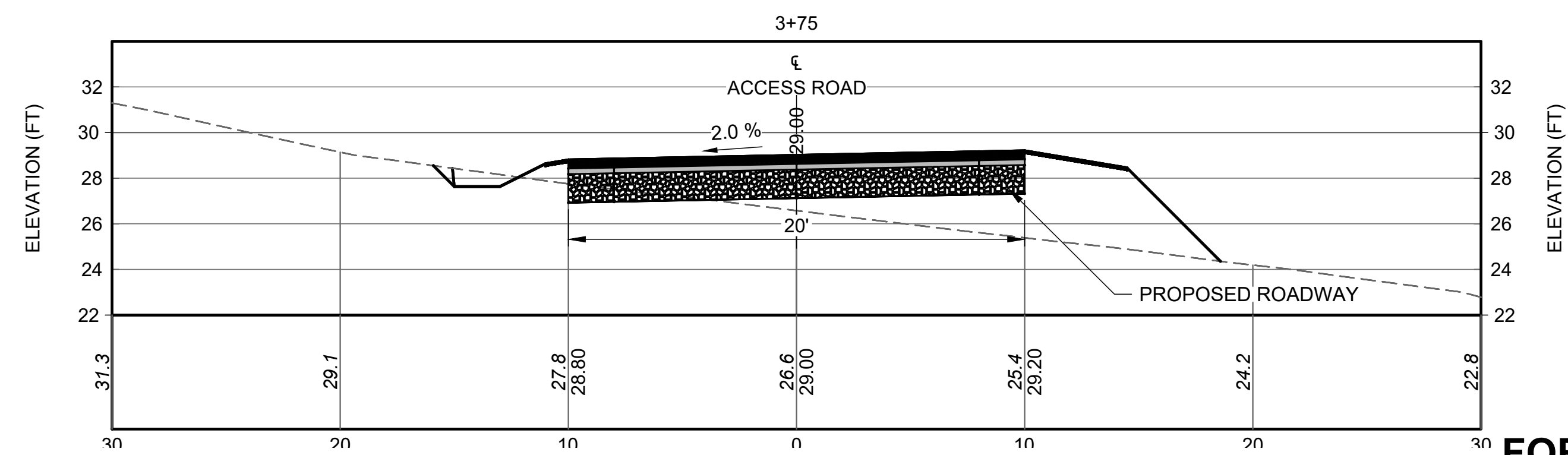
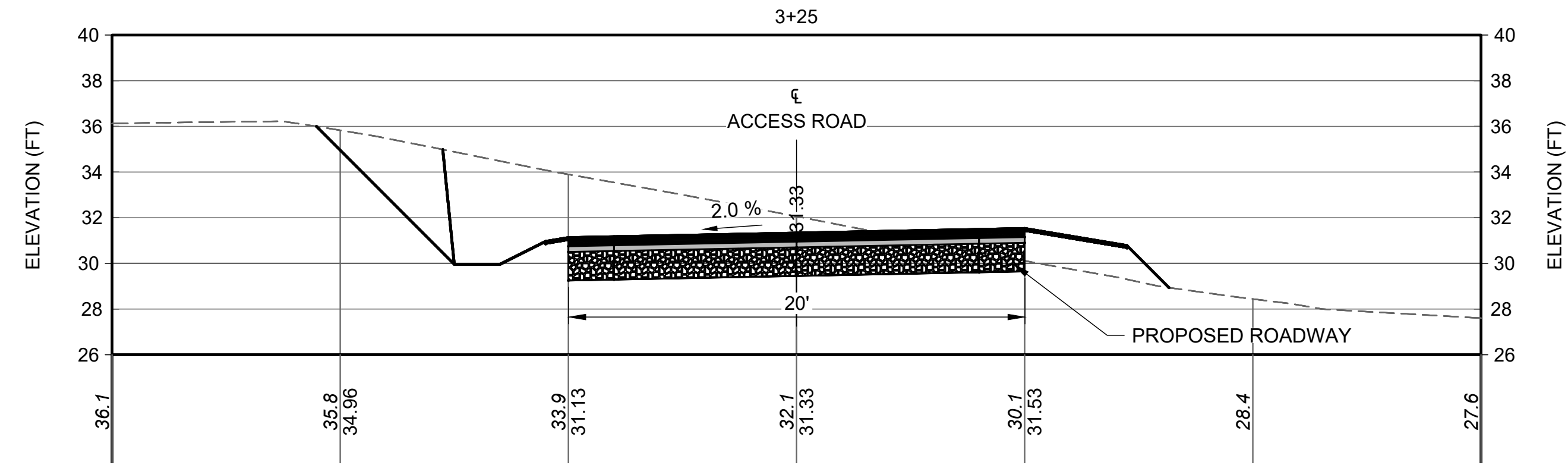
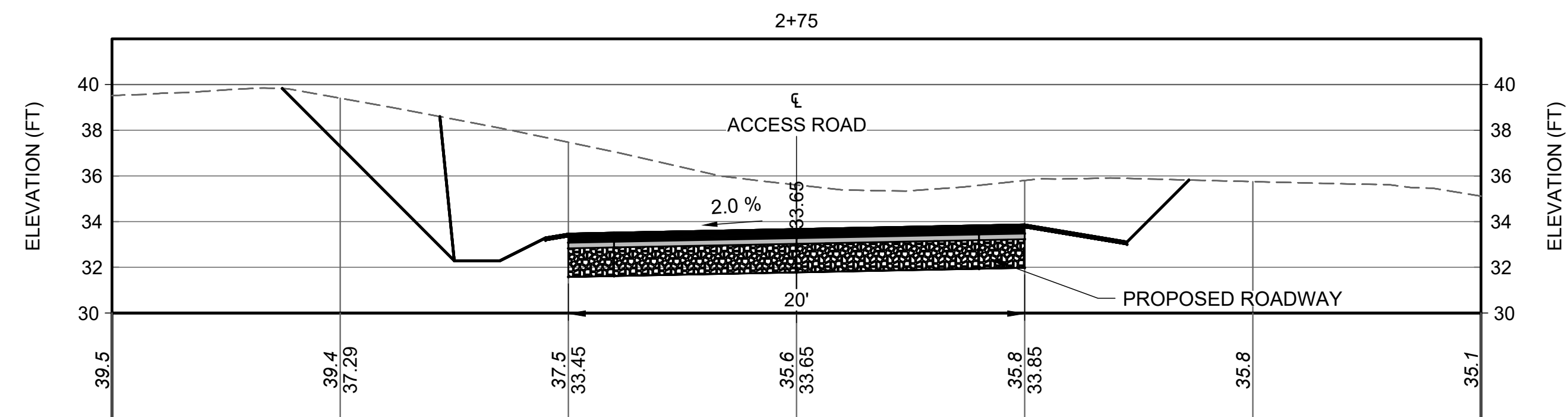
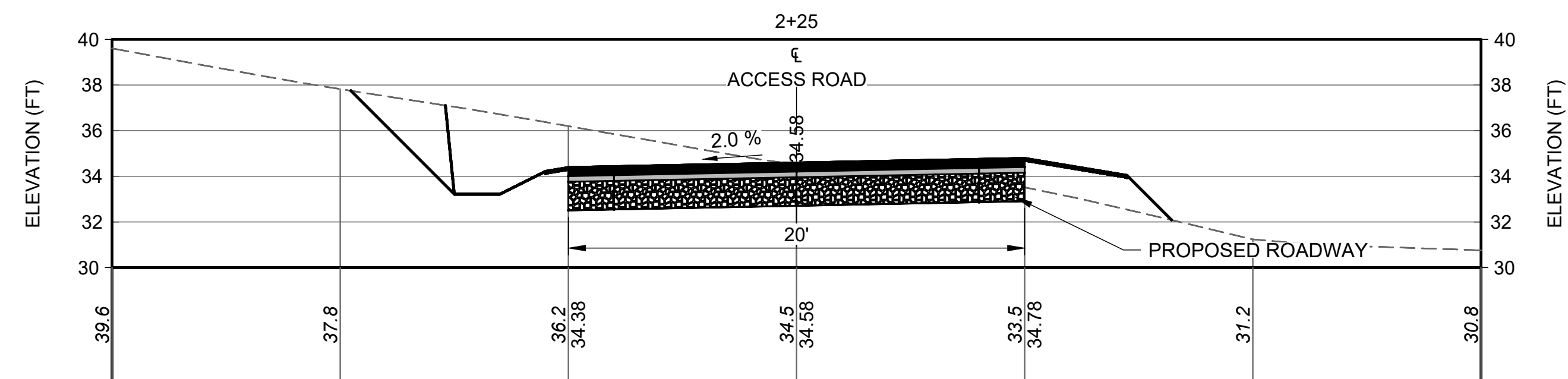
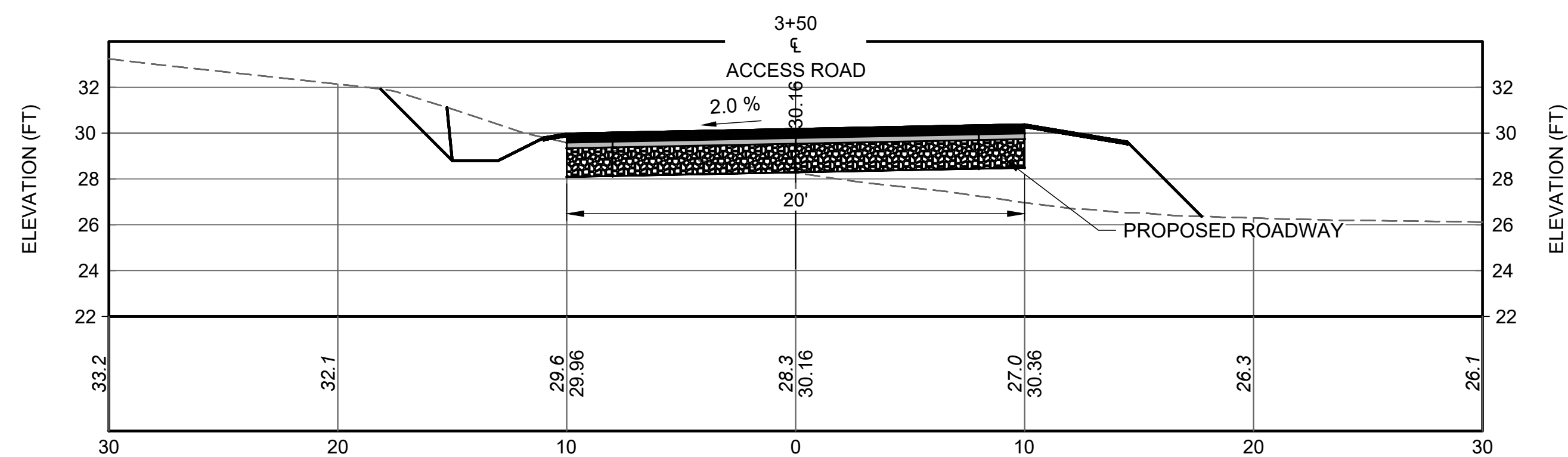
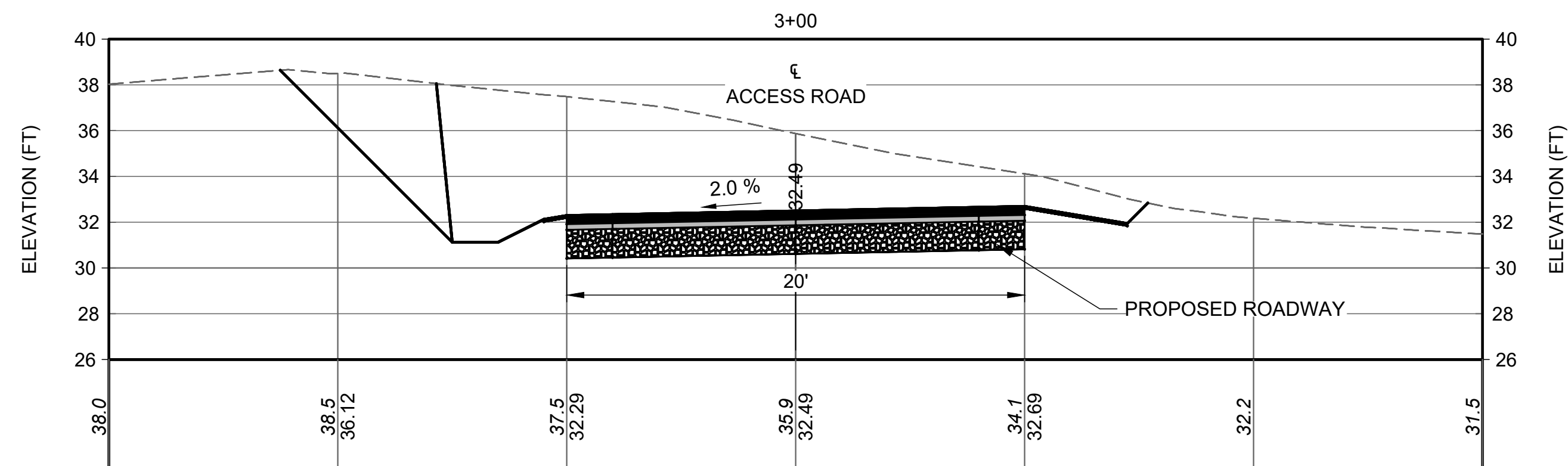
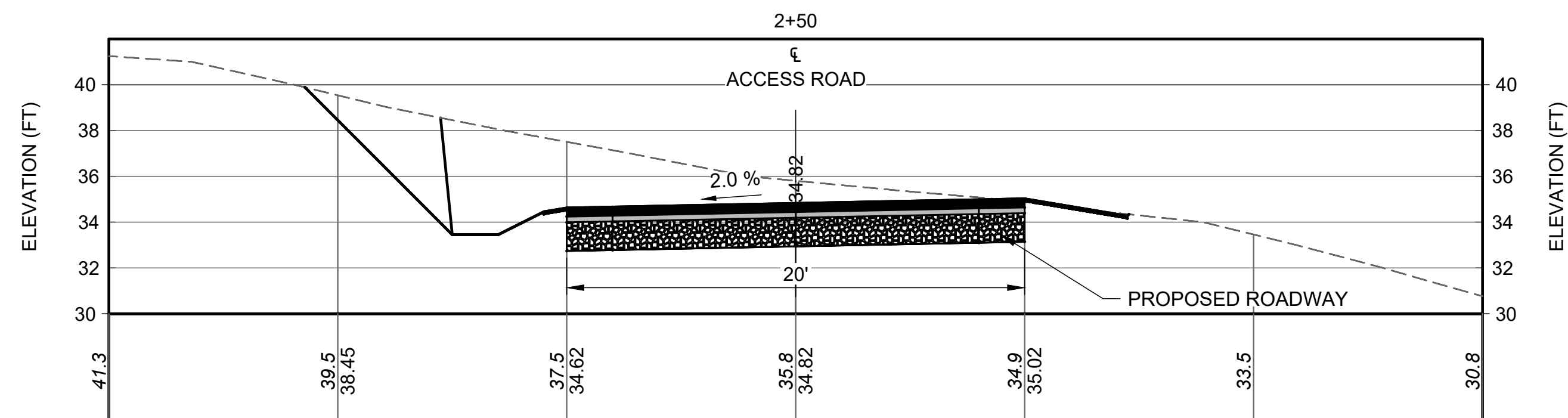
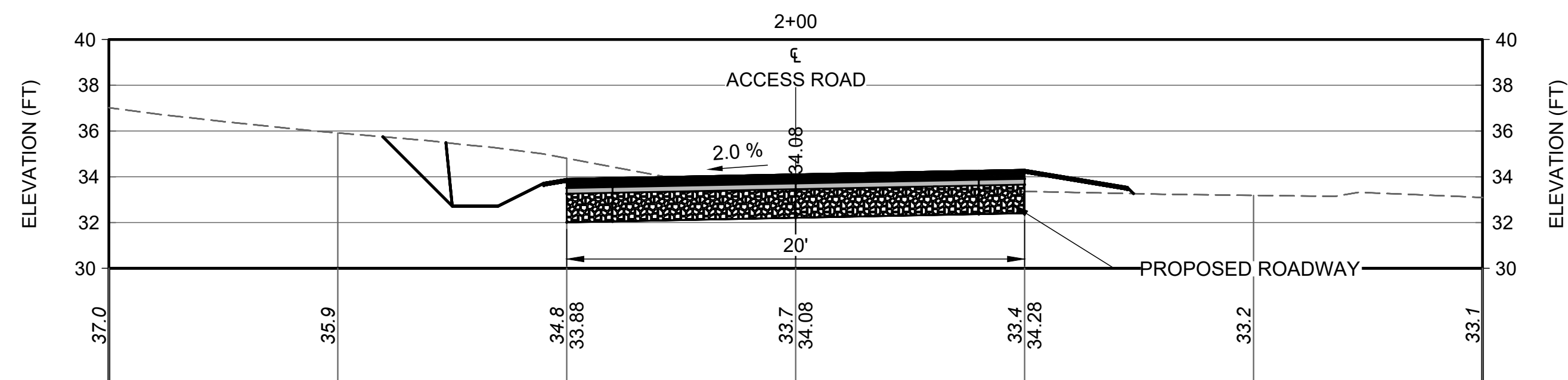
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7	4/16/2025	BIDDEFORD PERMIT APP.	DJB
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1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB

SHEET NAME
**ACCESS ROAD
PLAN AND PROFILE
STA 1+00 TO 4+00**

SHEET NO.
C-006

FOR PERMIT

Page 631 of 72

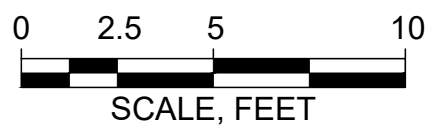


FOR PERMIT

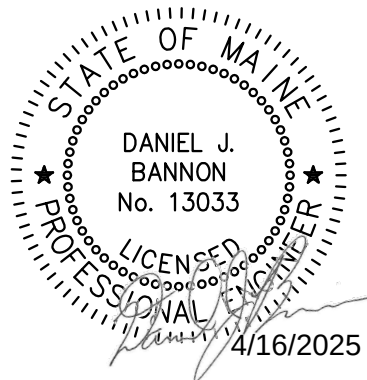
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7	4/16/2025	BIDDEFORD PERMIT APP.	DJB		
6	9/17/2024	REVISED PERMIT SET	DJB		
5	6/27/2024	REVISED PERMIT SET	DJB		
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NO	DATE	ISSUE/REVISION	APP		

Page 632 of 726

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Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.



Designed:	DJB
Drawn:	JAM
Checked:	BJB
Approved:	BMM
P.E. No:	13033
GEI Project	2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER

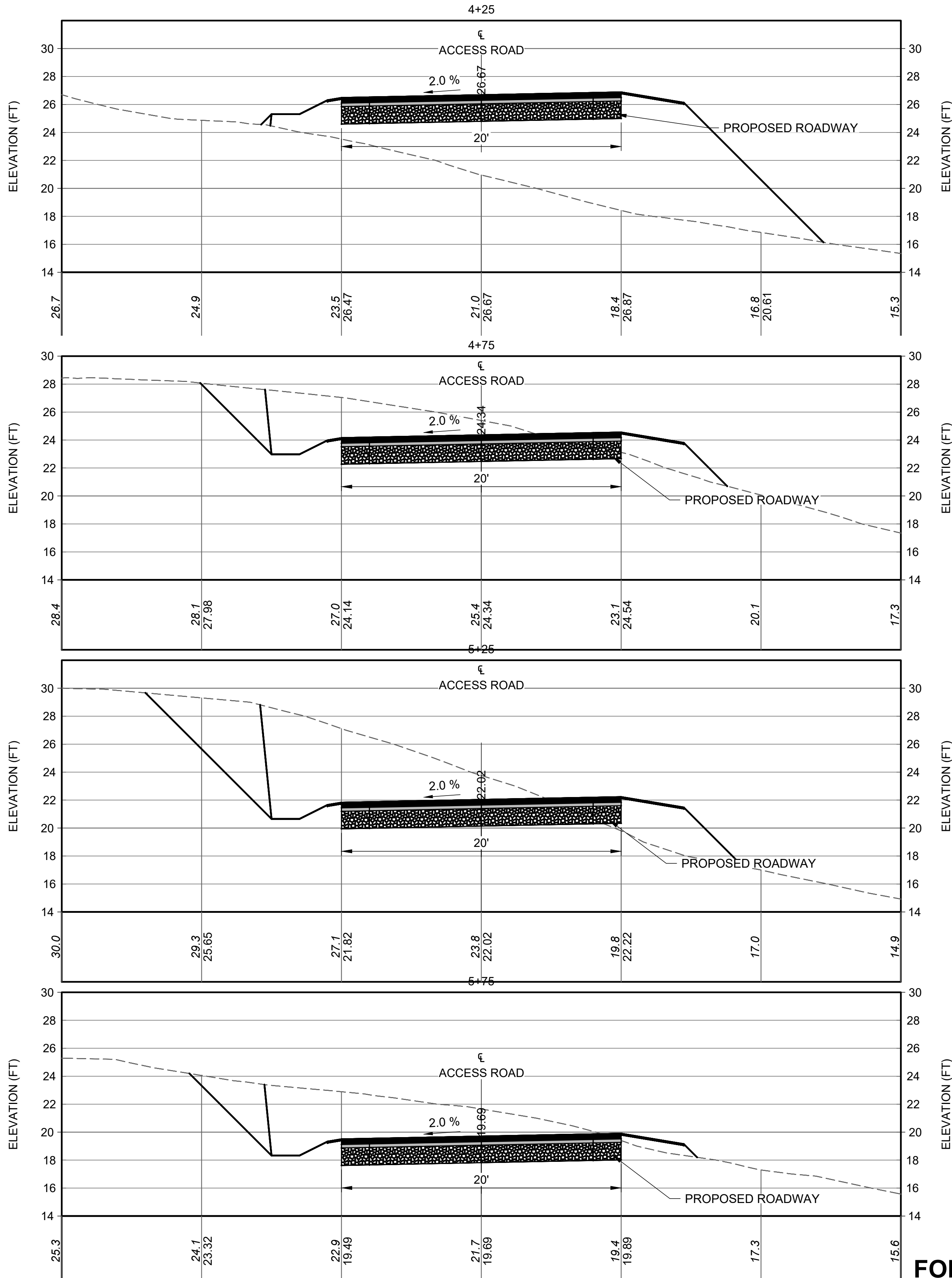
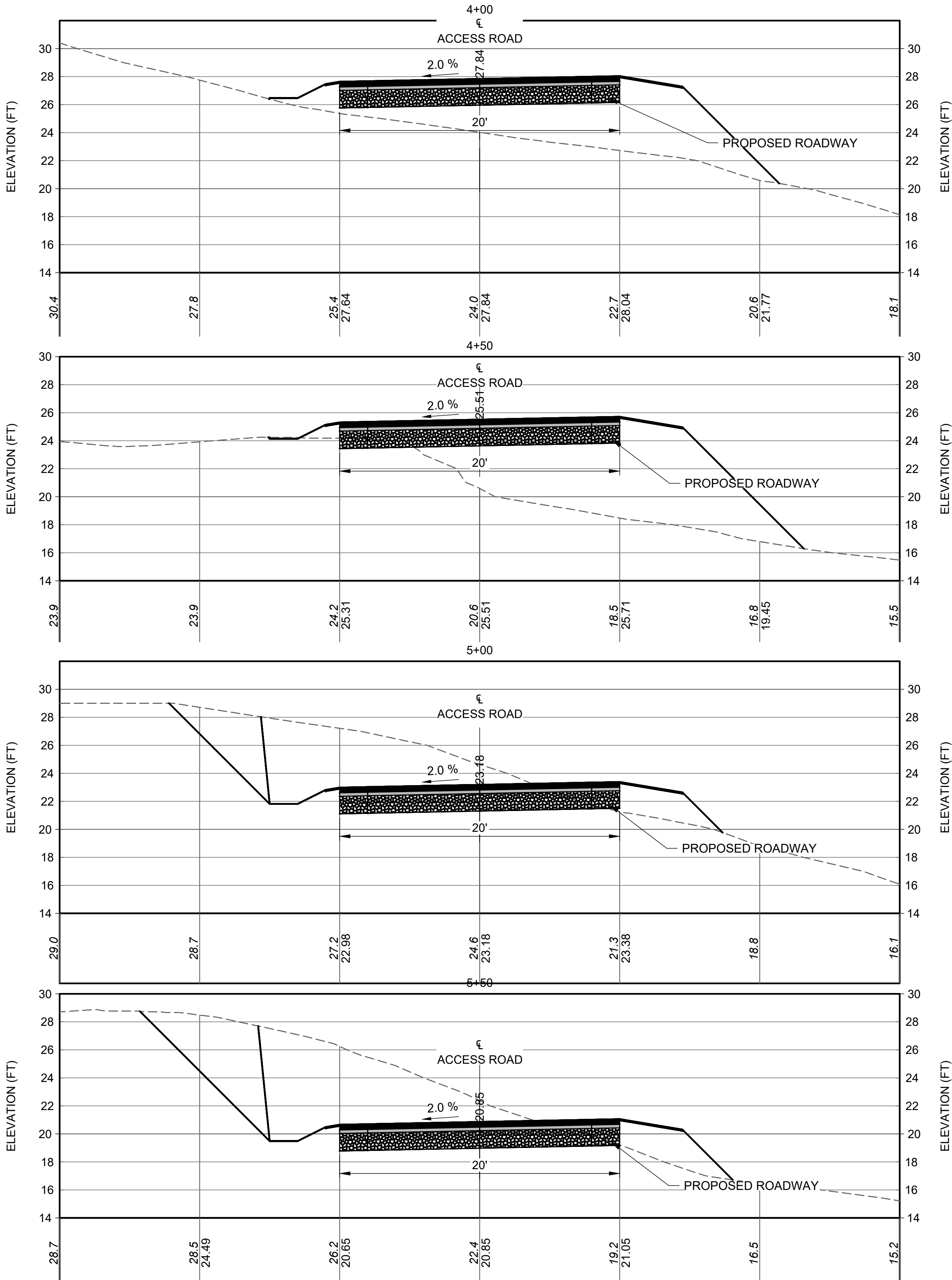
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

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NO	DATE	ISSUE/REVISION	APP

SHEET NAME
**ROAD ACCESS
SECTIONS STA
4+00 TO 5+75**

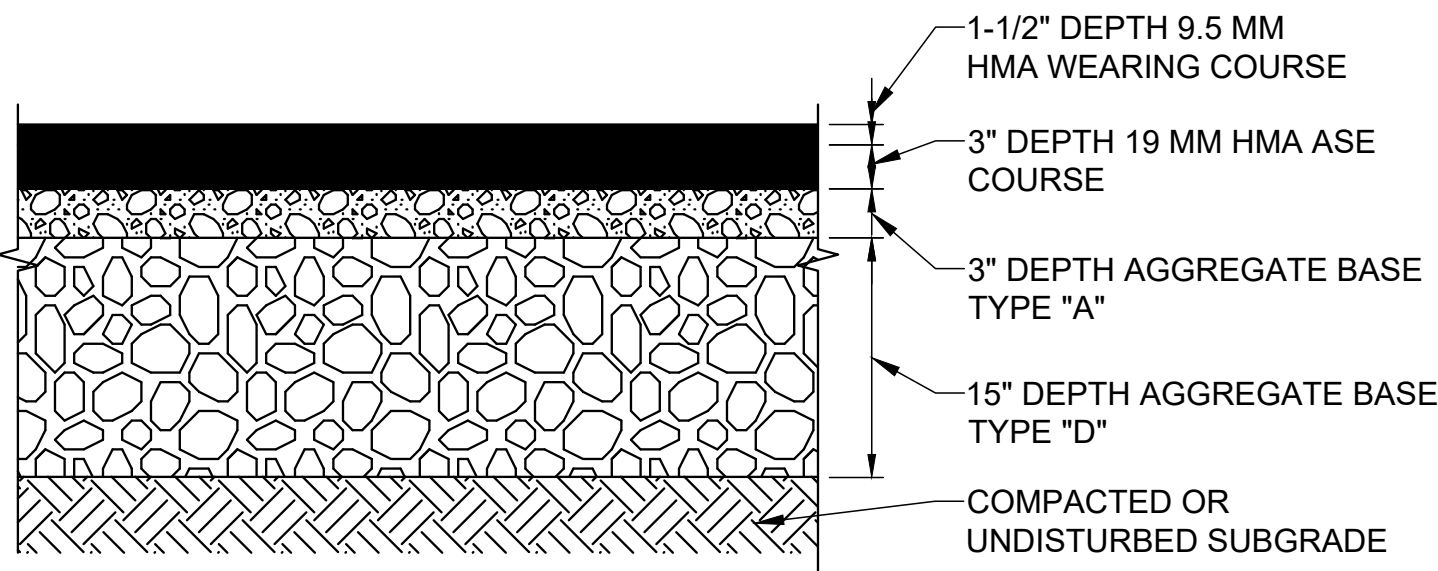
SHEET NO.

C-010



FOR PERMIT

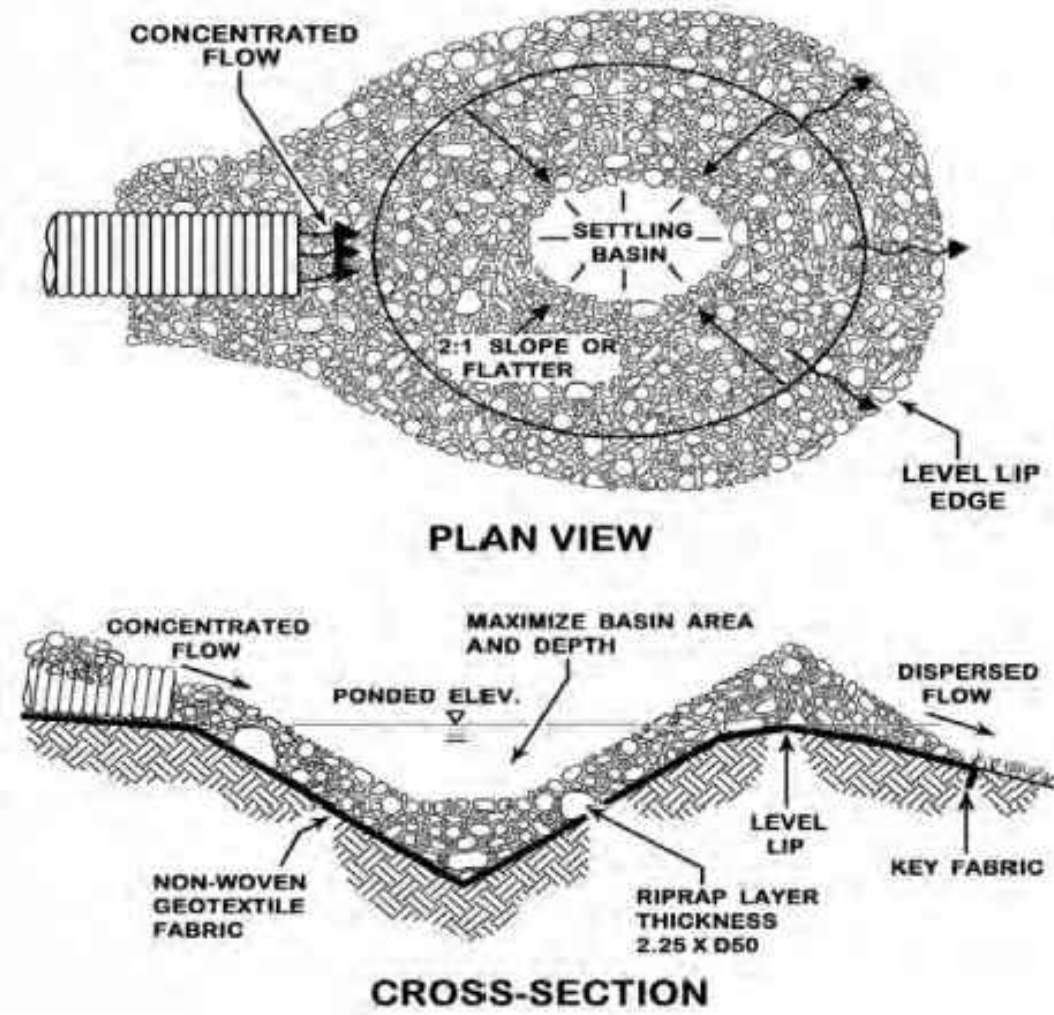
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- NOTES:
- PAVEMENT DESIGN SHALL HAVE A MAINEDOT APPROVED JOB MIX FORMULA (JMF) WITHIN THE LATEST CALENDAR YEAR UNLESS OTHERWISE APPROVED BY OWNER.

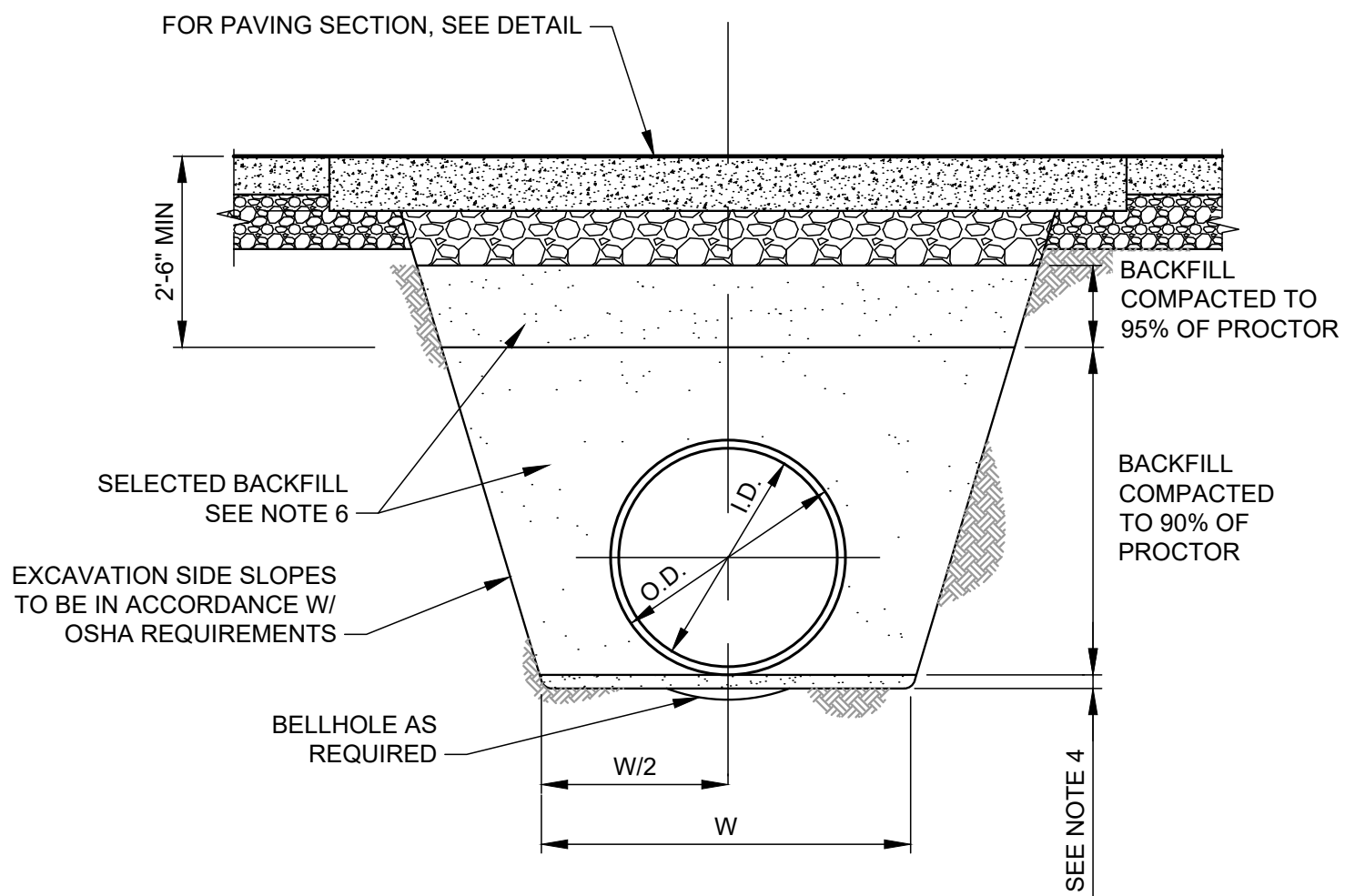
1 HMA TRAVELWAY/SHOULDER TYPICAL SECTION

NO SCALE



PLUNGE POOL SIZING (minimum)				
SIZE	RIPRAP SIZING (D ₅₀)	WIDTH At the narrow end of pipe	LENGTH For slow flows (no pressure head)	LENGTH For high flows (with pressure head)
12"	5"	3-4'	4-6'	8-10'
18"	8"	4-6'	6-8'	12-18'
24"	10"	6-8'	8-10'	18-22'
30"	12"	8-10'	12-14'	22-28'
36"	14"	10-12'	14-16'	28-32'

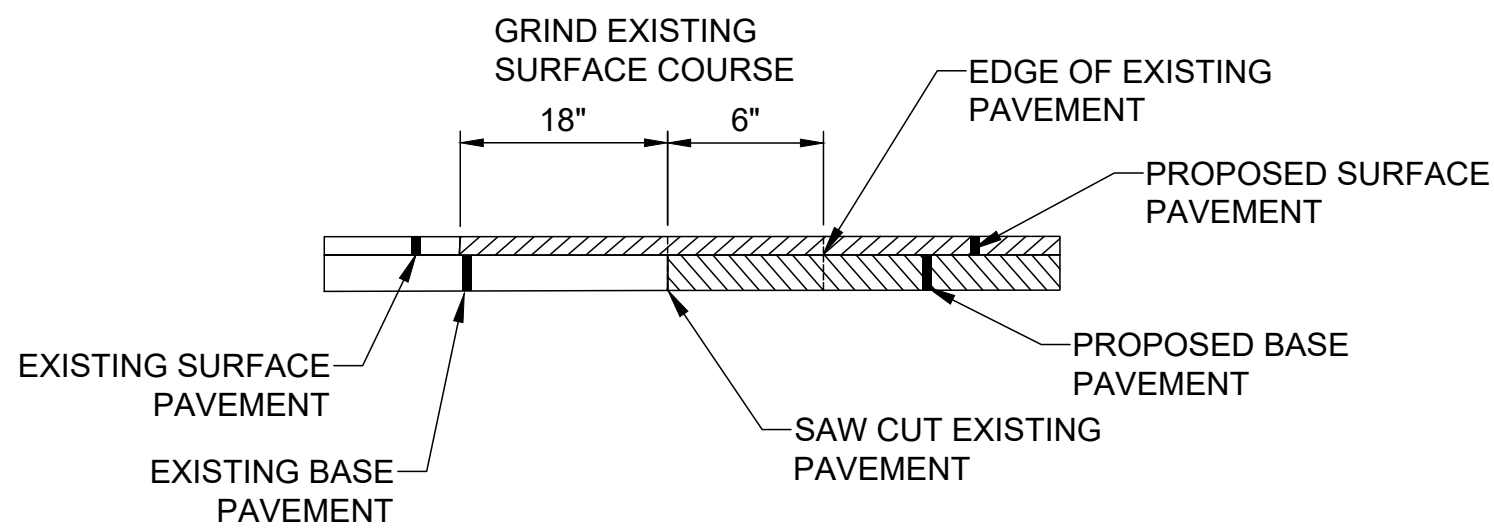
The diameter of the largest stone size in the mix should be about 1.5 times the D₅₀ and the smallest one about one half the size. The thickness of riprap should never be less than 2 times the rock D₅₀.



- NOTES:
- TRENCH BOTTOM OR BEDDING FOR ALL PIPE SHALL BE GRADED TO PROVIDE UNIFORM SUPPORT FOR THE ENTIRE LENGTH OF THE PIPE EXCEPT AT BELLHOLES.
 - BELLHOLES FOR PIPES SHALL HAVE A CLEARANCE OF 3" BETWEEN THE BOTTOM OF THE BELLHOLE AND THE EXTERIOR OF THE PIPE BARREL, BUT IN NO CASE SHALL BELLHOLES BE SMALLER THAN REQUIRED TO FACILITATE PLACING OF THE PIPE OR PROPER JOINING OF THE PIPE.
 - COMPACTION BACKFILL SHALL BE COMPACTED TO A DEGREE AT LEAST EQUIVALENT TO THE EXISTING DEGREE OF COMPACTING OF ADJACENT IN-PLACE EARTH MATERIALS AGAINST WHICH SUCH COMPACTED BACKFILL IS TO BE PLACED, OR TO A MIN OF 95% OF THE LABORATORY STANDARD MAX ASTM D698 DENSITY, WHICHEVER IS GREATER.
 - MIN 3" DEEP LAYER OF SCARIFIED MATERIAL WHEN IN HARD MATERIAL. IN UNSUITABLE MATERIAL, OVER EXCAVATE AS DIRECTED BY ENGINEER (6" MIN) AND REPLACE WITH COMPACTED BACKFILL.
 - W = PIPE O.D. + 24" MIN
 - ALL SELECTED BACKFILL IS TO BE IN CONFORMANCE WITH STATE STANDARD SPECIFICATION.

3 TRENCH

NO SCALE



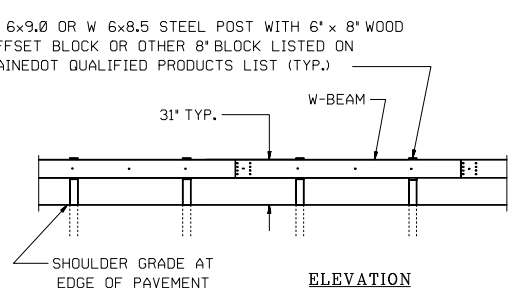
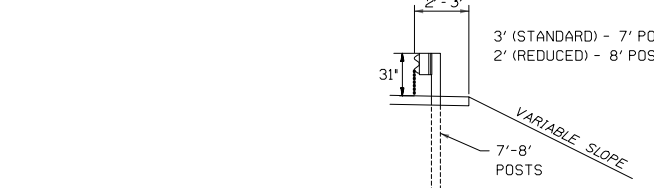
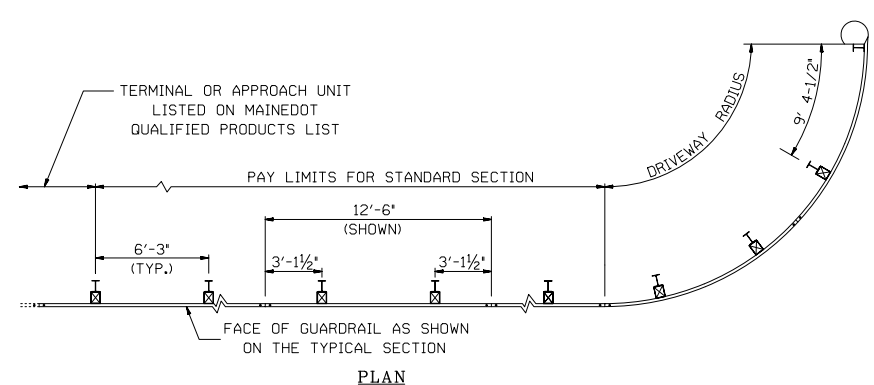
4 HMA PAVEMENT BUTT JOINT

NO SCALE

- NOTES:
- IF THE PIPE DISCHARGES ONTO A FLAT AREA, THE APRON SHOULD HAVE A WIDTH THAT IS THREE TIMES THE OUTLET PIPE'S DIAMETER. IF THE PIPE FLOWS HAVE THE POTENTIAL OF CAUSING A GULLY, A LEVEL SPREADER SHOULD BE PROVIDED.
 - THE CHANNEL SIDE SLOPES SHOULD BE NO STEEPER THAN 2:1. RIPRAP ON THE SIDES OF THE PLUNGE POOL SHOULD EXTEND TO THE TOP OF THE CHANNEL.
 - THE PLUNGE POOL SIZING AND THE MEDIAN SIZED RIPRAP CAN BE DETERMINED FROM THE FOLLOWING TABLE. THE THICKNESS OF RIPRAP SHOULD NOT BE LESS THAN 2 TIMES THE ROCK D₅₀.
 - A GEOTEXTILE OR APPROPRIATE GRAVEL FILTER SHOULD BE USED TO PROTECT AGAINST PIPING OF SOIL FINES FROM BENEATH THE ROCK.
 - IN A CHANNEL THAT CAN BE REVEGETATED, SEED AND MULCH SHOULD BE APPLIED WITHIN 7 DAYS FROM FINAL CONSTRUCTION..

2 PLUNGE POOL

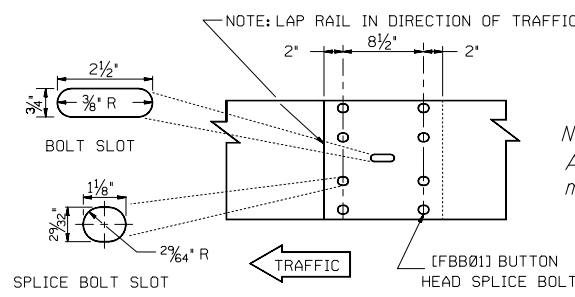
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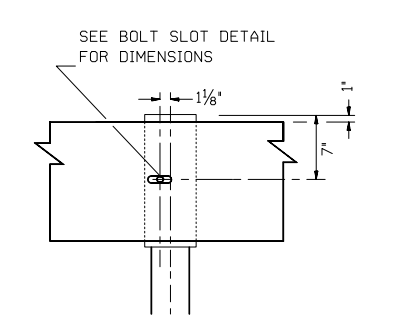
31" W-BEAM GUARDRAIL - MID-WAY SPLICE

Identification letters and numbers on drawings refer to the standard detail drawings shown in "A" guide to Standardized Highway Barrier Hardware" by AASHTO-HQ-ARTBA Joint Committee.

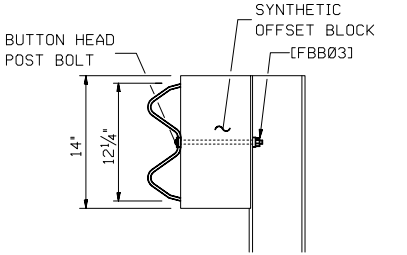
GUARDRAIL 606(03)



ELEVATION VIEW AT BEAM SPLICE

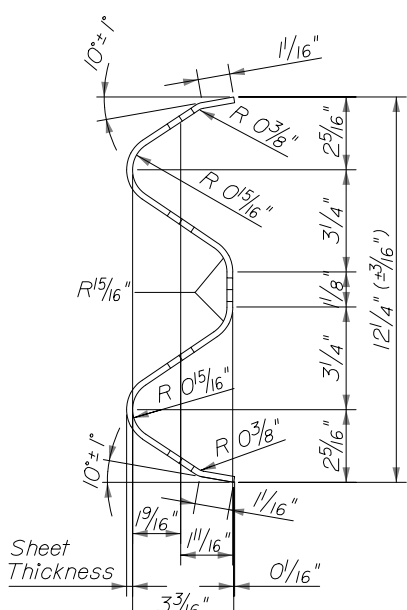


ELEVATION AT POST VIEW

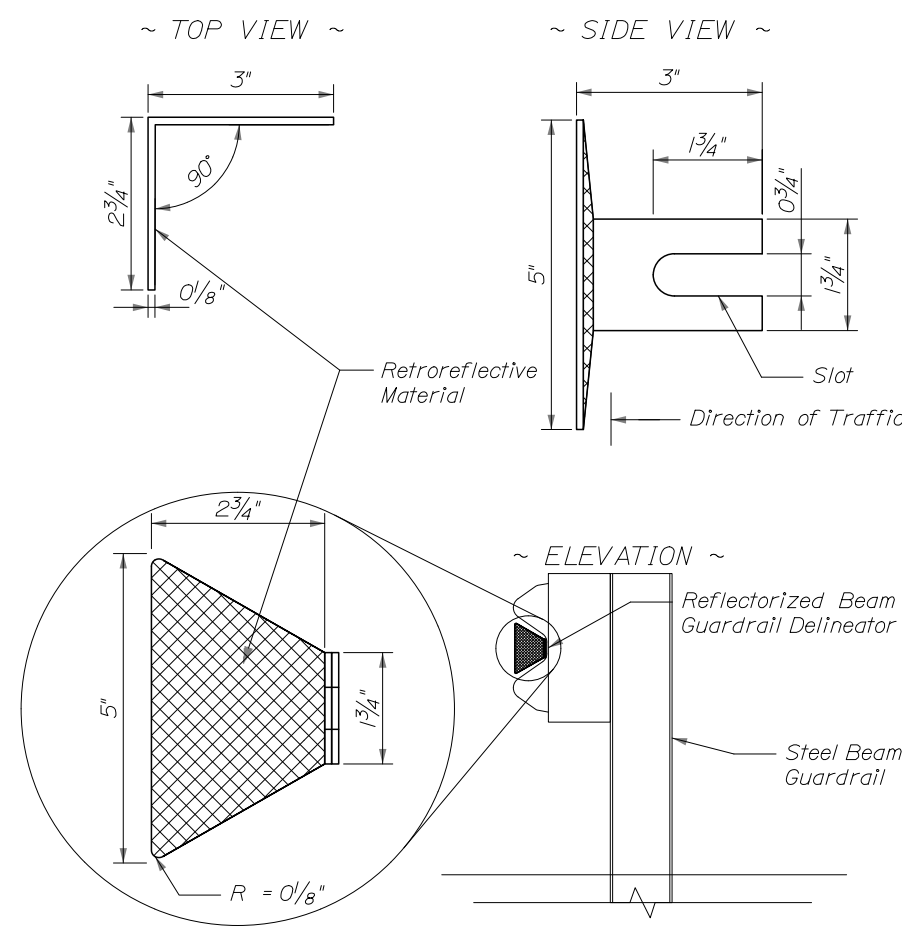


TYPICAL SIDE VIEW

GUARDRAIL 606(04)

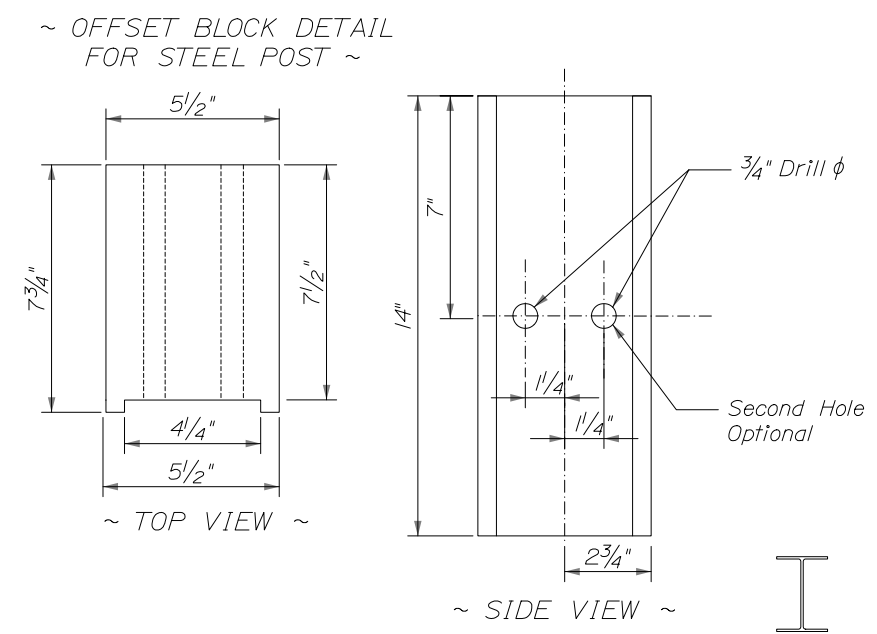


~ GUARDRAIL BEAM DETAIL RWM02A ~



All dimensions are in inches and subject to manufacturing tolerances.

REFLECTORIZED BEAM GUARDRAIL DELINEATOR DETAILS 606(07)

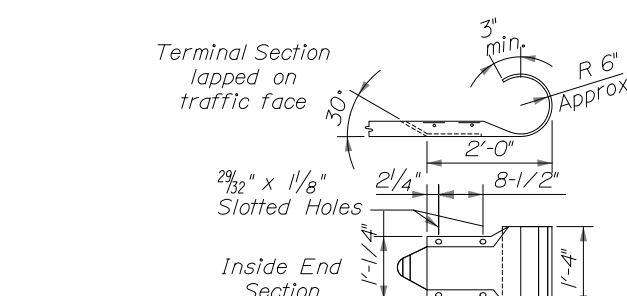


Offset Block and Post shall be bolted with one FBB03 Post Bolt. Holes to be 3/4\"/>

Location of holes for attaching Offset Block to Steel Post (second hole is optional)

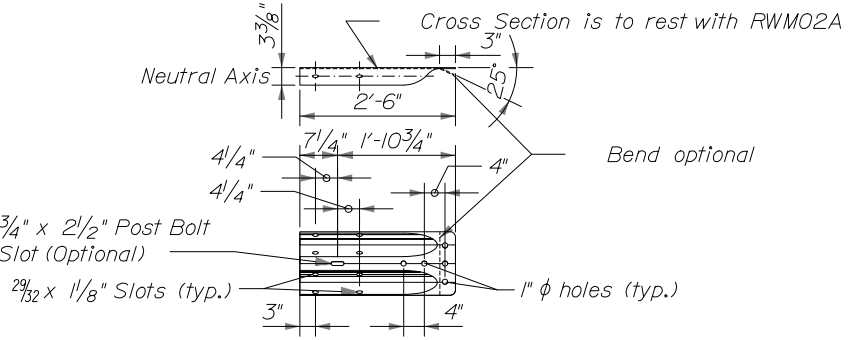
~ STEEL POST ~ (PWE01)

GUARDRAIL 606(05)



~ GUARDRAIL TERMINAL END - RWE03A ~

- Use only on the end of circular guardrail at driveways.
- Use only on the trailing end of guardrail on divided highways with washers (fwr03) installed on the last 9 posts.



~ W-BEAM TERMINAL CONNECTOR RWE02A ~

GUARDRAIL 606(05)

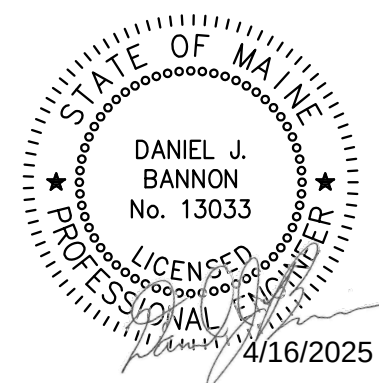
5 GUARD RAIL DETAILS

NO SCALE

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.



Designed: DJB

Drawn: JAM

Checked: BJB

Approved: BMM

P.E. No: 13033

GEI Project 2203703



UNIVERSITY OF NEW ENGLAND

11 HILLS BEACH RD. BIDDEFORD, MAINE

UNIVERSITY OF NEW ENGLAND MARINE SCIENCE CENTER PIER

11 HILLS BEACH ROAD BIDDEFORD, YORK COUNTY, MAINE

7	4/16/2025	BIDDEFORD PERMIT APP.	DJB
6	9/17/2024	REVISED PERMIT SET	DJB
5	6/27/2024	REVISED PERMIT SET	DJB
4	9/14/2023	DEP PERMIT SET	DJB
3	6/28/2023	75% DESIGN SUBMISSION	DJB
2	2/15/2023	30% DESIGN SUBMISSION	DJB
1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

SHEET NAME	SHEET NO.
SITE DETAILS	C-011

FOR PERMIT

BANNON, DAN | gjeiconsultants.com\data\data Storage\Working\UNIVERSITY OF NEW ENGLAND\2203703-UNE Marine Science Center Plan\00_CAD\Design\Sheets\2203703-C-013.dwg - 4/16/2025

EROSION AND SEDIMENTATION CONTROL NOTES:

INTRODUCTION
THE FOLLOWING PLAN FOR CONTROLLING SEDIMENTATION AND EROSION IN THIS PROJECT IS BASED ON CONSERVATION PRACTICES FOUND IN THE MAINE EROSION & SEDIMENT CONTROL BMPS MANUAL, OCTOBER 2016, AND MAINE EROSION AND SEDIMENT CONTROL PRACTICE FIELD GUIDE FOR CONTRACTORS, REVISED 2014. MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION. THE CONTRACTOR WHO IMPLEMENTS THIS PLAN SHALL BE FAMILIAR WITH THESE PUBLICATIONS AND ADHERE TO THEM AND THE PRACTICES PRESENTED HEREIN REFERENCE IS MADE TO THE EROSION CONTROL PLANS AND DETAILS (C-005 AND C-013) WITHIN THE PLAN SET, SHOWING THE LOCATIONS AND TYPES OF PROPOSED MEASURES TO BE IMPLEMENTED.

GENERAL EROSION AND SEDIMENTATION CONTROL NOTES:

1. EROSION AND SEDIMENTATION CONTROL MEASURES ARE PROPOSED TO CONTROL ACCELERATED EROSION AND SEDIMENTATION AND REDUCE ADVERSE IMPACTS FROM RUNOFF AND EROSION AT THE WORK SITE.
2. APPLICATION OF TEMPORARY AND PERMANENT EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MAINE EROSION AND SEDIMENT CONTROL BMPS PUBLISHED BY MAINE DEP AND AVAILABLE AT: [HTTPS://WWW.MAINE.GOV/DEP/LAND/EROSION/ESCBMPS/](https://www.maine.gov/dep/land/erosion/escbmps/)
3. THE WORK SHALL BE PERFORMED BY A CONTRACTOR THAT IS CERTIFIED BY MAINE DEP IN EROSION AND SEDIMENT CONTROL MEASURES. A CERTIFIED INDIVIDUAL SHALL BE ONSITE DURING ALL CONSTRUCTION ACTIVITY.
4. EROSION AND SEDIMENTATION DUE TO RUNOFF, TIDAL EXPOSURE, AND WAVE ACTION SHALL BE CONTROLLED BY STAGING CONSTRUCTION ACTIVITY TO MINIMIZE AREA AND TIME OF DISTURBANCE, APPLICATION OF SILT FENCE, BARRIERS, AND OTHER EROSION CONTROL MEASURES, AND PRESERVING NATURAL VEGETATION WHENEVER POSSIBLE.
5. THE CONTRACTOR'S SEQUENCE OF OPERATIONS AND SCHEDULE FOR WORK ACTIVITIES SHALL ACT TO MINIMIZE EXPOSURE TO EROSION.
6. THE CONTRACTOR SHALL TAKE CARE TO LIMIT THE AREA OF SOIL DISTURBANCE TO THE MINIMUM NECESSARY TO COMPLETE THE WORK.
7. EROSION CONTROL MEASURES, SEEDING, AND VEGETATION SHALL BE INSPECTED WEEKLY AND AFTER RAINSTORMS, RUNOFF EVENTS, AND STORM EVENTS UNTIL FINAL ACCEPTANCE. REPAIRS SHALL BE MADE WHEN NO LONGER SERVICEABLE DUE TO DAMAGE OR ACCUMULATION OF SEDIMENT.
8. AT THE COMPLETION OF CONSTRUCTION, ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND CONTOUR, UNLESS OTHERWISE INDICATED ON THE PLANS.

GENERAL EROSION AND SEDIMENTATION CONTROL PRACTICES

THE FOLLOWING IS A LIST OF GENERAL EROSION CONTROL PRACTICES THAT WILL BE USED TO PREVENT EROSION AND SEDIMENTATION BEFORE, DURING AND AFTER THE CONSTRUCTION OF THIS PROJECT. IN ADDITION, SPECIAL CARE SHALL BE USED AT ALL TIMES TO: LIMIT DISTURBANCE AND, HENCE, EROSION

1. CORRECT ANY EROSION PROBLEMS IMMEDIATELY.
2. REGULARLY MONITOR THE IMPLEMENTED PRACTICES, ESPECIALLY AFTER EVERY RAINFALL.
3. REVEGETATE DISTURBED AREAS AS SOON AS POSSIBLE AFTER CONSTRUCTION.
4. CONFORM TO ALL REQUIREMENTS/STANDARDS OF THE SITE'S MAINE DEP EROSION & SEDIMENT CONTROL BMP MANUAL.

SILT FENCE AND/OR EROSION CONTROL MIX SEDIMENT BARRIERS

SILT FENCE AND/OR EROSION CONTROL MIX SEDIMENT BARRIERS WILL BE INSTALLED ALONG THE DOWN GRADIENT SIDE OF THE PROPOSED GROUND DISTURBANCE AREAS PRIOR TO ANY CONSTRUCTION ACTIVITIES WHERE SLOPES EXCEED 8% OR THERE IS FLOWING WATER BOTH SILT FENCE AND EROSION CONTROL MATTING BERMS SHALL BE USED.

CATCH BASIN PROTECTION

CATCH BASIN PROTECTION WILL BE INSTALLED AT THE FIRST DOWNGRADIENT CATCH BASIN IN STREET ADJACENT TO ANY CONSTRUCTION ACTIVITIES AND IN ALL ONSITE CATCH BASINS UNTIL SITE HAS BEEN COMPLETELY STABILIZED.

CONSTRUCTION PHASE

THE FOLLOWING GENERAL PRACTICES WILL BE IMPLEMENTED TO PREVENT EROSION DURING CONSTRUCTION ON THIS PROJECT:

1. EROSION AND SEDIMENTATION CONTROL BMPS SHALL BE INTALLED PRIOR TO THE COMMENCEMENT OF EARTHWORK ACTIVITIES
2. ONLY THOSE AREAS UNDER ACTIVE CONSTRUCTION WILL BE CLEARED AND LEFT IN AN UNTREATED OR UNVEGETATED CONDITION. AN AREA NO LARGER THAN WHAT CAN BE MULCHED IN ONE DAY MAY BE OPEN AT ONCE. ONCE CONSTRUCTION OF AN AREA IS COMPLETE, FINAL GRADING, LOAMING AND SEEDING SHALL OCCUR IMMEDIATELY (REFER TO "POST CONSTRUCTION REVEGETATION" SECTION). IF DURING FINAL GRADING, LOAMING AND SEEDING CAN NOT OCCUR IMMEDIATELY, IT SHALL BE DONE PRIOR TO ANY STORM EVENT AND WITHIN 15 DAYS OF COMPLETING CONSTRUCTION IN THE AREA. IF FINAL GRADING, LOAMING AND SEEDING CANNOT OCCUR WITHIN 7 DAYS, OR IF THE AREA IS NOT UNDER ACTIVE CONSTRUCTION FOR A PERIOD LONGER THAN 7 DAYS, SEE ITEM NO. 4 BELOW.
3. PRIOR TO THE START OF CONSTRUCTION IN A SPECIFIC AREA, SILT FENCING SHALL BE INSTALLED ON DOWNGRADIENT PORTIONS OF THE SITE AS LOCATED ON THE PLANS TO PROTECT AGAINST ANY CONSTRUCTION RELATED EROSION.
4. TOPSOIL WILL BE STOCKPILED WHEN NECESSARY IN AREAS WHICH HAVE MINIMUM POTENTIAL FOR EROSION AND WILL BE KEPT AS FAR AS POSSIBLE FROM EXISTING DRAINAGE AREAS AND WETLANDS. ALL STOCKPILES EXPECTED TO REMAIN LONGER THAN 7 DAYS SHALL BE:
 - A. TREATED WITH ANCHORED MULCH (WITHIN 5 DAYS OF THE LAST DEPOSIT OF STOCKPILED SOIL).
 - B. SEEDED WITH CONSERVATION MIX AND MULCHED IMMEDIATELY.
 - C. STOCKPILES SHALL BE EITHER PLACED UPHILL OF AN EXISTING SEDIMENT BARRIER ON THE SITE OR ENCIROLED BY A HAY BALE OR SILT FENCE BARRIER THE FIRST DAY THAT STOCKPILING COMMENCES.
5. ALL DISTURBED AREAS EXPECTED TO REMAIN LONGER THAN 7 DAYS SHALL BE:
 - A. TREATED WITH STRAW AT A RATE OF 70-90 LBS. PER 1000 SQUARE FEET FROM 4/16 TO 10/1, OR AT A RATE OF 150-200 LBS. PER 1000 SQUARE FEET FROM 10/1 TO 4/15.
 - B. SEEDED WITH CONSERVATION MIX OF PERENNIAL RYE GRASS (1.0 LBS/1000 SQ.FT.) AND MULCHED IMMEDIATELY. FROM 10/1 TO 4/15, FOLLOW THE SEEDING RATES AS OUTLINED BELOW IN SUB-SECTION 4.D. OF THE "POST CONSTRUCTION REVEGETATION" SECTION.
 - C. MONITORED EVERY TWO WEEKS UNTIL SEEDING CAN OCCUR AND REMULCHED AS NEEDED TO PROTECT SLOPES.
6. ALL GRADING WILL BE HELD TO A MAXIMUM 3:1 SLOPE WHERE PRACTICAL. GREATER SLOPES MAY BE USED WHERE THE BANKS ARE PROTECTED WITH SOFT ARMOUR MATTING, EROSION CONTROL MATTING, OR RIPRAP. ALL SLOPES WILL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY AFTER FINAL GRADING IS COMPLETE. (IT IS UNDERSTOOD THAT IMMEDIATELY MEANS WITHIN 5 DAYS OF THE COMPLETION OF WORK. SEE POST-CONSTRUCTION REVEGETATION FOR SEEDING SPECIFICATION).
7. APPLICATION RATE MUST BE 2 BALES (70-90 LBS.) PER 1,000 SQUARE FEET OR 1.5 TO 2 TONS (90-100 BALES) PER ACRE TO COVER 75 TO 90% OF THE GROUND SURFACE. DRIVE OVER WITH TRACKED CONSTRUCTION EQUIPMENT ON GRADES OF 5% AND LESS.
8. CONSTRUCTION TRAFFIC WILL BE DIRECTED OVER THE EXISTING SITE ENTRANCE. THE ROAD SHALL BE

- SWEPT AND VACUUMED DAILY SHOULD SEDIMENT BE TRACKED ONTO IT.
9. ALL AREAS DRAINING TO A STORMWATER FILTER OR BMP SHALL BE STABILIZED PRIOR TO CONSTRUCTION OF FILTER MEDIA TO PREVENT SEDIMENT FROM CLOGGING MEDIA.

DEWATERING

1. ALL DEWATERING DISCHARGE LOCATIONS SHALL BE LOCATED ON RELATIVELY FLAT GROUND AT LEAST 75' FROM STREAMS AND 25' FROM WETLANDS. THE CONTRACTOR SHALL UTILIZE DIRTBAGS, EROSION CONTROL MIX BERMS, OR SIMILAR METHODS FOR FILTRATION OF DEWATERING AND SHALL CONFORM TO THE MAINE EROSION AND SEDIMENT CONTROL BMPS G-1, G-2, AND G-3.

POST CONSTRUCTION REVEGETATION

THE FOLLOWING GENERAL PRACTICES WILL BE IMPLEMENTED TO PREVENT EROSION AS SOON AS AN AREA IS READY TO UNDERGO FINAL GRADING:

1. A MINIMUM OF 6" OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND GRADED TO A UNIFORM DEPTH AND NATURAL APPEARANCE.
2. LAWN AREAS: "PARK MIX" GRASS SEED BY ALLEN, STERLING & LOTHROP (FALMOUTH, MAINE), OR APPROVED EQUAL.
3. MULCH SHALL BE HAY OR STRAW MULCHES THAT ARE DRY AND FREE FROM UNDESIRABLE SEEDS AND COURSE MATERIALS.
 - A. APPLICATION RATE MUST BE 2 BALES (70-90 LBS.) PER 1,000 SQUARE FEET OR 1.5 TO 2 TONS (90-100 BALES) PER ACRE TO COVER 75 TO 90% OF THE GROUND SURFACE.
 - B. DRIVE OVER WITH TRACKED CONSTRUCTION EQUIPMENT ON GRADES OF 5% AND LESS.
 - C. BLANKET WITH TACKED PHOTODEGRADABLE/BIODEGRADABLE NETTING ON GRADES GREATER THAN 5%.
4. HYDRO-MULCH SHALL CONSIST OF A MIXTURE OF ASPHALT, WOOD FIBRE OR PAPER FIBRE AND WATER, WHICH IS SPRAYED OVER A SEEDED AREA. HYDRO-MULCH SHALL NOT BE USED BETWEEN 10/1 AND 4/15.
5. CONSTRUCTION SHALL BE PLANNED TO ELIMINATE THE NEED FOR SEEDING BETWEEN OCTOBER 1ST AND APRIL 15TH. SHOULD SEEDING BE NECESSARY BETWEEN THESE DATES, THE FOLLOWING PROCEDURE SHALL BE FOLLOWED:
 - A. ONLY UNFROZEN LOAM SHALL BE USED.
 - B. LOAMING, SEEDING AND MULCHING WILL NOT BE DONE OVER SNOW OR ICE COVER. IF SNOW EXISTS, IT MUST BE REMOVED PRIOR TO PLACEMENT OF SEED.
 - C. WHERE PERMANENT SEEDING IS NECESSARY, ANNUAL WINTER RYE (1.2 LBS/1000 S.F.) SHALL BE SOWN INSTEAD OF THE PREVIOUSLY NOTED SEEDING RATE.
 - D. WHERE TEMPORARY SEEDING IS REQUIRED, ANNUAL WINTER RYE (2.5 LBS/1000 S.F.) SHALL BE SOWN INSTEAD OF THE PREVIOUSLY NOTED SEEDING RATE.
 - E. FERTILIZING, SEEDING AND MULCHING SHALL BE DONE ON LOAM THE DAY THE LOAM IS SPREAD.
 - F. HAY MULCH SHALL BE SECURED WITH PHOTODEGRADABLE/BIODEGRADABLE NETTING. TRACKING BY MACHINERY ALONE WILL NOT SUFFICE. WINTER MULCHING RATES, SHALL BE DOUBLE AS SPECIFIED ABOVE IN SUBSECTION 3.A OF THE "POST CONSTRUCTION REVEGETATION" SECTION, SHOULD BE APPLIED DURING THIS PERIOD.
6. FOLLOWING FINAL SEEDING, THE SITE WILL BE INSPECTED EVERY 30 DAYS UNTIL 90% COVER HAS BEEN ESTABLISHED. RESEEDING WILL BE CARRIED OUT BY THE CONTRACTOR WITHIN 10 DAYS OF NOTIFICATION BY THE DESIGN PROFESSIONAL THAT THE EXISTING CATCH IS INADEQUATE.

MONITORING SCHEDULE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING, MONITORING, MAINTAINING, REPAIRING, REPLACING AND REMOVING ALL OF THE EROSION AND SEDIMENTATION CONTROLS OR APPOINTING A QUALIFIED SUBCONTRACTOR TO DO SO. MAINTENANCE MEASURES WILL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL, AND AT LEAST ONCE A WEEK, A VISUAL INSPECTION WILL BE MADE OF ALL EROSION AND SEDIMENTATION CONTROLS AS FOLLOWS:

1. SILT FENCE SHALL BE INSPECTED AND REPAIRED. SEDIMENT TRAPPED BEHIND THESE BARRIERS SHALL BE EXCAVATED WHEN IT REACHES A DEPTH OF 6" AND REDISTRIBUTED TO AREAS UNDERGOING FINAL GRADING.
2. CONSTRUCTION ENTRANCE SHALL BE VISUALLY INSPECTED AND REPAIRED AS NEEDED. ANY AREAS SUBJECT TO RUTTING SHALL BE STABILIZED IMMEDIATELY, IF THE VOIDS OF THE CONSTRUCTION ENTRANCE BECOME FILLED WITH MUD, MORE CRUSHED STONE SHALL BE ADDED AS NEEDED. THE PUBLIC ROADWAY SHALL BE SWEEPED AND VACUUMED SHOULD MUD BE DEPOSITED/TRACKED ONTO THEM.

STANDARDS FOR STABILIZING SITES FOR THE WINTER

THE FOLLOWING STANDARDS AND METHODOLOGIES SHALL BE USED FOR STABILIZING THE SITE DURING THE WINTER CONSTRUCTION PERIOD:

1. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES (ANY AREA HAVING A GRADE GREATER THAN 25%) - THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15TH. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15TH, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.
 - A. **STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS:** BY OCTOBER 1ST THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A RATE OF 3 POUNDS PER 1000 SQUARE FEET AND THEN INSTALL EROSION CONTROL MATS OR ANCHORED HAY MULCH OVER THE SEEDING AT TWICE THE RATE AS SPECIFIED ABOVE IN SUBSECTION 3.A OF THE "POST CONSTRUCTION REVEGETATION" SECTION. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS.
 - B. **STABILIZE THE SLOPE WITH WOOD-WASTE COMPOST:** THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF WOOD-WASTE COMPOST ON THE SLOPE BY NOVEMBER 15TH. THE CONTRACTOR WILL NOT USE WOOD-WASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
 - C. **STABILIZE THE SLOPE WITH STONE RIPRAP:** THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15TH. THE DEVELOPMENT'S OWNER WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS - BY SEPTEMBER 15TH THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON THE SITE. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

- A. **STABILIZE THE SOIL WITH TEMPORARY VEGETATION:** BY OCTOBER 1ST THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER, 1, THEN THE CONTRACTOR WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM III OF THIS STANDARD.
- B. **STABILIZE THE SOIL WITH SOD:** THE CONTRACTOR WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.

- C. **STABILIZE THE SOIL WITH MULCH:** BY NOVEMBER 15TH THE CONTRACTOR WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, THE CONTRACTOR WILL ANCHOR THE MULCH WITH NETTING OR OTHER METHOD TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

EROSION CONTROL REMOVAL

AN AREA IS CONSIDERED STABLE IF IT IS PAVED OR IF 90% GROWTH OF PLANTED SEEDS IS ESTABLISHED. ONCE AN AREA IS CONSIDERED STABLE, THE EROSION CONTROL MEASURES CAN BE REMOVED AS FOLLOWS:

1. **SILT FENCE:** SILT FENCE SHALL BE DISPOSED OF LEGALLY AND PROPERLY OFF-SITE. ALL SEDIMENT TRAPPED BEHIND THESE CONTROLS SHALL BE DISTRIBUTED TO AN AREA UNDERGOING FINAL GRADING OR REMOVED AND RELOCATED OFF-SITE.
2. **STABILIZED CONSTRUCTION ENTRANCE:** THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE REMOVED ONCE THE COMPACTED ROADWAY BASE IN IN PLACE. STONE AND SEDIMENT FROM THE CONSTRUCTION ENTRANCE SHALL BE REDISTRIBUTED TO AN AREA UNDERGOING GRADING OR REMOVED AND RELOCATED OFFSITE.
3. **MISCELLANEOUS:** ONCE ALL THE TRAPPED SEDIMENTS HAVE BEEN REMOVED FROM THE TEMPORARY SEDIMENTATION DEVICES THE DISTURBED AREAS MUST BE REGRADED IN AN AESTHETIC MANNER TO CONFORM TO THE SURROUNDING TOPOGRAPHY. ONCE GRADED THESE DISTURBED AREAS MUST BE LOAMED (IF NECESSARY), FERTILIZED, SEEDED AND MULCHED IN ACCORDANCE WITH THE RATES PREVIOUSLY STATED.

THE ABOVE EROSION CONTROLS MUST BE REMOVED WITHIN 30 DAYS OF FINAL STABILIZATION OF THE SITE. CONFORMANCE WITH THIS PLAN AND FOLLOWING THESE PRACTICES WILL RESULT IN A PROJECT THAT COMPLIES WITH THE STATE REGULATIONS AND THE STANDARDS OF THE NATURAL RESOURCES PROTECTION ACT, AND WILL PROTECT WATER QUALITY IN AREAS DOWNSTREAM ROM THE PROJECT.

MAINE CONSTRUCTION GENERAL PERMIT REQUIRED

SUBMISSION OF A MAINE CONSTRUCTION GENERAL PERMIT (MCGP) IS REQUIRED PRIOR TO COMMENCEMENT OF ANY EXCAVATION ACTIVITIES.

INSPECTION AND MAINTENANCE (APPENDIX B)

1. **INSPECTION AND MAINTENANCE REQUIREMENTS:** INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION AND STORMWATER CONTROL MEASURES, AREAS USED FOR STORAGE THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND AFTER A SIGNIFICANT STORM EVENT (0.5 INCHES OF RAINFALL IN A 24-HOUR PERIOD) AND PRIOR TO COMPLETION OF PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS IN THE MCGP AND ANY DEPARTMENTAL COMPANION DOCUMENT TO THE MCGP, MUST CONDUCT THE INSPECTION. THIS PERSON MUST BE IDENTIFIED IN THE INSPECTION LOG. IF BEST MANAGEMENT PRACTICES (BMPS) NEED TO BE MODIFIED OR IF ADDITIONAL BMPS ARE NECESSARY, IMPLEMENTATION MUST BE STARTED BY THE END OF THE NEXT WORKIN DAY AND COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS AREA PERMANENTLY STABILIZED. DOCUMENTATION OF CORRECTION ACTIONS SHALL BE MAINTAINED WITH THE INSPECTION FORMS.
2. **INSPECTION LOG (REPORT):** A LOG (REPORT) MUST BE KEPT SUMMARIZING THE SCOPE OF THE INSPECTION, NAME(S) AND QUALIFICATIONS OF THE PERSONNEL MAKING THE INSPECTION, THE DATE(S) OF THE INSPECTION, AND MAJOR OBSERVATIONS RELATING TO OPERATION OF EROSION AND SEDIMENTATION CONTROLS AND POLLUTION PREVENTION MEASURES. MAJOR OBSERVATIONS MUST INCLUDE BMPS THAT NEED MAINTENANCE, BMPS THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPS ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDED ADDITIONAL BMPS, NOTE IN THE INSPECTION LOG THE CORRECT ACTION TAKEN AND WHEN IT WAS TAKEN. THE LOG MUST BE MADE ACCESSIBLE TO THE DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF THE PERMANENT STABILIZATION.

HOUSEKEEPING (APPENDIX C)

1. **SPILL PREVENTION:** CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON SITE TO ENTER STORMWATER, WHICH INCLUDES STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER. THE SITE CONTRACTOR OR OPERATOR MUST DEVELOP, AND IMPLEMENT AS NECESSARY, APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING MEASURES.

NOTE: ANY SPILL OR RELEASE OF TOXIC OR HAZARDOUS SUBSTANCES MUST BE REPORTED TO THE DEPARTMENT. FOR OIL SPILLS, CALL 1-800-482-0777 WHICH IS AVAILABLE 24 HOURS A DAY. FOR SPILLS OF TOXIC OR HAZARDOUS MATERIAL, CALL 1-800-452-4664 WHICH IS AVAILABLE 24 HOURS A DAY. FOR MORE INFORMATION, VISIT THE DEPARTMENT'S WEBSITE AT: [HTTP://WWW.MAINE.GOV/DEP/SPILLS/EMERGSPILLRESP/](http://www.maine.gov/dep/spills/emergspillresp/)

2. **GROUNDWATER PROTECTION:** DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE-TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.

NOTE: LACK OF APPROPRIATE POLLUTANT REMOVAL BEST MANAGEMENT PRACTICES (BMPS) MAY RESULT IN VIOLATIONS OF THE GROUNDWATER QUALITY STANDARD ESTABLISHED BY 38 M.R.S.A. §465-C(1).

3. **FUGITIVE SEDIMENT AND DUST:** ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF-SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEEPED IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.

NOTE: DEWATERING A STREAM WITHOUT A PERMIT FROM THE DEPARTMENT MAY VIOLATE STATE WATER QUALITY STANDARDS AND THE NATURAL RESOURCES PROTECTION ACT.

4. **DEBRIS AND OTHER MATERIALS:** MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

NOTE: TO PREVENT THESE MATERIALS FROM BECOMING A SOURCE OF POLLUTANTS, CONSTRUCTION AND POST-CONSTRUCTION ACTIVITIES RELATED TO A PROJECT MAY BE REQUIRED TO COMPLY WITH APPLICABLE PROVISION OF RULES RELATED TO SOLID, UNIVERSAL, AND HAZARDOUS WASTE, INCLUDING, BUT NOT LIMITED TO, THE MAINE SOLID WASTE AND HAZARDOUS WASTE MANAGEMENT RULES; MAINE HAZARDOUS WASTE MANAGEMENT RULES; MAINE OIL CONVEYANCE AND STORAGE RULES; AND MAINE PESTICIDE REQUIREMENTS.

5. **EXCAVATION DEWATERING:** EXCAVATION DEWATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER REMOVED FROM THE PONDING AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

NOTE: DEWATERING CONTROLS ARE DISCUSSED IN THE "MAINE EROSION AND SEDIMENT CONTROL BMPS, MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION."

6. **AUTHORIZED NON-STORMWATER DISCHARGES:** IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES, WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST. THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE:
 - DISCHARGES FROM FIREFIGHTING ACTIVITY;
 - FIRE HYDRANT FLUSHINGS;
 - VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE, AND TRANSMISSION WASHING IS PROHIBITED);
 - DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS AND APPENDIX C(C)(3);
 - ROUTINE EXTERNAL BUILDING WASH-DOWN, NOT INCLUDING SURFACE PAINT REMOVAL, THAT DOES NOT INVOLVE DETERGENTS;
 - PAVEMENT WASHWATER (WHERE SPILLS/LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE NOT OCCURRED, UNLESS ALL SPILLED MATERIAL HAD BEEN REMOVED) IF DETERGENTS ARE NOT USED;
 - UNCONTAMINATED AIR CONDITIONING OR COMPRESSOR CONDENSATE;
 - UNCONTAMINATED GROUNDWATER OR SPRING WATER;
 - FOUNDATION OR FOOTER DRAIN-WATER WHERE FLOWS ARE NOT CONTAMINATED;
 - UNCONTAMINATED EXCAVATION DEWATERING (SEE REQUIREMENTS IN APPENDIX C(5));
 - POTABLE WATER SOURCES INCLUDING WATERLINE FLUSHINGS; AND
 - LANDSCAPE IRRIGATION
7. **UNAUTHORIZED NON-STORMWATER DISCHARGES:** THE DEPARTMENT'S APPROVAL UNDER THIS CHAPTER DOES NOT AUTHORIZE A DISCHARGE THAT IS MIXED WITH A SOURCE OF NON-STORMWATER, OTHER THAN THOSE DISCHARGES IN COMPLIANCE WITH APPENDIX C (6). SPECIFICALLY, THE DEPARTMENT'S APPROVAL DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING:
 - WASTEWATER FROM THE WASHOUT OR CLEANOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS;
 - FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE;
 - SOAPS, SOLVENTS, OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING; AND
 - TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE.

ADDITIONAL REQUIREMENTS: ADDITIONAL REQUIREMENTS MAY BE APPLIED ON A SITE-SPECIFIC BASIS.

CONSTRUCTION OVERSITE

THE APPLICANT WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION FOR ALL STORMWATER MANAGEMENT STRUCTURES. IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE POND'S CONSTRUCTION PLAN FOR THE CONTRACTOR. ONCE ALL STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER WILL NOTIFY THE DEPARTMENT IN WRITING WITHIN 30 DAYS TO STATE THAT THE POND HAS BEEN COMPLETED. ACCOMPANYING THE ENGINEER'S NOTIFICATION MUST BE A LOG OF THE ENGINEER'S INSPECTIONS GIVING THE DATE OF EACH INSPECTION, THE TIME OF EACH INSPECTION, AND THE ITEMS INSPECTED ON EACH VISIT, AND INCLUDE ANY TESTING DATA OR SIEVE ANALYSIS DATA OF EVERY MINERAL SOIL AND SOIL MEDIA SPECIFIED IN THE PLANS AND USED ON SITE.

CONSTRUCTION SEQUENCE: THE SOIL FILTER MEDIA AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE FILTER AS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.

COMPACTION OF SOIL FILTER: FILTER SOIL MEDIA AND UNDERDRAIN BEDDING MATERIAL MUST BE COMPACTED BY FLOODING EACH LIFT. THE BED SHOULD BE INSTALLED IN AT LEAST 2 LIFTS OF 9 INCHES TO PREVENT POCKETS OF LOOSE MEDIA.

CONSTRUCTION INSPECTIONS: AT A MINIMUM, THE PROFESSIONAL ENGINEER'S INSPECTION WILL OCCUR:

- AFTER THE THE FILTER HAS BEEN CONSTRUCTED TO SUBGRADE.
- AFTER INSTALLATION OF THE FILTER LINER.
- AFTER INSTALLATION OF THE UNDERDRAIN PIPES HAVE BEEN INSTALLED BUT NOT BACKFILLED.
- AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO INSTALLATION OF THE SOIL FILTER MEDIA.
- AFTER THE SOIL FILTER MEDIA HAS BEEN INSTALLED, SEEDED AND MULCHED.
- AFTER ONE YEAR TO INSPECT VEGETATION AND MAKE CORRECTIONS.
- ALL THE MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY TO SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.

TESTING AND SUBMITTALS: THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE FILTER MEDIA. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL:

- SUBMIT SAMPLES OF EACH TYPE OF MATERIAL TO BE BLENDED FOR THE MIXED FILTER MEDIA AND SAMPLES OF THE UNDERDRAIN BEDDING MATERIAL. SAMPLES MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.
- PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES; 1996A) ON EACH TYPE OF THE SAMPLE MATERIAL.
- PERFORM A PERMEABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90-92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698.

FOR PERMIT

Attention: 0 1" If this scale bar does not measure 1" then drawing is not original scale.		 DANIEL J. BANNON No. 13033 STATE OF MAINE PROFESSIONAL ENGINEER 4/16/2025		Designed: DJB		 GEI Consultants GEI CONSULTANTS, INC. 5 MILK STREET PORTLAND, ME 04101 (207)797-8901 UNIVERSITY OF NEW ENGLAND 11 HILLS BEACH RD. BIDDEFORD, MAINE	 UNIVERSITY OF NEW ENGLAND 11 HILLS BEACH ROAD BIDDEFORD, YORK COUNTY, MAINE	7 4/16/2025 BIDDEFORD PERMIT APP. DJB		SHEET NAME EROSION CONTROL NOTES	SHEET NO. C-012
		6 9/17/2024 REVISED PERMIT SET DJB									
		5 6/27/2024 REVISED PERMIT SET DJB									
		4 9/14/2023 DEP PERMIT SET DJB									
		3 6/28/2023 75% DESIGN SUBMISSION DJB									
		2 2/15/2023 30% DESIGN SUBMISSION DJB									
		1 12/9/2022 15% DESIGN SUB REV DJB									
		0 11/11/2022 15% DESIGN SUBMISSION DJB									
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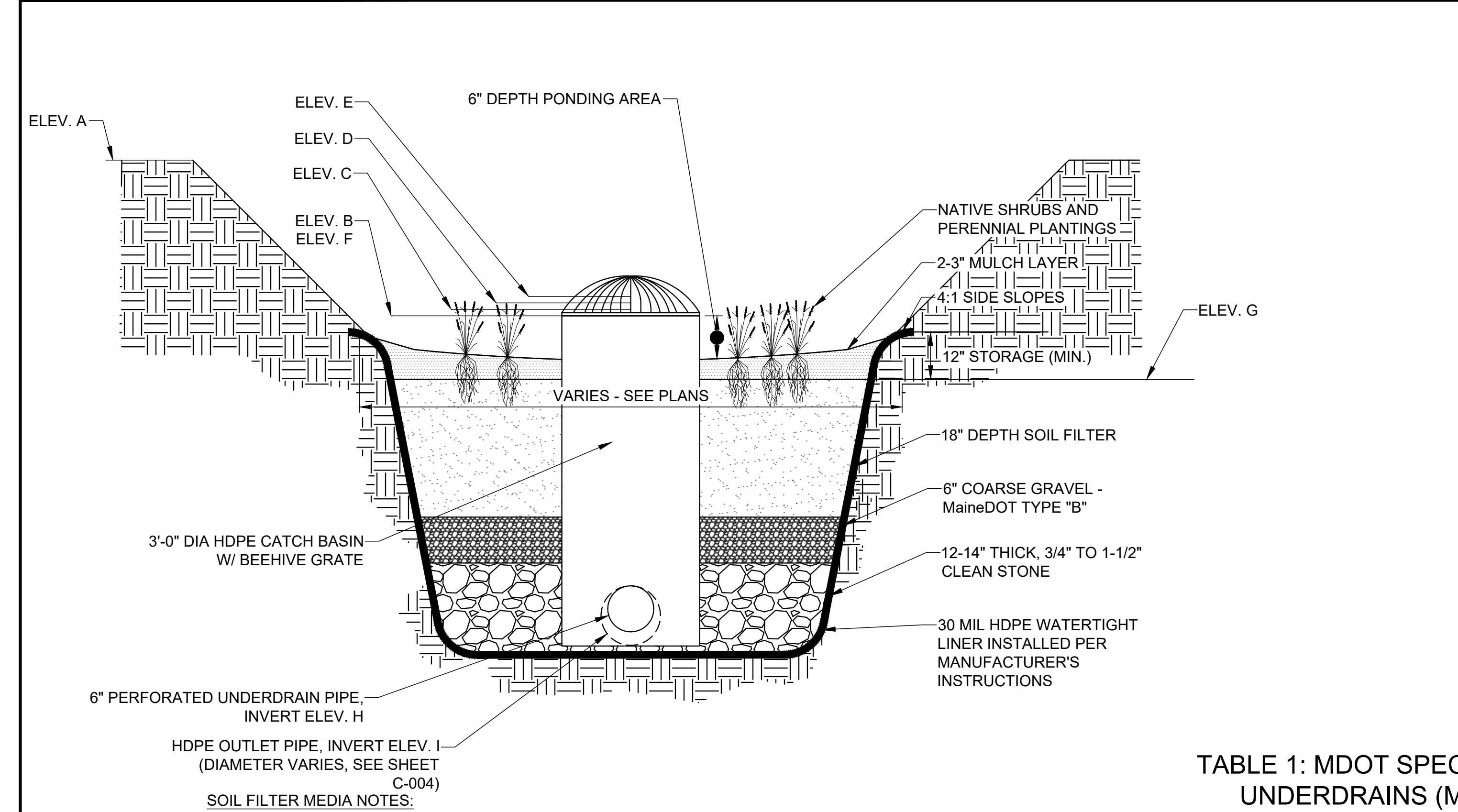
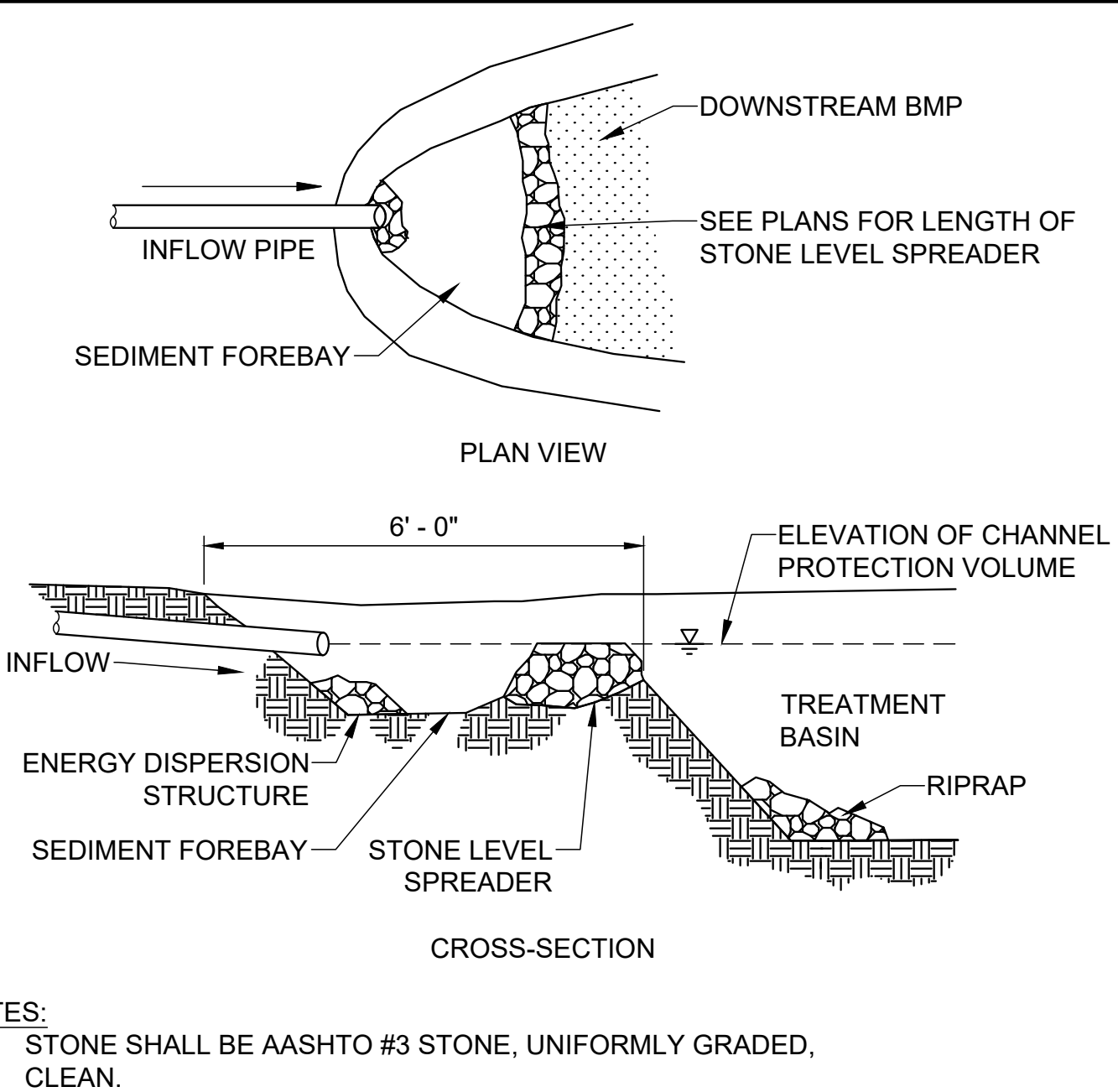


TABLE 1: MDOT SPECIFICATIONS FOR UNDERDRAINS (MDOT #703.22)

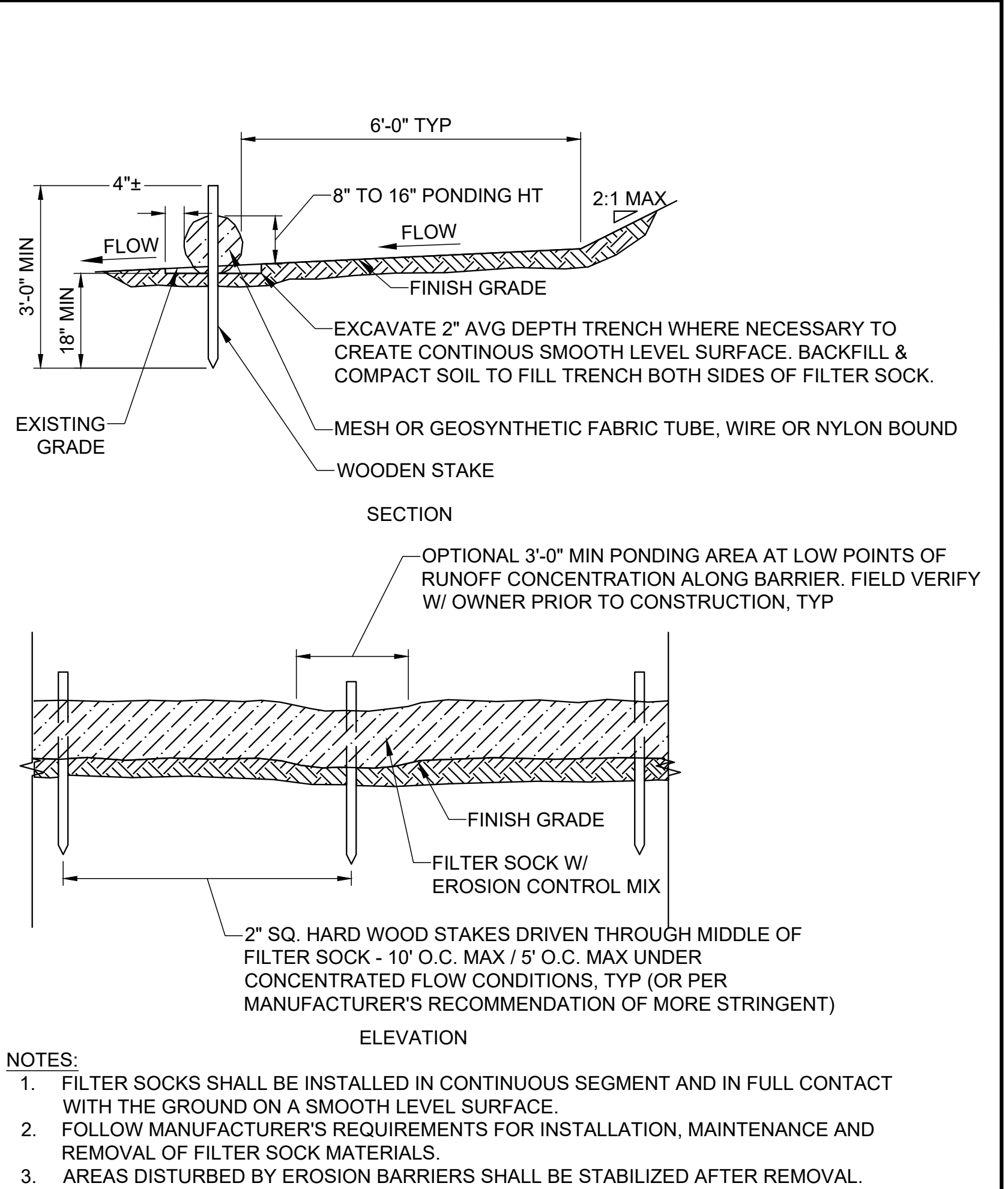
SIEVE SIZE	% BY WEIGHT
UNDERDRAIN TYPE B	
0'-1"	90-100
0'-0 1/2"	75-100
#4	50-100
#20	15-80
#50	0-15
#200	0-5

GRASSED UNDERDRAINED SOIL FILTER SCHEDULE

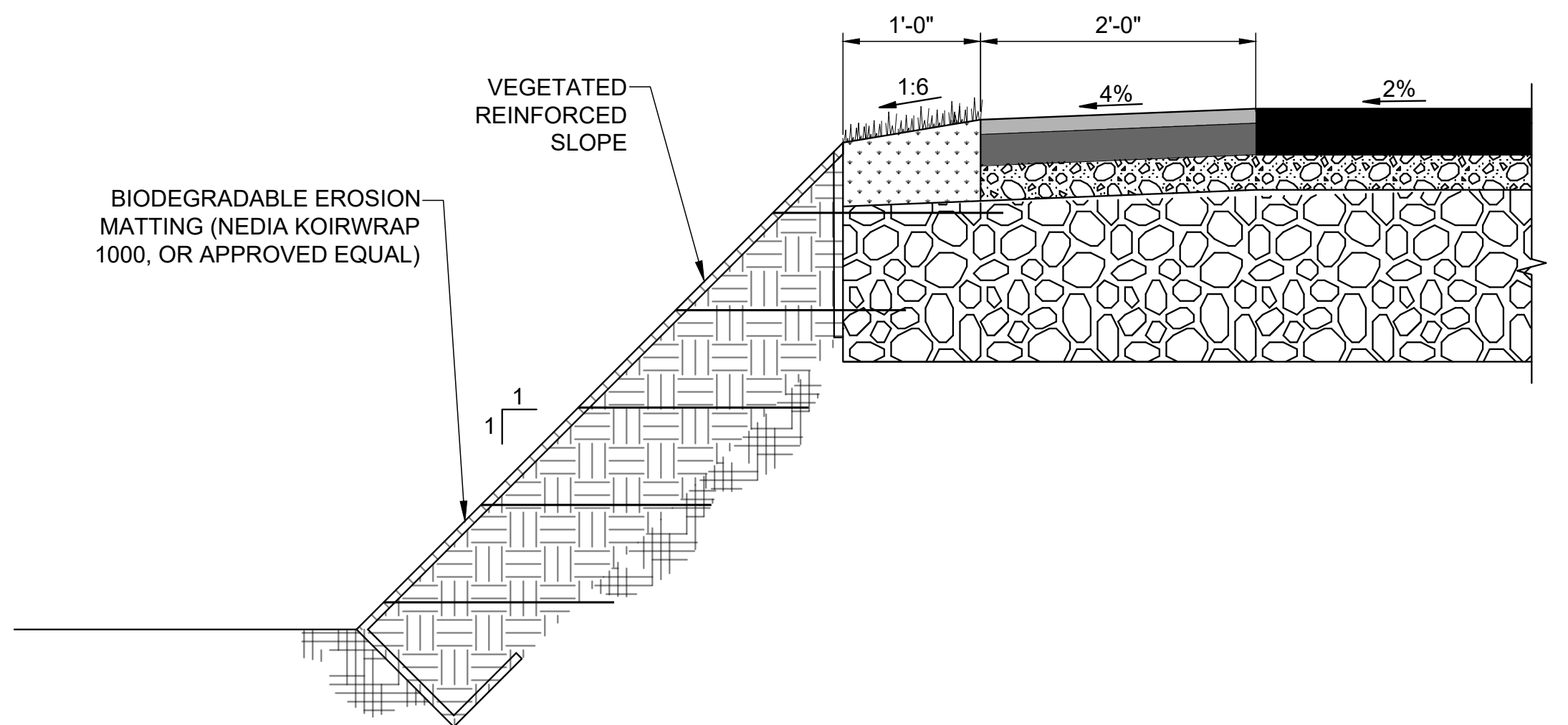
GRASSED UNDERDRAINED SOIL FILTER ID	EMBKM.T. ELEV.	WATER QUALITY STORM ELEV.	2-YR STORM ELEV.	10-YR STORM ELEV.	25-YR STORM ELEV.	TOP OF OUTLET STRUCT ELEV.	BOTTOM OF STORAGE ELV.	INTERIOR UNDERDRAIN INVERT (START)	UNDERDRAIN OUTLET INVERT	FILTER AREA (SQ. FT.)
	A	B	C	D	E	F	G	H	I	
SF-A	24.50	23.50	23.62	23.67	23.71	23.50	23.00	19.25	18.75	580
SF-B	18.50	18.00	18.11	18.16	18.19	18.00	17.50	14.25	13.75	890



LEVEL SPREADER DESIGN



SEDIMENT BARRIER - FILTER SOCK



1:1 VEGETATED REINFORCED SLOPE

BIORETENTION FILTER CELL

NO SCALE

FOR PERMIT

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

STATE OF MAINE

DANIEL J. BANNON

No. 13033

LICENSED PROFESSIONAL ENGINEER

4/16/2025

Designed: DJB

Drawn: JAM

Checked: BJB

Approved: BMM

P.E. No: 13033

GEI Project 2203703

GEI Consultants

5 MILK STREET

PORTLAND, ME 04101

(207)797-8901

UNE

UNIVERSITY OF NEW ENGLAND

11 HILLS BEACH RD.

BIDDEFORD, MAINE

UNIVERSITY OF NEW ENGLAND

MARINE SCIENCE CENTER PIER

11 HILLS BEACH ROAD

BIDDEFORD, YORK COUNTY, MAINE

7	4/16/2025	BIDDEFORD PERMIT APP.	DJB
6	9/17/2024	REVISED PERMIT SET	DJB
5	6/27/2024	REVISED PERMIT SET	DJB
4	9/14/2023	DEP PERMIT SET	DJB
3	6/28/2023	75% DESIGN SUBMISSION	DJB
2	2/15/2023	30% DESIGN SUBMISSION	DJB
1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

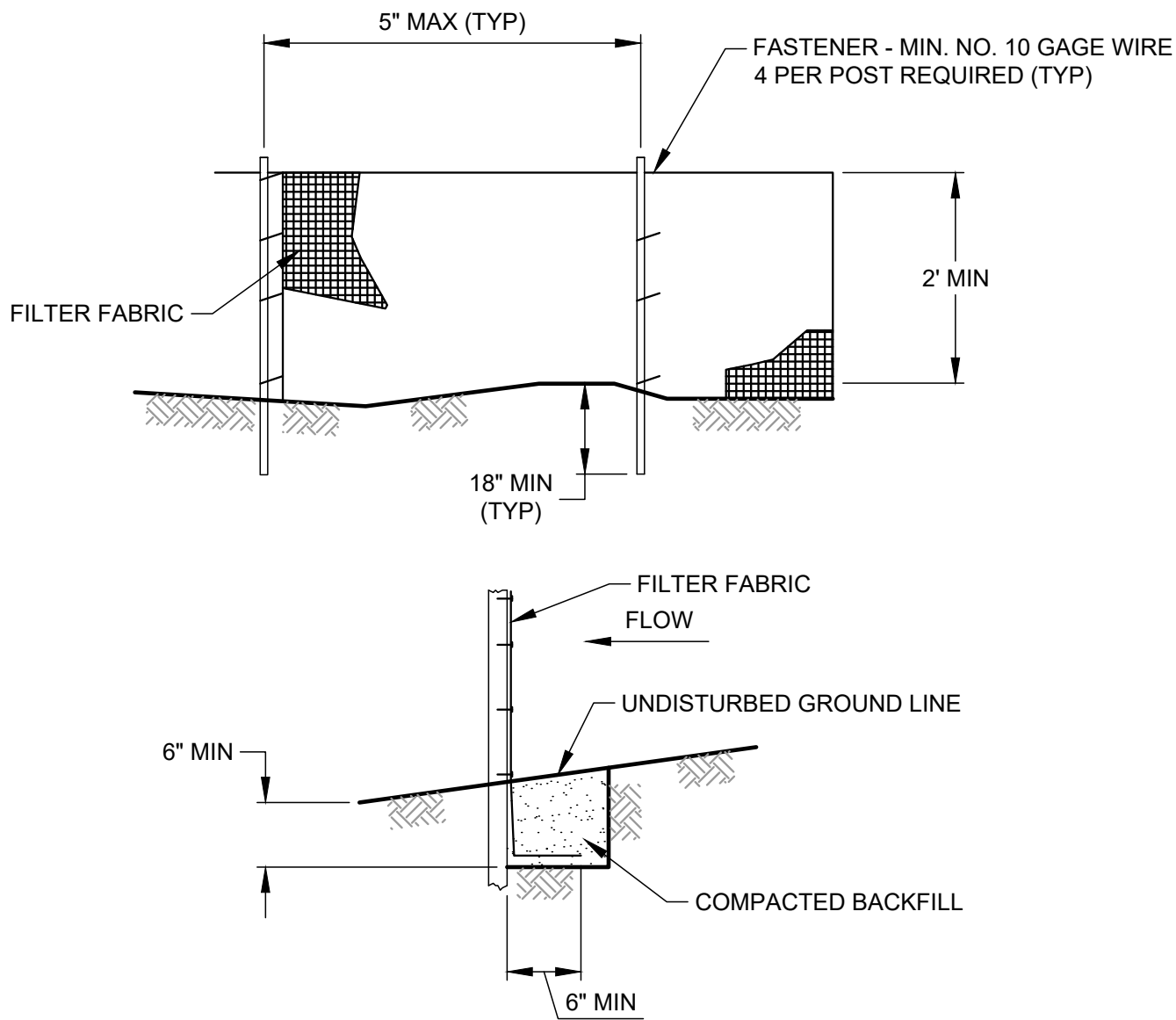
SHEET NAME

EROSION CONTROL DETAILS I

SHEET NO.

C-013

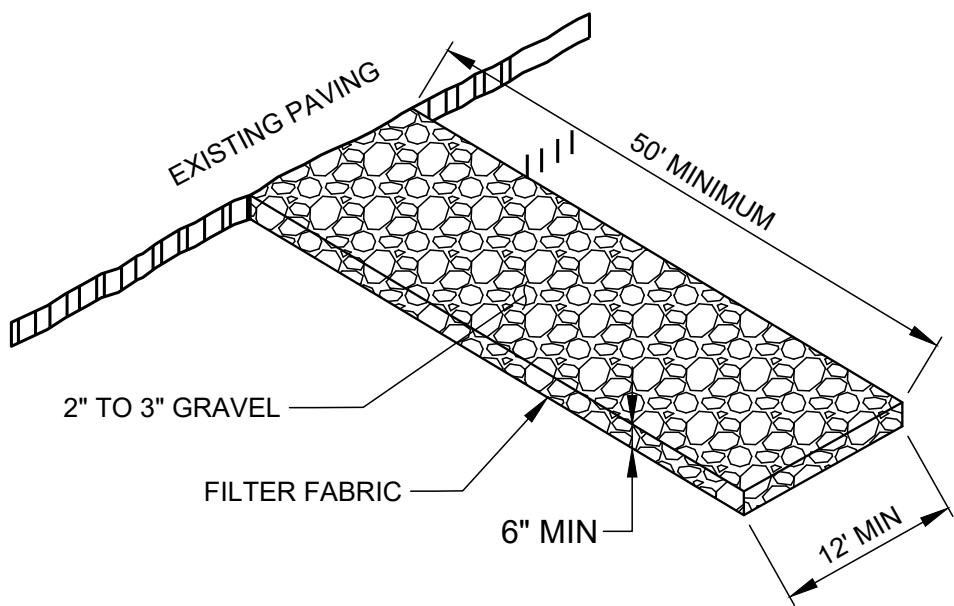
BANNON, DAN | geciconsultants.com\data\data - UNIVERSITY OF NEW ENGLAND\2203703_013 Marine Science Center Plan\00_CADD\Design\Sheets\2203703-C-DETAILS.dwg - 4/16/2025



- NOTES:
1. TEMPORARY SEDIMENT FENCE SHALL BE INSTALLED PRIOR TO ANY GRADING WORK IN THE AREA TO BE PROTECTED. THEY SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD AND REMOVED IN CONJUNCTION WITH THE FINAL GRADING AND SITE STABILIZATION.
 2. FILTER FABRIC SHALL MEET THE REQUIREMENTS OF MATERIAL SPECIFICATION 592 GEOTEXTILE TABLE 1 OR 2, CLASS L WITH EQUIVALENT OPENING SIZE OF AT LEAST 30 FOR NONWOVEN AND 50 FOR WOVEN.
 3. FENCE POSTS SHALL BE EITHER WOOD POST WITH A MINIMUM CROSS-SECTIONAL AREA OF 3 SQ. IN. OR A STANDARD STEEL POST.

5 SILT FENCE

NO SCALE

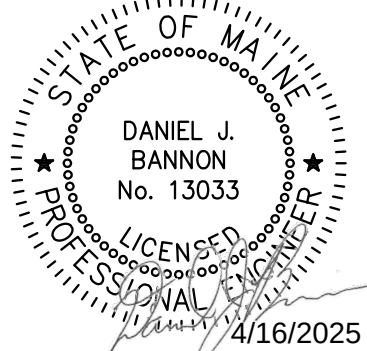


8 STABILIZED CONSTRUCTION ENTRANCE

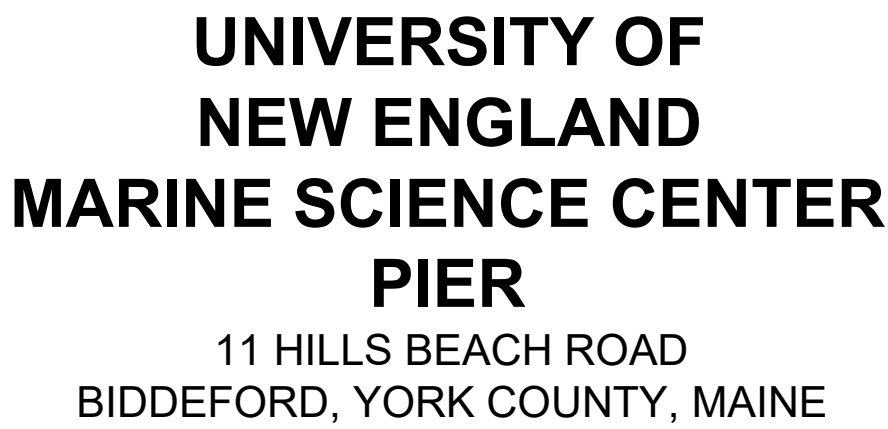
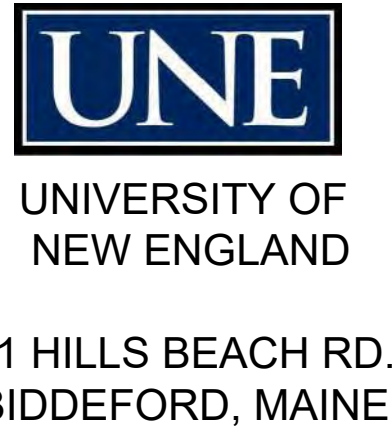
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- NOTES:
1. THE ENTRANCE/EXIT PAD SHOULD HAVE A LENGTH OF 50 FEET OR MORE AND A 12-FOOT MINIMUM WIDTH (OR AS APPROPRIATE TO CONTAIN THE WHEEL BASE OF CONSTRUCTION VEHICLES PLUS 3 FEET ON EITHER SIDE).
 2. THE PAD SHOULD BE 6 INCHES OR MORE THICK WITH ANGULAR AGGREGATE (2-3 INCH DIAMETER). APPROPRIATE RECLAIMED CONCRETE MATERIAL MAY BE USED.
 3. THE AGGREGATE SHOULD BE PLACED OVER A GEOTEXTILE FILTER TO PREVENT THE STONES FROM PUSHING INTO THE NATIVE SOIL.
 4. AT THE BOTTOM OF SLOPES, A DIVERSION RIDGE SHOULD BE PROVIDED TO INTERCEPT RUNOFF.
 5. BERMS MAY BE NECESSARY TO DIVERT WATER AROUND ANY EXPOSED SOIL, AND RUNOFF SHOULD BE DIRECTED TO A SEDIMENT TRAP.
 6. THE WHEELS OF CONSTRUCTION EQUIPMENT MAY BE WASHED PRIOR TO EXITING THE SITE. WASHING SHOULD BE PERFORMED IN AN AREA THAT DRAINS TO A SEDIMENT TRAP OR BASIN.
 7. THE PAD SHOULD BE INSPECTED WEEKLY, AND BEFORE AND AFTER EACH STORM. THE PAD MAY HAVE TO BE REPLACED IF THE VOIDS BECOME FILLED WITH SEDIMENT. STREET SWEEPING MAY BE NECESSARY

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.



Designed:	DJB
Drawn:	JAM
Checked:	BJB
Approved:	BMM
P.E. No:	13033
GEI Project	2203703



7	4/16/2025	BIDDEFORD PERMIT APP.	DJB
6	9/17/2024	REVISED PERMIT SET	DJB
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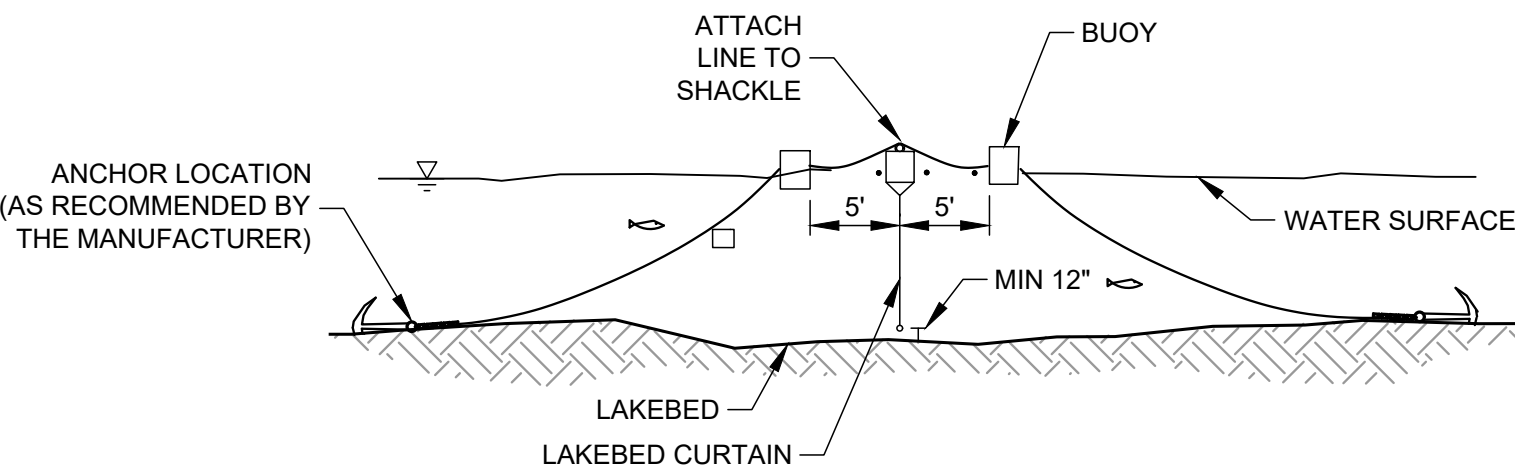
SHEET NAME
**EROSION CONTROL
DETAILS II**

SHEET NO.
C-014

- NOTES:
1. THE DIMENSION CHART ABOVE IS FOR STANDARD CATCH BASINS AND INLETS ONLY. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE CORRECT SIZE DEVICE FOR EACH INLET.
 2. FOR NON-STANDARD CATCH BASINS AND INLETS, THE CONTRACTOR SHALL MEASURE DIMENSIONS IN THE FIELD AND ORDER THE APPROPRIATE SIZE(S).
 3. THE INLET SEDIMENT CONTROL DEVICE SHALL BE OF HIGH FLOW DESIGN (200 GAL/MIN/FT), AS PER THE MANUFACTURER'S SPECS.
 4. THE SEDIMENT CONTROL DEVICE SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED A MINIMUM ONCE PER MONTH OR WITHIN THE 48 HOURS FOLLOWING A STORM EVENT. FILTER SHALL BE CLEANED IN A MANNER WHICH ENSURES THAT ALL SEDIMENT REMAINS ON SITE.
 5. SUBSTITUTION OF A SHEET OF FILTER FABRIC PLACED OVER THE OPENING OF THE INLET IS NOT APPROVED.
 6. RECESSED CURB INLET CATCH BASINS MUST BE BLOCKED WHEN USING FILTER FABRIC INLET SACKS, SIZE OF FILTER INLET SACK TO BE DETERMINED BY MANUFACTURER.
 7. THE FILTER SHALL BE REPLACED OR CLEANED WHEN THE BAG BECOMES HALF FULL.
 8. SEE INLET PROTECTION NOTES STD. DETAIL E3.

6 SILT SACK INLET PROTECTION

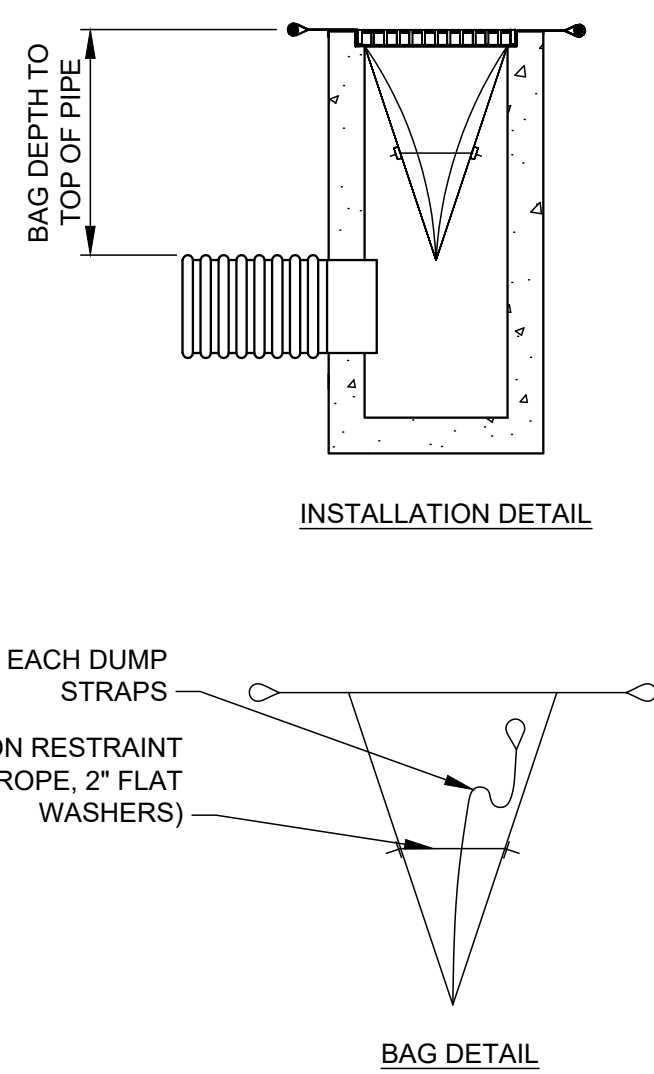
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- NOTES:
1. FLOATING TURBIDITY BARRIER CONSTRUCTION SHALL CONFORM WITH RELEVANT LOCAL AND STATE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL.
 2. FLOATING TURBIDITY BARRIER WILL BE INSPECTED AND MAINTAINED DAILY.

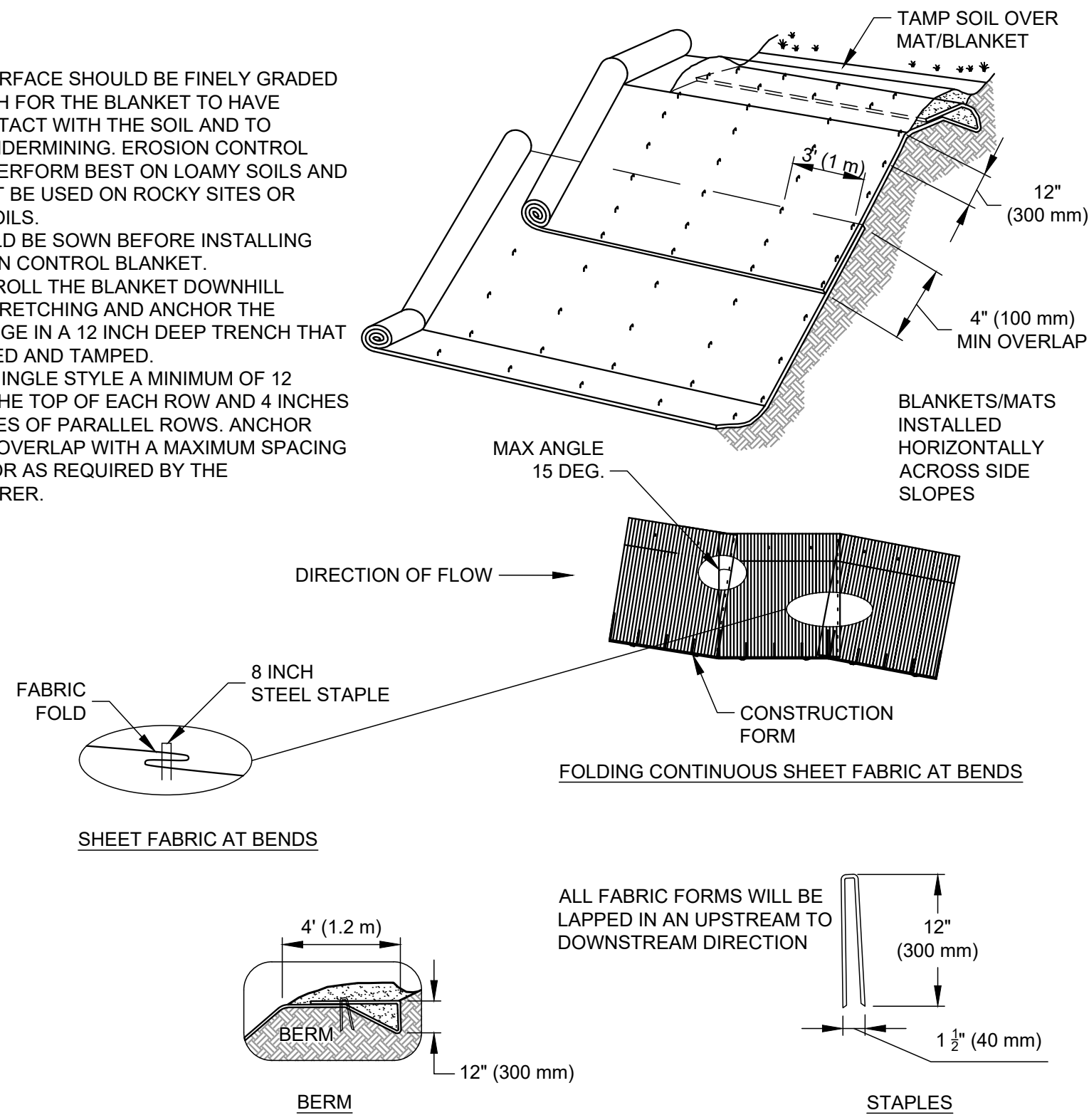
9 FLOATING TURBIDITY BARRIER

SCALE: N.T.S.



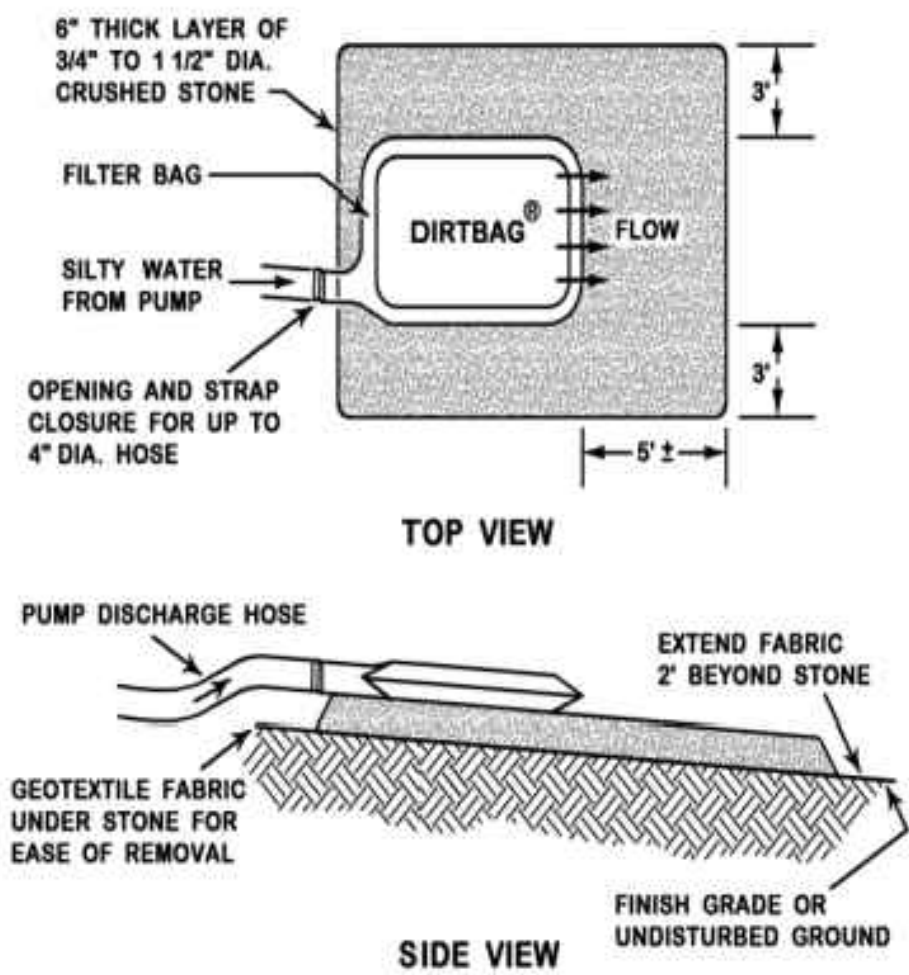
CB STYLE	LENGTH	WIDTH	DEPTH
TYPE 1 CB	2'-0"	1'-8"	VARIES
TYPCE 1 CCI	2'-5 1/2"	2'-0"	VARIES
USA G2	2'-8 1/2"	2'-3 1/2"	VARIES

- NOTES:
1. THE SOIL SURFACE SHOULD BE FINELY GRADED AND SMOOTH FOR THE BLANKET TO HAVE DIRECT CONTACT WITH THE SOIL AND TO PREVENT UNDERMINING. EROSION CONTROL BLANKETS PERFORM BEST ON LOAMY SOILS AND SHOULD NOT BE USED ON ROCKY SITES OR SHALLOW SOILS.
 2. SEED SHOULD BE SOWN BEFORE INSTALLING THE EROSION CONTROL BLANKET.
 3. ALWAYS UNROLL THE BLANKET DOWNHILL WITHOUT STRETCHING AND ANCHOR THE UPSLOPE EDGE IN A 12 INCH DEEP TRENCH THAT IS BACKFILLED AND TAMPED.
 4. OVERLAP SHINGLE STYLE A MINIMUM OF 12 INCHES AT THE TOP OF EACH ROW AND 4 INCHES AT THE EDGES OF PARALLEL ROWS. ANCHOR ALONG THE OVERLAP WITH A MAXIMUM SPACING OF 3 FEET OR AS REQUIRED BY THE MANUFACTURER.



7 BIODEGRADABLE STABILIZATION MATTING

NO SCALE



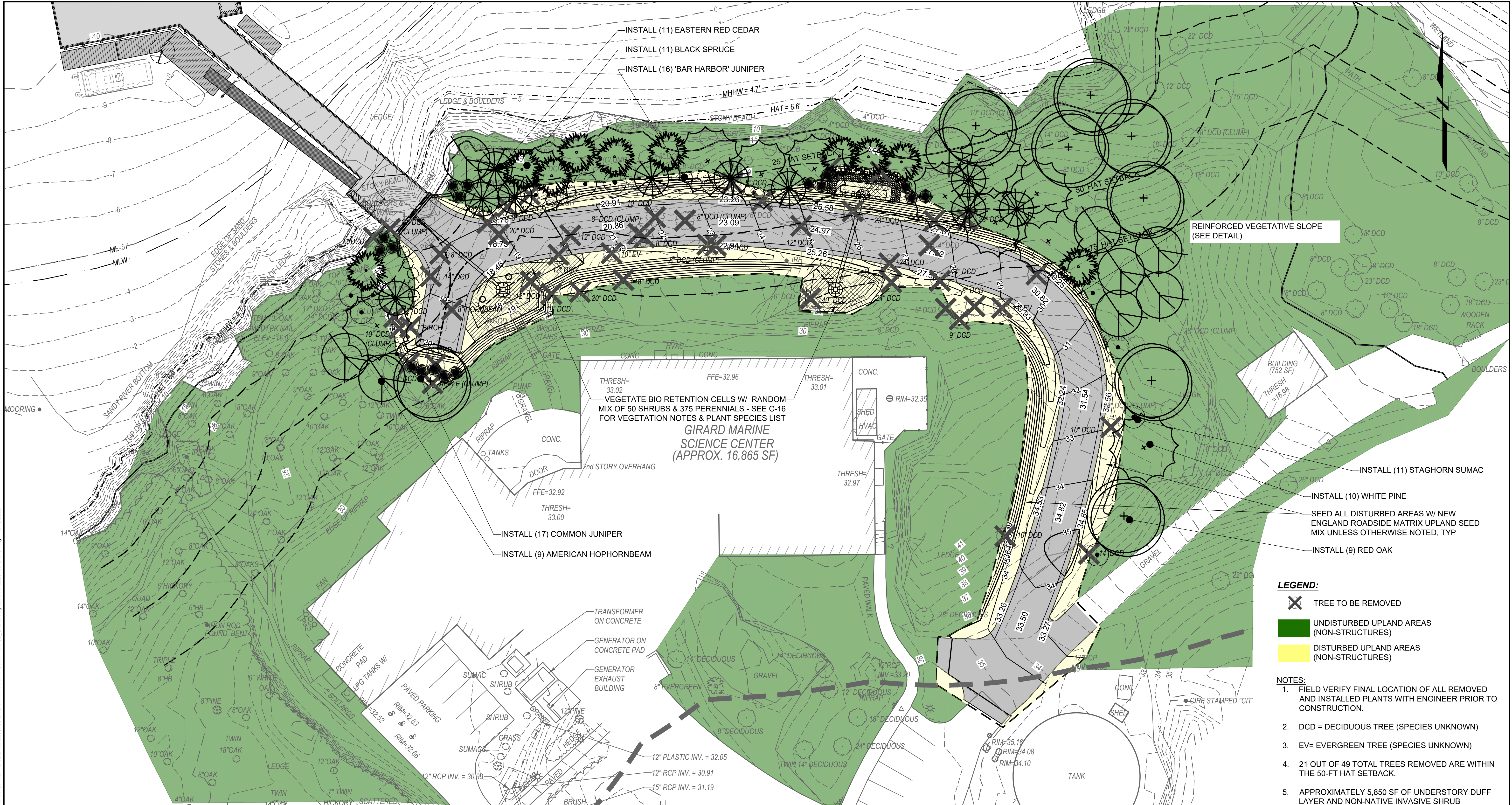
- NOTES:
1. INSTALL THE FILTER BAG PRIOR TO INITIATING ANY ACTIVITIES WHICH WILL REQUIRE DEWATERING.
 2. THE TYPE OF FABRIC SHOULD BE BASED ON THE SIZE OF SOIL PARTICLES TO BE TRAPPED (I.E. A WOVEN MATERIAL FOR COARSE PARTICLES AND A NONWOVEN MATERIAL FOR FINER PARTICLES).
 3. A FILTER BAG SHOULD BE LOCATED IN AN AREA MOSTLY LEVEL (WITH LESS THAN 5% SLOPE). A PAD OF CRUSHED GRAVEL MAY BE PROVIDED.
 4. AVOID DISCHARGING TO AN AREA THAT IS BARE OF VEGETATION OR NEWLY VEGETATED. ANY SIGN OF EROSION OR CHANNELIZATION FROM THE DISCHARGED WATER REQUIRES IMMEDIATELY CORRECTION.
 5. FILTER BAGS HAVE A FINITE CAPACITY FOR SEDIMENT COLLECTION AND MAY BE PRONE TO PLUGGING. AVOID OVER-PRESSURIZING THE BAG OR IT MAY BURST.

10 GEOTEXTILE FILTER BAG

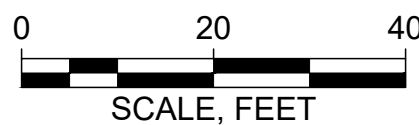
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FOR PERMIT

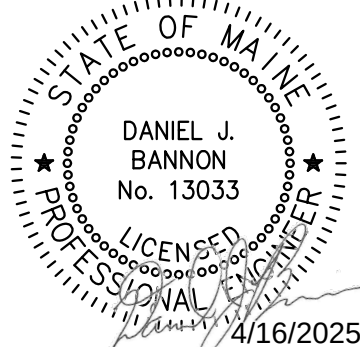
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PLAN
SCALE: 1" = 20'



Attention:
0 1"
If this scale bar
does not measure
1" then drawing is
not original scale.



Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

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11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

7	4/16/2025	BIDDEFORD PERMIT APP.	DJB
6	9/17/2024	REVISED PERMIT SET	DJB
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1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

SHEET NAME
**REVEGETATION
PLAN**

SHEET NO.

C-015

FOR PERMIT

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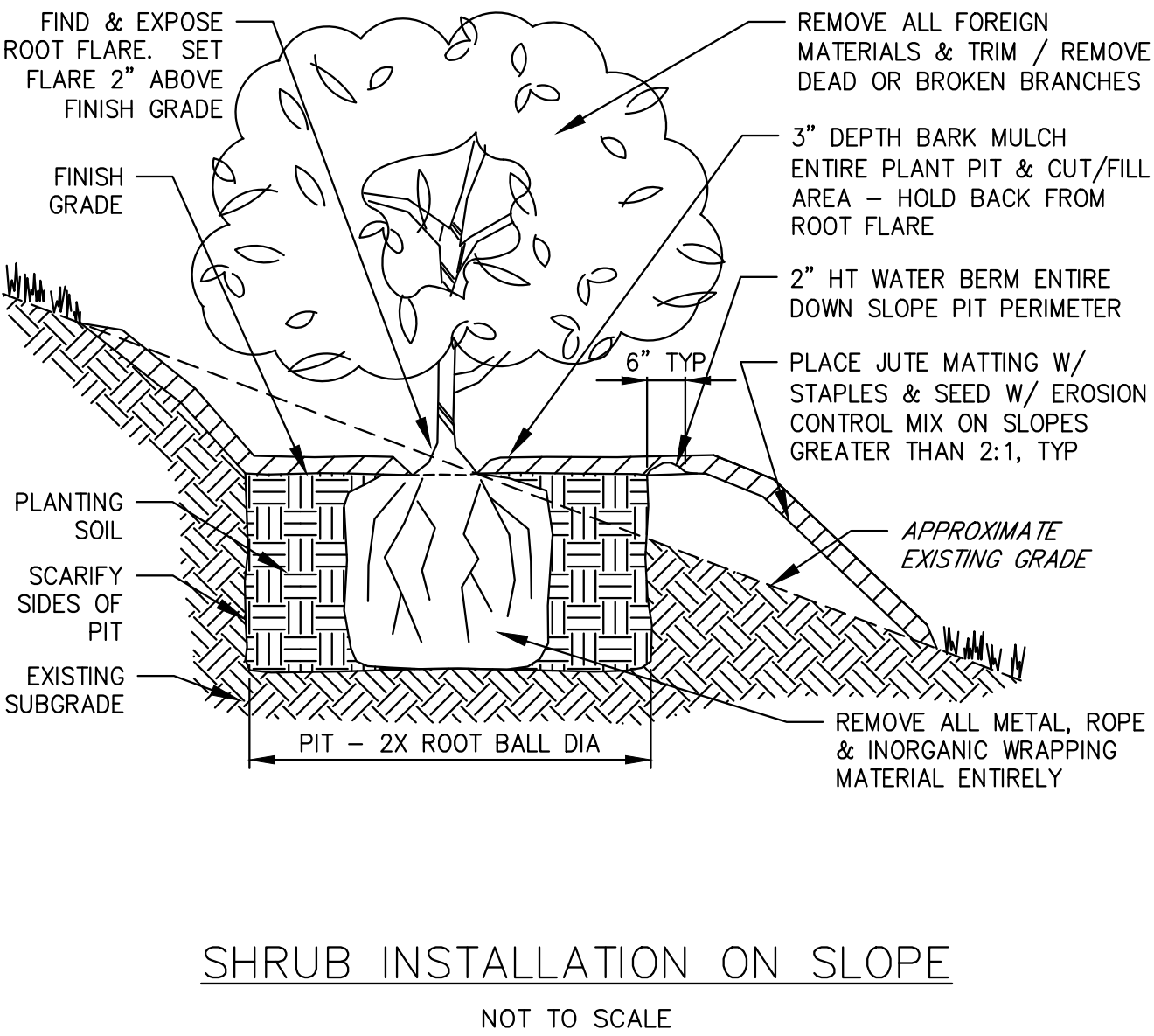
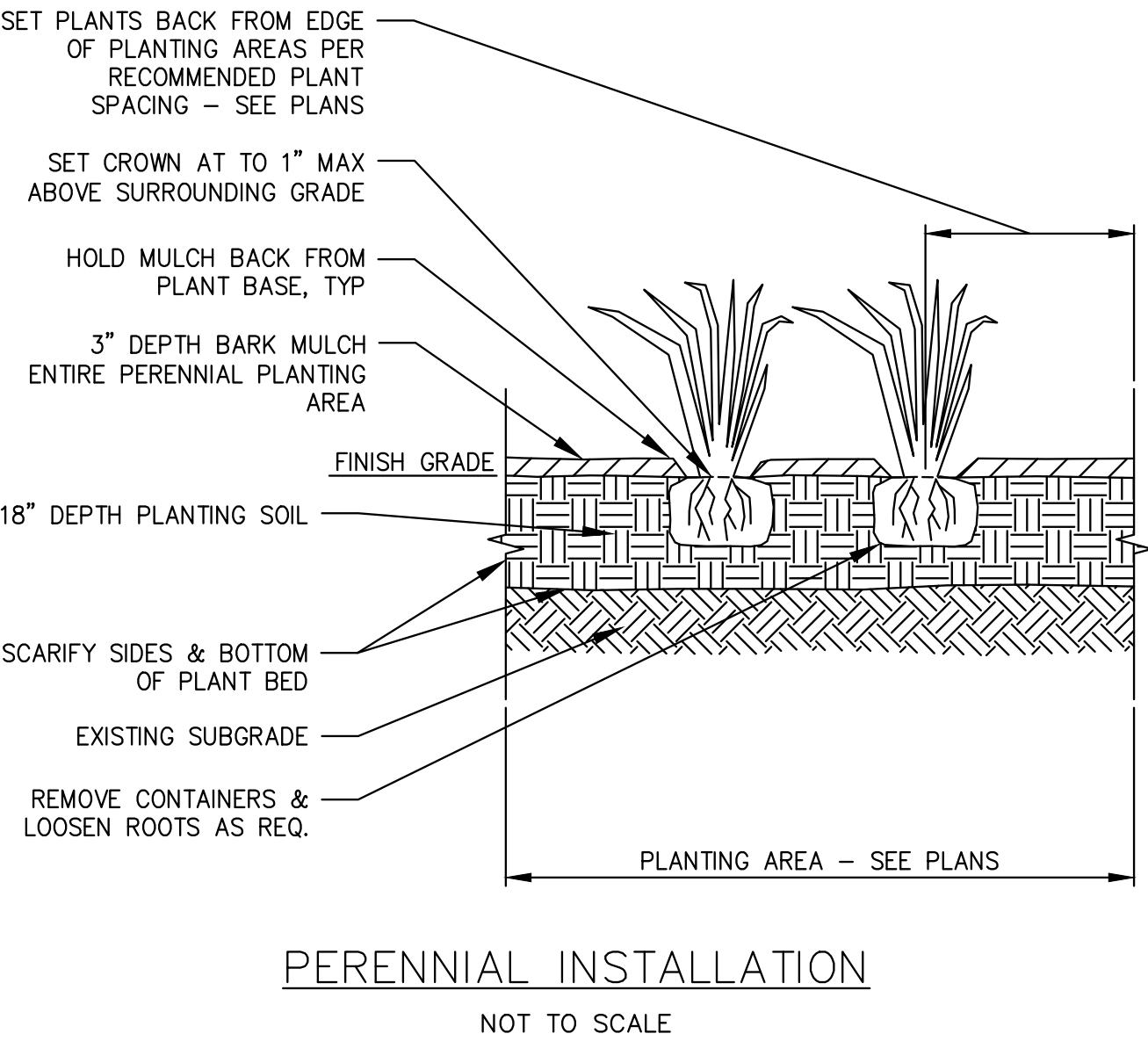
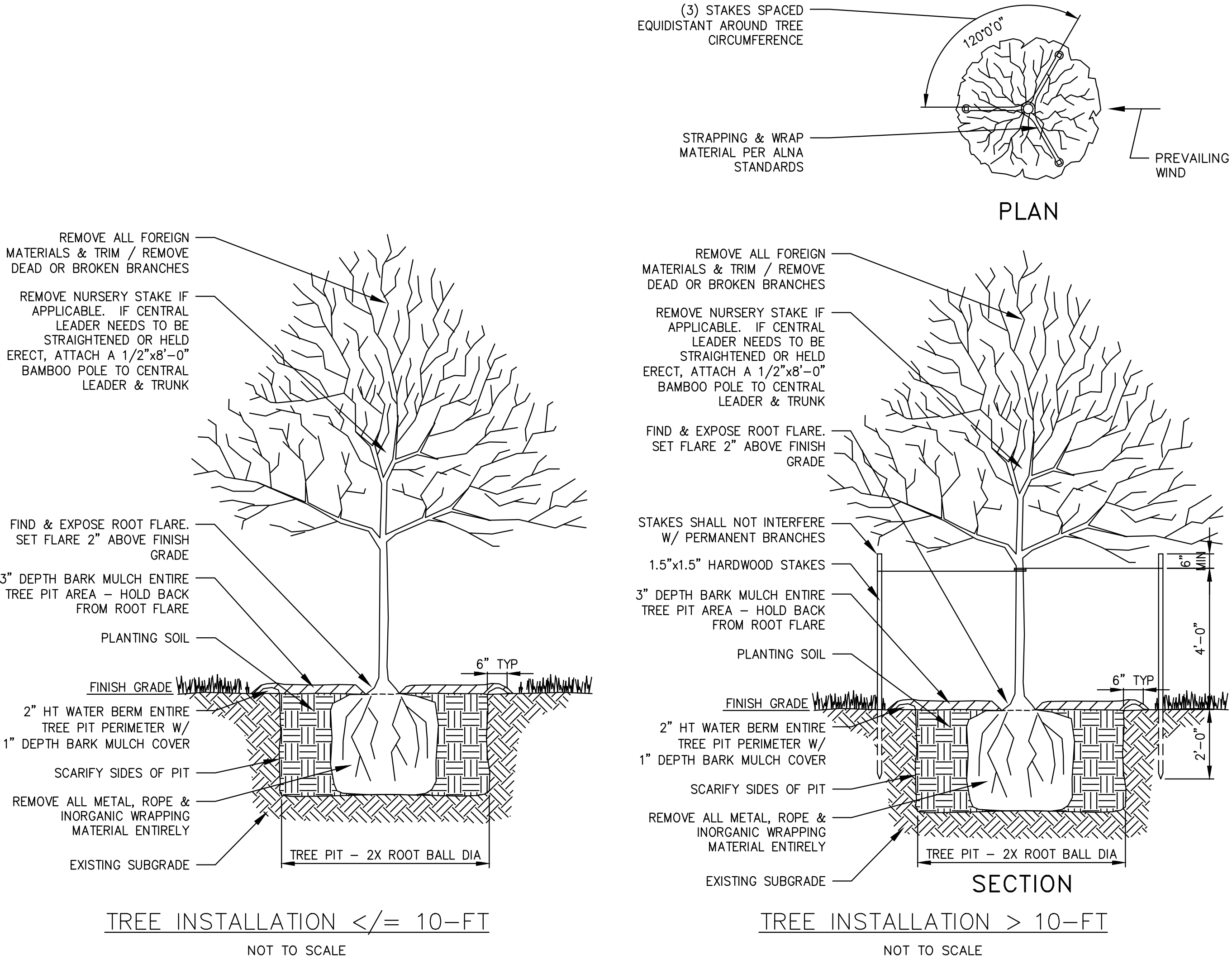
VEGETATION GENERAL NOTES:

- VEGETATION MANAGEMENT (INSTALLATION AND MAINTENANCE) SHALL COMPLY WITH CITY OF BIDDEFORD SHORELAND ZONING ORDINANCE REQUIREMENTS.
 - ALL REVEGETATION MUST OCCUR ALONG THE SAME SEGMENT OF SHORELINE AND IN AS CLOSE OF PROXIMITY AS PRACTICAL TO THE LOCATION WHERE THE VEGETATION WAS REMOVED.
 - ALL VEGETATION REMOVED MUST BE REPLACED WITH NATIVE, NON-INVASIVE SPECIES.
 - AT LEAST THREE DIFFERENT SPECIES OF TREES AND WOODY VEGETATION UNDER THREE FEET IN HEIGHT SHALL BE USED.
 - NO MORE THAN ONE SPECIES OF TREES AND WOODY VEGETATION UNDER THREE FEET IN HEIGHT SHALL MAKE UP MORE THAN 50% OF THE TOTAL NUMBER OF TREES AND WOOD VEGETATION UNDER THREE FEET IN HEIGHT PLANTED.
 - SURVIVAL OF ALL VEGETATION MUST BE MAINTAINED FOR A MINIMUM OF FIVE YEARS.
- ALL REMOVED NON-NATIVE PLANT MATERIAL SHALL BE PROPERLY DISPOSED OF BY BURNING ON-SITE OR DISPOSAL AT A WASTE RECEIVING FACILITY.
- AN UPDATED LIST OF NON-NATIVE INVASIVE VEGETATION IS MAINTAINED BY THE DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY'S NATURAL AREAS PROGRAM.
- HTTPS://WWW.MAINE.GOV/DACF/MNAP/FEATURES/INVASIVE_PLANTS/INVASIVES.HTM
- PLANT SPECIES SUBSTITUTIONS SHALL BE APPROVED BY THE OWNER. CONTRACTOR SHALL REFERENCE THE FOLLOWING RESOURCES FOR COASTAL PLANT LIST GUIDELINES: CUMBERLAND COUNTY SOIL & WATER CONSERVATION DISTRICT - COASTAL PLANTING GUIDE; UNIVERSITY OF MAINE COOPERATE EXTENSION; AND/OR THE WILD SEED PROJECT.

VEGETATION INSTALLATION NOTES:

- THE CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE VEGETATION WITHIN THE CONSTRUCTION AREA UNLESS NOTED TO BE REMOVED, LIMBED OR PRUNED. THIS MAY REQUIRE HAND EXCAVATION WITHIN TREE DRIPLINES.
- ALL PLANT MATERIAL SELECTIONS SHALL BE APPROVED BY THE OWNER PRIOR TO INSTALLATION.
- ALL NEW PLANTING MATERIAL SHALL CONFORM TO THE MINIMUM GUIDELINES ESTABLISHED FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC. IN ADDITION ALL NEW PLANT MATERIAL FOR THE PROJECT SHALL BE OF THE HIGHEST SPECIMEN QUALITY.
- ALL NEW PLANTS SHALL BE BALLED AND BURLAPPED OR CONTAINER GROWN UNLESS OTHERWISE NOTED ON THE PLANT LIST.
- CONTRACTOR SHALL SUPPLY ALL NEW PLANT MATERIAL IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTING SHOWN ON THE DRAWINGS.
- NO TREES SHALL BE PLANTED BEFORE ACCEPTANCE OF ROUGH GRADING. TREES SHALL BEAR SAME RELATIONSHIP TO FINISH GRADE AS THEY BORE TO PREVIOUS GRADE.
- STAKE LOCATION OF ALL PROPOSED PLANTING FOR APPROVAL BY THE OWNER PRIOR TO COMMENCEMENT OF PLANTING.
- ALL EXISTING TREES TO REMAIN SHALL BE PROPERLY PROTECTED, PRUNED AND FERTILIZED PER THE SPECIFICATIONS.
- ALL LAWN AREAS DISTURBED BY CONSTRUCTION OPERATIONS INSIDE AND OUTSIDE THE LIMIT OF WORK SHALL BE LOAMED AND SEEDED AS SPECIFIED.
- ALL PLANT BEDS ARE TO RECEIVE THREE INCHES (4") OF SHREDDED BARK MULCH AS SPECIFIED.
- ANY PROPOSED SUBSTITUTIONS OF PLANT SPECIES SHALL BE MADE WITH PLANTS OF EQUIVALENT OVERALL FORM, HEIGHT, BRANCHING HABIT, FLOWER, LEAF, COLOR, FRUIT AND CULTURE ONLY AS APPROVED BY OWNER
- ALL AREAS TO BE SEEDED SHALL RECEIVE SOIL PREPARATION AS SPECIFIED PRIOR TO SEEDING, UNLESS OTHERWISE NOTED ON PLAN.
- PREPARE ALL PLANT PITS WITH PLANTING SOIL TO A MINIMUM DEPTH MATCHING THE DEPTH OF ROOT BALLS.
- NATIVE PLANT SPECIES REMOVED SHALL BE REPLANTED WITH IN-KIND SPECIES AND/OR THOSE PROVIDE IN THE PLANT LIST.

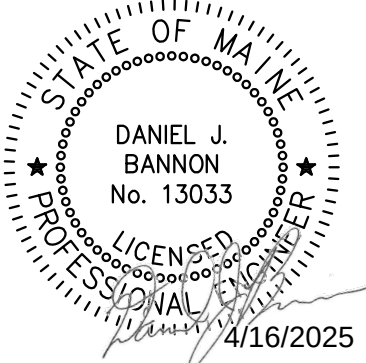
PLANT LIST							
KEY	QTY	SCIENTIFIC NAME COMMON NAME	SIZE	SPACING	ROOTING	MATURE SIZE	NOTES
TREES							
CC	9	CARPINUS CAROLINIANA AMERICAN HORNBEAM	1" CAL	10' O.C.	B&B / CONT	25' HT / 25' W	REPLACE REMOVED TREES 1 FOR 1 AT LOCATIONS AS INDICATED ON THE REVEGETATION PLAN.
JV	10	JUNIPERUS VIRGINIANA EASTERN RED CEDAR	3'-4' HT	10' O.C.	B&B / CONT	35' HT / 15' W	
PM	10	PICEA MARIANA BLACK SPRUCE	5'-6' HT	10' O.C.	B&B / CONT	35' HT / 15' W	
PS	10	PINUS STROBUS WHITE PINE	6'-7' HT	15' O.C.	B&B / CONT	75' HT / 35' W	
QR	9	QUERCUS RUBRA RED OAK	1.5 - 2" CAL	25' O.C.	B&B / CONT	75' HT / 50' W	
SHRUBS							
JC	17	JUNIPERUS COMMUNIS COMMON JUNIPER	18"-24" HT	5' O.C.	CONT	10' HT / 10' W	PLANT SHRUBS AT LOCATIONS AS INDICATED ON THE REVEGETATION PLAN.
JH	16	JUNIPERUS HORIZONTALIS 'BAR HARBOR' BAR HARBOR CREEPING JUNIPER	5-7 PPP	6' O.C.	CONT	1.5' HT / 10' W	
RT	11	RHUS TYPHINA STAGHORN SUMAC	18"-24" HT	10' O.C.	B&B / CONT	20' HT / 25' W	
BIORETENTION CELL PLANTING							
AS	75	ASCLEPIAS SYRIACA COMMON MILKWEED	5-7 PPP	18" O.C.	CONT	2' HT / 3' W	PROVIDE A RANDOM MIX OF EQUAL QUANTITIES OF EACH PERENNIAL AND SHRUB SPECIES THROUGHOUT BIO RETENTION CELLS. PLANT EACH SPECIES AS INDIVIDUALS OR IN GROUPINGS OF THREE.
IR	75	IRIS VERSICOLOR BLUE FLAG IRIS	5-7 PPP	18" O.C.	CONT	18" HT / 2' W	
IV	25	ILEX VERTICILLATA WINTERBERRY	12"-18" HT	3' O.C.	CONT	8' HT / 8' W	
MP	25	MYRICA PENSYLVANICA NORTHERN BAYBERRY	12"-18" HT	3' O.C.	CONT	8' HT / 8' W	
PV	75	PANICUM VIRGATUM SWITCHGRASS	5-7 PPP	18" O.C.	CONT	3' HT / 2' W	
SN	75	SYMPHYOTRICHUM NOVAE-ANGLIAE NEW ENGLAND ASTER	5-7 PPP	18" O.C.	CONT	2' HT / 3' W	
SS	75	SOLIDAGO SEMPERVIRENS SEASIDE GOLDENROD	5-7 PPP	18" O.C.	CONT	2' HT / 3' W	
SEED MIX							
SOW NEW ENGLAND ROADSIDE MATRIX UPLAND SEED MIX ON ALL DISTURBED AREAS UNLESS OTHERWISE NOTED ON REVEGETATION PLAN.							



ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.



Designed:	DJB
Drawn:	JAM
Checked:	BJB
Approved:	BMM
P.E. No:	13033
GEI Project	2203703



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BIDDEFORD, MAINE

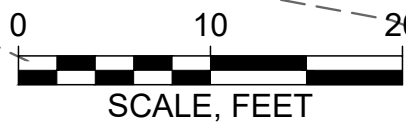
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11 HILLS BEACH ROAD
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NO	DATE	ISSUE/REVISION	APP

SHEET NAME	SHEET NO.
REVEGETATION NOTES, DETAILS AND SCHEDULES	C-016

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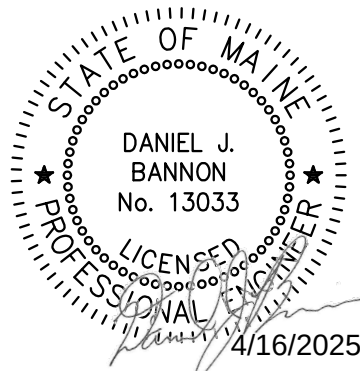
NOTES:
AREA OF FIXED PIER BEYOND
MLW LINE = 2770 SF, BASED ON
LIMITS OF CONCRETE DECK



ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

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GEI Project	2203703



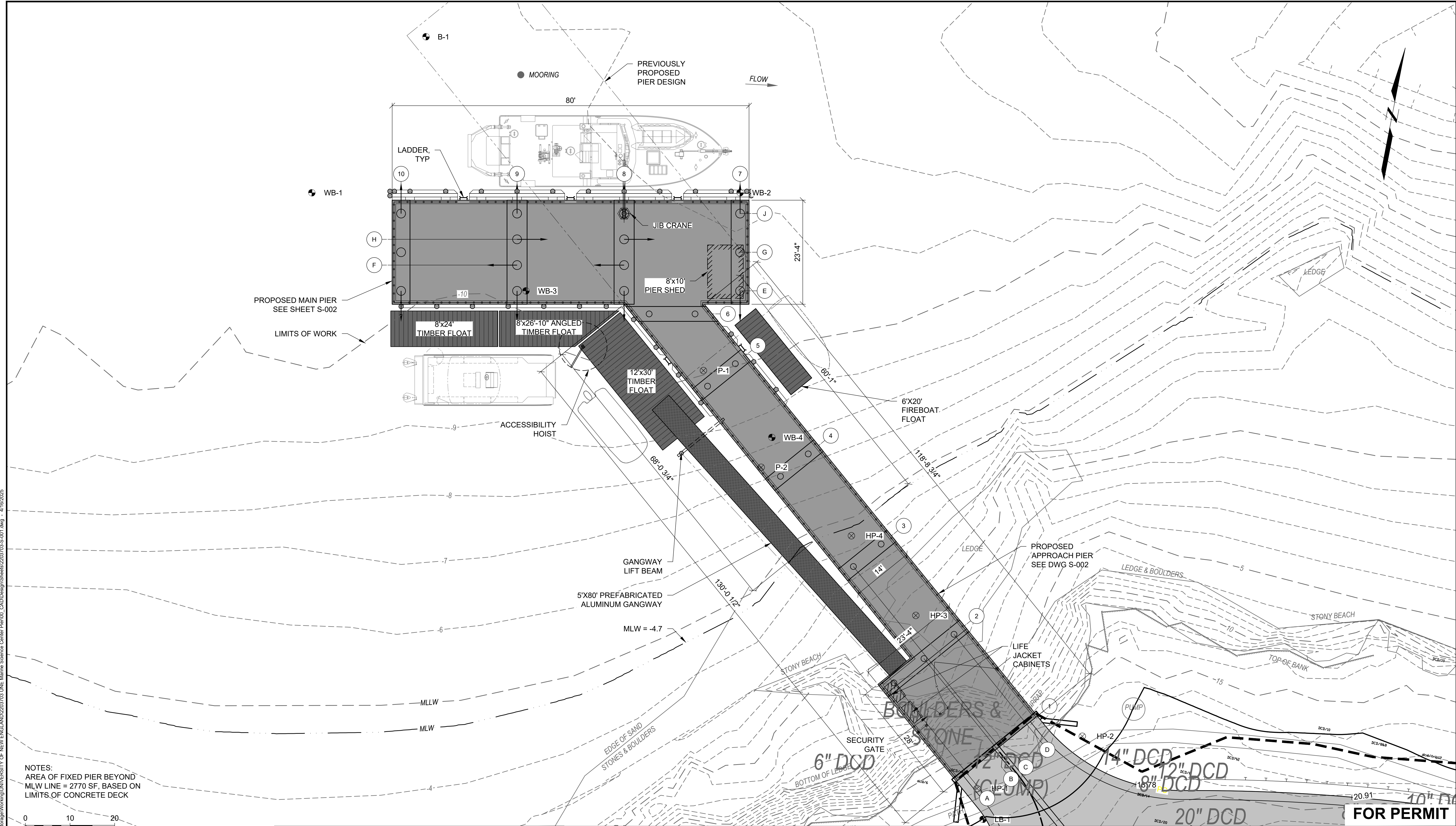
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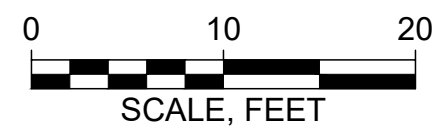
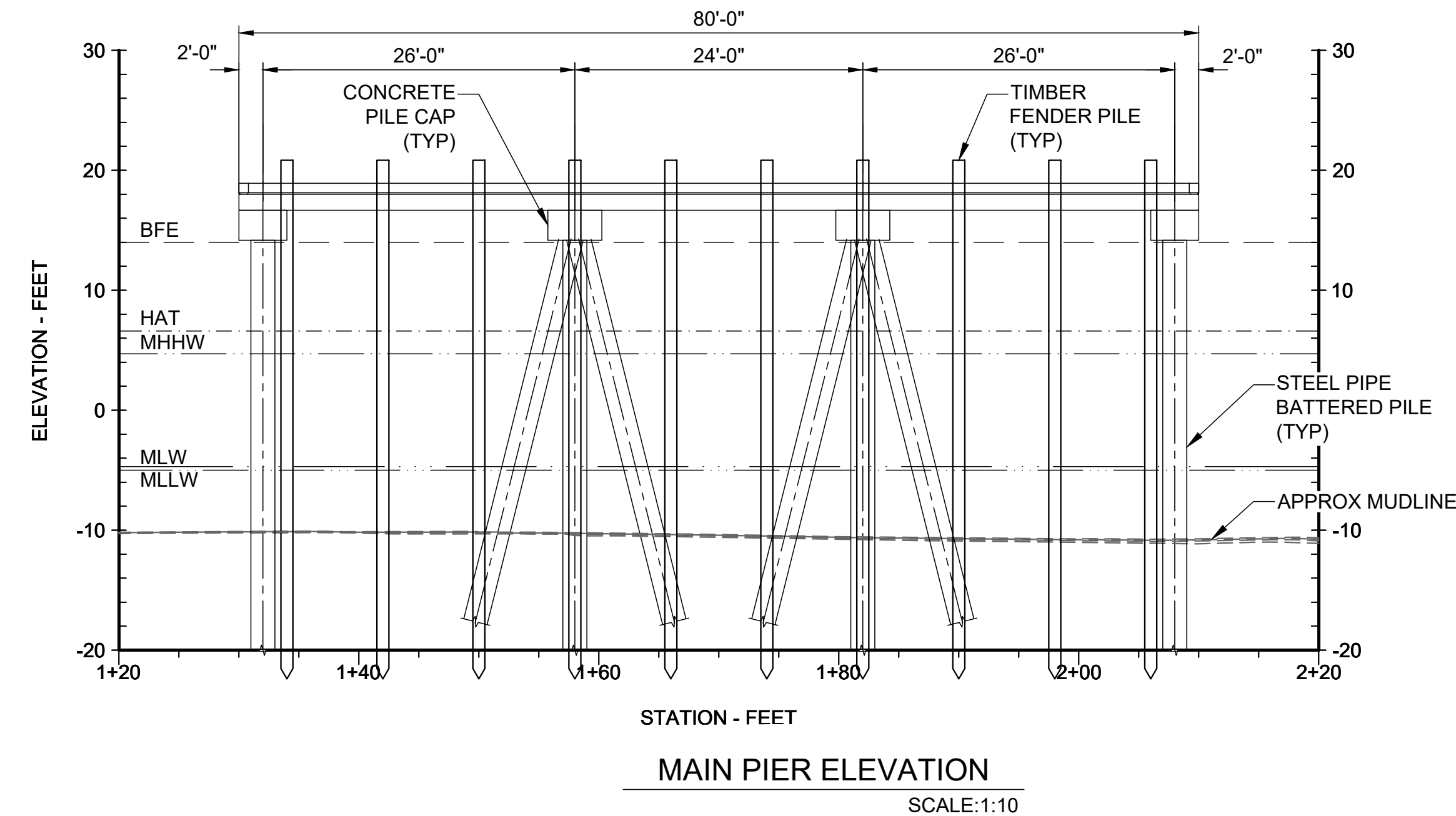
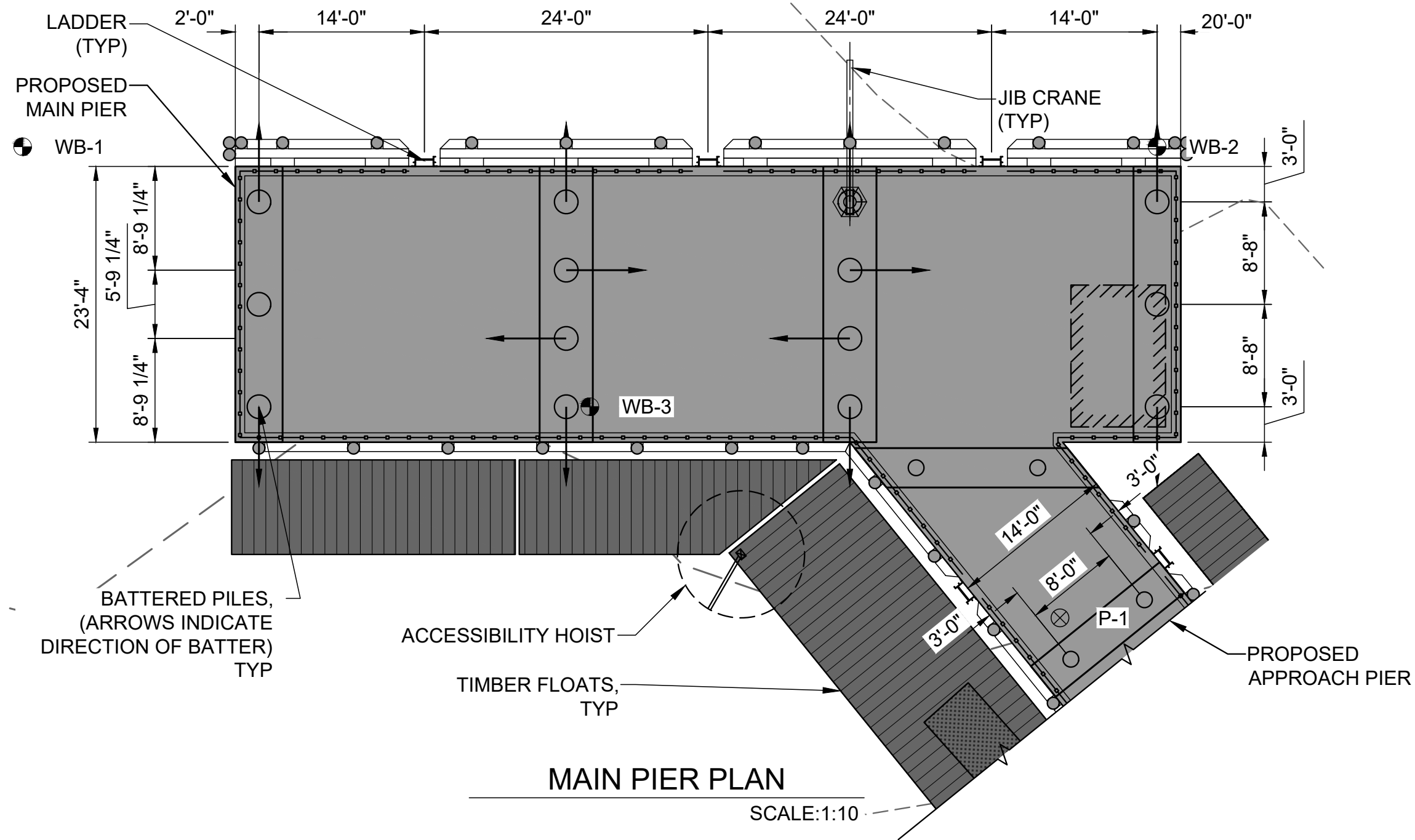
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0	11/11/2022	15% DESIGN SUBMISSION	DJB
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SHEET NAME
PIER LAYOUT PLAN

SHEET NO.
S-001



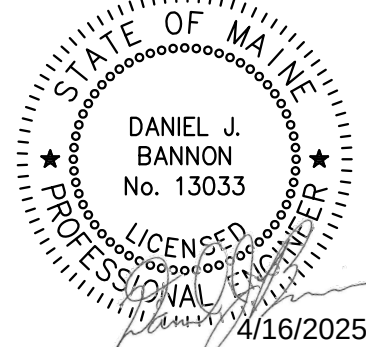
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ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
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BIDDEFORD, YORK COUNTY, MAINE

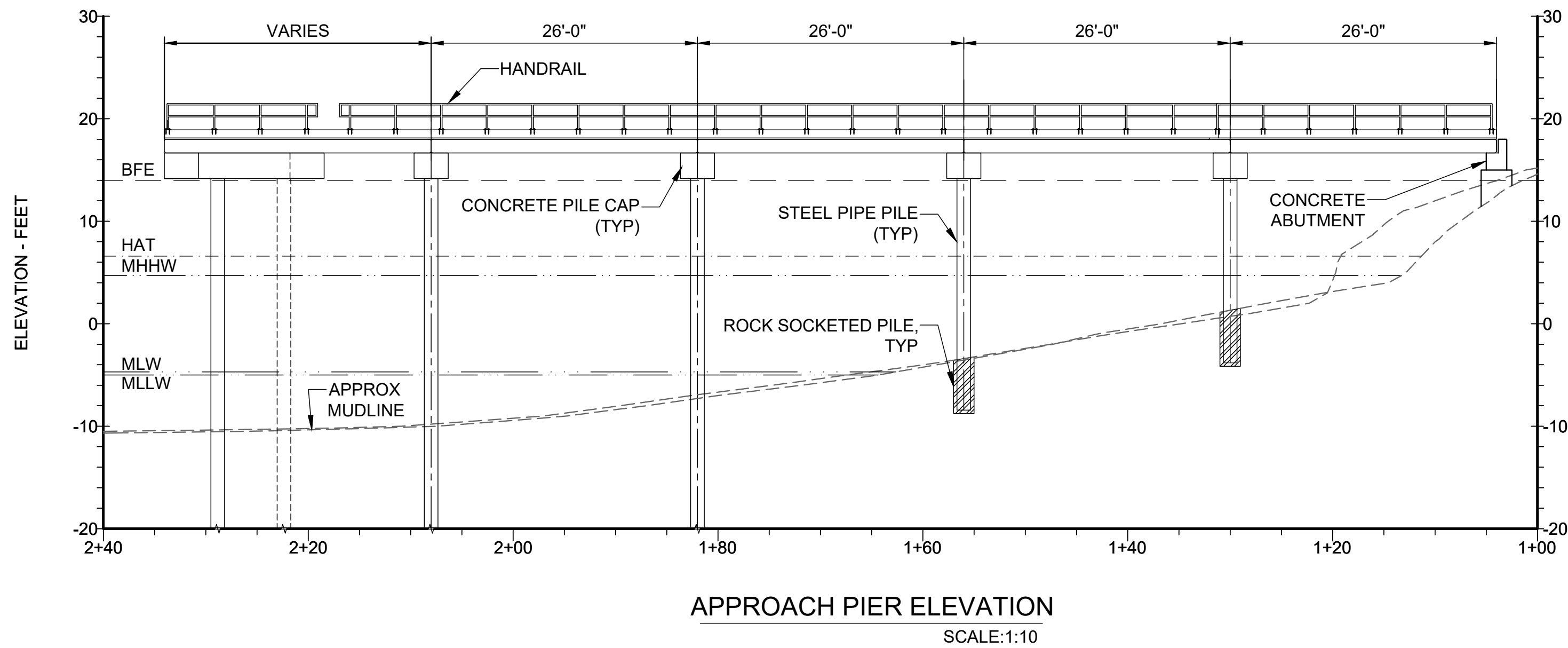
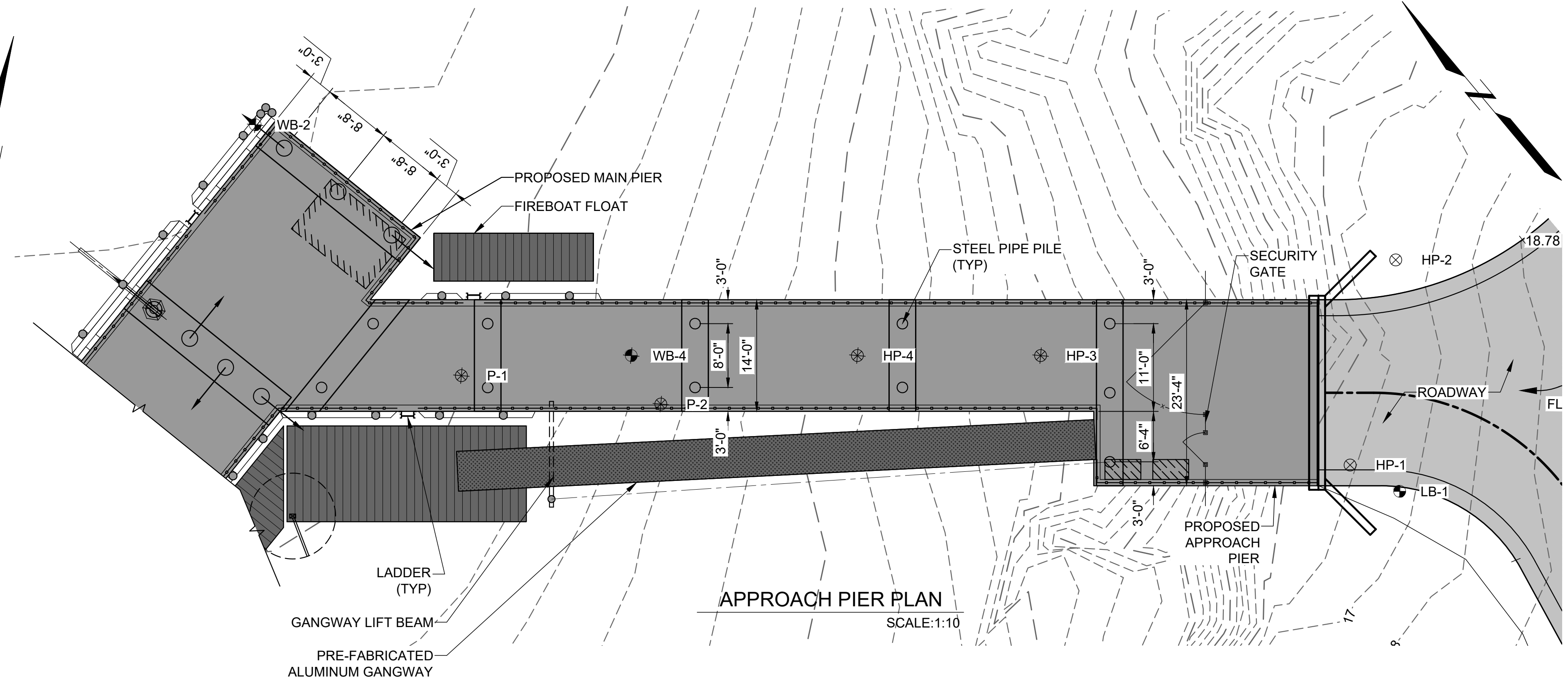
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SHEET NAME
**PIER PLANS
AND
ELEVATIONS**

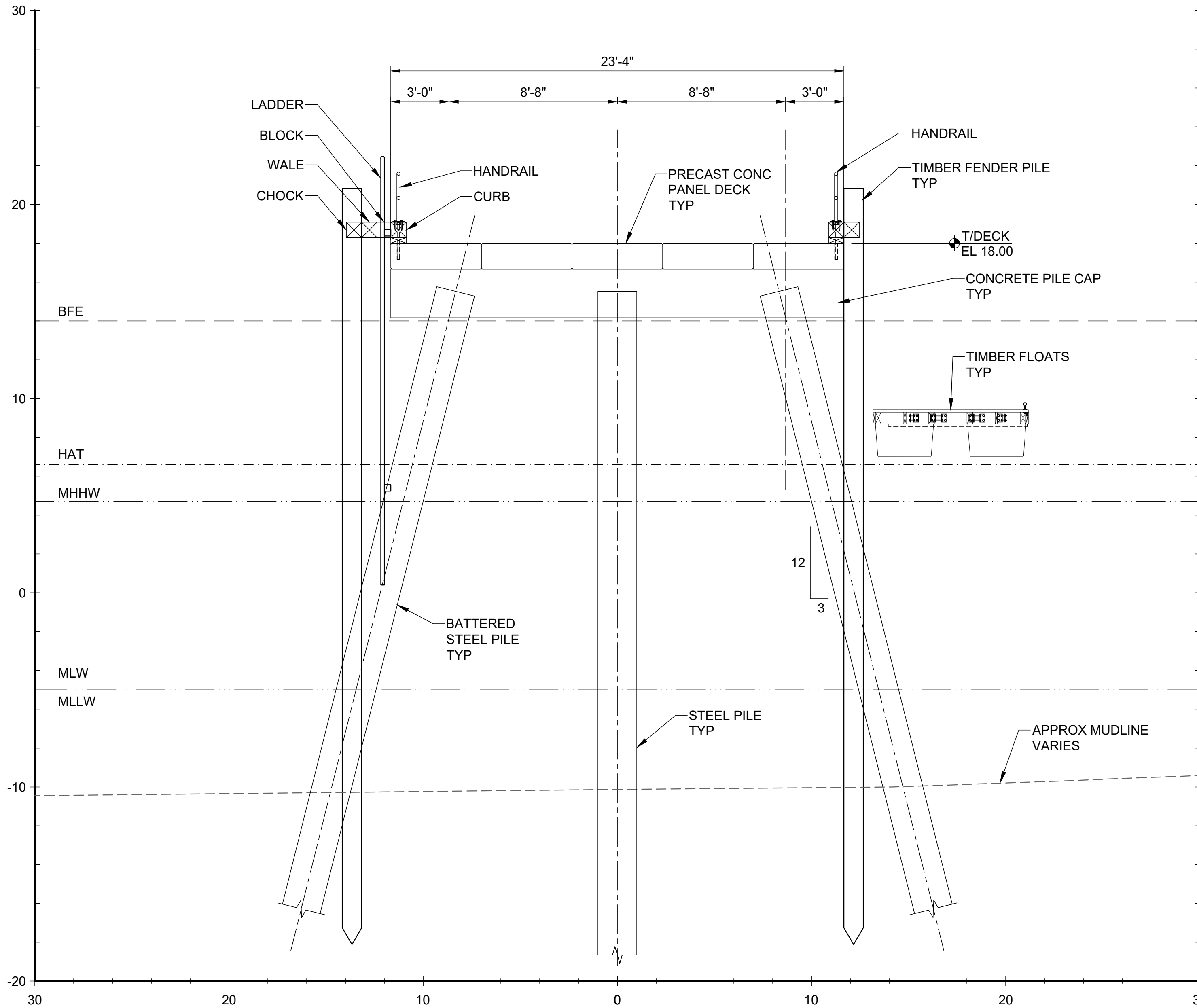
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S-002

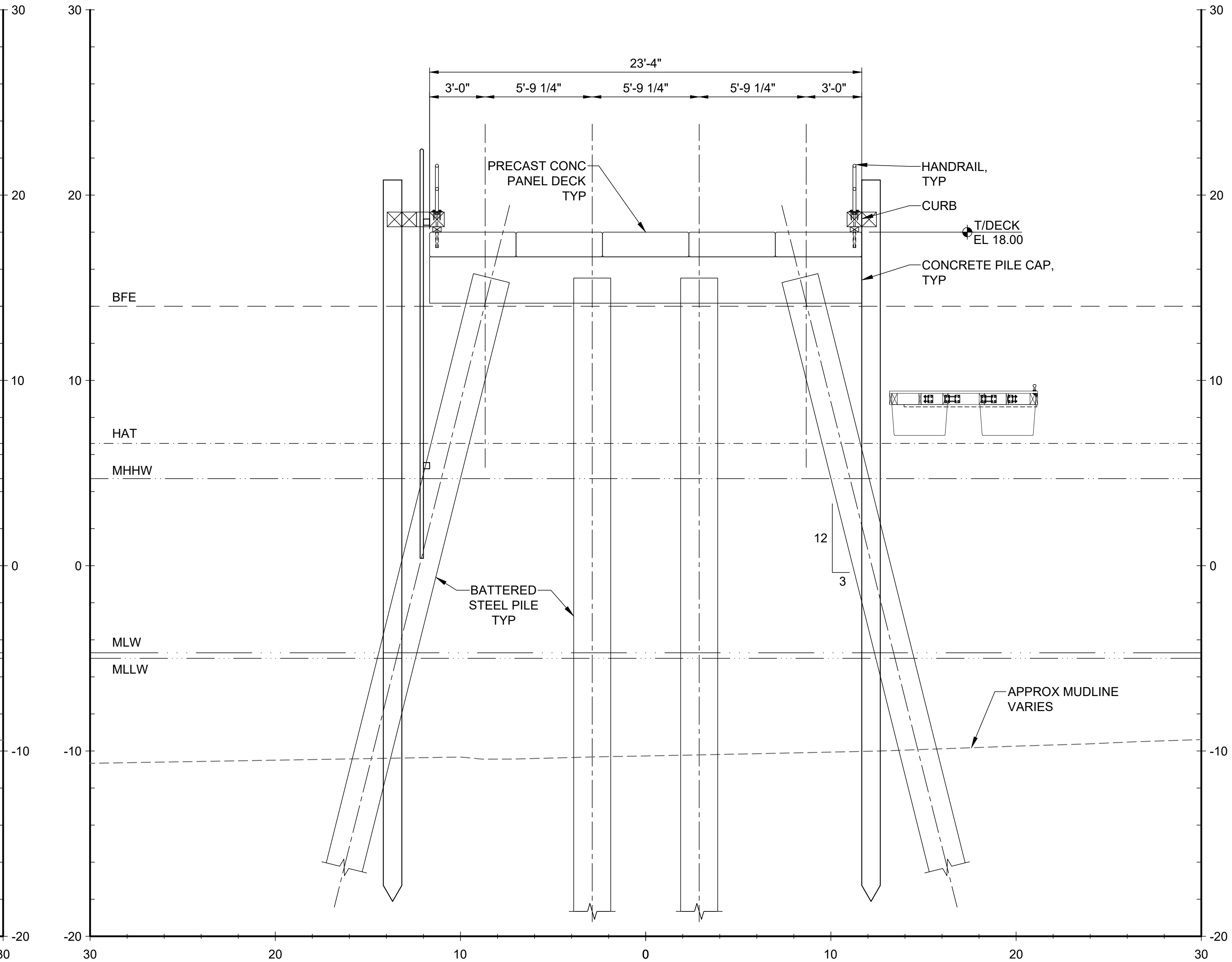
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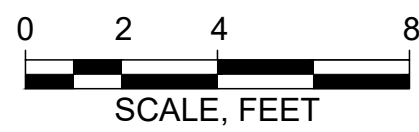
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SECTION
MAIN PIER AT BENT 10
SCALE: 1"=4'



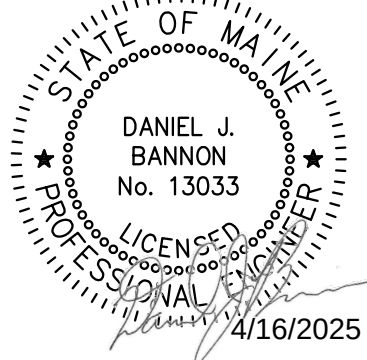
SECTION
MAIN PIER AT BENT 9
SCALE: 1"=4'



ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
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<i>Designed:</i>	DJB
<i>Drawn:</i>	JAM
<i>Checked:</i>	BJB
<i>Approved:</i>	BMM
<i>P.E. No:</i>	13033
<i>GEI Project</i>	2203703



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BIDDEFORD, MAINE

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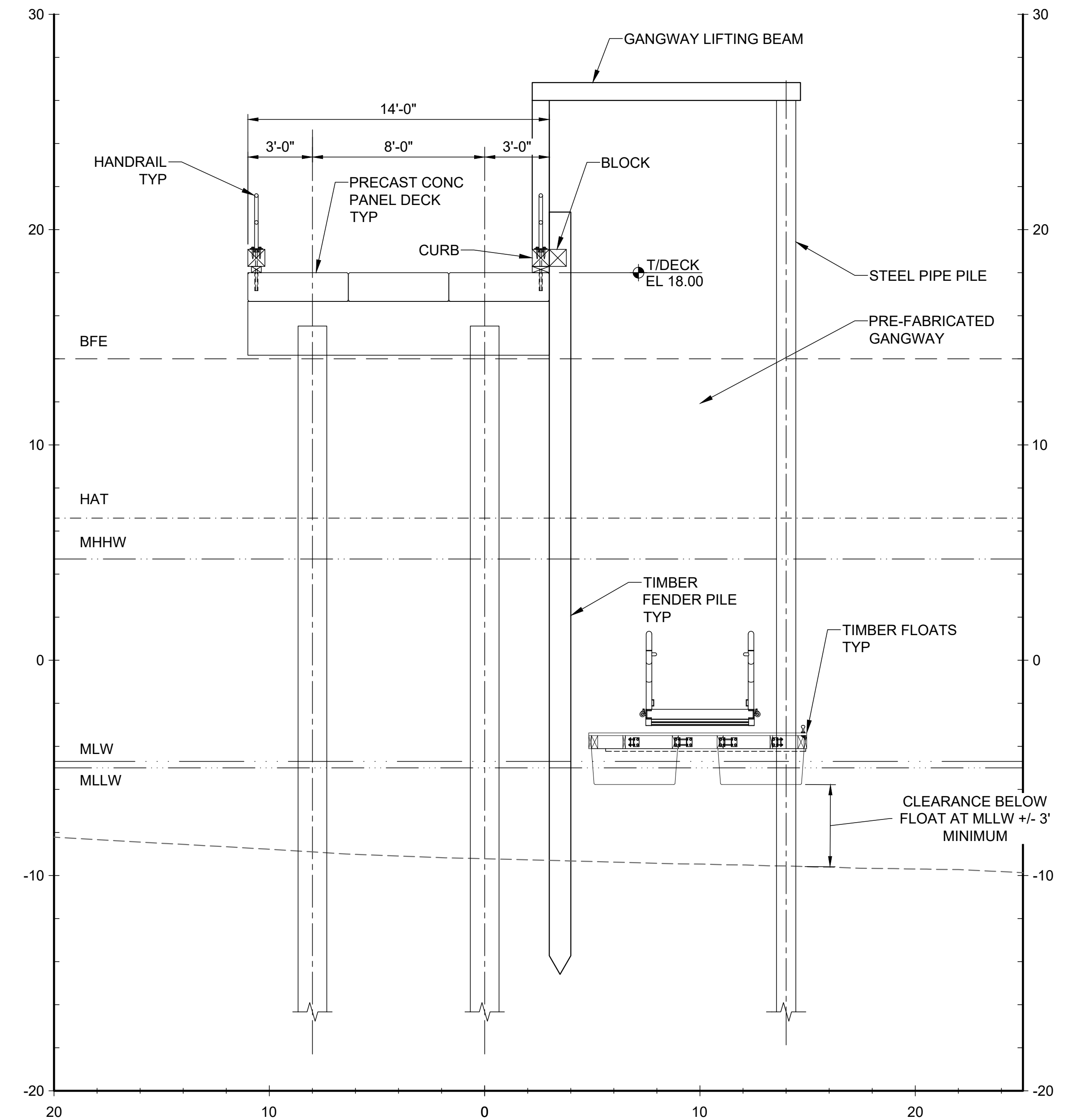
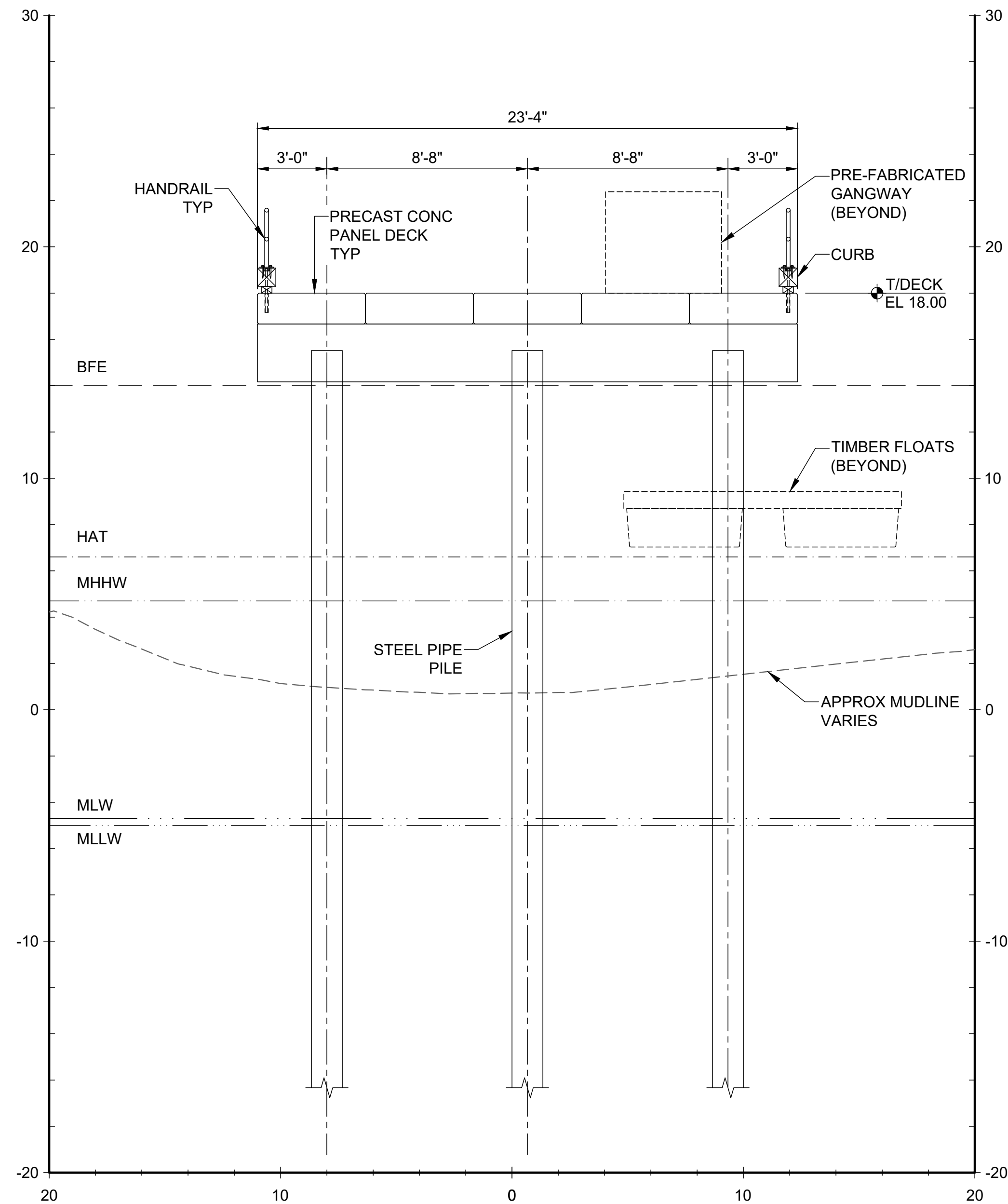
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0	11/11/2022	15% DESIGN SUBMISSION	DJB

SHEET NAME
**TYPICAL PIER SECTIONS
(1 OF 2)**

FOR PERMIT

SHEET NO.

S-003



FOR PERMIT



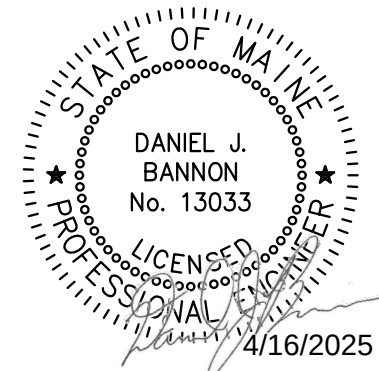
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HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:



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does not measure
1" then drawing is
not original scale.



<i>Designed:</i>	DJB
<i>Drawn:</i>	JAM
<i>Checked:</i>	BJB
<i>Approved:</i>	BMM
<i>P.E. No:</i>	13033
<i>GEI Project</i>	2203703



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NO	DATE	ISSUE/REVISION	APP

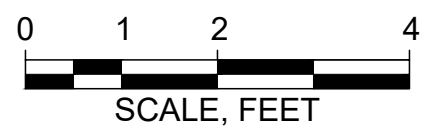
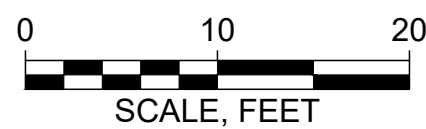
SHEET NAME

**TYPICAL PIER SECTIONS
(2 OF 2)**

SHEET NO.

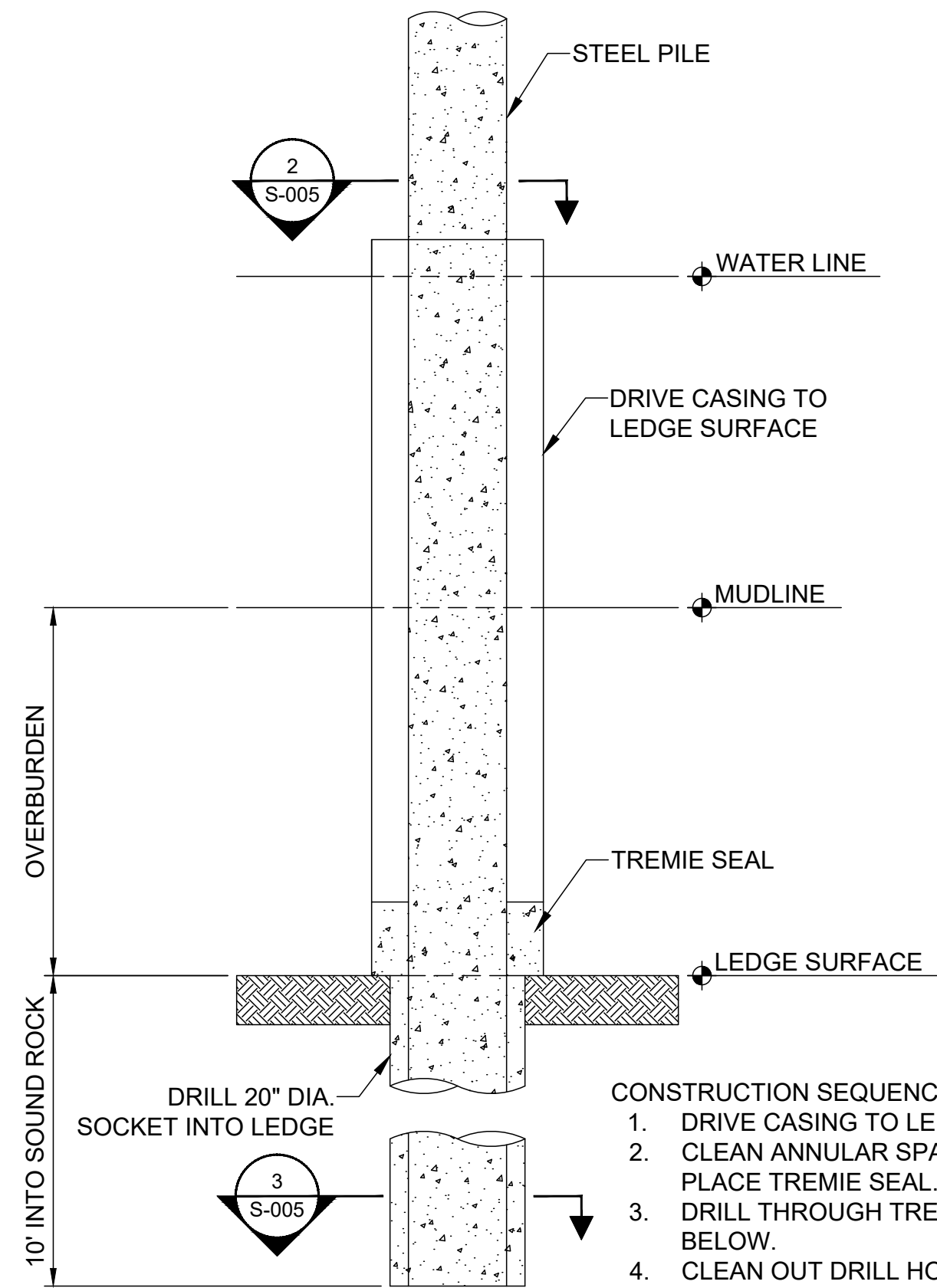
S-004

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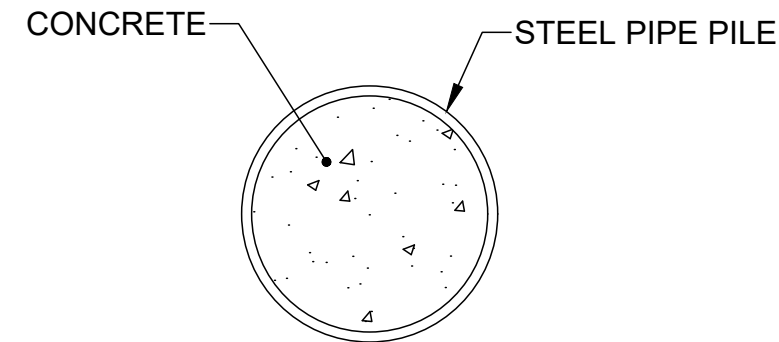
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BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

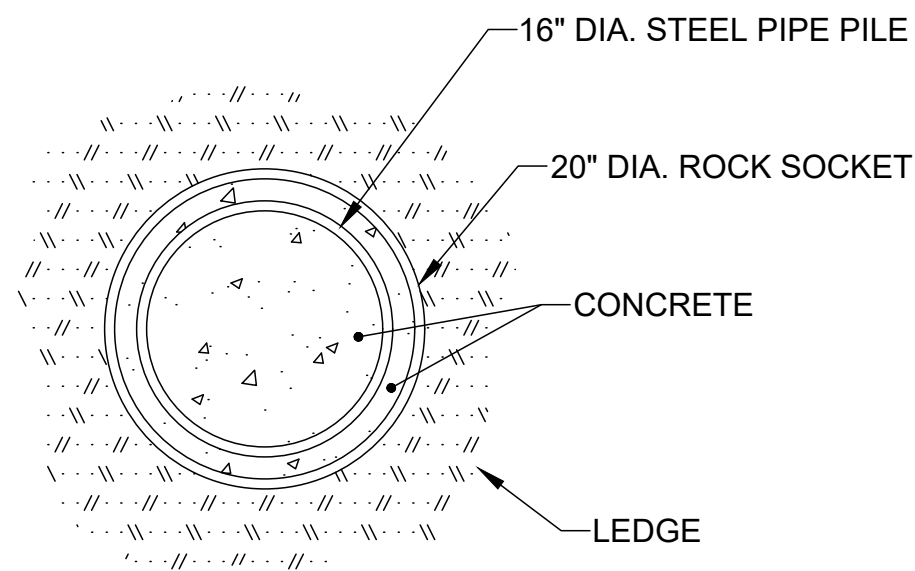


1 DETAIL PILE SOCKET SCALE: 1" = 2'

- CONSTRUCTION SEQUENCE
1. DRIVE CASING TO LEDGE SURFACE.
 2. CLEAN ANNULAR SPACE TO LEDGE SURFACE, PLACE TREMIE SEAL.
 3. DRILL THROUGH TREMIE INTO SOUND ROCK BELOW.
 4. CLEAN OUT DRILL HOLE.
 5. INSERT PILE AND GROUT TO SURFACE.
 6. REMOVE CASING.
 7. FILL STEEL PIPE PILE TO TOP WITH CONCRETE.



2 SECTION CONCRETE FILLED STEEL PIPE PILE SCALE: 1" = 1'

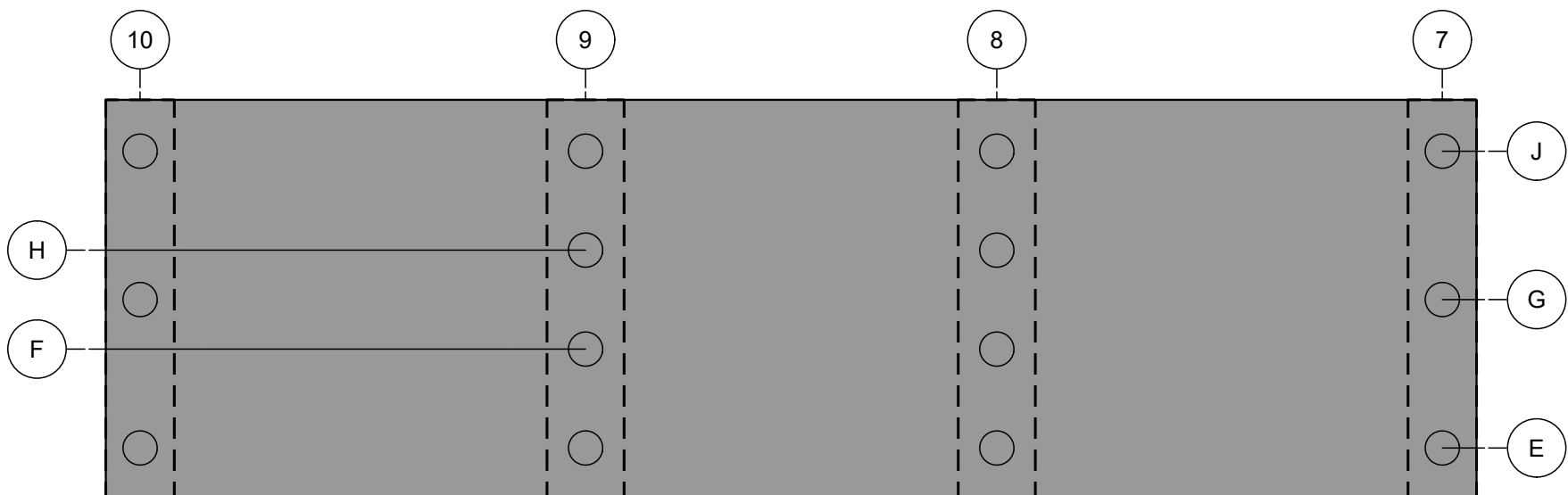


3 SECTION ROCK SOCKET SCALE: 1" = 1'

CONCRETE FILLED STEEL PIPE PILE SCHEDULE

PILE DESIGNATION	PILE SIZE (INCHES)	BATTER	CUTOFF ELEVATION (FT)	EXISTING GRADE ELEVATION (FT)	ESTIMATED LEDGE ELEVATION (FT)	ROCK SOCKET LENGTH (FT)	MIN. ESTIMATED PILE TIP ELEVATION (FT)	ESTIMATED TOTAL PILE LENGTH (FT)	MIN. COATING LENGTH (FT)
2A	16x5/8	VERTICAL	15.52	1	1	10	-9	24.52	19.52
2B	16x5/8	VERTICAL	15.52	1	1	10	-9	24.52	19.52
2D	16x5/8	VERTICAL	15.52	1	1	10	-9	24.52	19.52
3C	16x5/8	VERTICAL	15.52	-4	-5	10	-15	30.52	24.52
3D	16x5/8	VERTICAL	15.52	-4	-5	10	-15	30.52	24.52
4C	16x5/8	VERTICAL	15.52	-8	-33	10	-43	58.52	28.52
4D	16x5/8	VERTICAL	15.52	-8	-33	10	-43	58.52	28.52
4.1-A.1	10.75x5/8	VERTICAL	27	-10	-54	-	-54	81	42
5C	16x5/8	VERTICAL	15.52	-10	-60	-	-60	75.52	30.52
5D	16x5/8	VERTICAL	15.52	-10	-60	-	-60	75.52	30.52
6C	16x5/8	VERTICAL	15.52	-11	-63	-	-63	78.52	31.52
6D	16x5/8	VERTICAL	15.52	-11	-63	-	-63	78.52	31.52
7E	24x5/8	3:12	15.42	-11	-71	-	-71	86.42	31.42
7G	24x5/8	VERTICAL	15.52	-11	-71	-	-71	86.52	31.52
7J	24x5/8	3:12	15.42	-11	-71	-	-71	86.42	31.42
8E	24x5/8	3:12	15.42	-11	-67	-	-67	82.42	31.42
8F	24x5/8	3:12	15.28	-11	-67	-	-67	82.28	31.28
8H	24x5/8	3:12	15.28	-11	-67	-	-67	82.28	31.28
8J	24x5/8	3:12	15.42	-11	-67	-	-67	82.42	31.42
9E	24x5/8	3:12	15.42	-11	-64	-	-64	79.42	31.42
9F	24x5/8	3:12	15.28	-11	-64	-	-64	79.28	31.28
9H	24x5/8	3:12	15.28	-11	-64	-	-64	79.28	31.28
9J	24x5/8	3:12	15.42	-11	-64	-	-64	79.42	31.42
10E	24x5/8	3:12	15.42	-11	-66	-	-66	81.42	31.42
10G	24x5/8	VERTICAL	15.52	-11	-66	-	-66	81.52	31.52
10J	24x5/8	3:12	15.42	-11	-66	-	-66	81.42	31.42
							TOTAL	1821.5	

- SCHEDULE NOTES
1. ALL ELEVATIONS REFERENCED IN TABLE ARE IN NAVD88 DATUM.



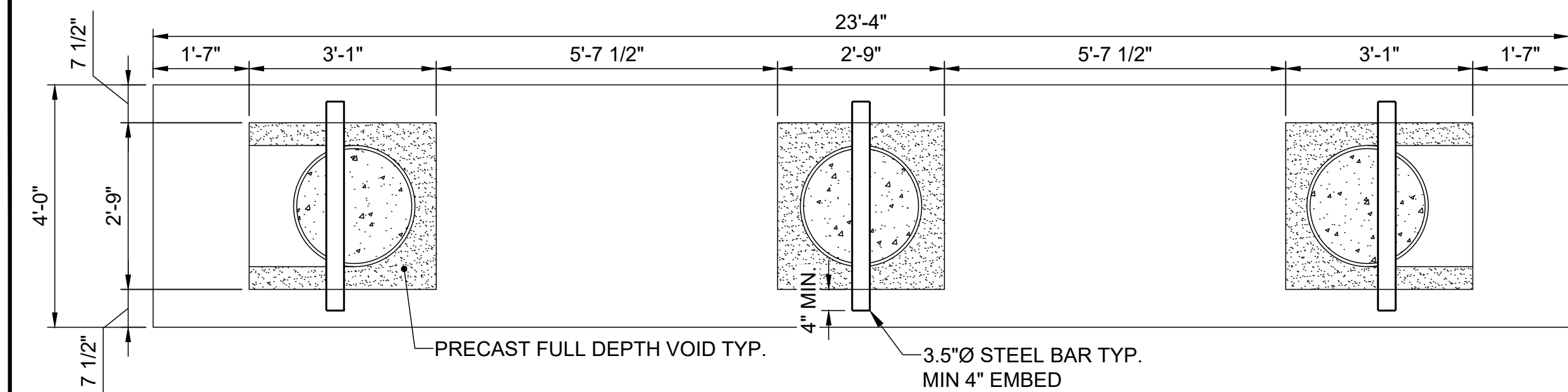
GANGWAY LIFTING BEAM SUPPORT PILE

DETAIL MAIN PIER SCALE: 1" = 10"

FOR PERMIT

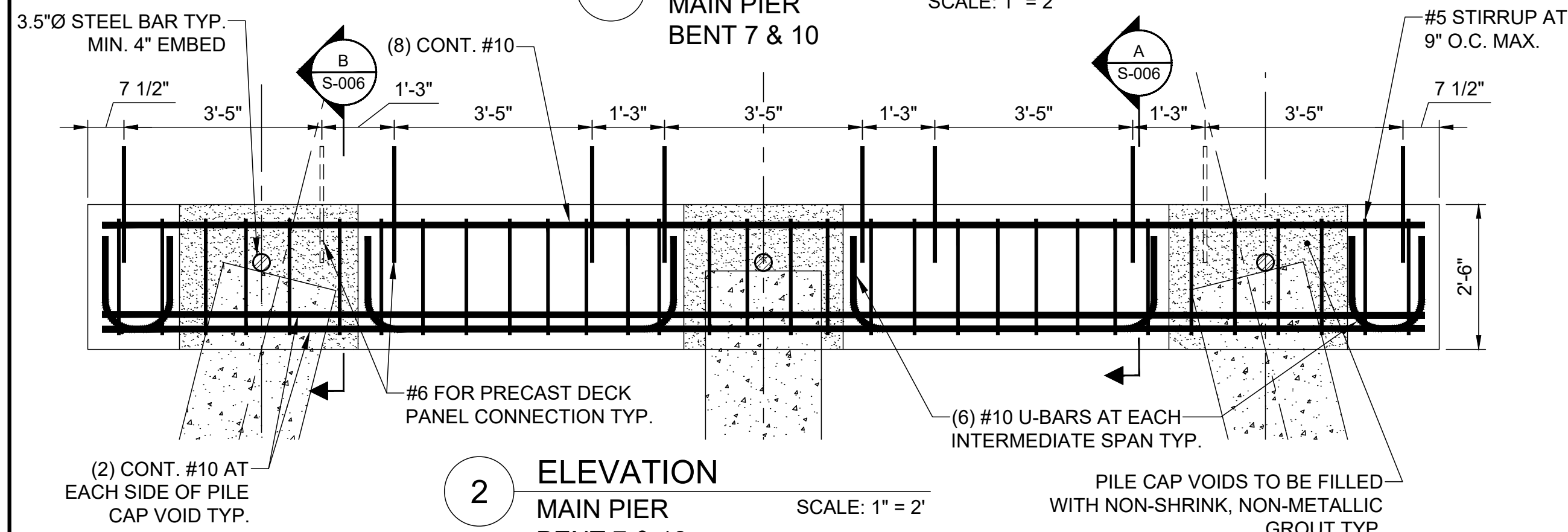
Attention:  If this scale bar does not measure 1" then drawing is not original scale.		Designed: DJB	 GEI Consultants GEI CONSULTANTS, INC. 5 MILK STREET PORTLAND, ME 04101 (207)797-8901	 UNIVERSITY OF NEW ENGLAND 11 HILLS BEACH RD. BIDDEFORD, MAINE	UNIVERSITY OF NEW ENGLAND MARINE SCIENCE CENTER PIER 11 HILLS BEACH ROAD BIDDEFORD, YORK COUNTY, MAINE					SHEET NAME <
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BANNON, DAN | geciconsultants.com\data\data - 4/16/2025



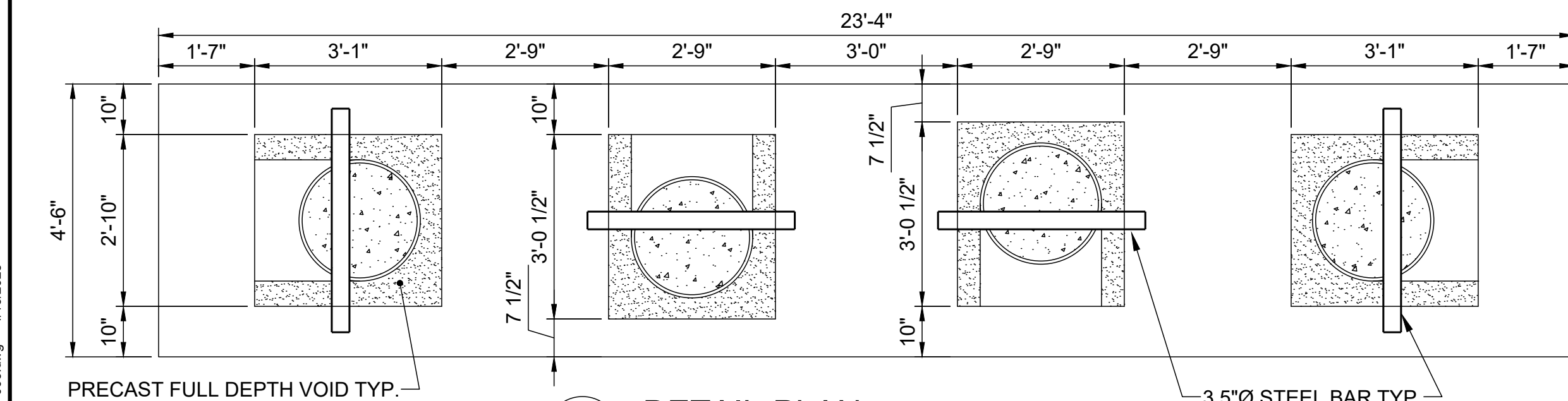
1
DETAIL-PLAN
MAIN PIER
BENT 7 & 10

SCALE: 1" = 2'



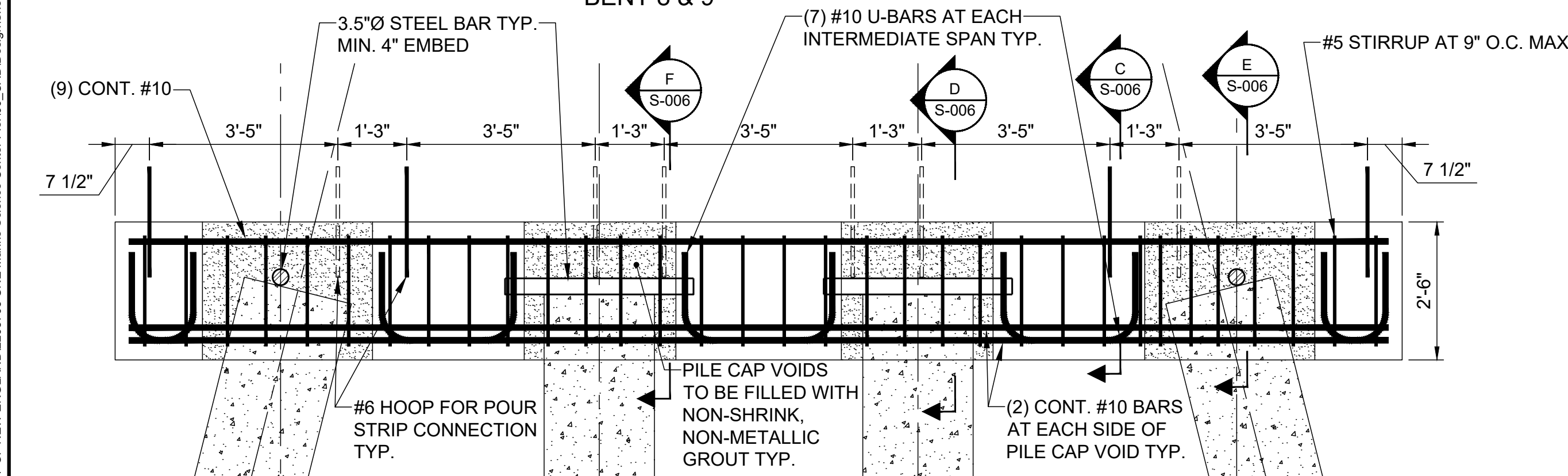
2
ELEVATION
MAIN PIER
BENT 7 & 10

SCALE: 1" = 2'



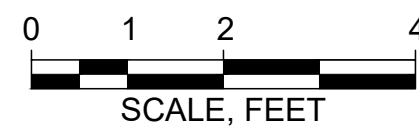
3
DETAIL-PLAN
MAIN PIER
BENT 8 & 9

SCALE: 1" = 2'



4
ELEVATION
MAIN PIER
BENT 8 & 9

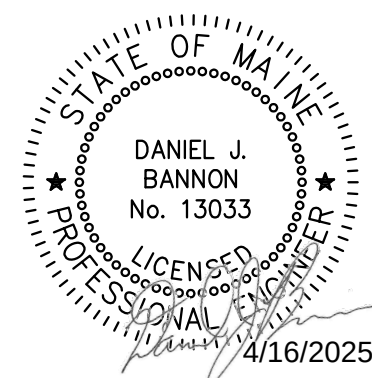
SCALE: 1" = 2'



ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
If this scale bar
does not measure
1" then drawing is
not original scale.



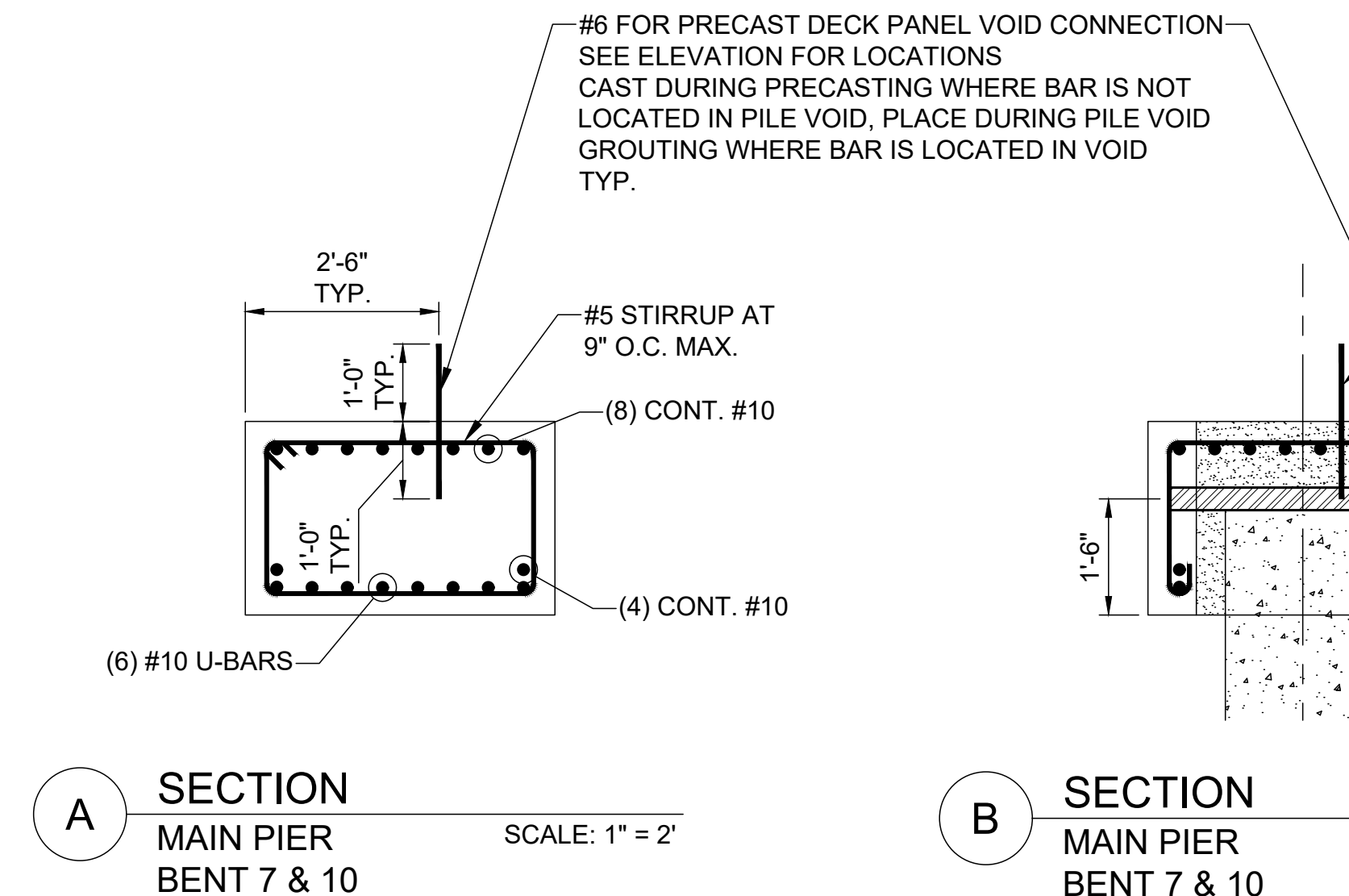
Designed:	DJB
Drawn:	JAM
Checked:	BJB
Approved:	BMM
P.E. No:	13033
GEI Project	2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

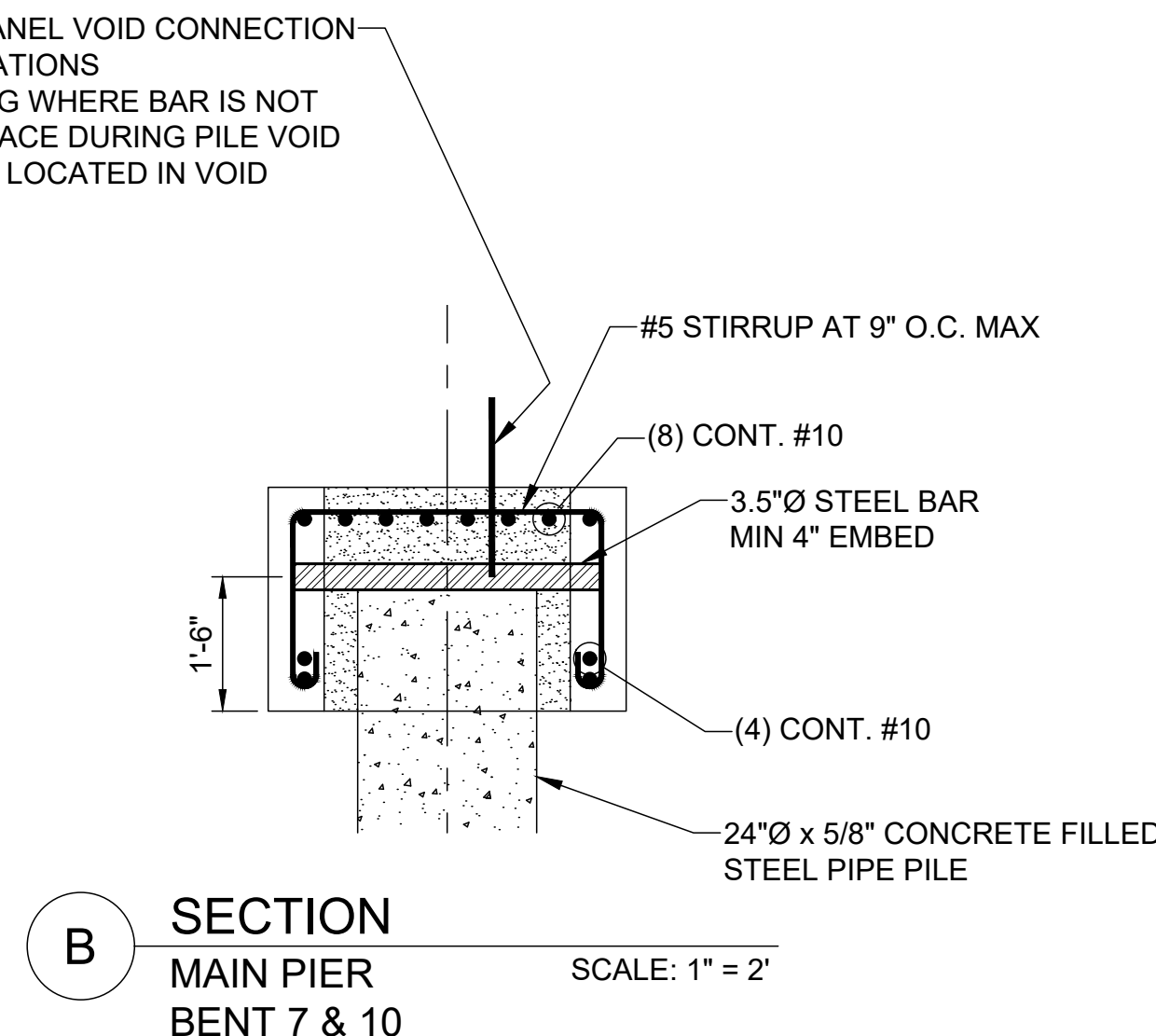
UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER

11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE



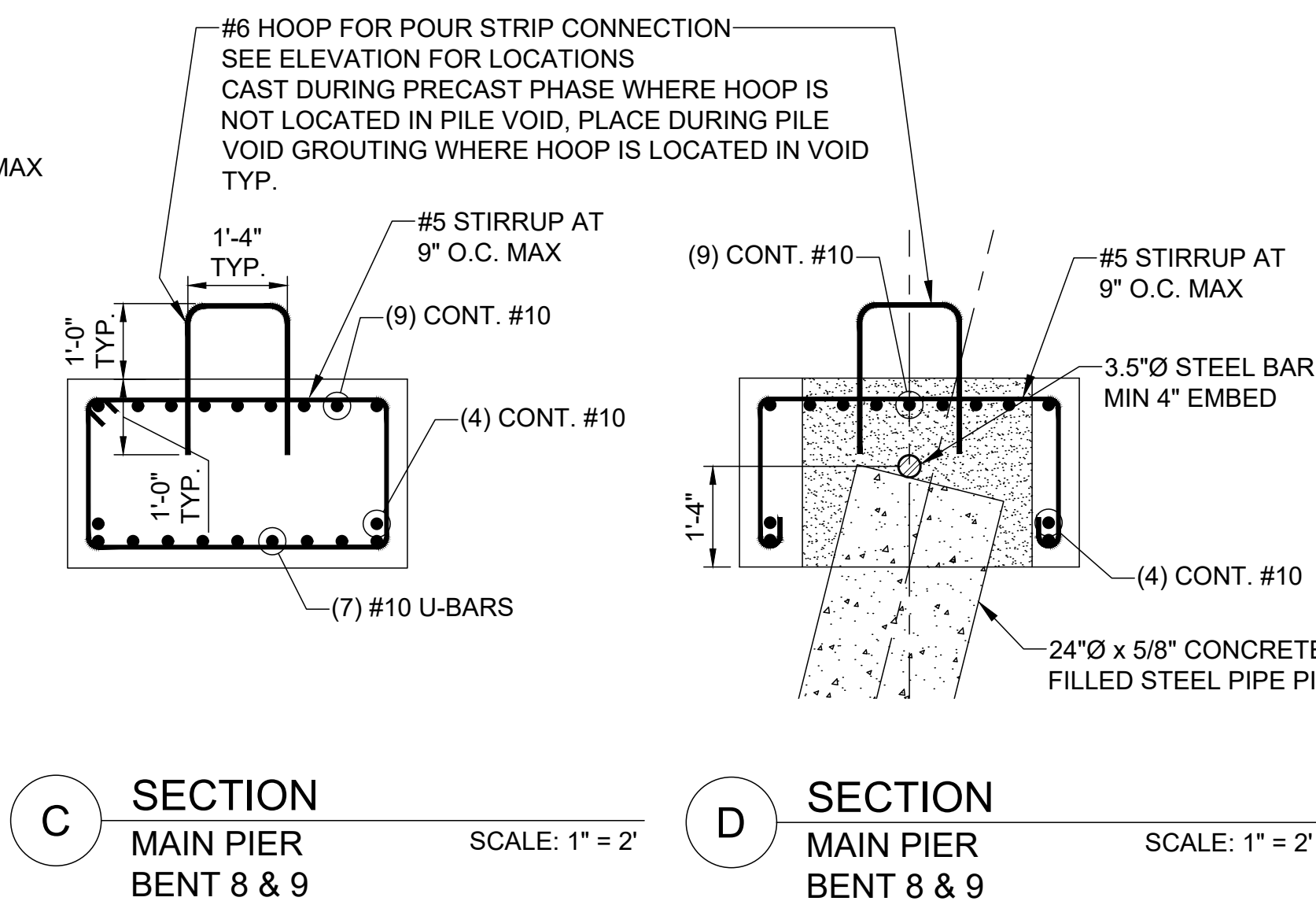
A
SECTION
MAIN PIER
BENT 7 & 10

SCALE: 1" = 2'



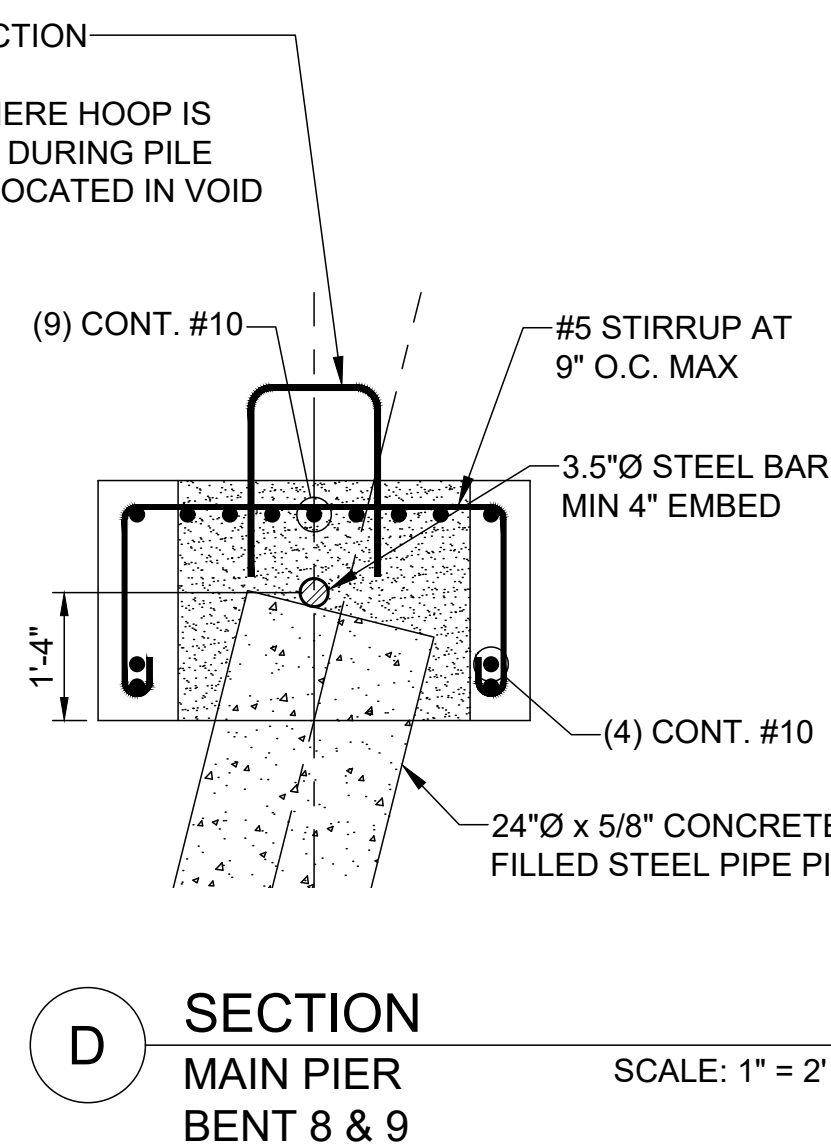
B
SECTION
MAIN PIER
BENT 7 & 10

SCALE: 1" = 2'



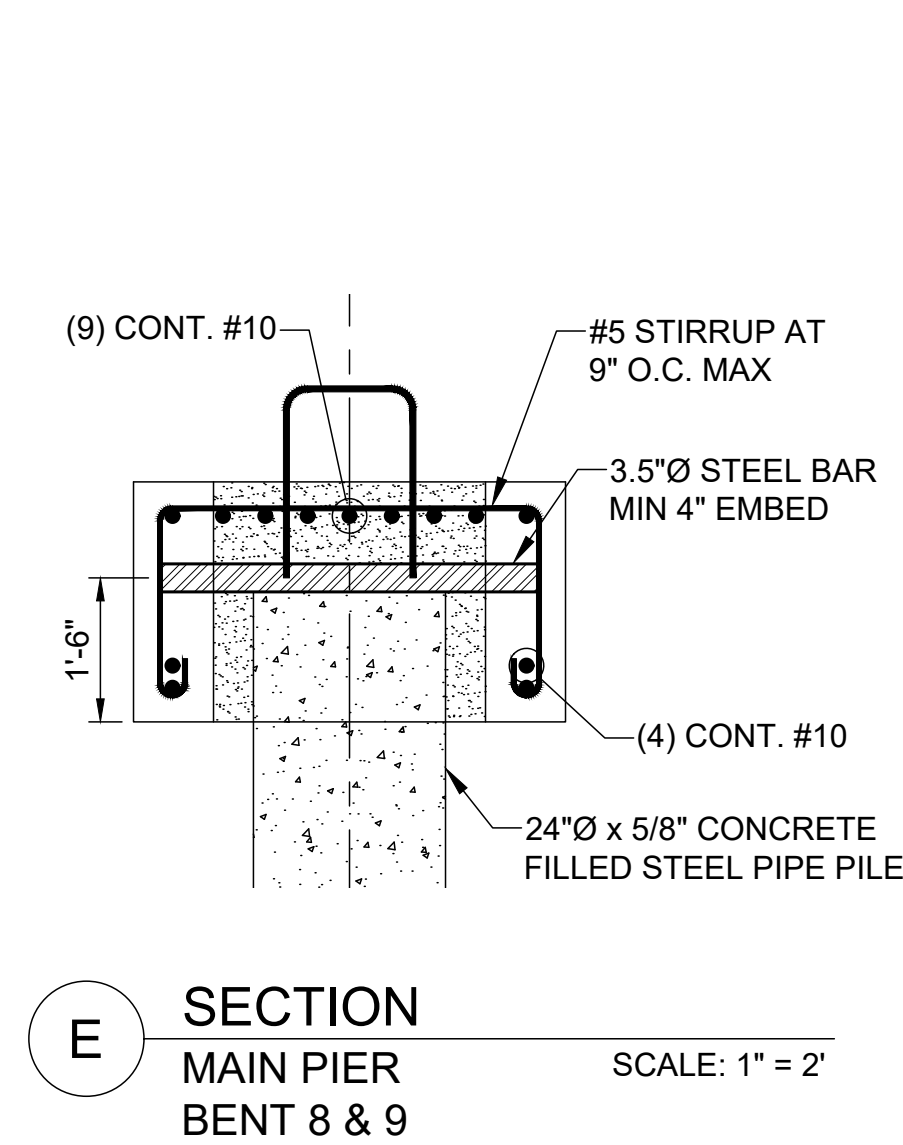
C
SECTION
MAIN PIER
BENT 8 & 9

SCALE: 1" = 2'



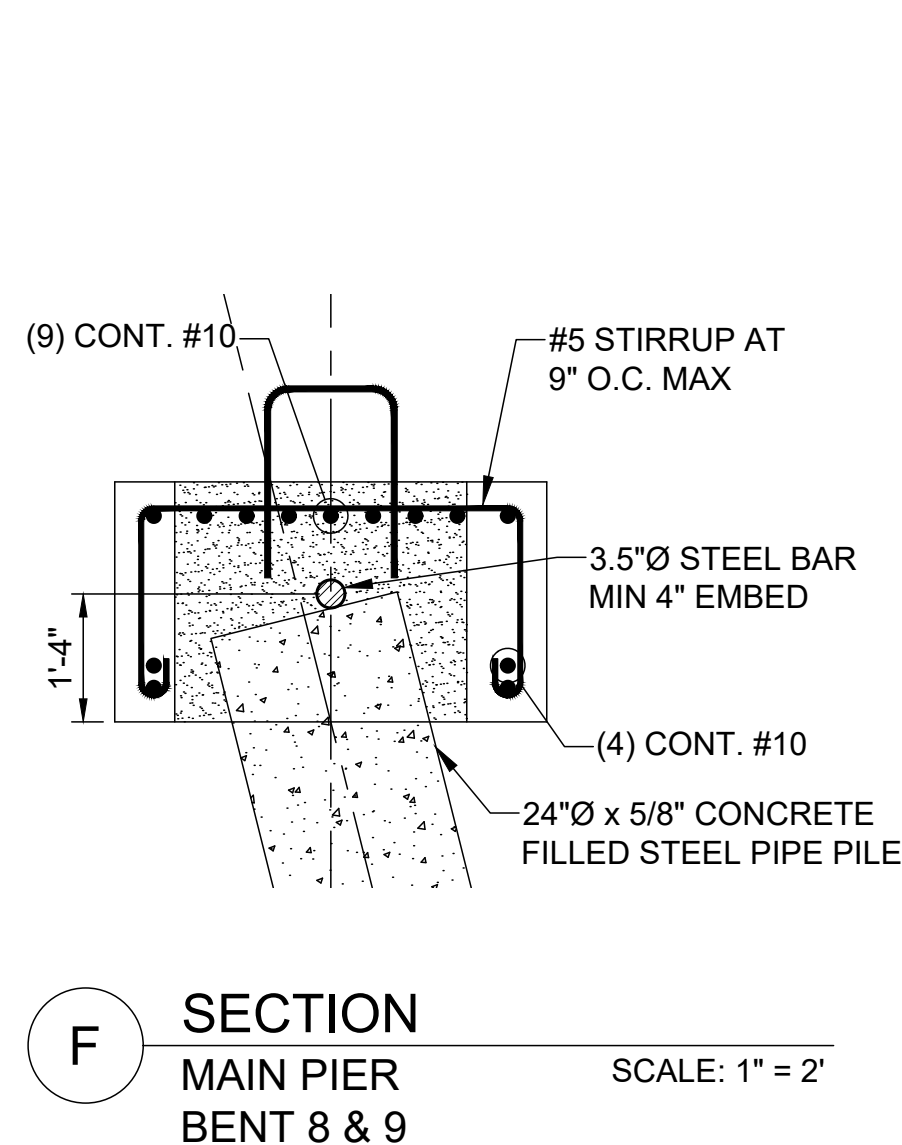
D
SECTION
MAIN PIER
BENT 8 & 9

SCALE: 1" = 2'



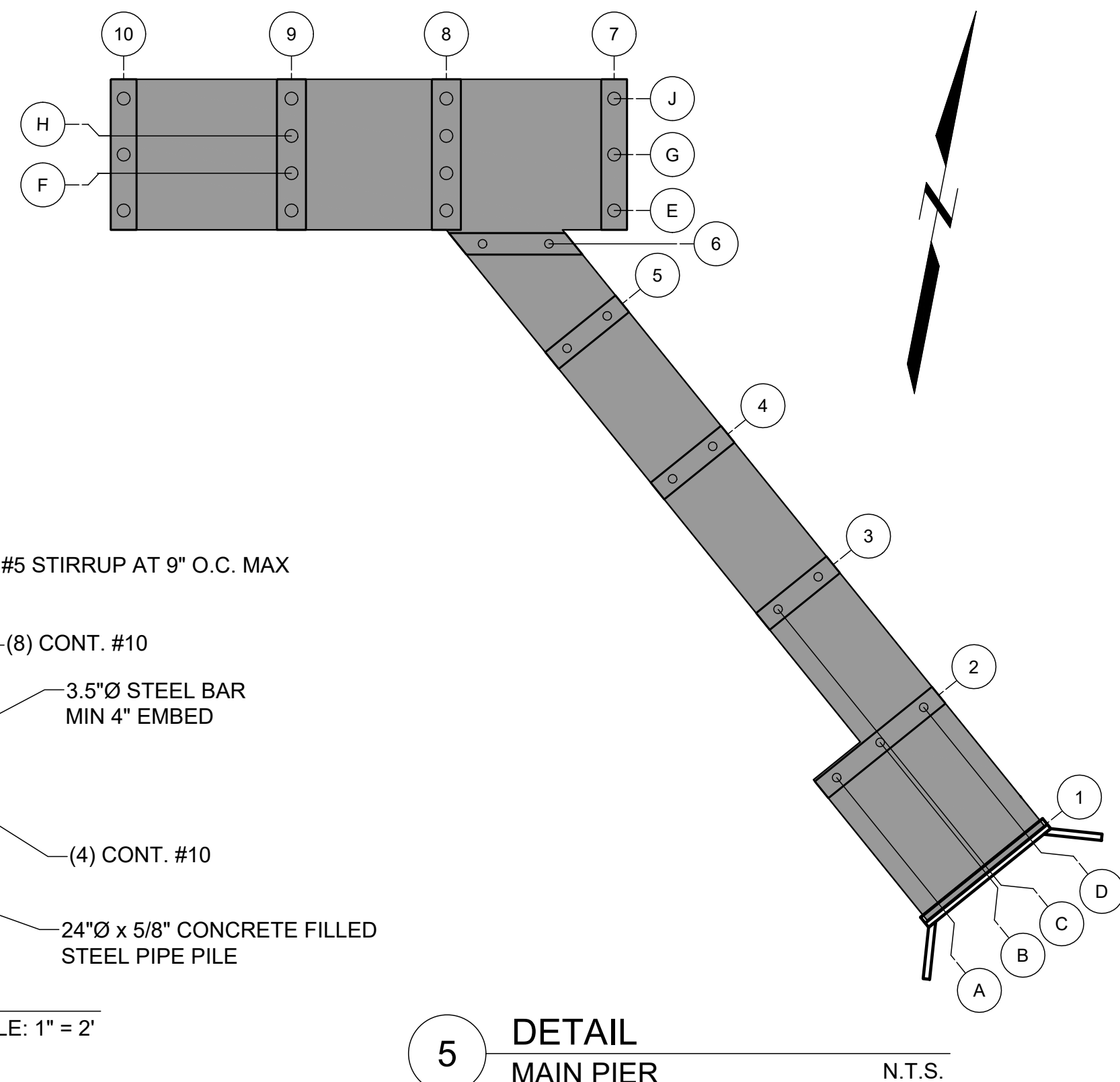
E
SECTION
MAIN PIER
BENT 8 & 9

SCALE: 1" = 2'



F
SECTION
MAIN PIER
BENT 8 & 9

SCALE: 1" = 2'



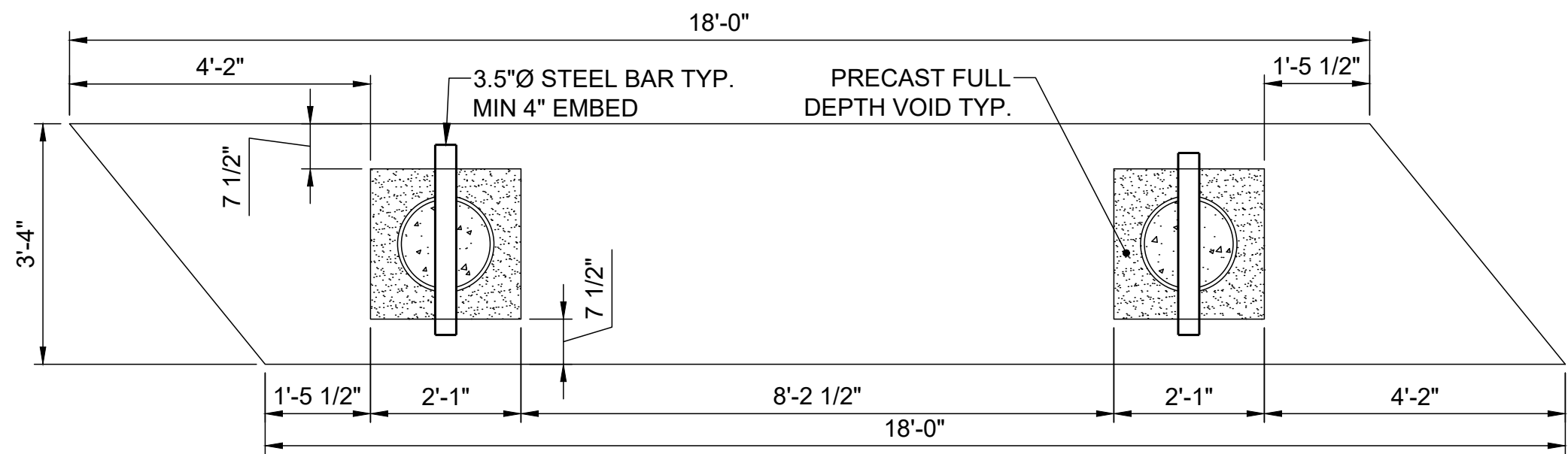
5
DETAIL
MAIN PIER

N.T.S.

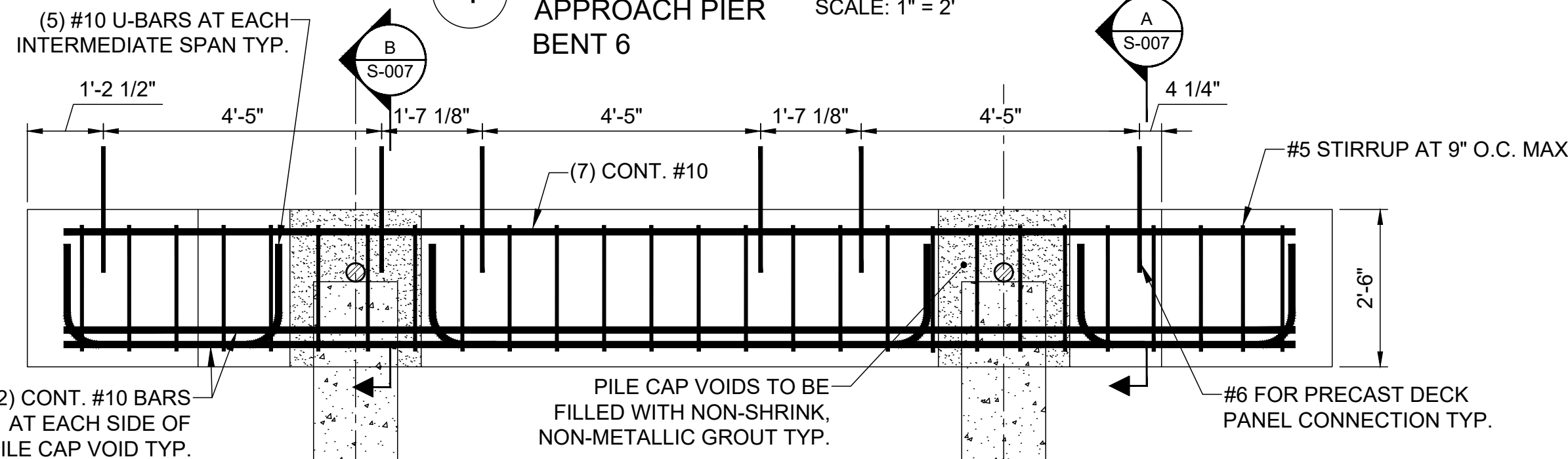
FOR PERMIT

SHEET NAME				SHEET NO.	
PRECAST PILE CAP PLAN AND SECTIONS 1 OF 2				S-006	

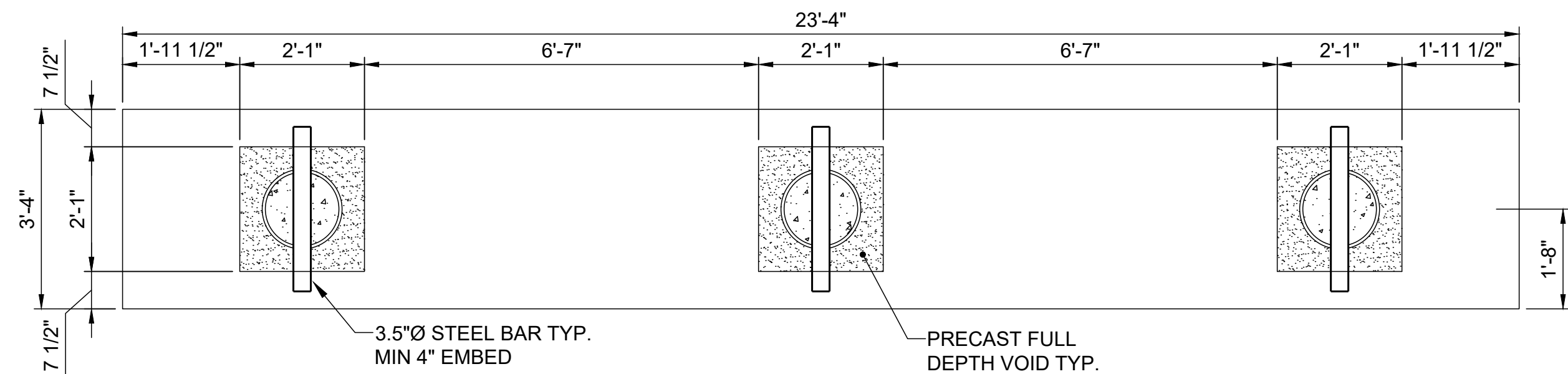
BANNON.DAN 1/16/2024 Data Storage\Working\UNIVERSITY OF NEW ENGLAND\2203703 UNE Marine Science Center Pier\00 CAD\Design\Sheets\2203703-S-007.dwg - 4/16/2025



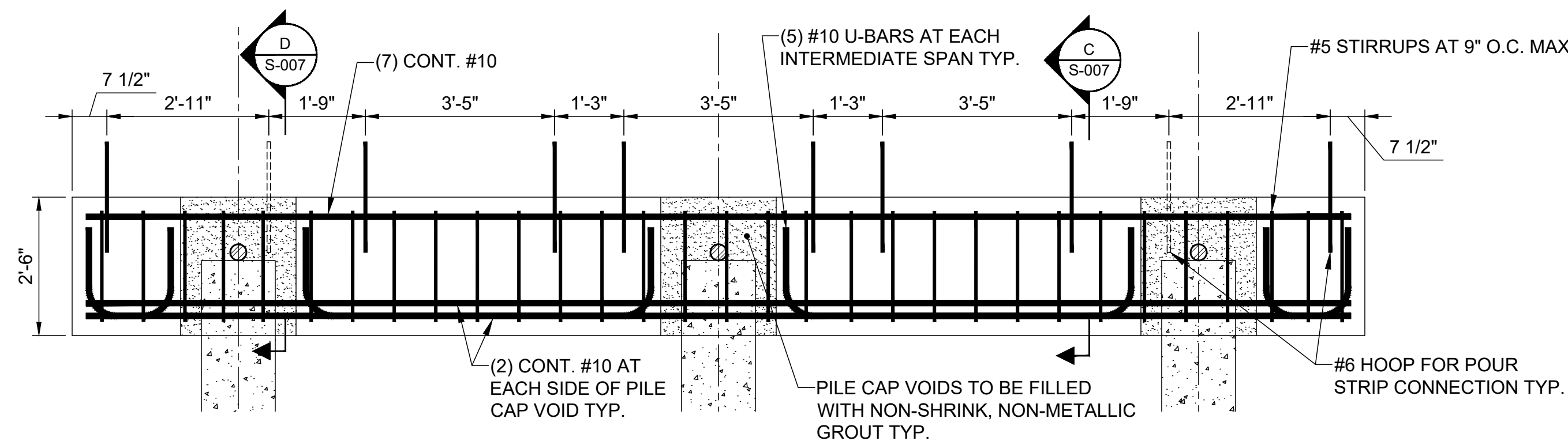
1
DETAIL-PLAN
APPROACH PIER
BENT 6
SCALE: 1" = 2'



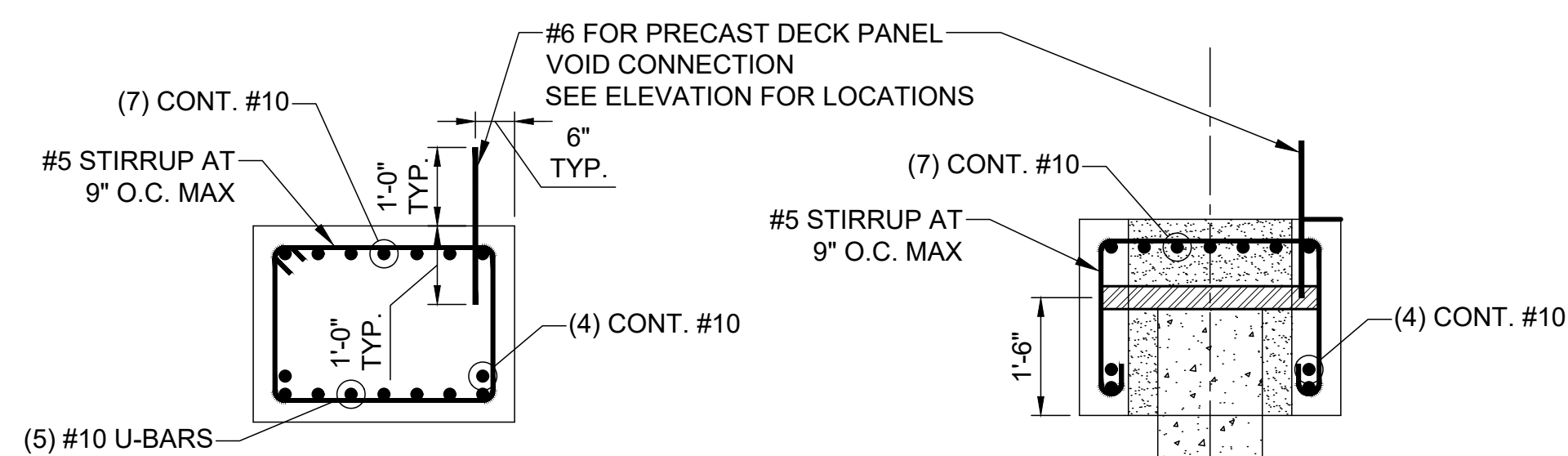
2
ELEVATION
APPROACH PIER
BENT 6
SCALE: 1" = 2'



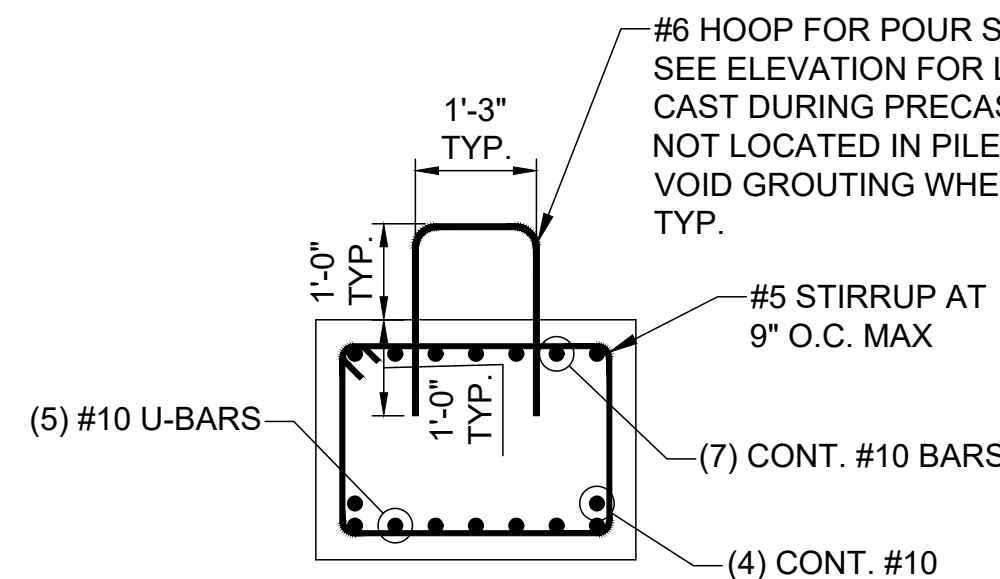
3
DETAIL-PLAN
APPROACH PIER
BENT 2
SCALE: 1" = 2'



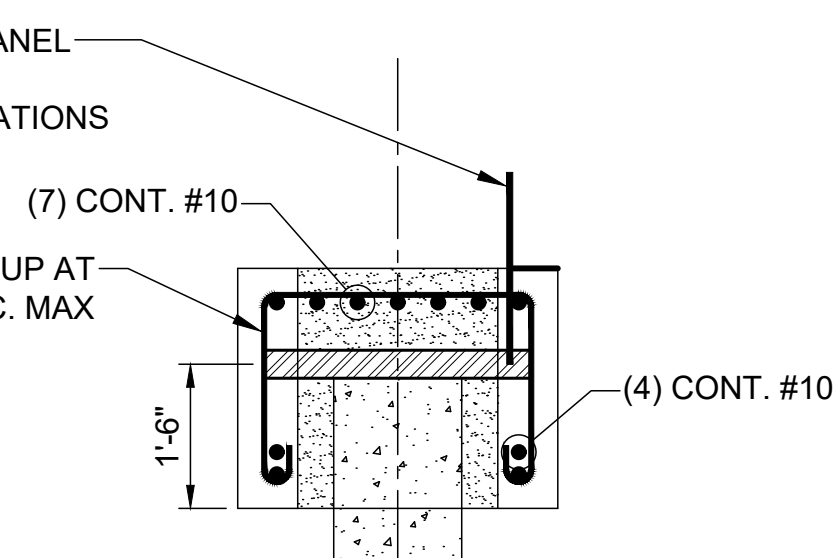
4
ELEVATION
APPROACH PIER
BENT 2
SCALE: 1" = 2'



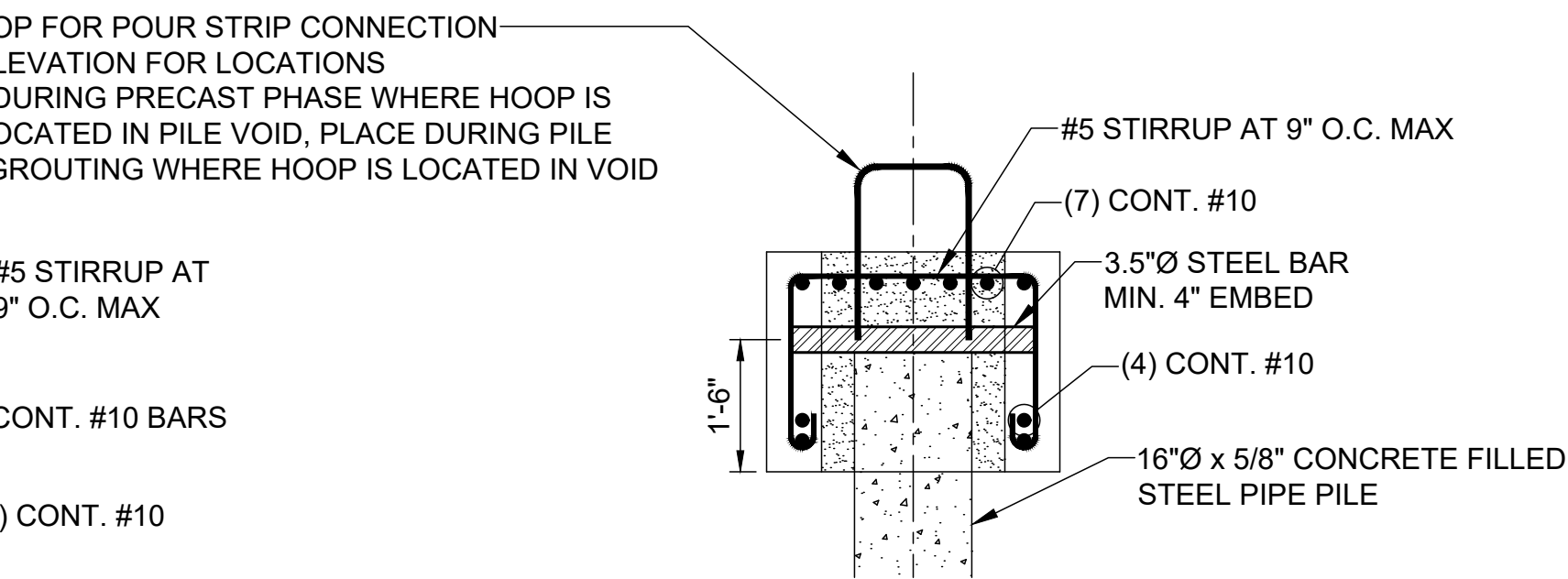
A
SECTION
APPROACH PIER
BENT 6
SCALE: 1" = 2'



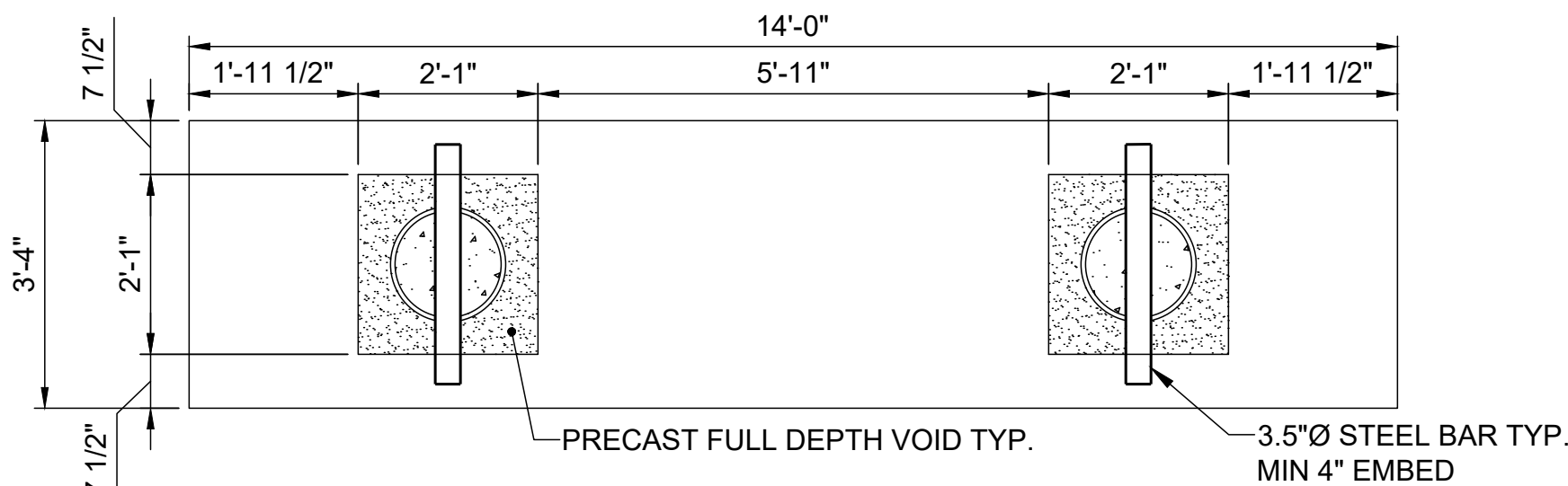
C
SECTION
APPROACH PIER
BENTS 2-5
SCALE: 1" = 2'



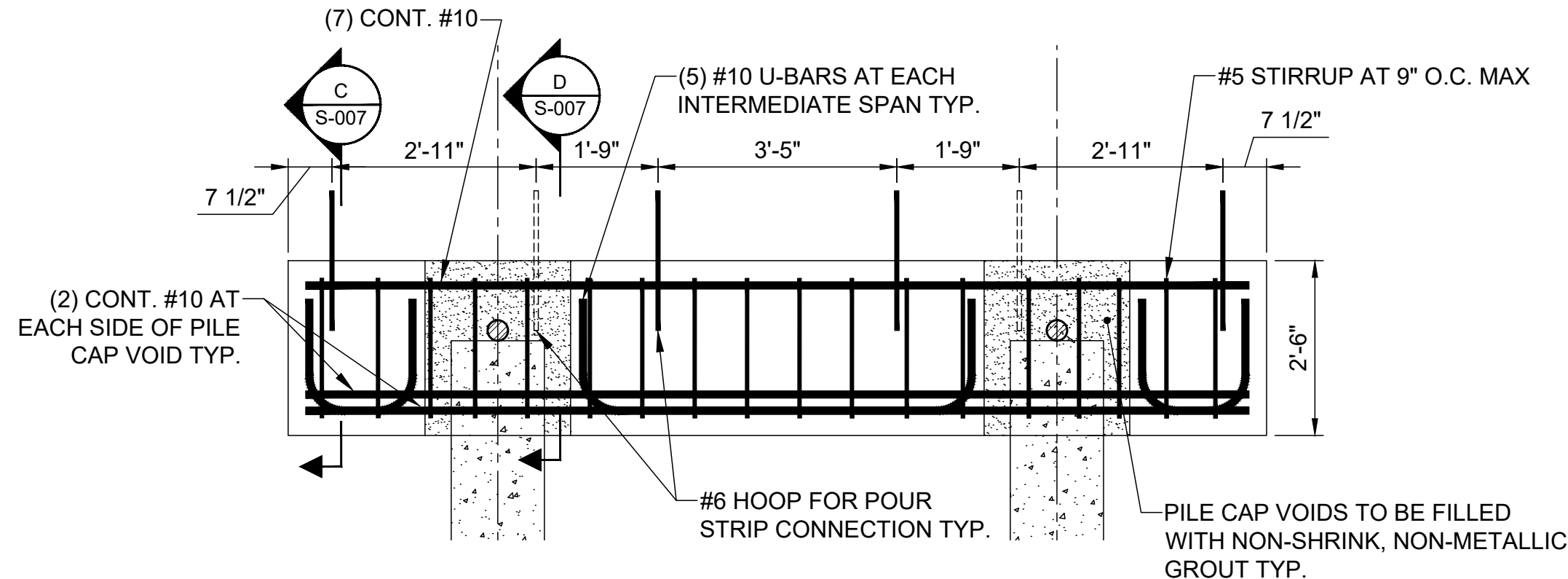
B
SECTION
APPROACH PIER
BENT 6
SCALE: 1" = 2'



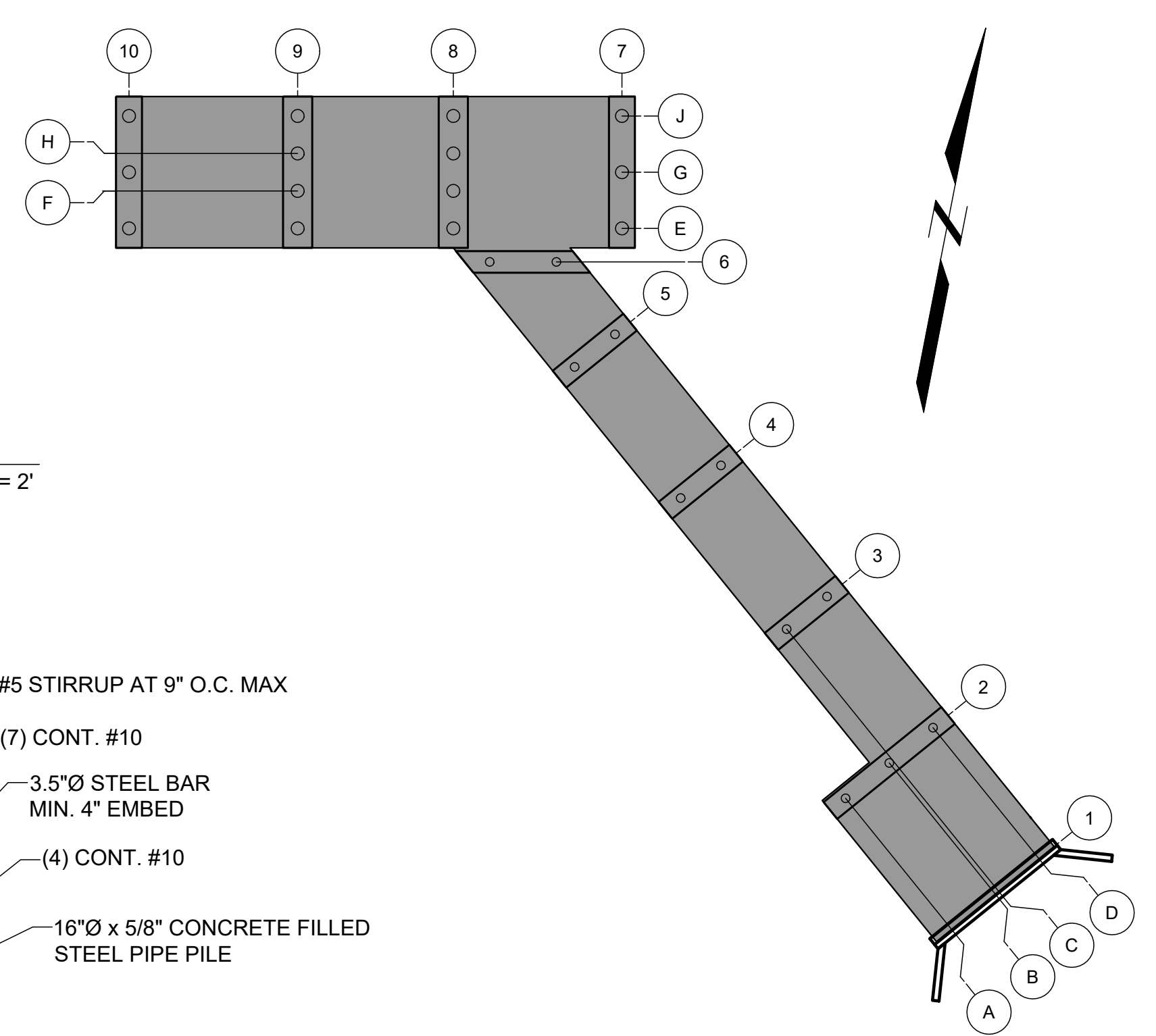
D
SECTION
APPROACH PIER
BENTS 2-5
SCALE: 1" = 2'



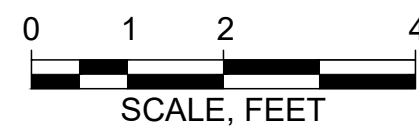
5
DETAIL-PLAN
APPROACH PIER
BENTS 3-5
SCALE: 1" = 2'



6
ELEVATION
APPROACH PIER
BENTS 3-5
SCALE: 1" = 2'



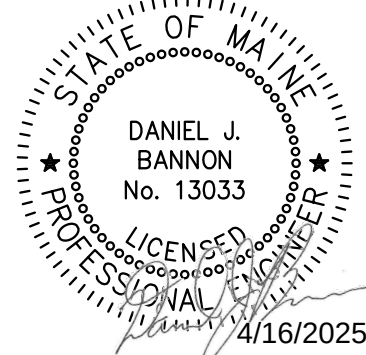
7
DETAIL
MAIN PIER
N.T.S.



ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1
If this scale bar
does not measure
1" then drawing is
not original scale.



Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



UNE
UNIVERSITY OF
NEW ENGLAND
11 HILLS BEACH RD.
BIDDEFORD, MAINE

UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

NO	DATE	ISSUE/REVISION	APP
7	4/16/2025	BIDDEFORD PERMIT APP.	DJB
6	9/17/2024	REVISED PERMIT SET	DJB
5	6/27/2024	REVISED PERMIT SET	DJB
4	9/14/2023	DEP PERMIT SET	DJB
3	6/28/2023	75% DESIGN SUBMISSION	DJB
2	2/15/2023	30% DESIGN SUBMISSION	DJB
1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB

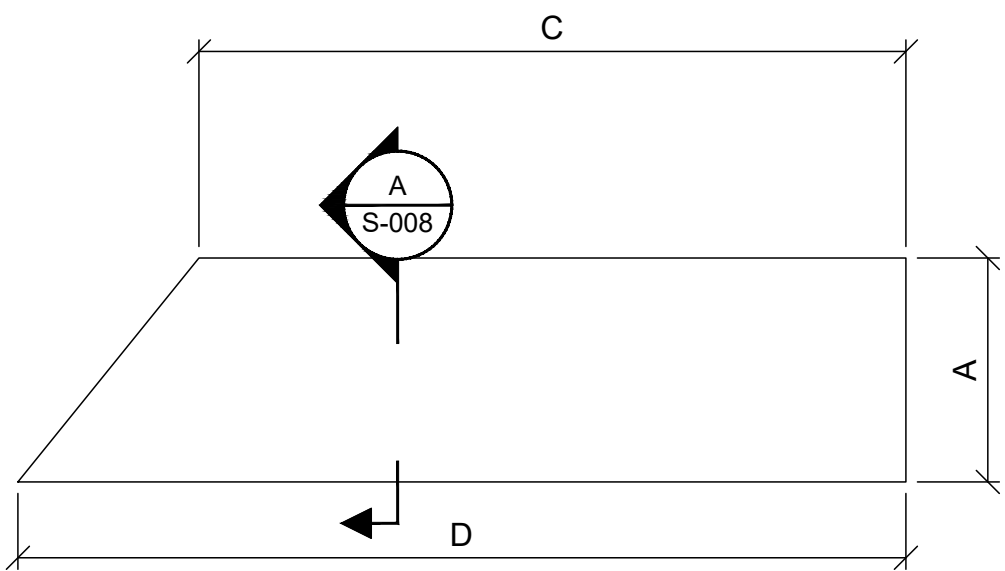
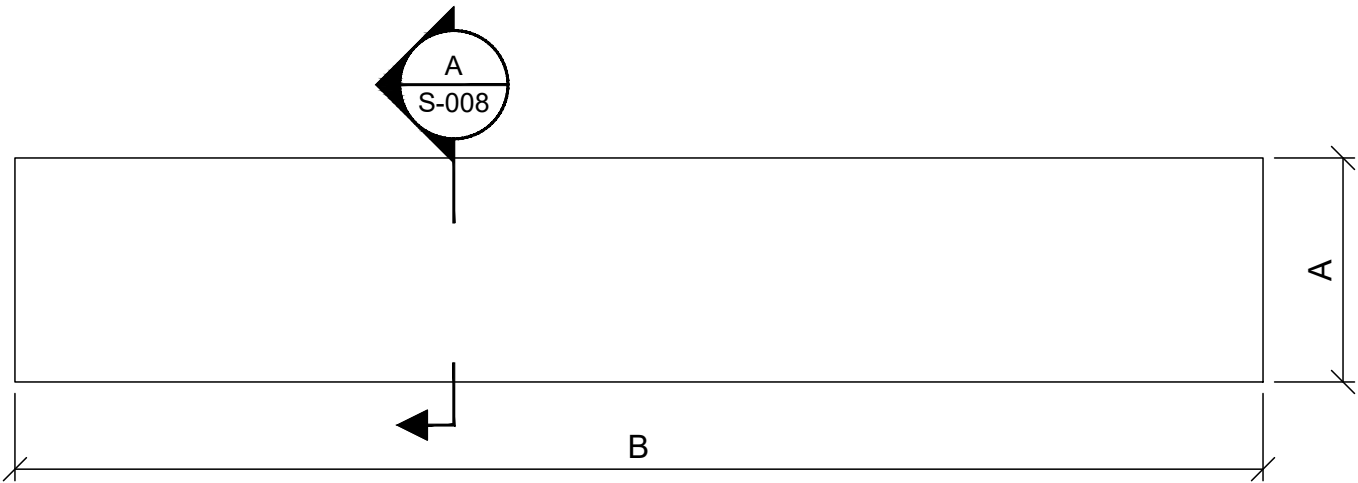
SHEET NAME
**PRECAST PILE CAP PLAN
AND SECTIONS
2 OF 2**

SHEET NO.
S-007

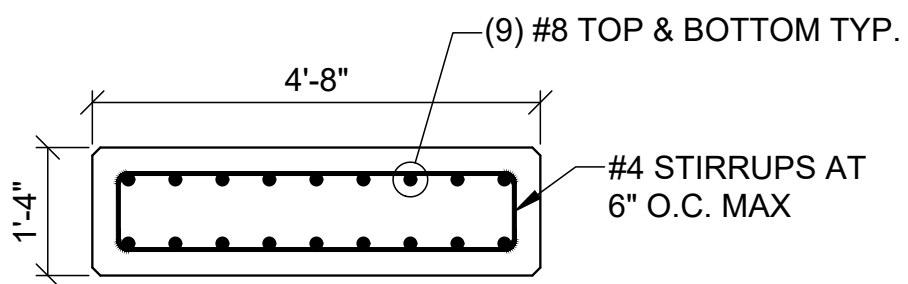
FOR PERMIT

BANNON, DAN | bas14502Data_Storage\Working\UNIVERSITY OF NEW ENGLAND\203703 UNE Marine Science Center Pier\00_CAD\Design\Sheets\203703-S-008.dwg - 4/16/2025

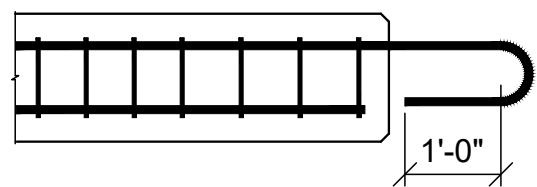
PRECAST DECK PANEL SCHEDULE					
PANEL ID	A	B	C	D	QTY.
A	4'-8"	25'-2"	-	-	5
B	4'-8"	24'-3"	-	-	9
C	4'-8"	-	13'-3"	17'-0"	1
D	4'-8"	-	17'-0"	20'-9 1/2"	1
E	4'-8"	-	20'-9 1/2"	24'-7"	1
F	4'-8"	26'-0"	-	-	10
G	4'-8"	22'-0"	-	-	5



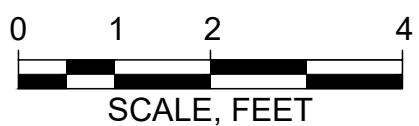
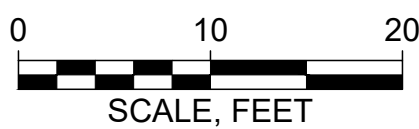
1 DETAIL-PLAN
PRECAST DECK PANEL SCALE: 1"=4'



A SECTION
PRECAST DECK PANEL SCALE: 1"=2'

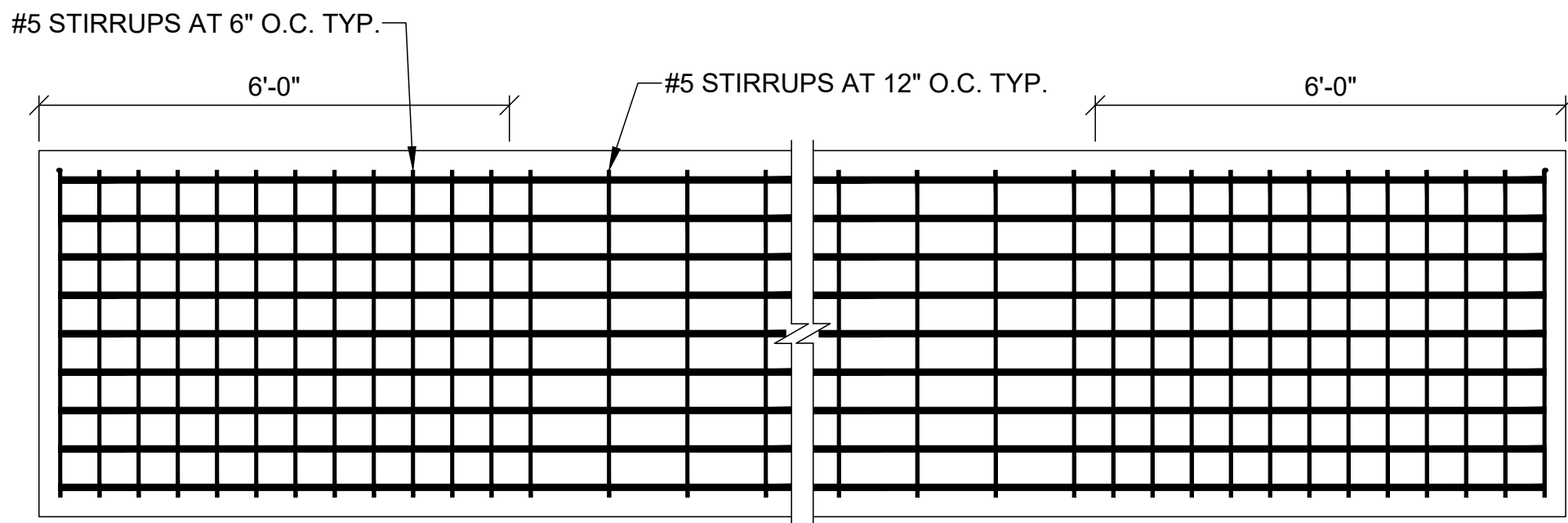


B SECTION
PRECAST DECK PANEL
CONNECTION END 2 & 3 SCALE: 1"=2'

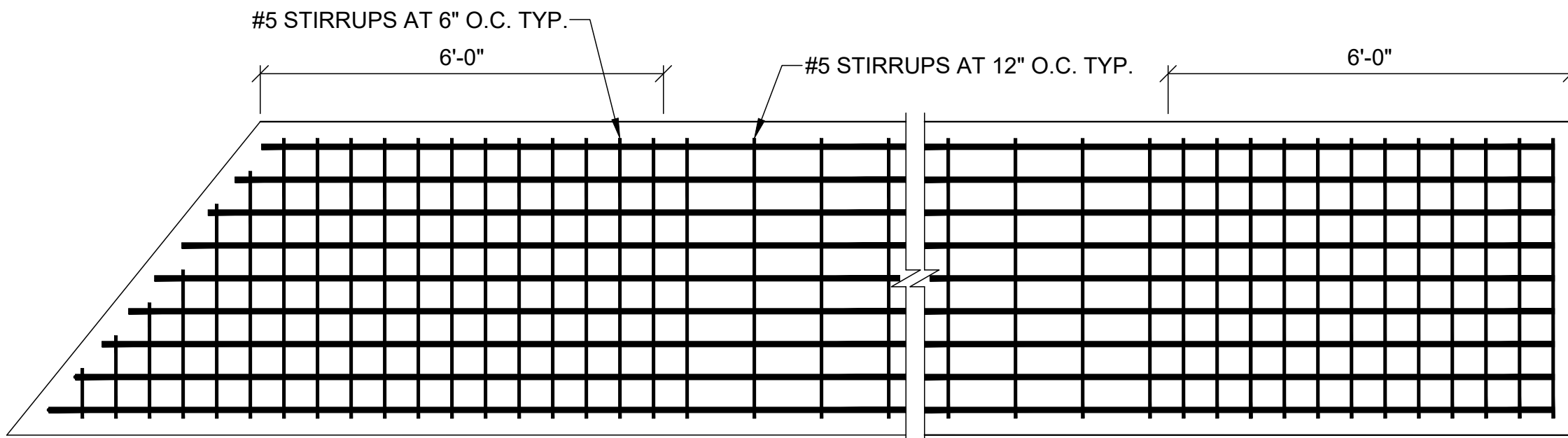


ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

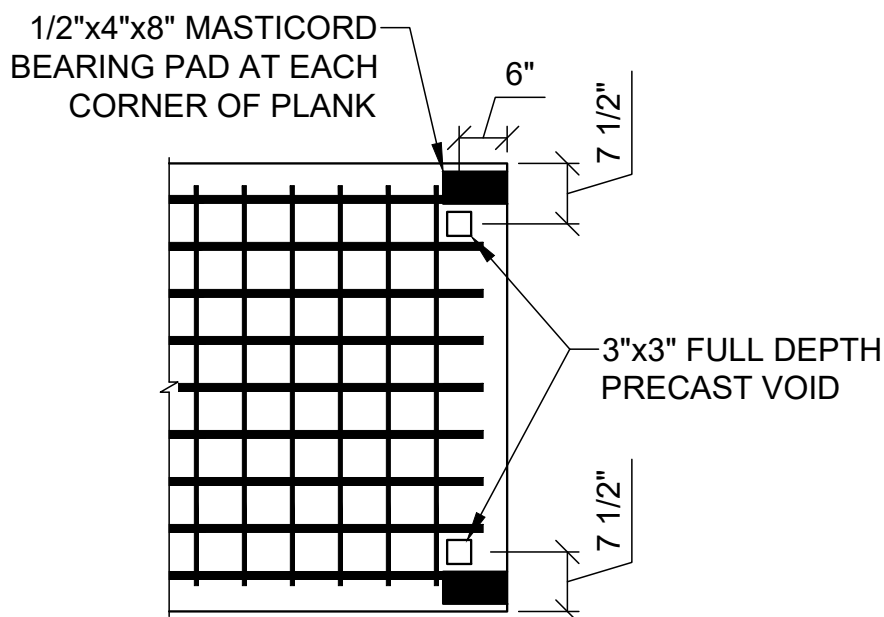
*PROJECT DATUM



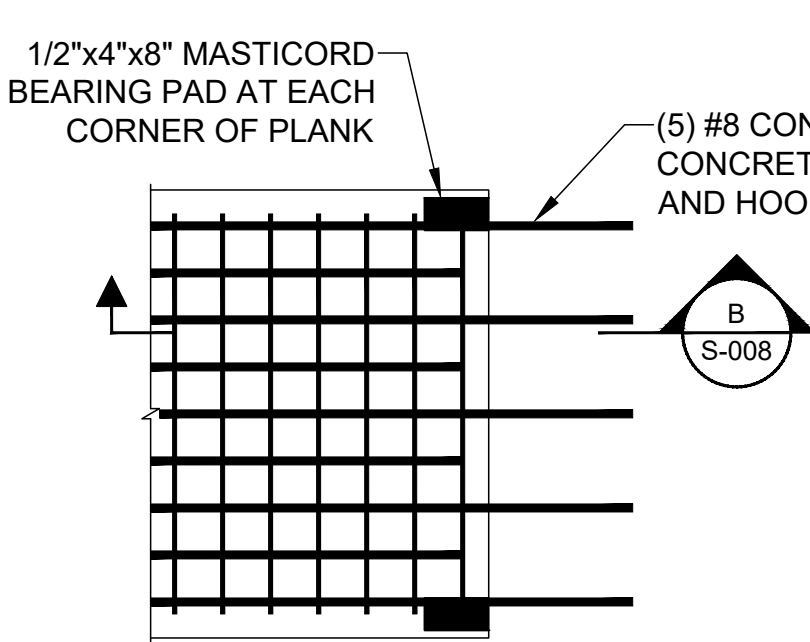
3 DETAIL-PLAN PLANKS A, B, F, & G
PRECAST DECK PANEL
STIRRUP SPACING SCALE: 1"=2'



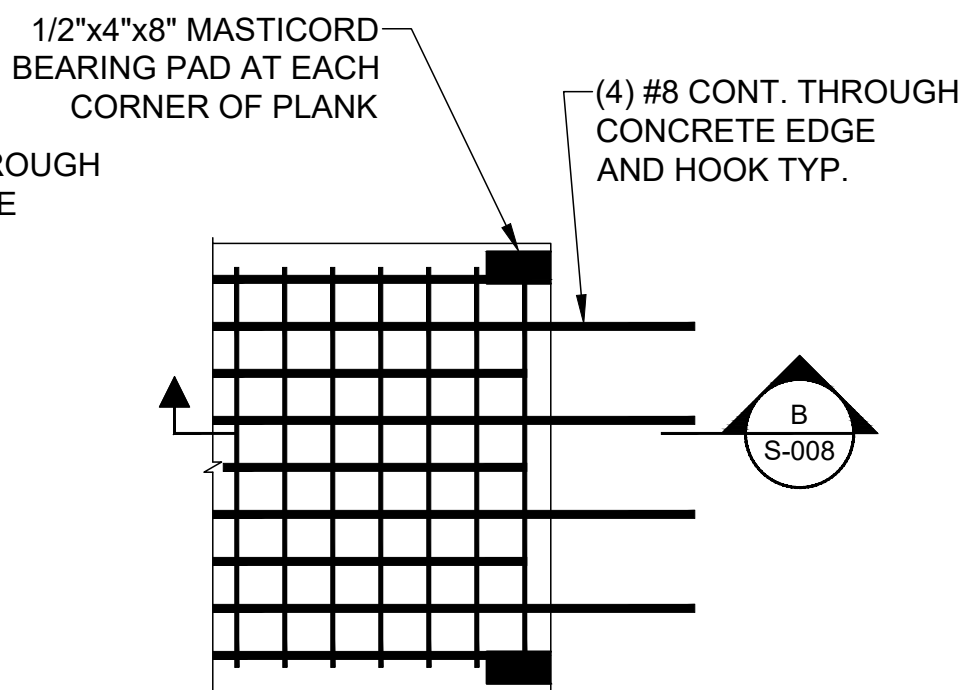
4 DETAIL-PLAN PLANKS C, D, & E
PRECAST DECK PANEL
STIRRUP SPACING SCALE: 1"=2'



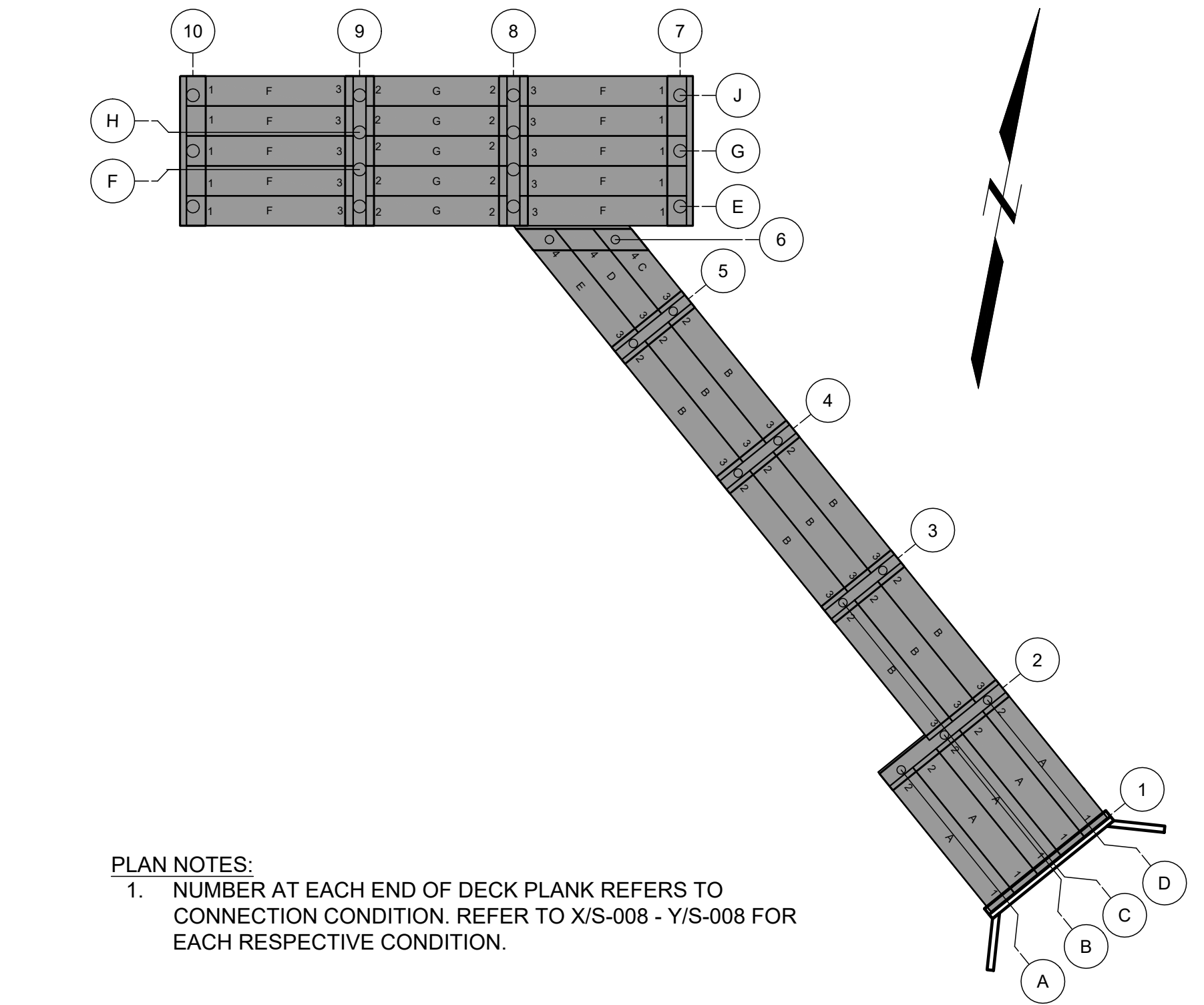
5 DETAIL - PLAN
DECK PANEL
CONNECTION 1 SCALE: 1"=2'



6 DETAIL - PLAN
DECK PANEL
CONNECTION 2 SCALE: 1"=2'

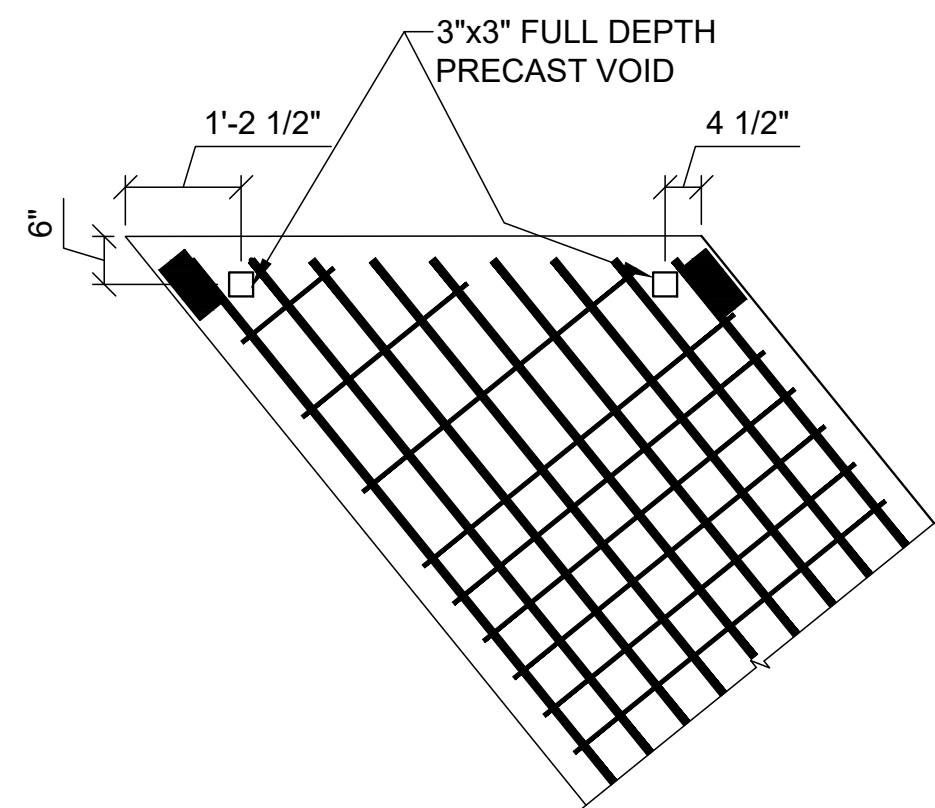


7 DETAIL - PLAN
DECK PANEL
CONNECTION 3 SCALE: 1"=2'



PLAN NOTES:
1. NUMBER AT EACH END OF DECK PLANK REFERS TO CONNECTION CONDITION. REFER TO X/S-008 - Y/S-008 FOR EACH RESPECTIVE CONDITION.

9 DETAIL
PIER DECK PANELS N.T.S.

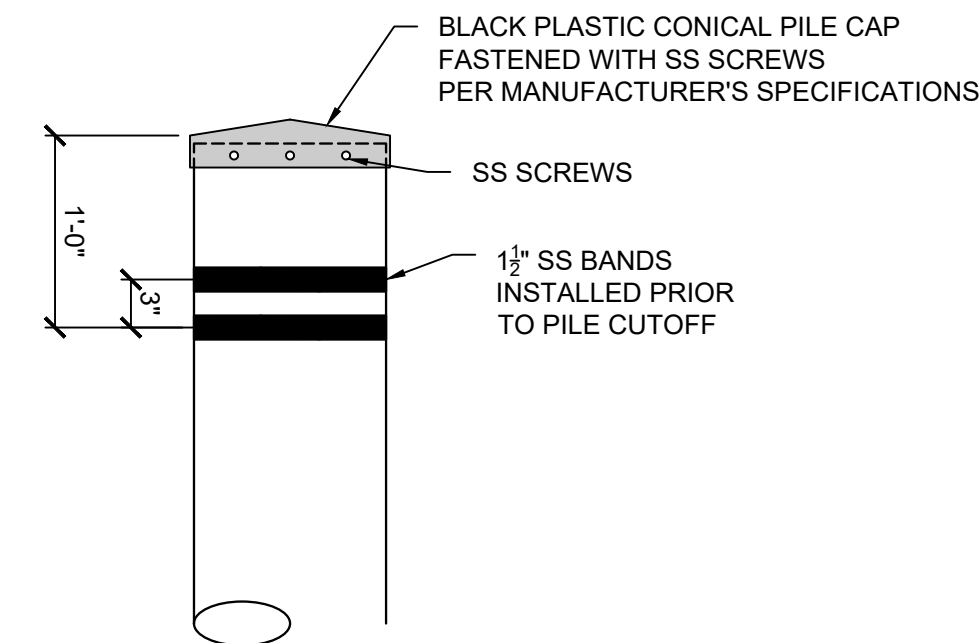
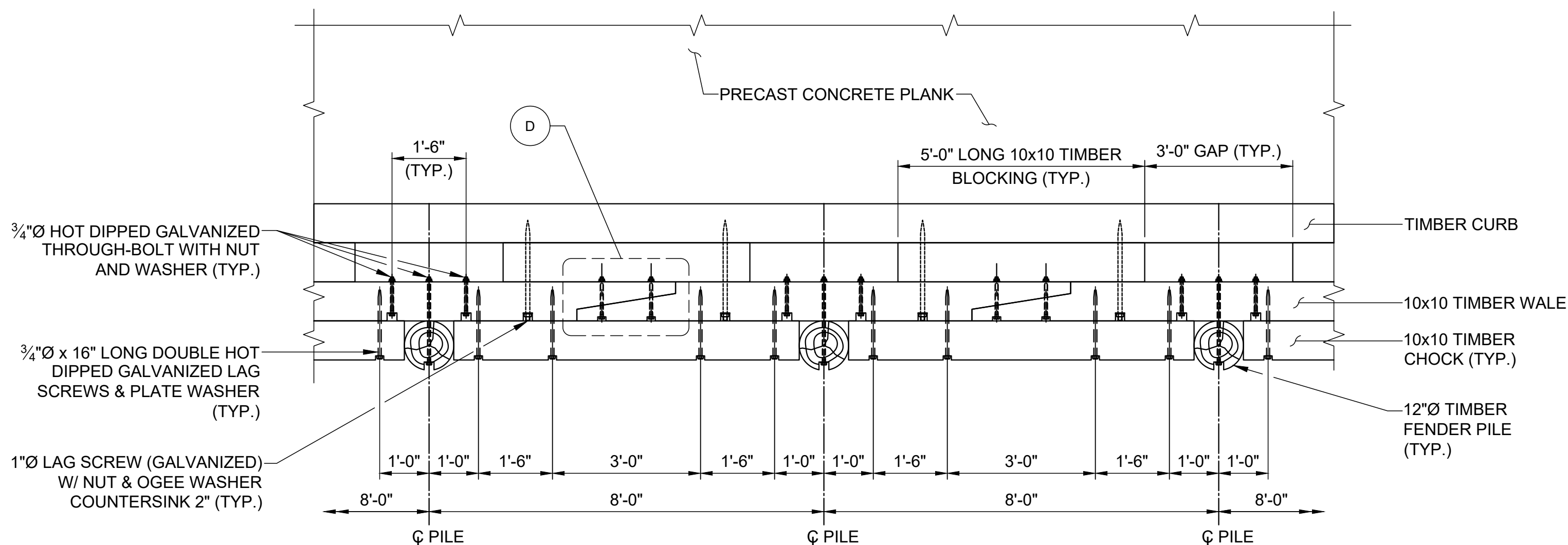
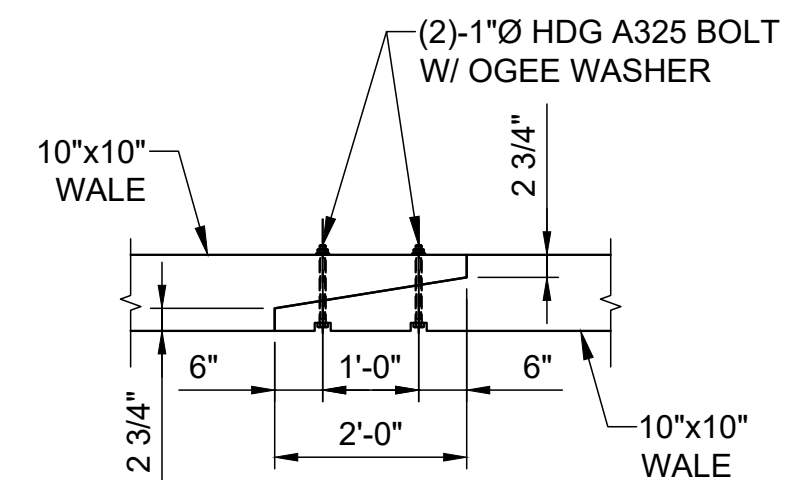
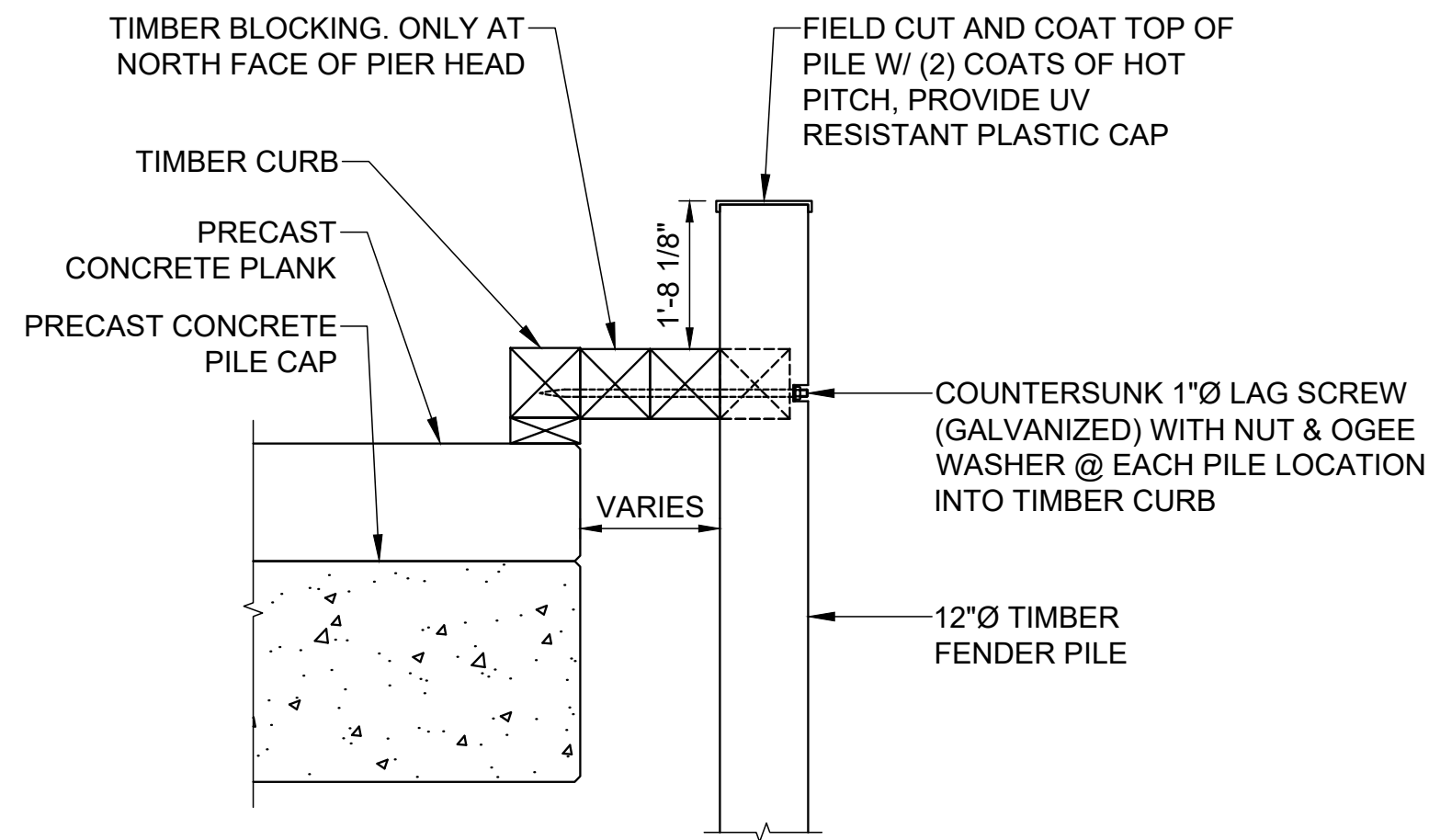
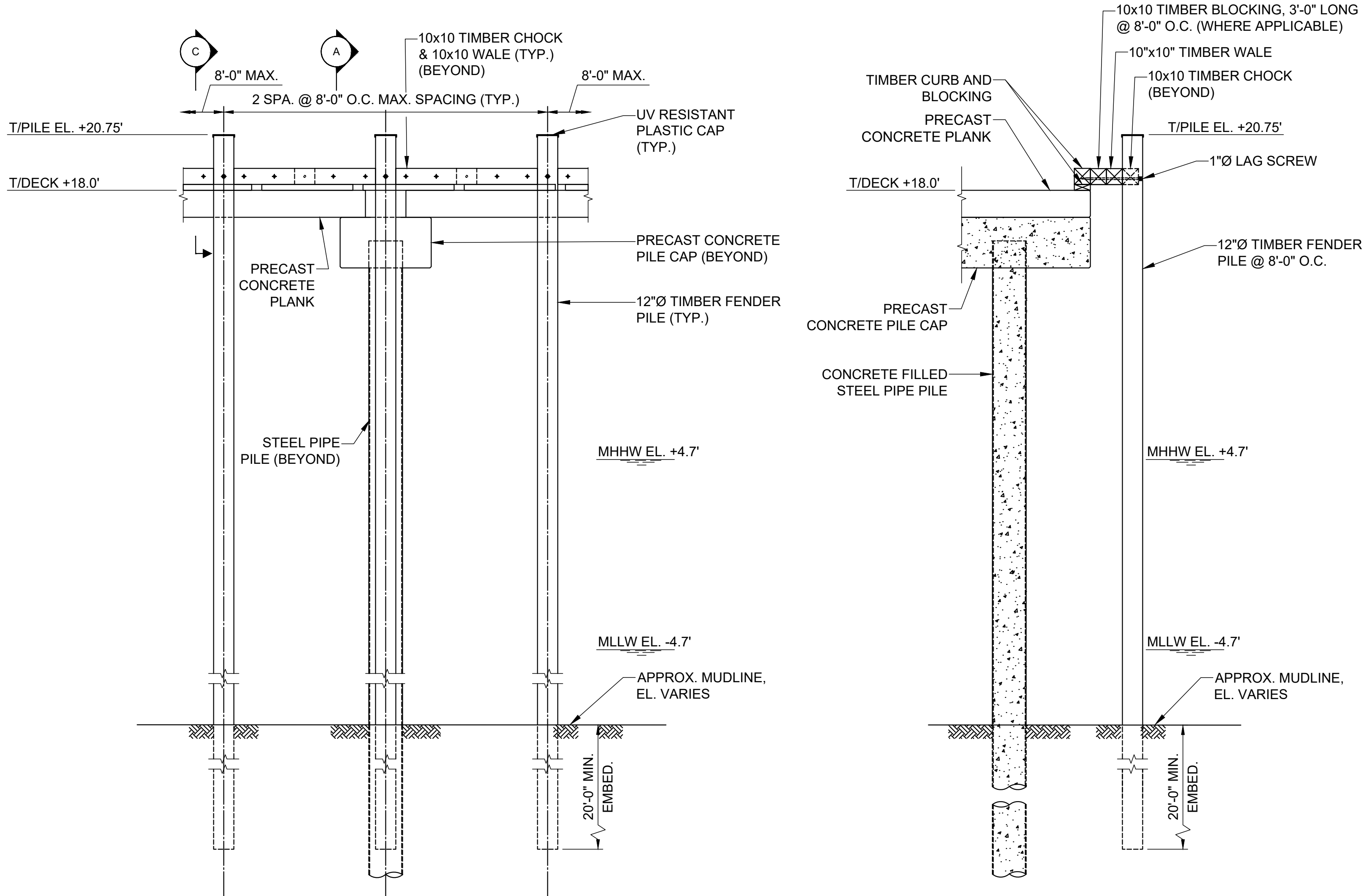


8 DETAIL - PLAN
DECK PANEL
CONNECTION 1 SCALE: 1"=2'

FOR PERMIT

Attention: 01" If this scale bar does not measure 1" then drawing is not original scale.	STATE OF MAINE DANIEL J. BANNON No. 13033 PROFESSIONAL ENGINEER 4/16/2025	Designed: DJB	GEI Consultants GEI CONSULTANTS, INC. 5 MILK STREET PORTLAND, ME 04101 (207)797-8901	UNE UNIVERSITY OF NEW ENGLAND 11 HILLS BEACH RD. BIDDEFORD, MAINE	UNIVERSITY OF NEW ENGLAND MARINE SCIENCE CENTER PIER 11 HILLS BEACH ROAD BIDDEFORD, YORK COUNTY, MAINE	7	4/16/2025	BIDDEFORD PERMIT APP.	DJB	SHEET NAME PRECAST DECK PANEL PLAN	SHEET NO. S-008		
		Drawn: JAM				6	9/17/2024	REVISED PERMIT SET	DJB				
		Checked: BJB				5	6/27/2024	REVISED PERMIT SET	DJB				
		Approved: BMM				4	9/14/2023	DEP PERMIT SET	DJB				
		P.E. No: 13033				3	6/28/2023	75% DESIGN SUBMISSION	DJB				
GEI Project 2203703		2	2/15/2023			30% DESIGN SUBMISSION	DJB	1	12/9/2022			15% DESIGN SUB REV	DJB
		0	11/11/2022			15% DESIGN SUBMISSION	DJB	NO	DATE			ISSUE/REVISION	APP

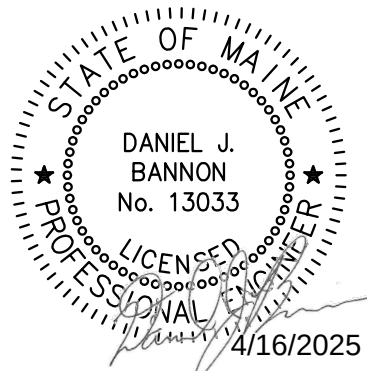
BANNON.DAN 1/16/2025 1:50:02 PM C:\Users\BANNON.DAN\OneDrive\Documents\Projects\2203703\2203703-S-009.dwg - 4/16/2025



ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.



Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



UNE
UNIVERSITY OF
NEW ENGLAND
11 HILLS BEACH RD.
BIDDEFORD, MAINE

**UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER**
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

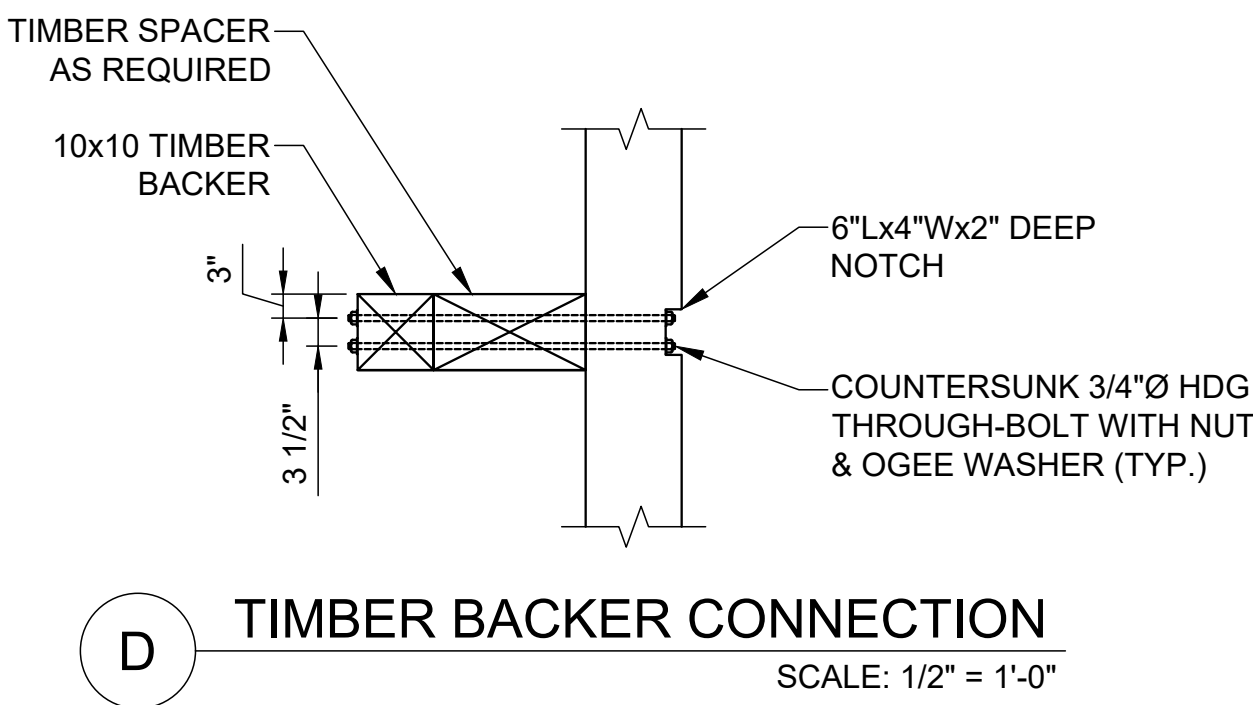
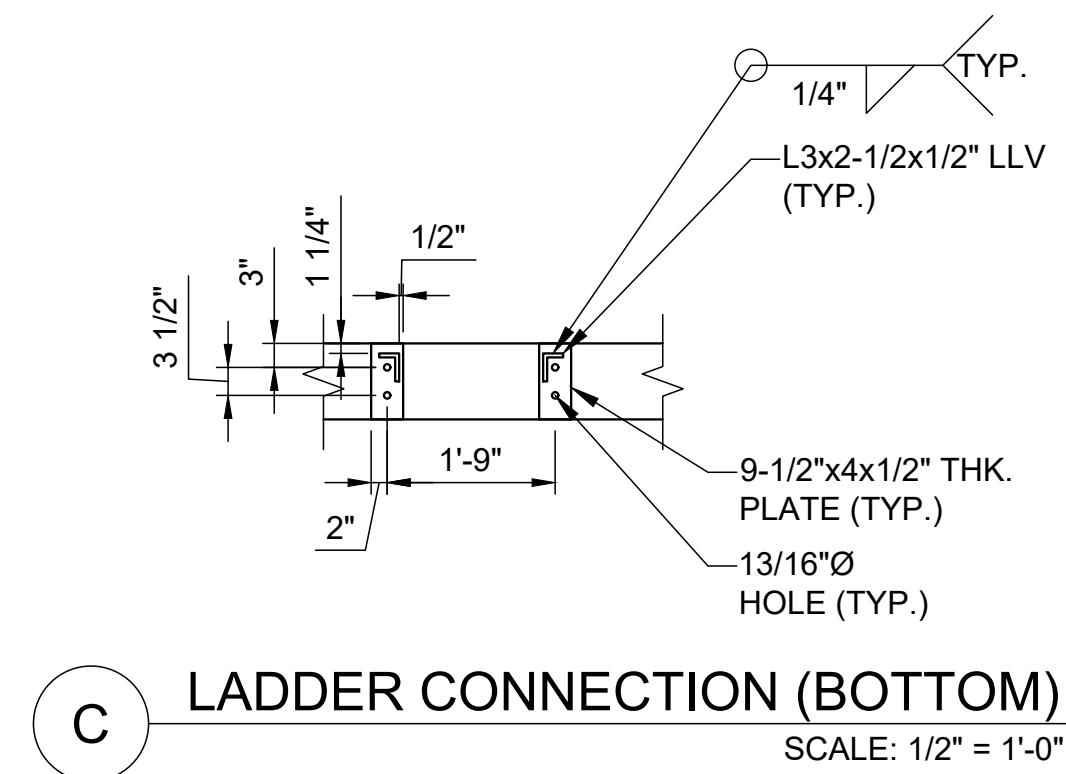
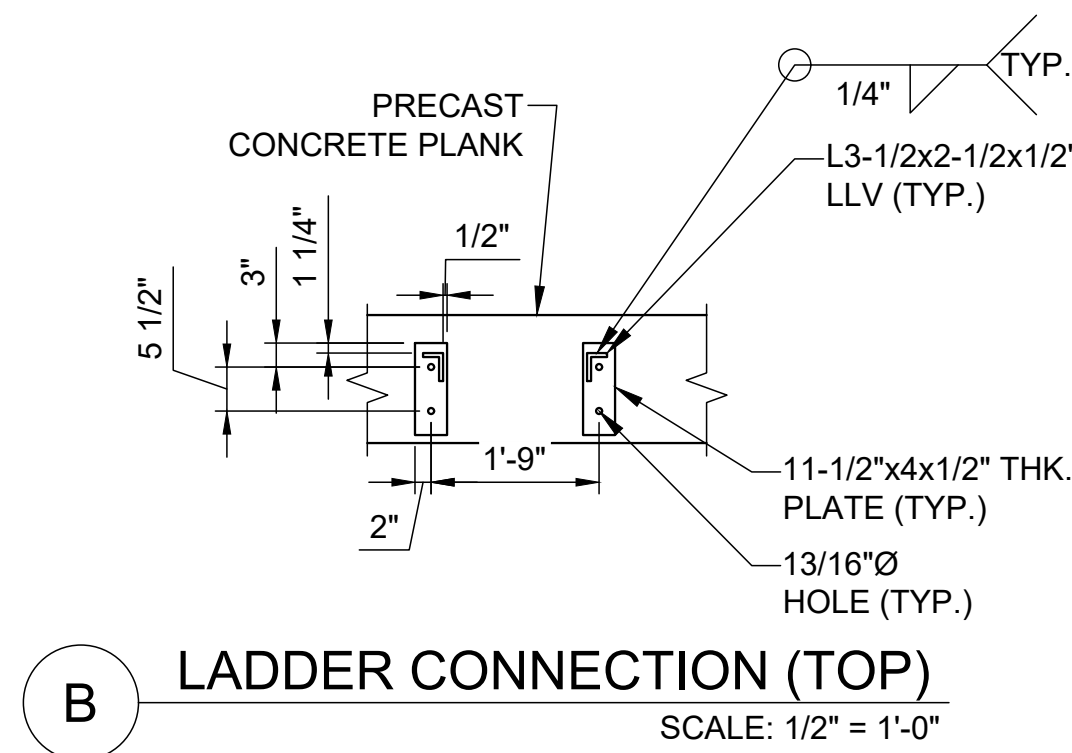
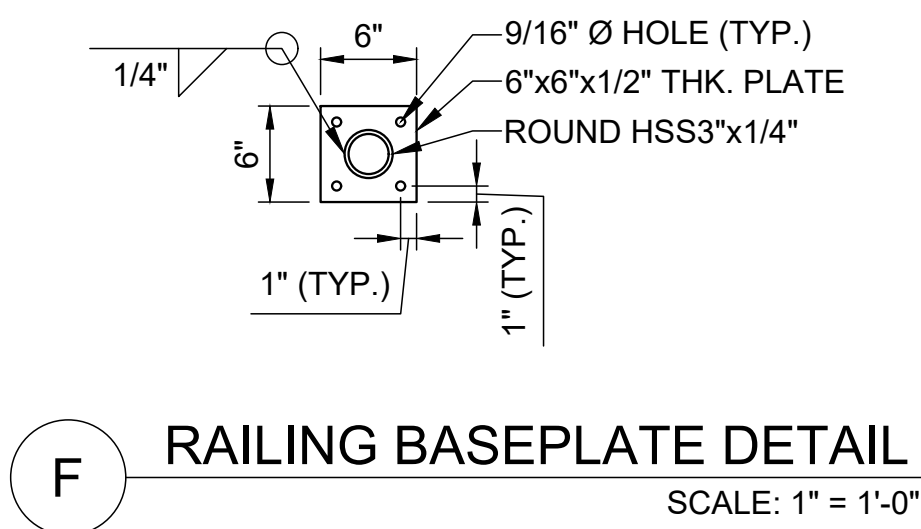
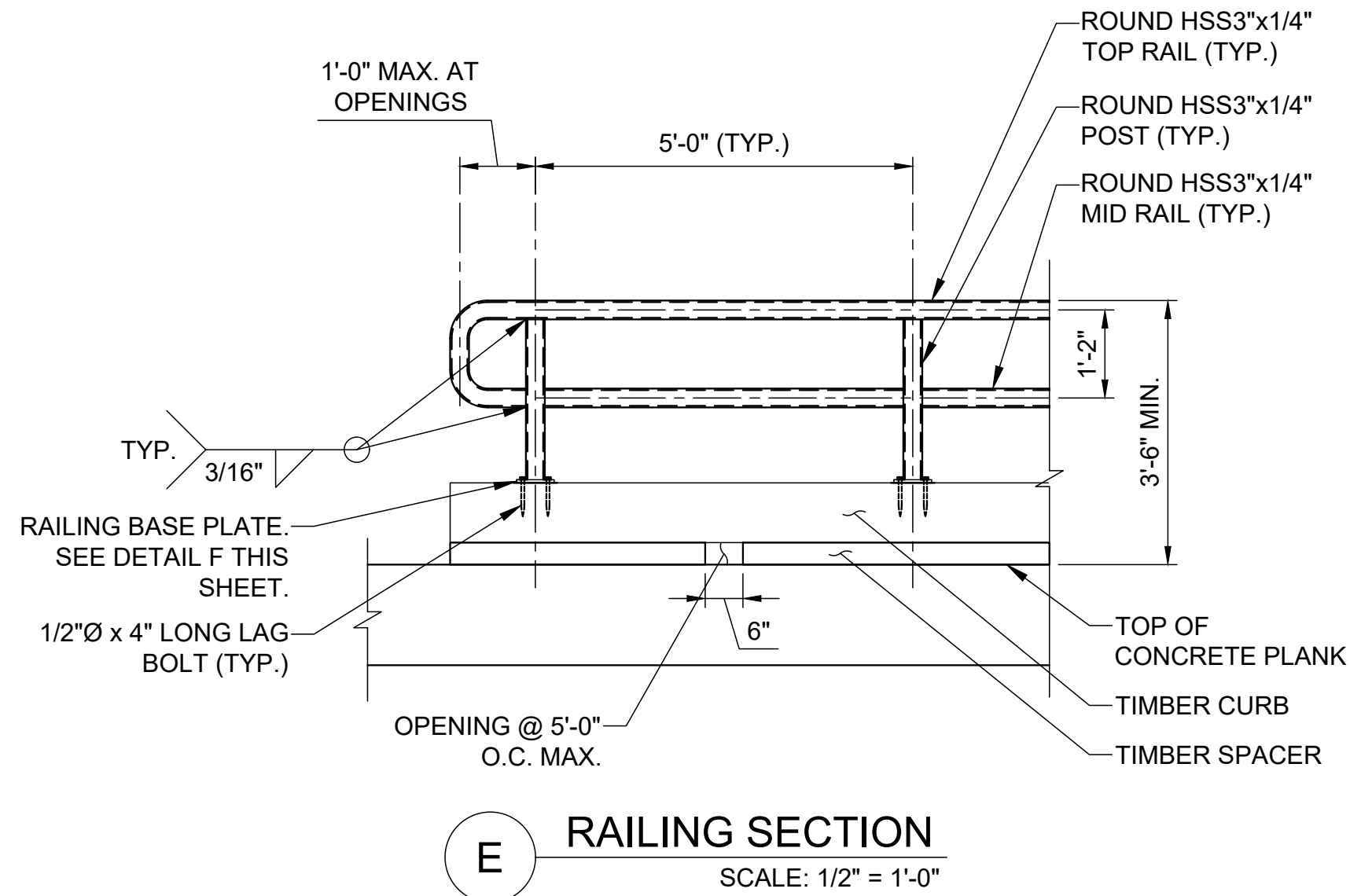
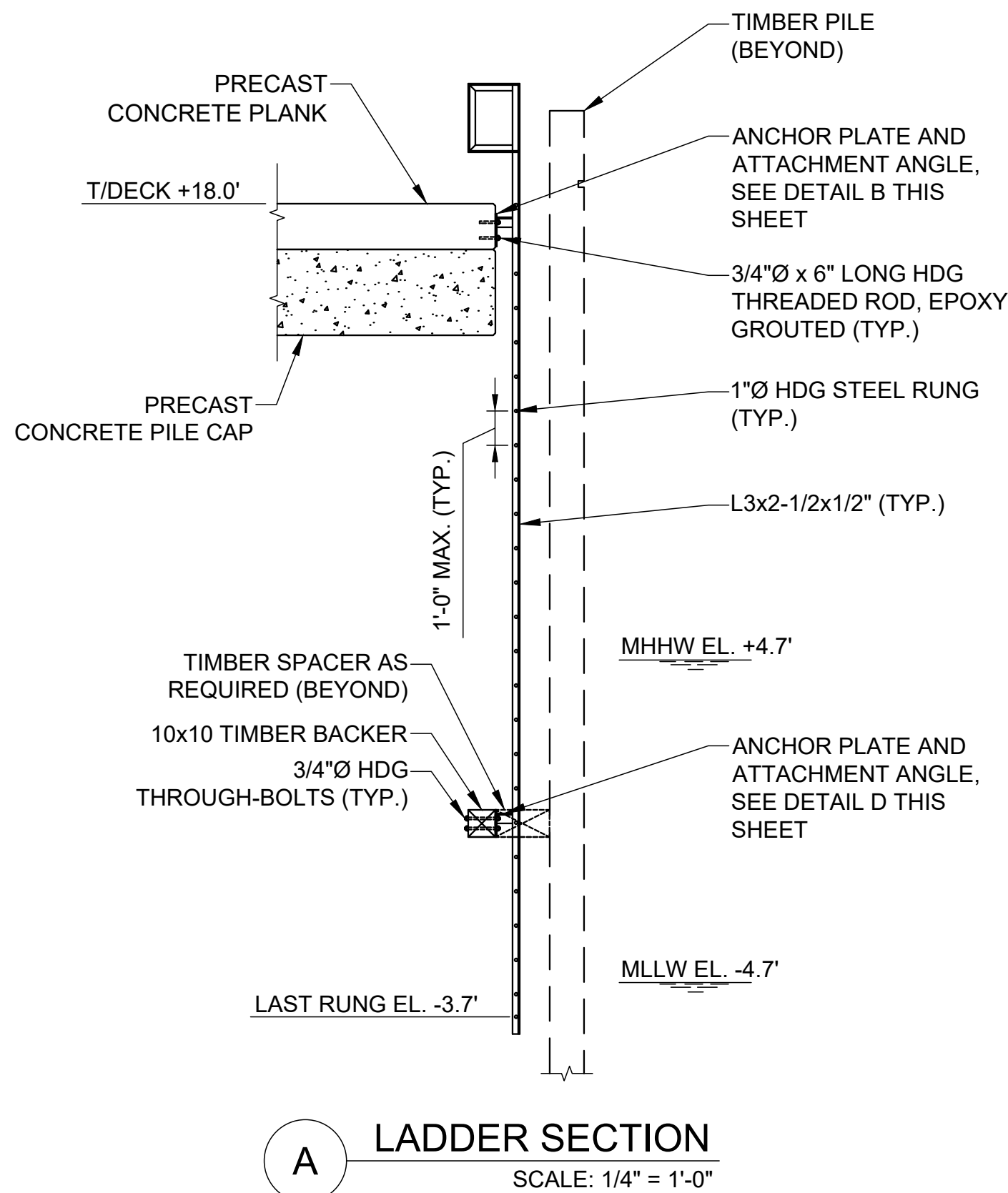
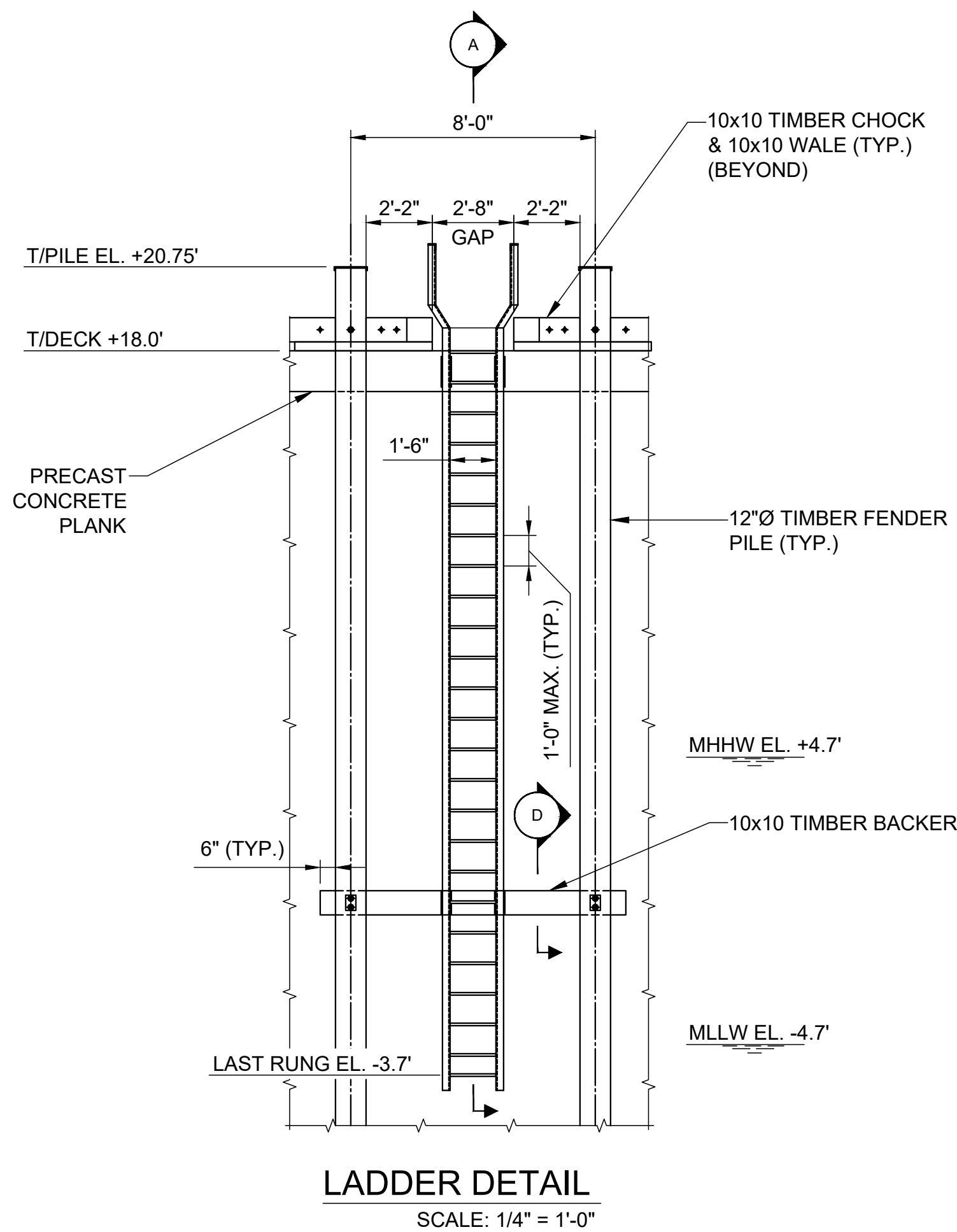
NO	DATE	ISSUE/REVISION	APP
7	4/16/2025	BIDDEFORD PERMIT APP.	DJB
6	9/17/2024	REVISED PERMIT SET	DJB
5	6/27/2024	REVISED PERMIT SET	DJB
4	9/14/2023	DEP PERMIT SET	DJB
3	6/28/2023	75% DESIGN SUBMISSION	DJB
2	2/15/2023	30% DESIGN SUBMISSION	DJB
1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB

SHEET NAME
**MISCELLANEOUS
DETAILS (1 OF 5)**

SHEET NO.
S-009

FOR PERMIT

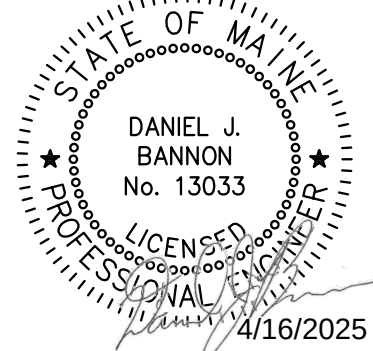
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ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.



<i>Designed:</i>	DJB
<i>Drawn:</i>	JAM
<i>Checked:</i>	BJB
<i>Approved:</i>	BMM
<i>P.E. No:</i>	13033
<i>GEI Project</i>	2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

**UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER**

11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

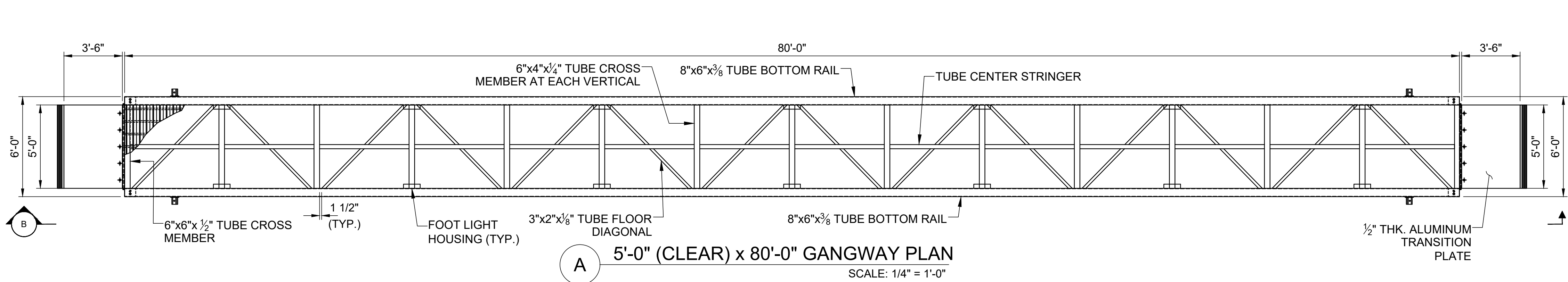
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6	9/17/2024	REVISED PERMIT SET	DJB
5	6/27/2024	REVISED PERMIT SET	DJB
4	9/14/2023	DEP PERMIT SET	DJB
3	6/28/2023	75% DESIGN SUBMISSION	DJB
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1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

SHEET NAME
**MISCELLANEOUS
DETAILS (2 OF 5)**

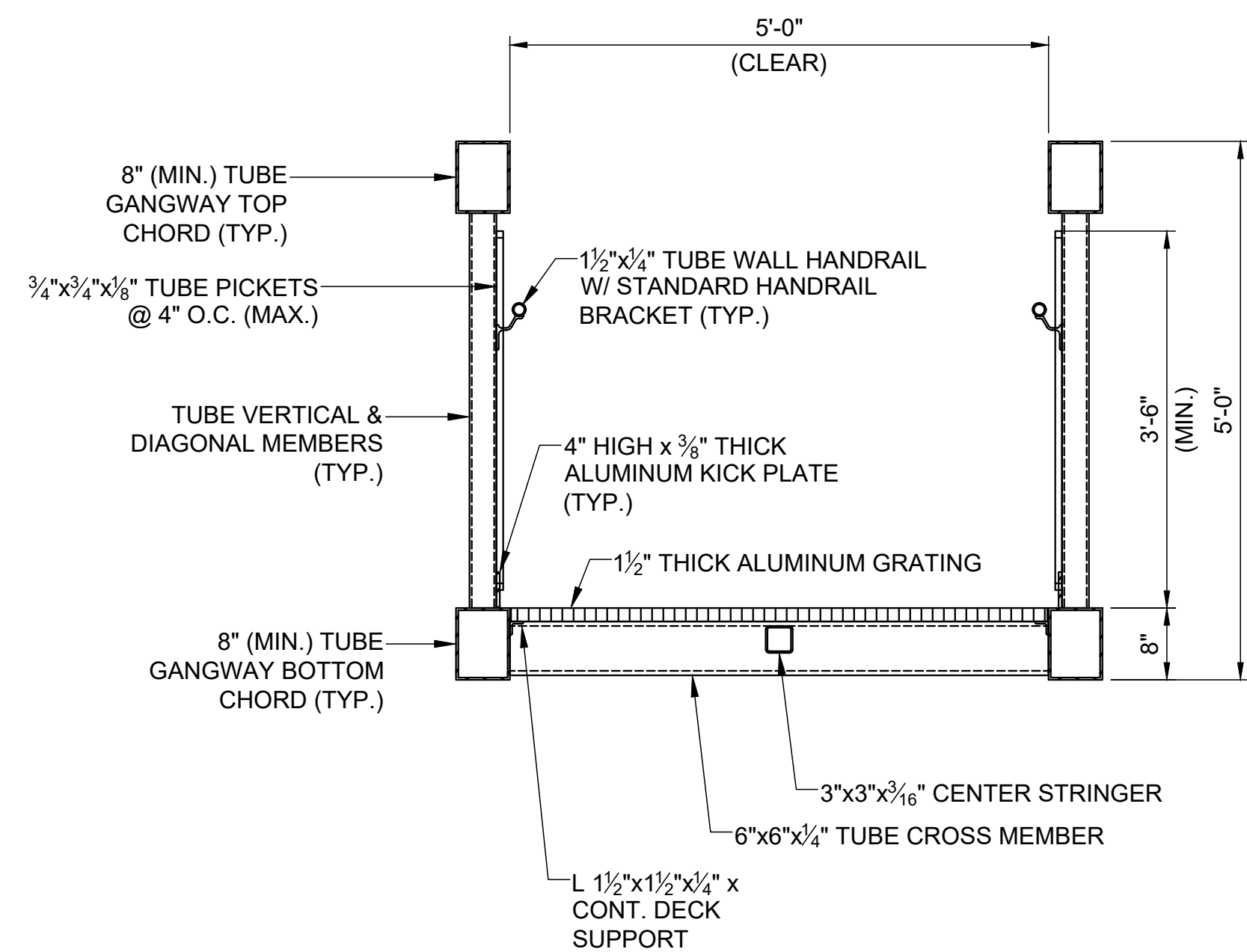
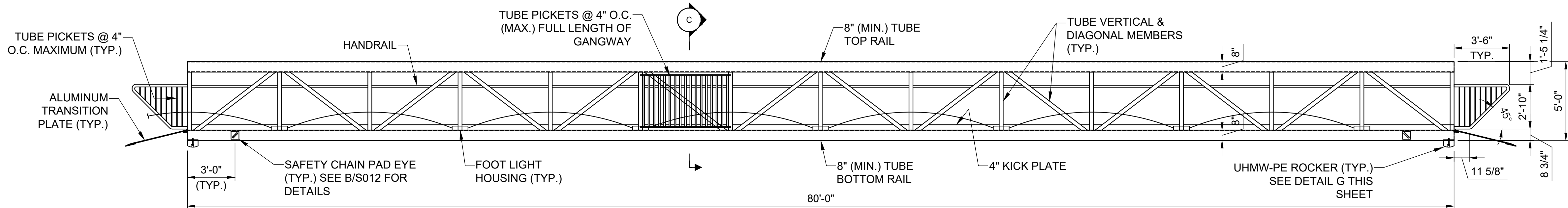
SHEET NO.
S-010

FOR PERMIT

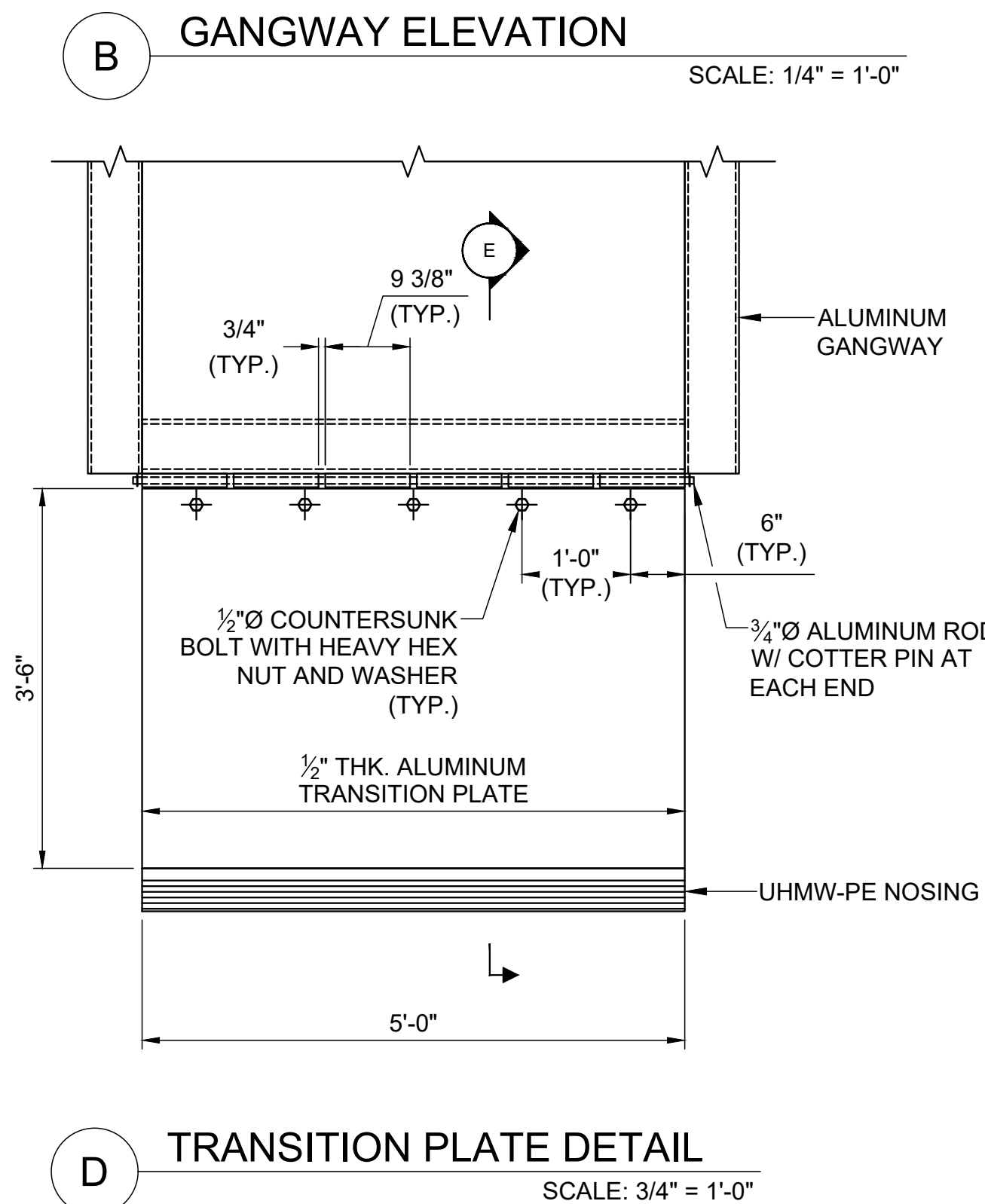
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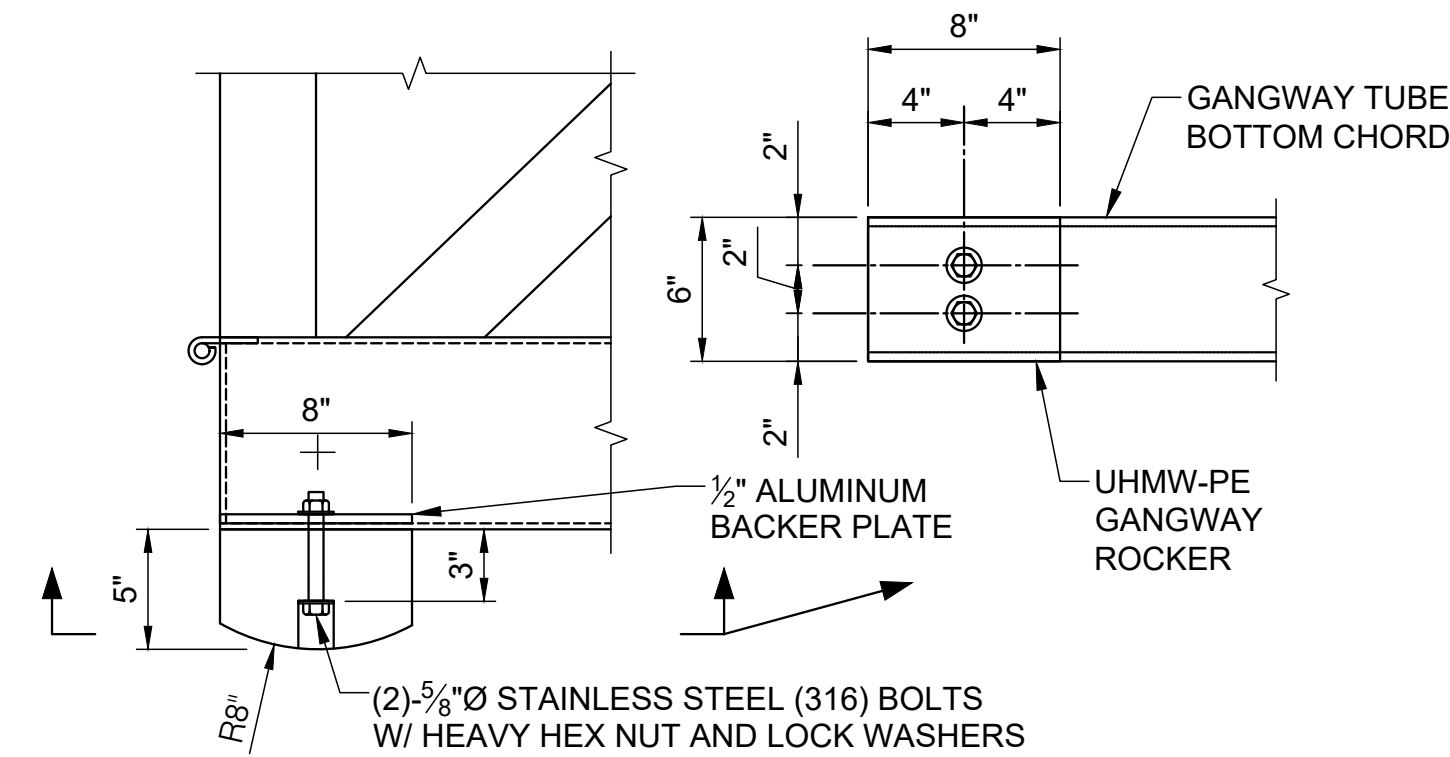
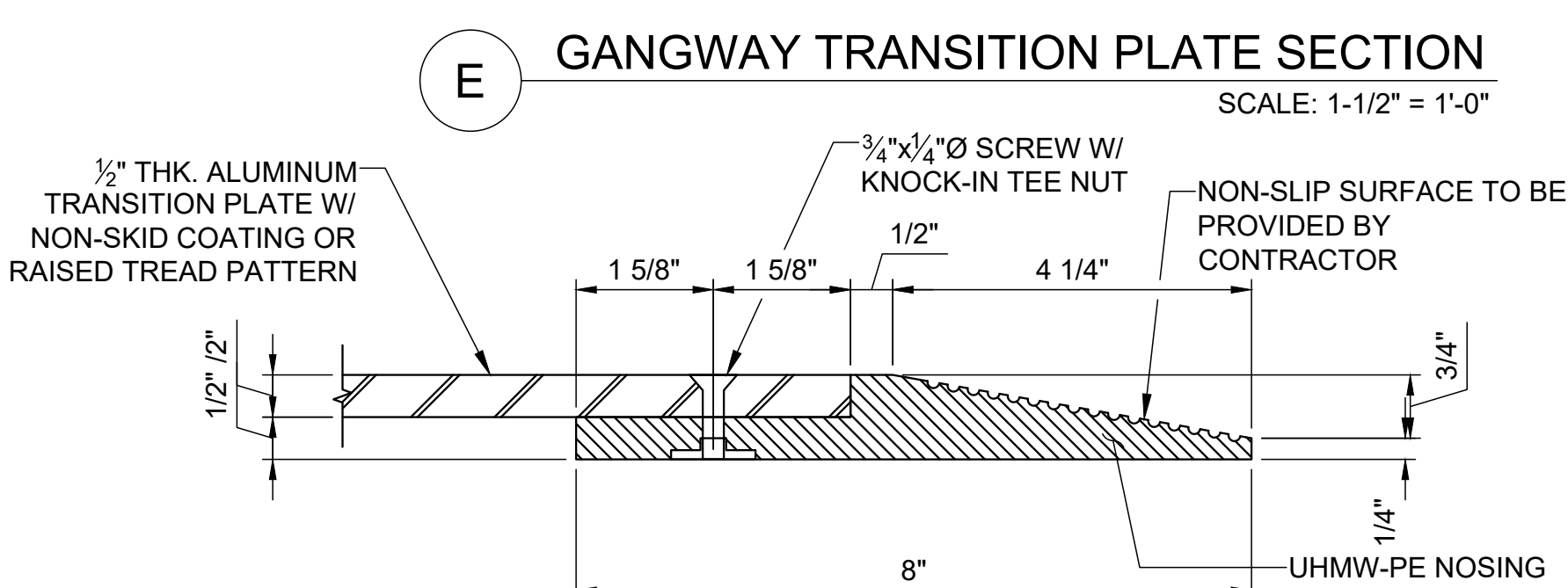
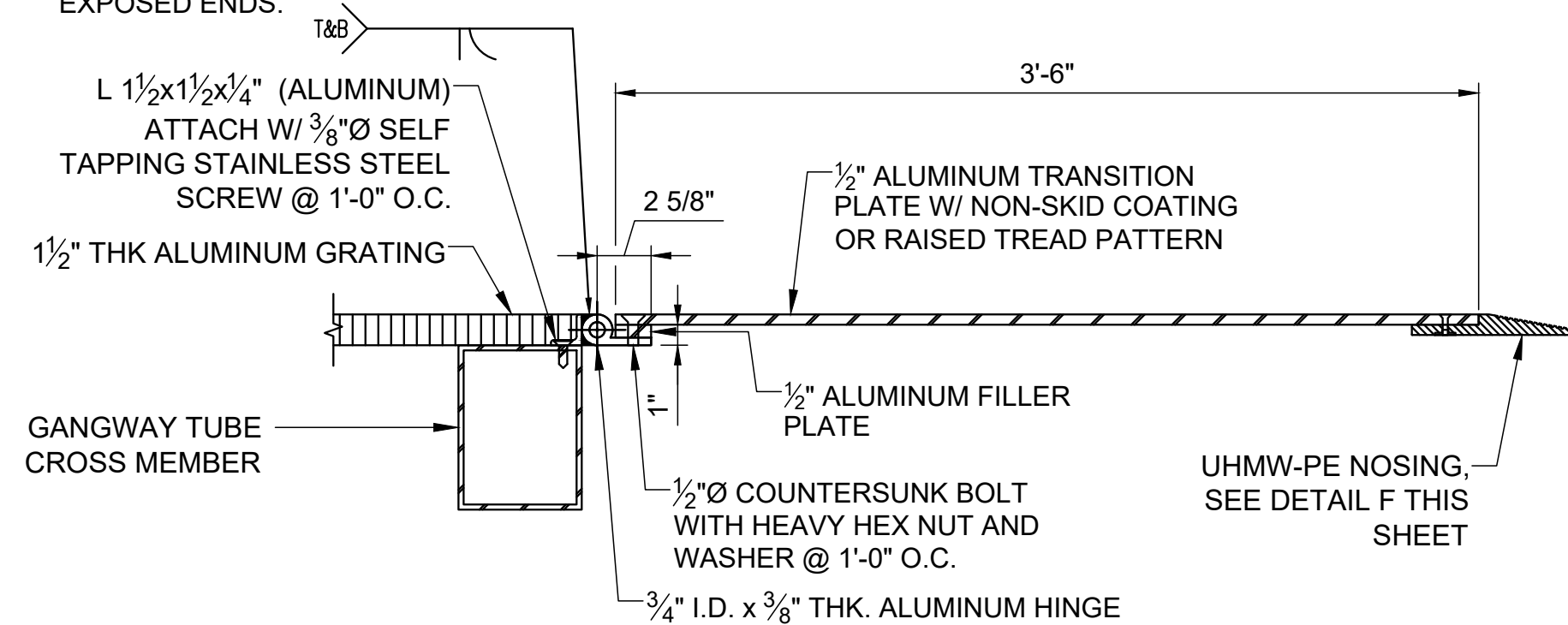
A 5'-0" (CLEAR) x 80'-0" GANGWAY PLAN
SCALE: 1/4" = 1'-0"



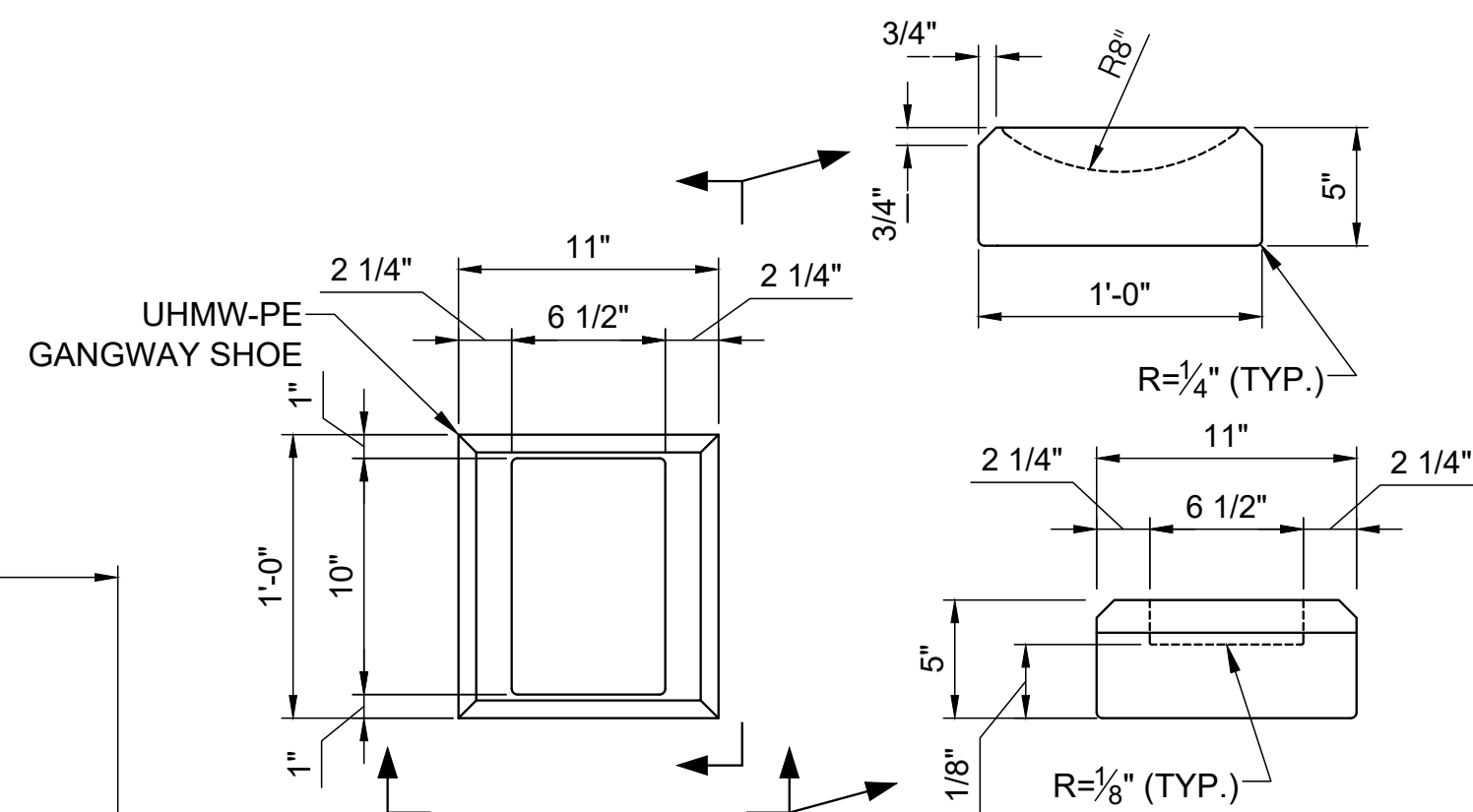
- NOTE(S):
1. CONTRACTOR AND GANGWAY MANUFACTURER SHALL DETERMINE FINAL GANGWAY MEMBER SIZES AND SUBMIT TO ENGINEER FOR REVIEW AND APPROVAL.
 2. ALUMINUM GRATING SHALL MEET ADA REQUIREMENTS.



- NOTES:
1. CONTRACTOR SHALL DETERMINE FINAL GANGWAY MEMBER SIZES. MEMBERS ONLY SHOWN SCHEMATICALLY FOR REFERENCE.
 2. CONTRACTOR SHALL SUBMIT FINAL GANGWAY SHOP DRAWINGS AND CALCULATION PACKAGE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MAINE.
 3. ALL GANGWAY TUBE MEMBERS SHALL BE 6061-T6 ALUMINUM.
 4. ALL GANGWAY TUBE MEMBERS SHALL BE CAPPED AND SEALED W/ ALUMINUM PLATES AT EXPOSED ENDS.



- NOTES:
1. ROCKER MATERIAL SHALL BE VIRGIN UHMW-PE, BLACK IN COLOR.
 2. ALUMINUM BACKER PLATE PLAN DIMENSIONS SHALL MATCH ROCKER PLAN DIMENSIONS.

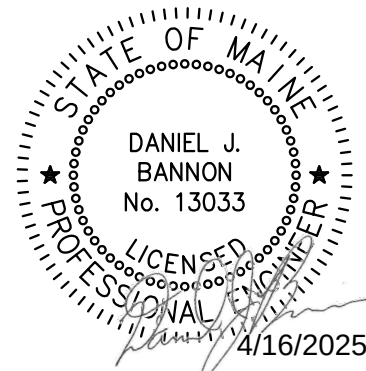


NOTE: SHOE MATERIAL SHALL BE VIRGIN UHMW-PE, BLACK IN COLOR.

ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.



Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



UNE
UNIVERSITY OF
NEW ENGLAND
11 HILLS BEACH RD.
BIDDEFORD, MAINE

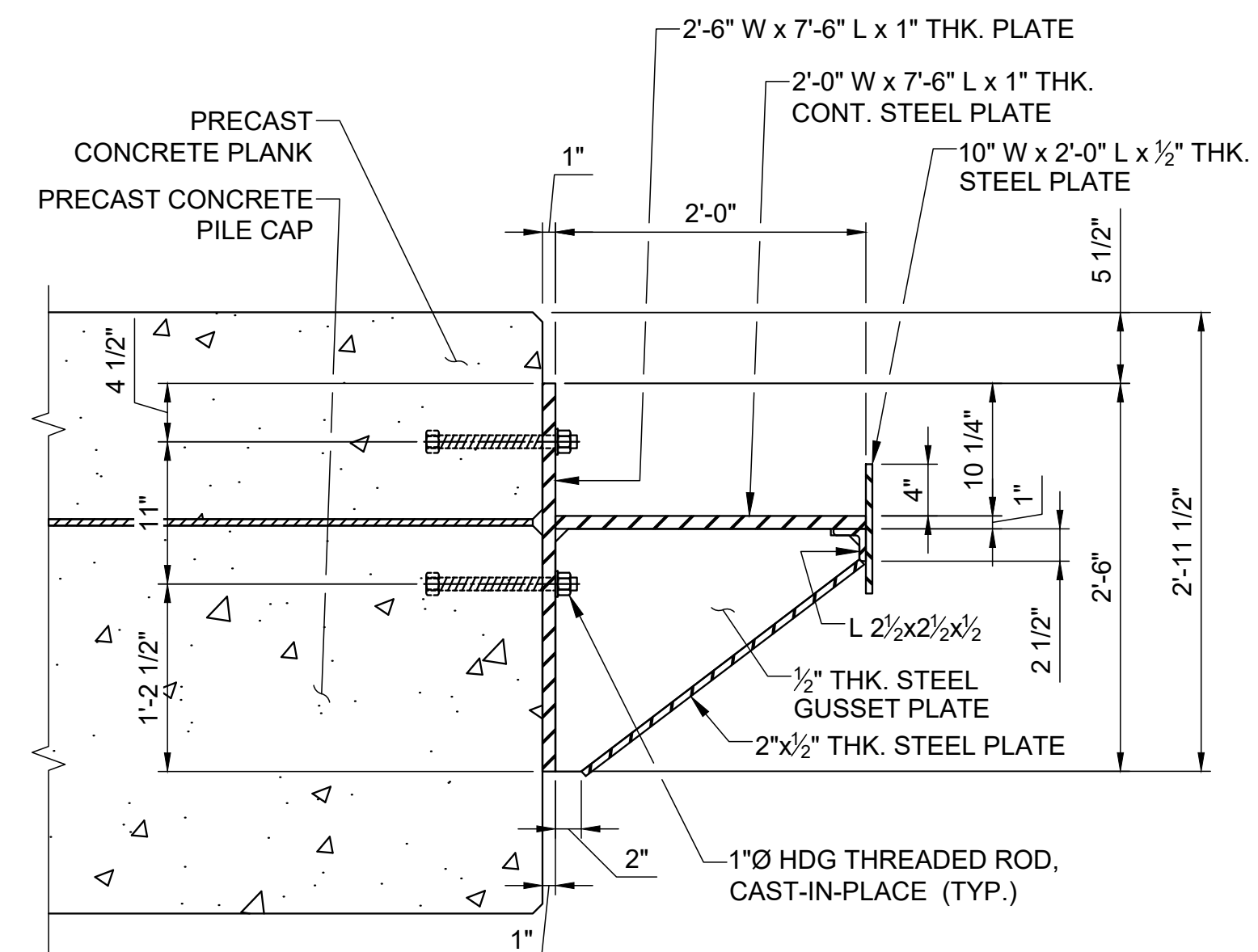
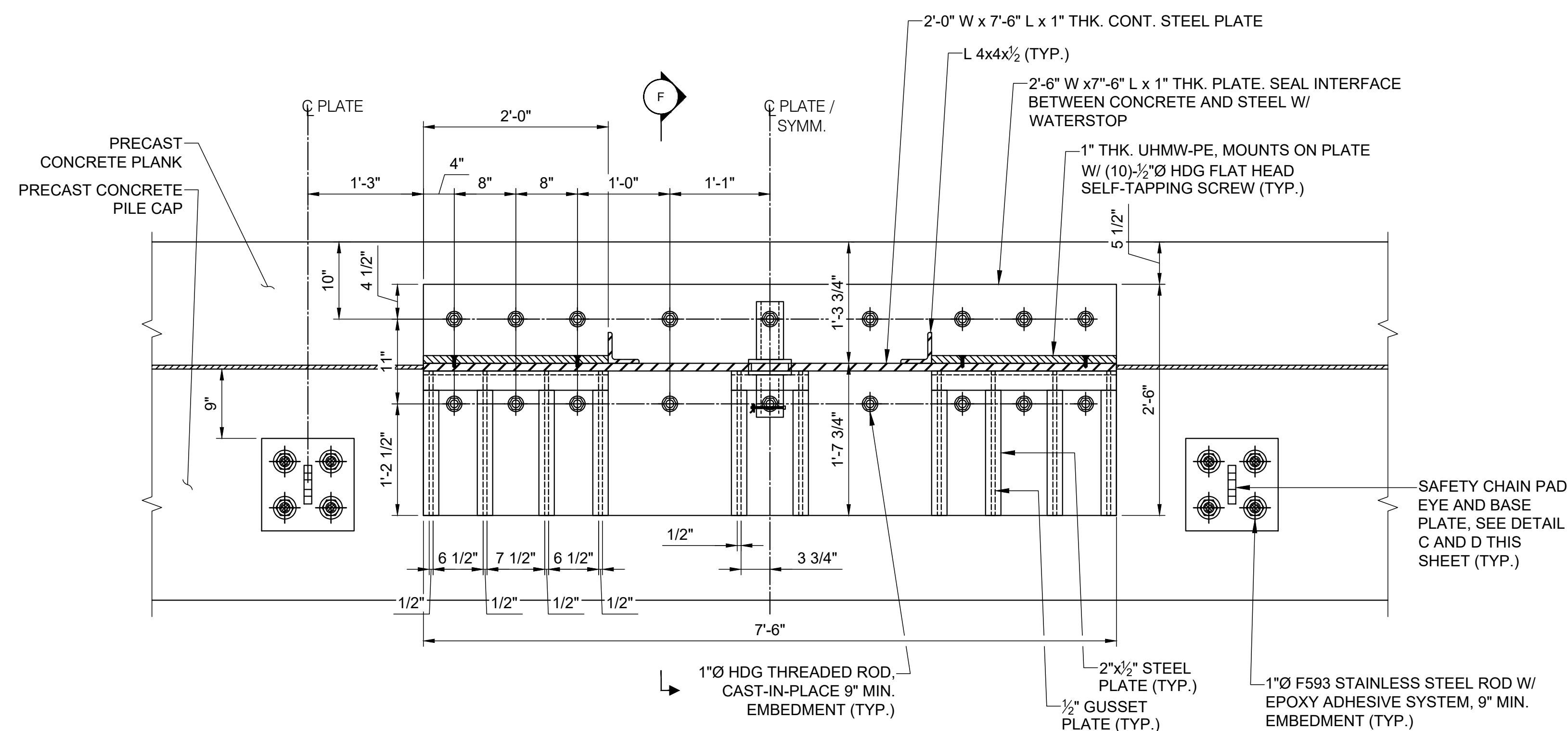
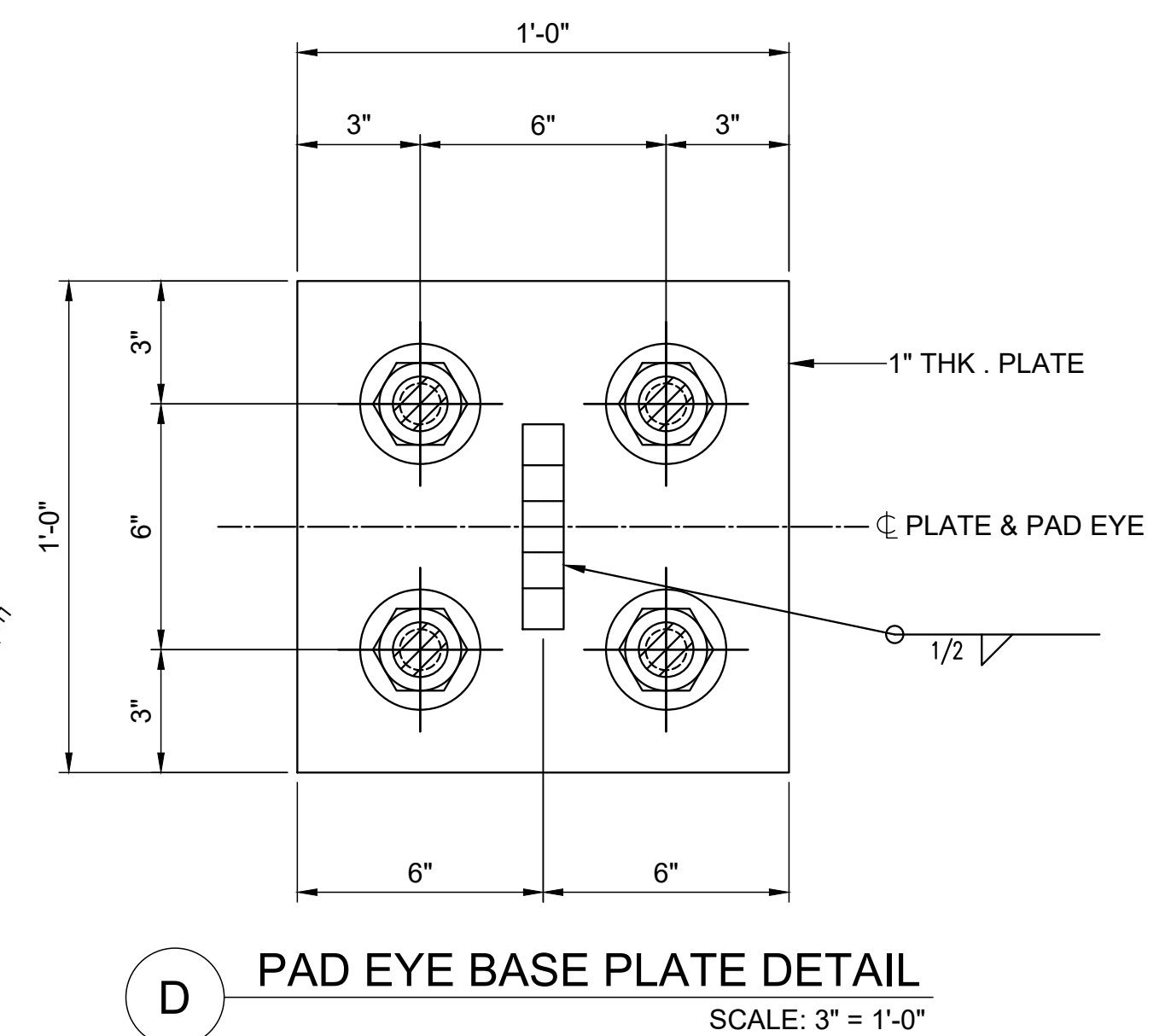
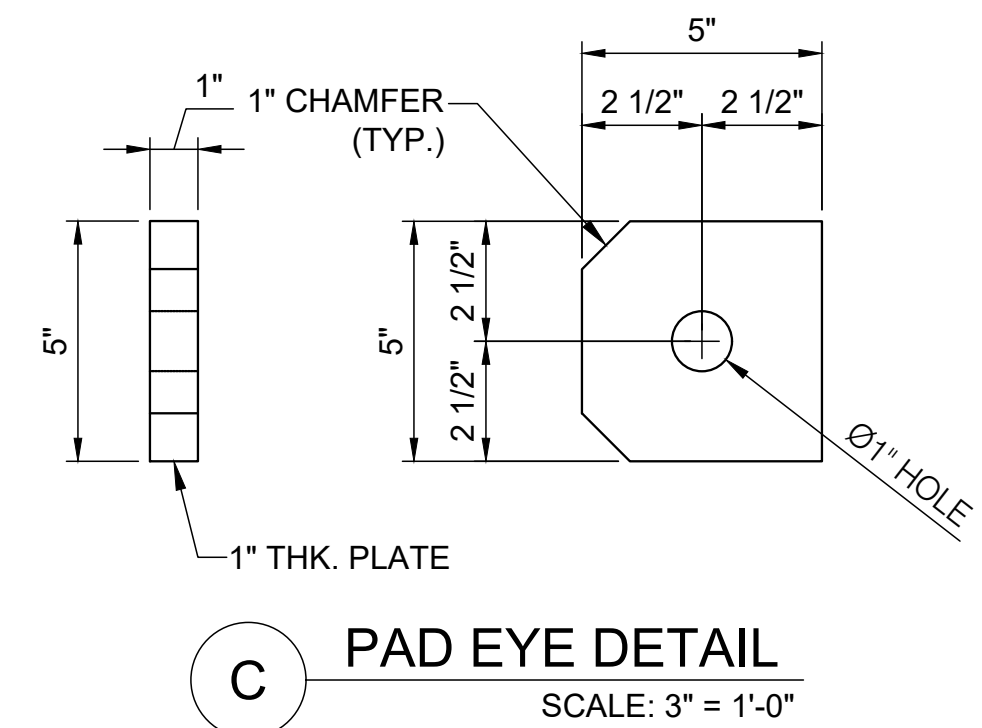
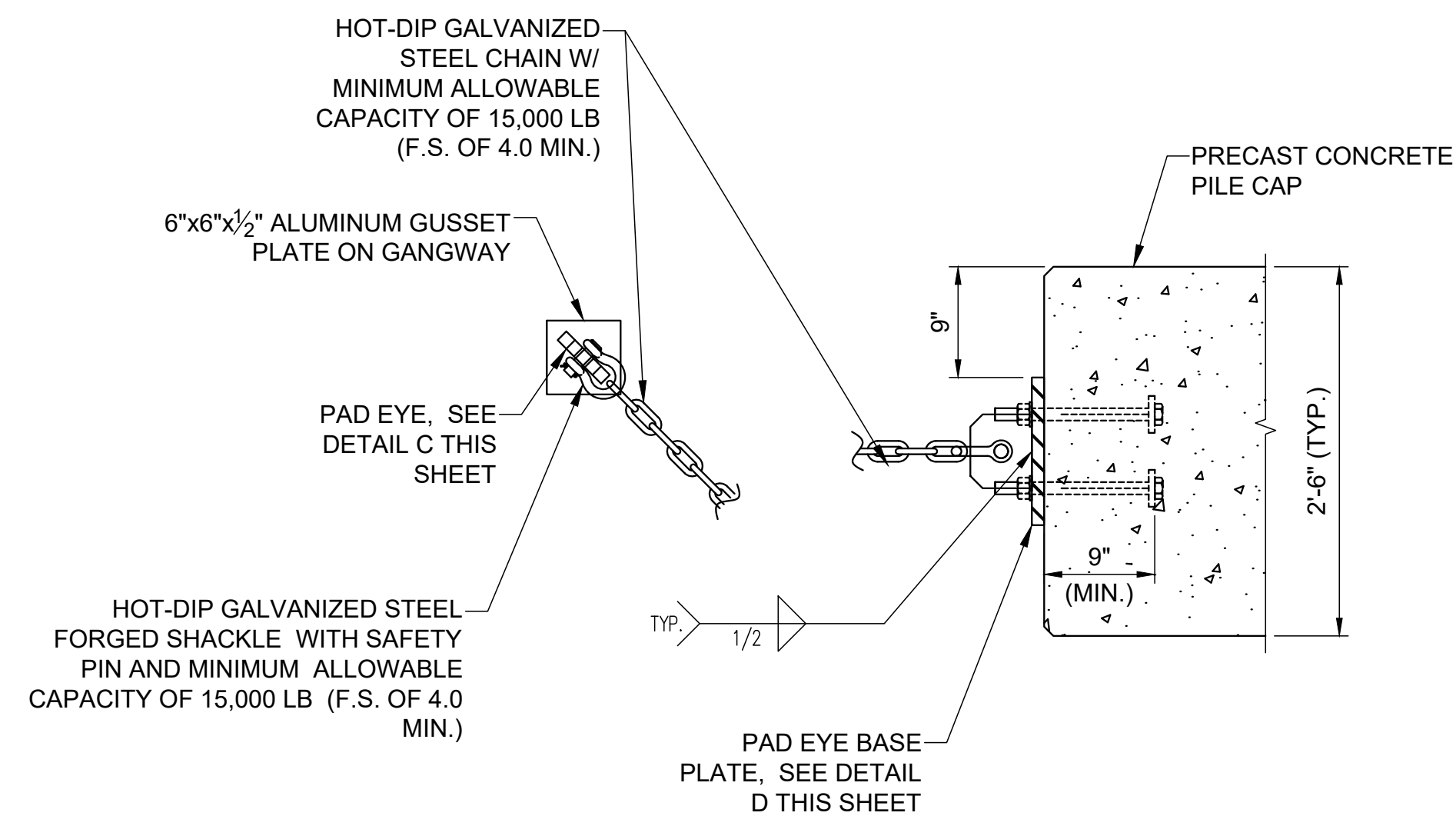
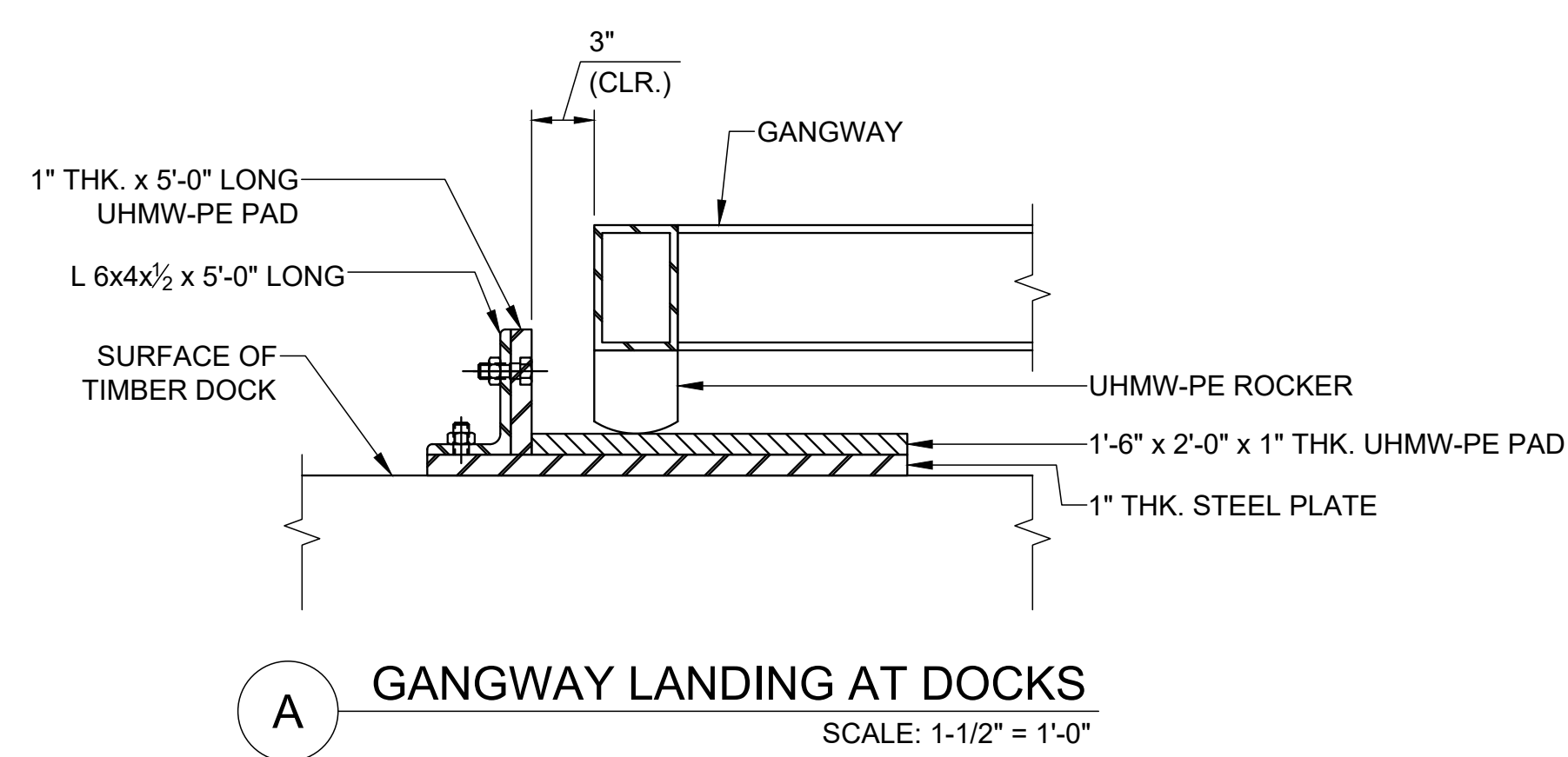
**UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER**
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

7	4/16/2025	BIDDEFORD PERMIT APP.	DJB
6	9/17/2024	REVISED PERMIT SET	DJB
5	6/27/2024	REVISED PERMIT SET	DJB
4	9/14/2023	DEP PERMIT SET	DJB
3	6/28/2023	75% DESIGN SUBMISSION	DJB
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1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

SHEET NAME
**MISCELLANEOUS
DETAILS (3 OF 5)**

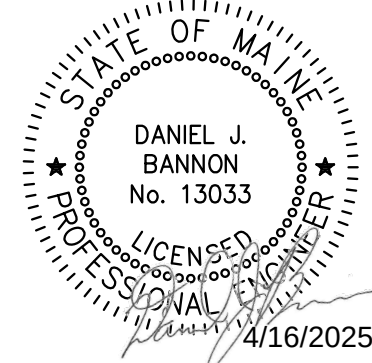
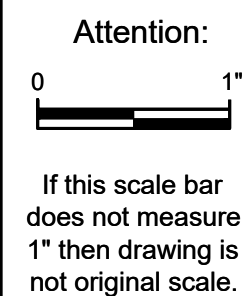
SHEET NO.
S-011

FOR PERMIT



ELEVATION	MLLW	NAVD88
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM



<i>Designed:</i>	DJB
<i>Drawn:</i>	JAM
<i>Checked:</i>	BJB
<i>Approved:</i>	BMM
<i>P.E. No:</i>	13033
<i>GEI Project</i>	2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

**UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER**

7	4/16/2025	BIDDEFORD PERMIT APP.		DJB
6	9/17/2024	REVISED PERMIT SET		DJB
5	6/27/2024	REVISED PERMIT SET		DJB
4	9/14/2023	DEP PERMIT SET		DJB
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1	12/9/2022	15% DESIGN SUB REV		DJB
0	11/11/2022	15% DESIGN SUBMISSION		DJB
NO	DATE	ISSUE/REVISION		APP

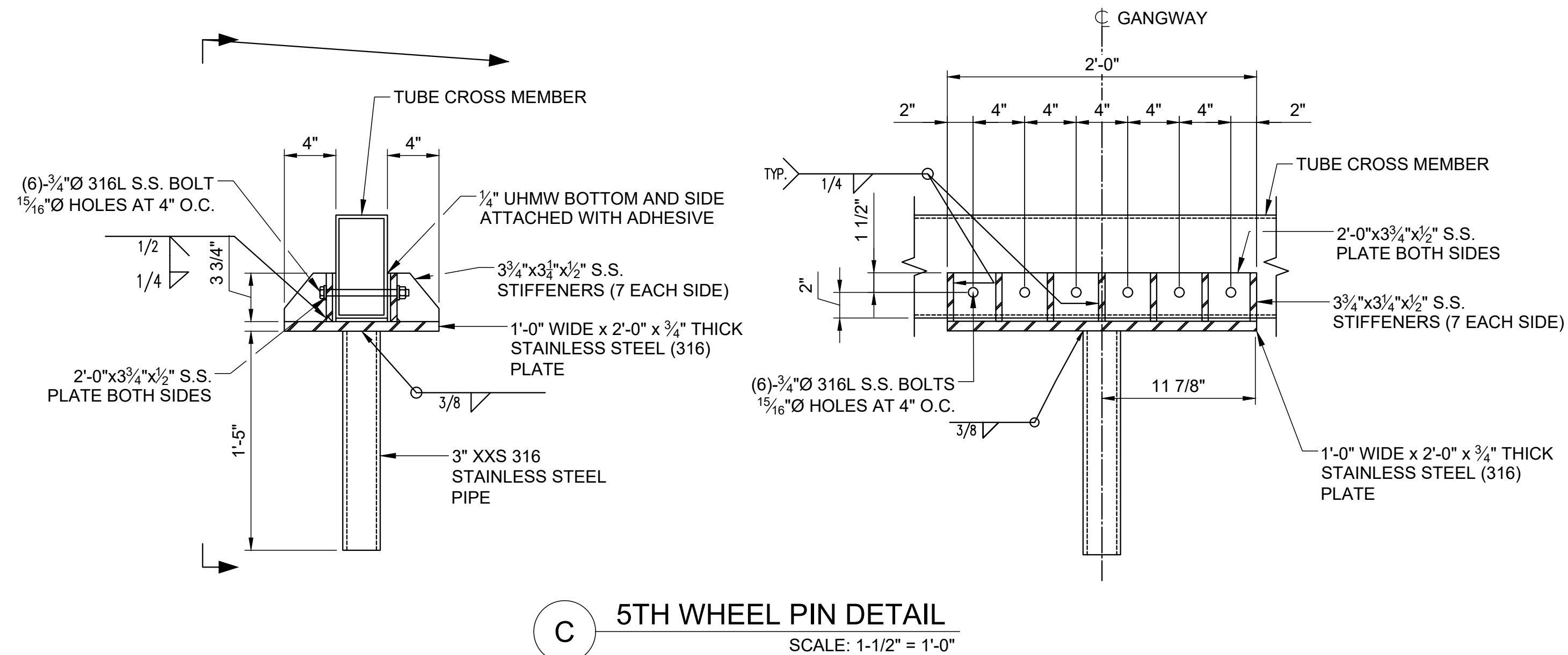
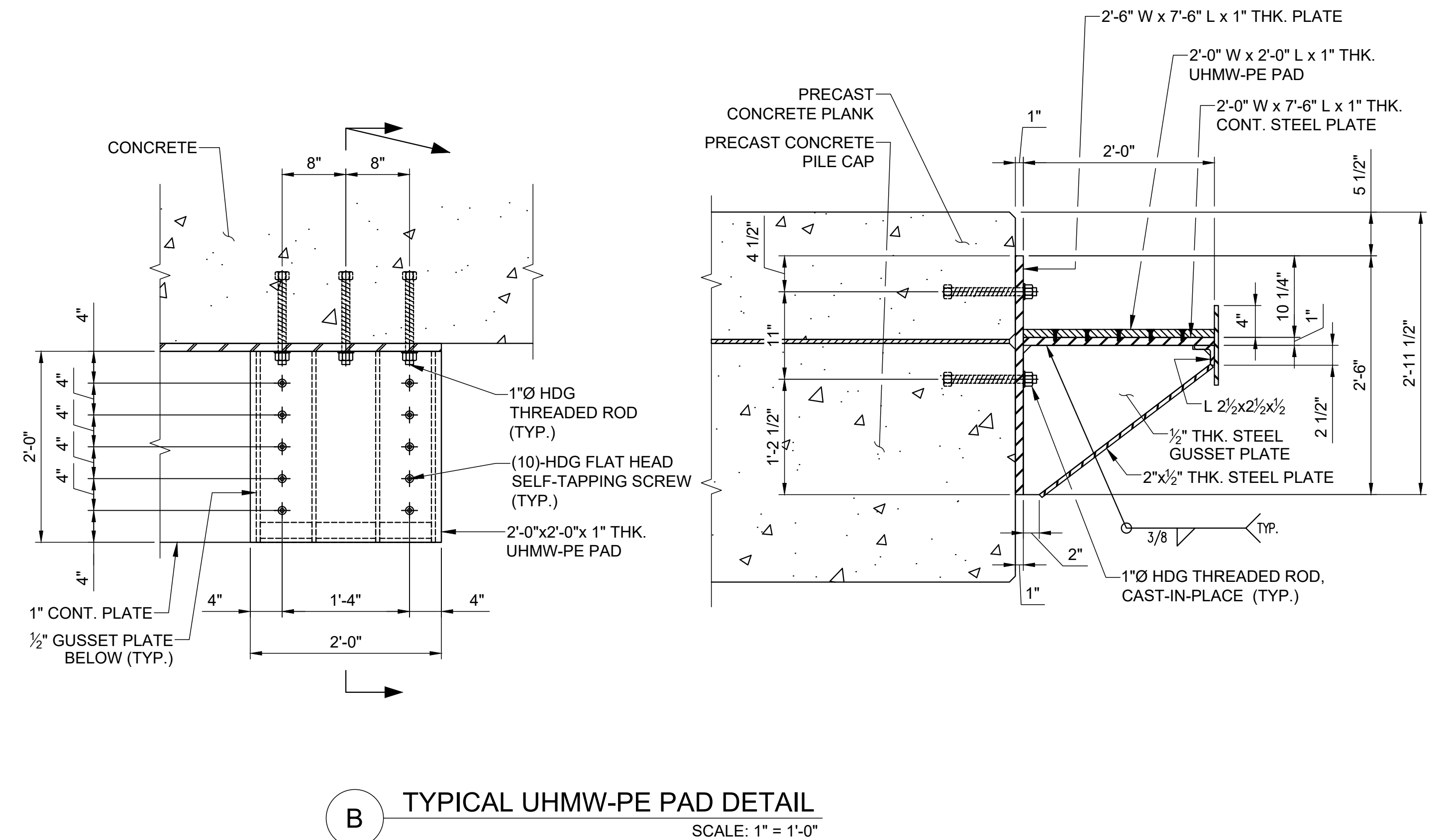
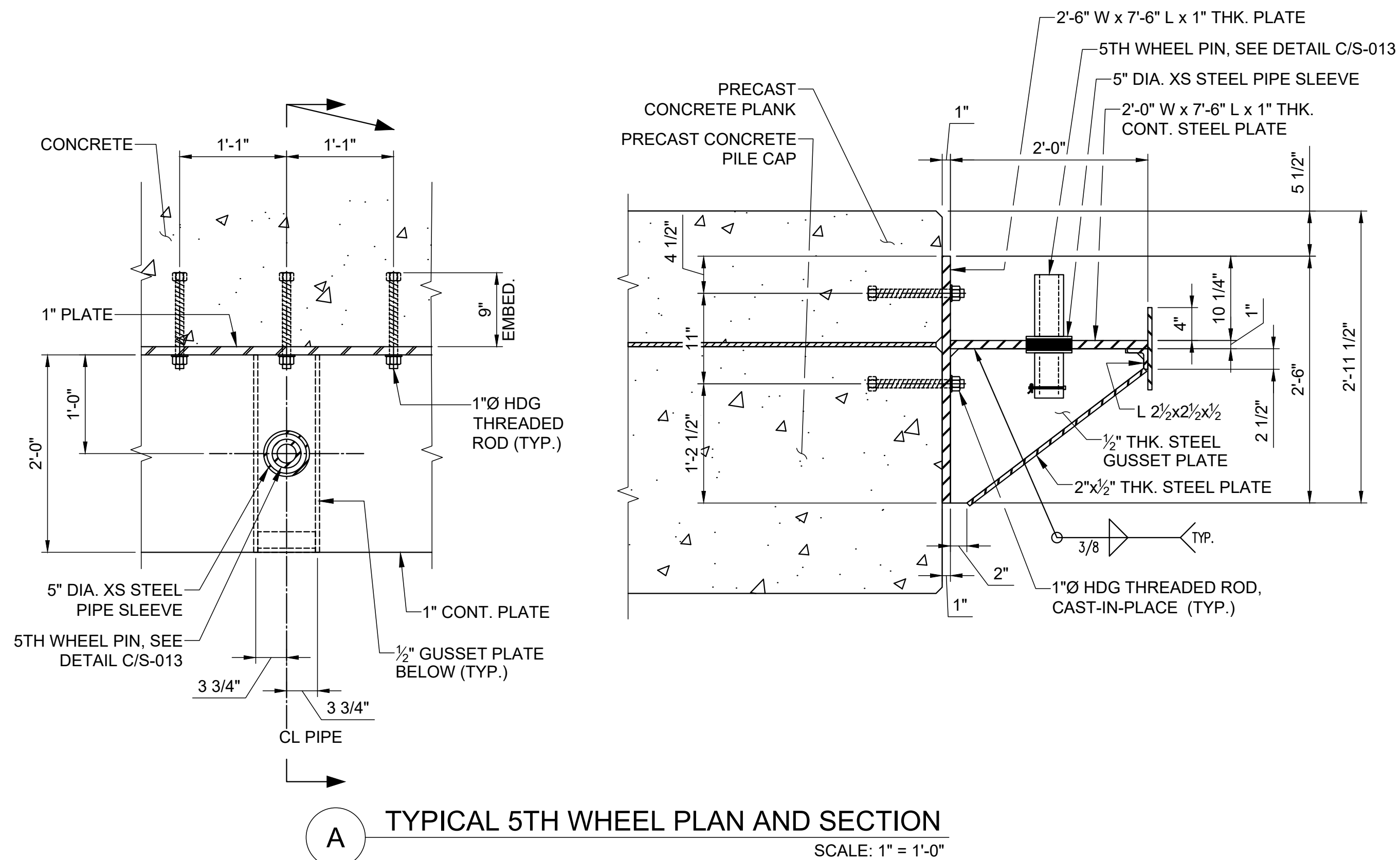
SHEET NAME

**MISCELLANEOUS
DETAILS (4 OF 5)**

SHEET NO.

S-012

FOR PERMIT

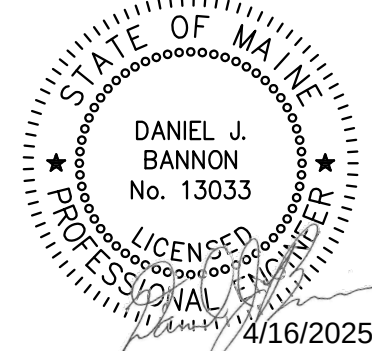


ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0
*PROJECT DATUM		

Attention:



If this scale bar does not measure 1" then drawing is not original scale.



<i>Designed:</i>	DJB
<i>Drawn:</i>	JAM
<i>Checked:</i>	BJB
<i>Approved:</i>	BMM
<i>P.E. No:</i>	13033
<i>GEI Project</i>	2203703



**UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER**
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

7	4/16/2025	BIDDEFORD PERMIT APP.	DJB
6	9/17/2024	REVISED PERMIT SET	DJB
5	6/27/2024	REVISED PERMIT SET	DJB
4	9/14/2023	DEP PERMIT SET	DJB
3	6/28/2023	75% DESIGN SUBMISSION	DJB
2	2/15/2023	30% DESIGN SUBMISSION	DJB
1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

SHEET NAME

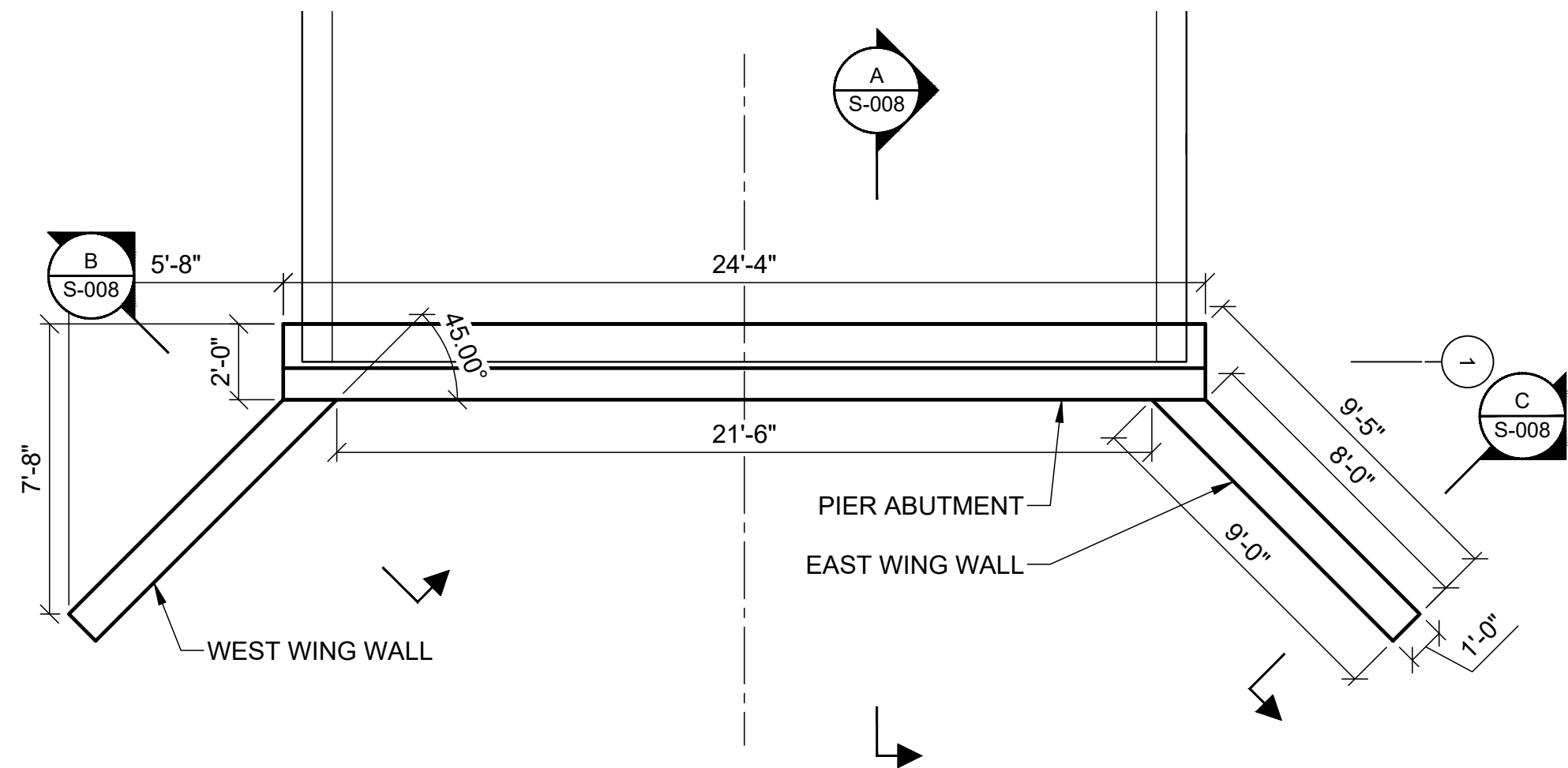
**MISCELLANEOUS
DETAILS (5 OF 5)**

SHEET NO.

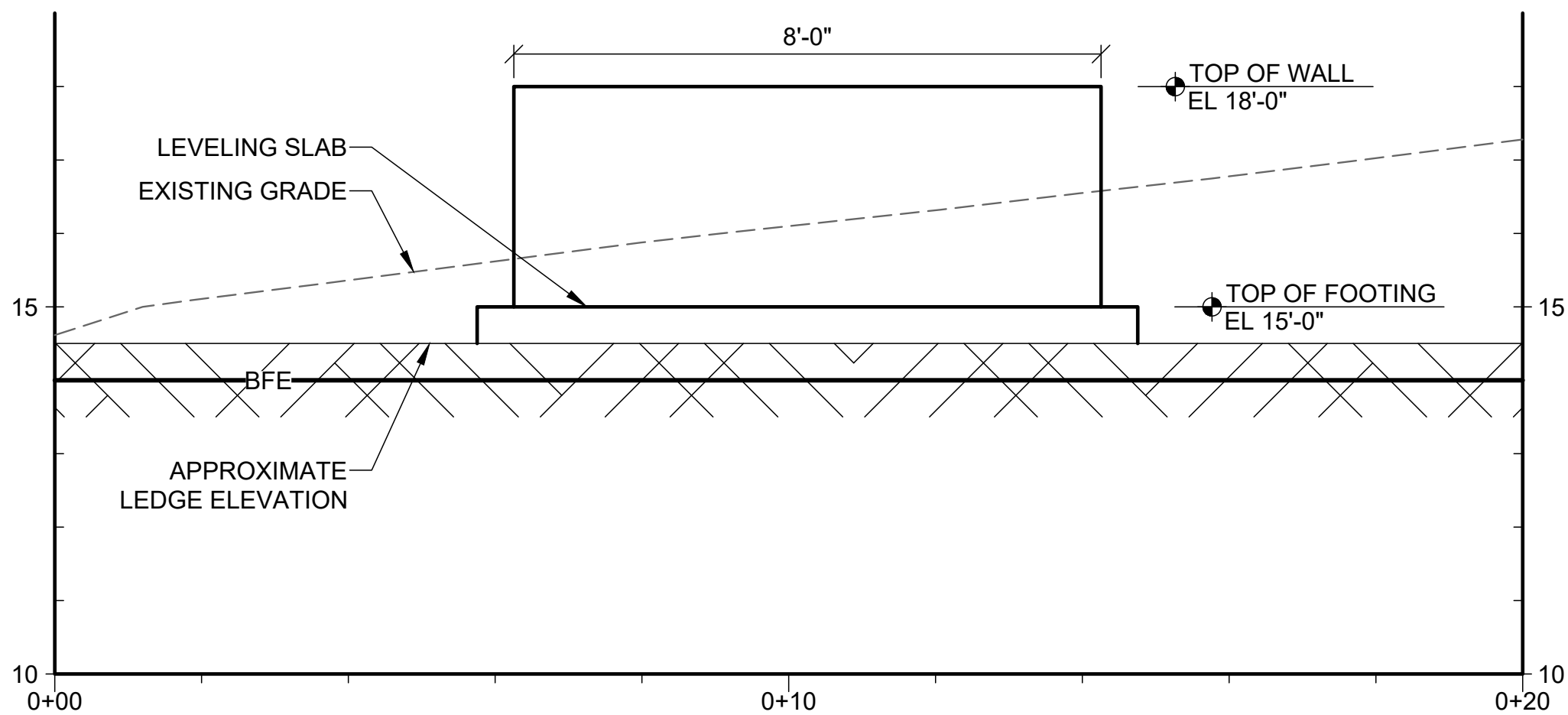
S-013

FOR PERMIT

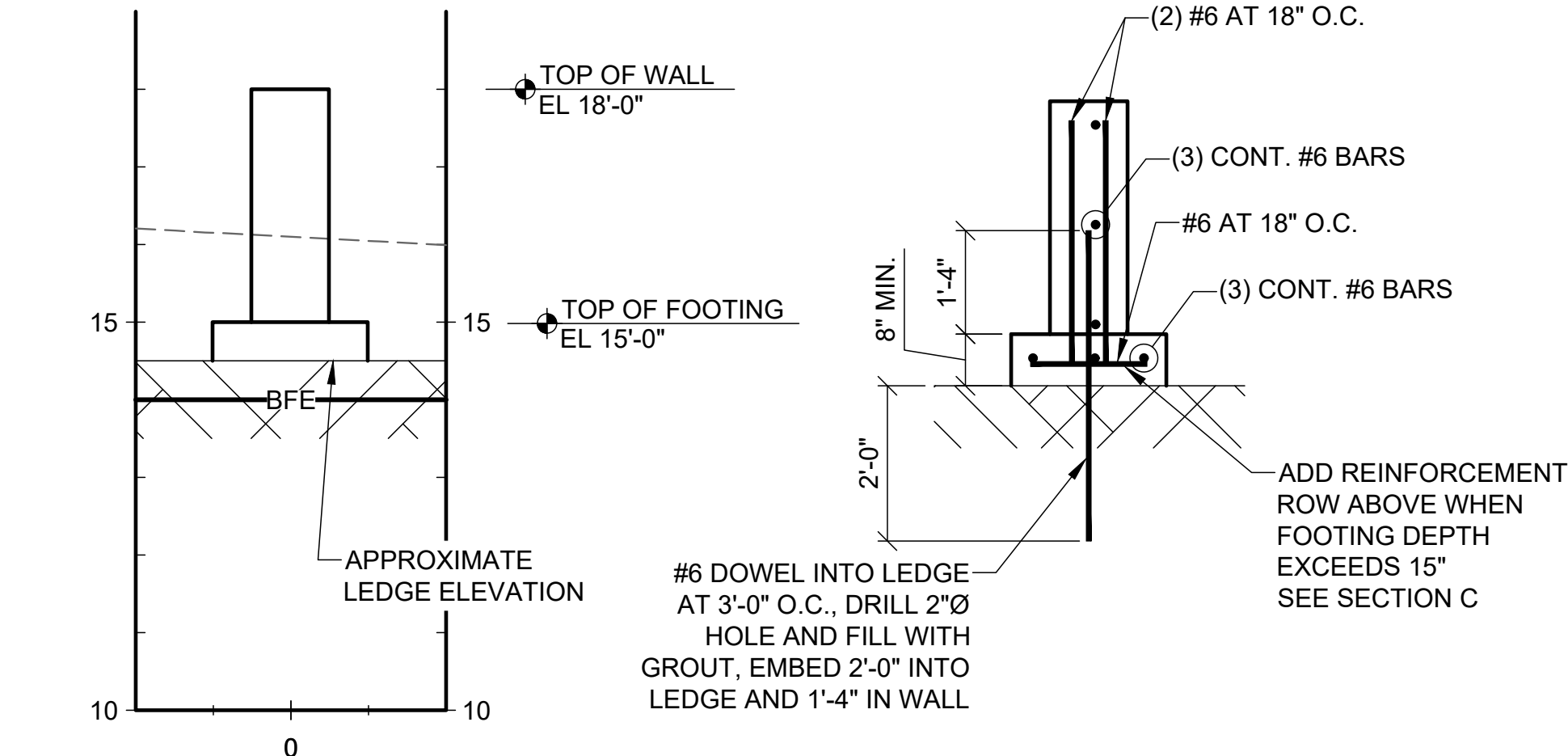
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ABUTMENT PLAN
SCALE: SCALE: 3" = 1'-0"

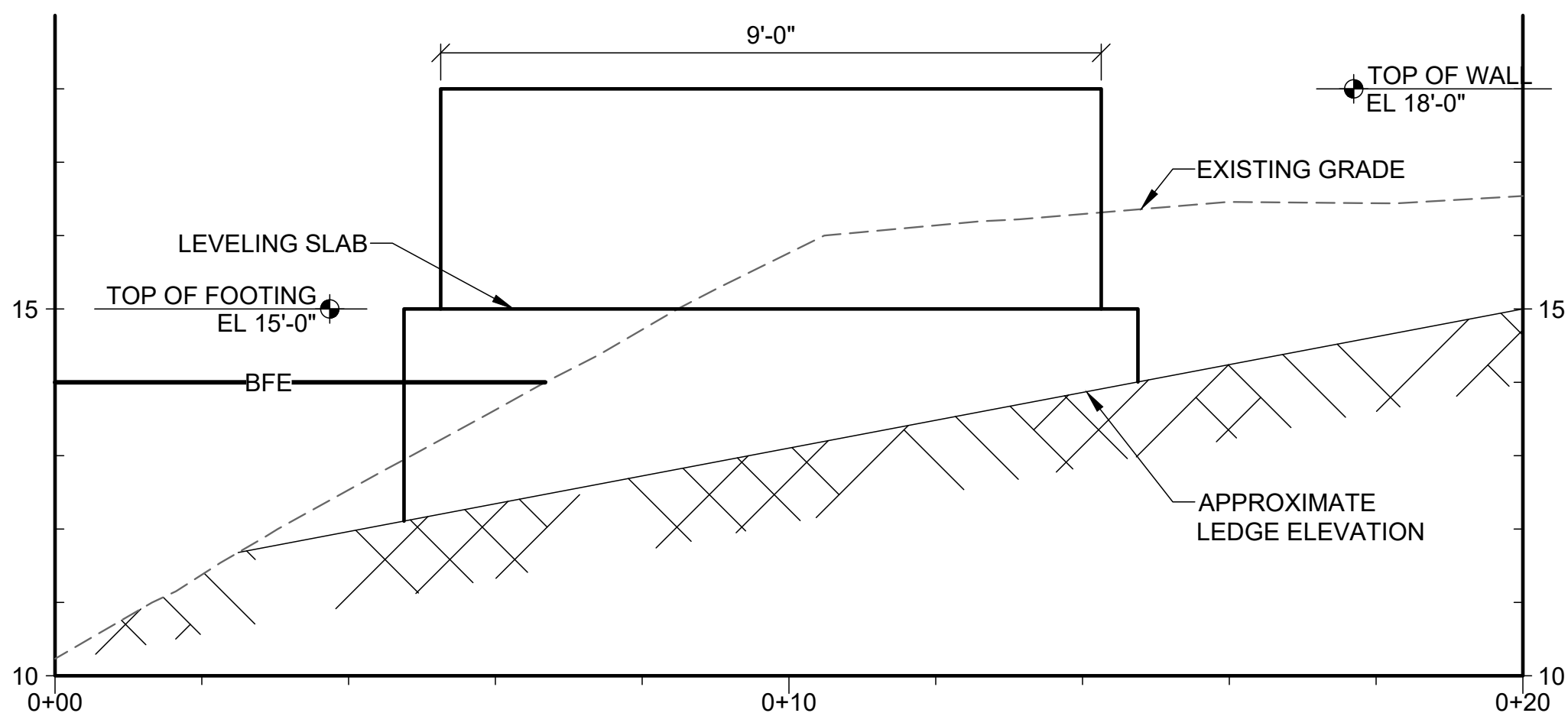


WEST WING WALL ELEVATION
SCALE: 6" = 1'-0"

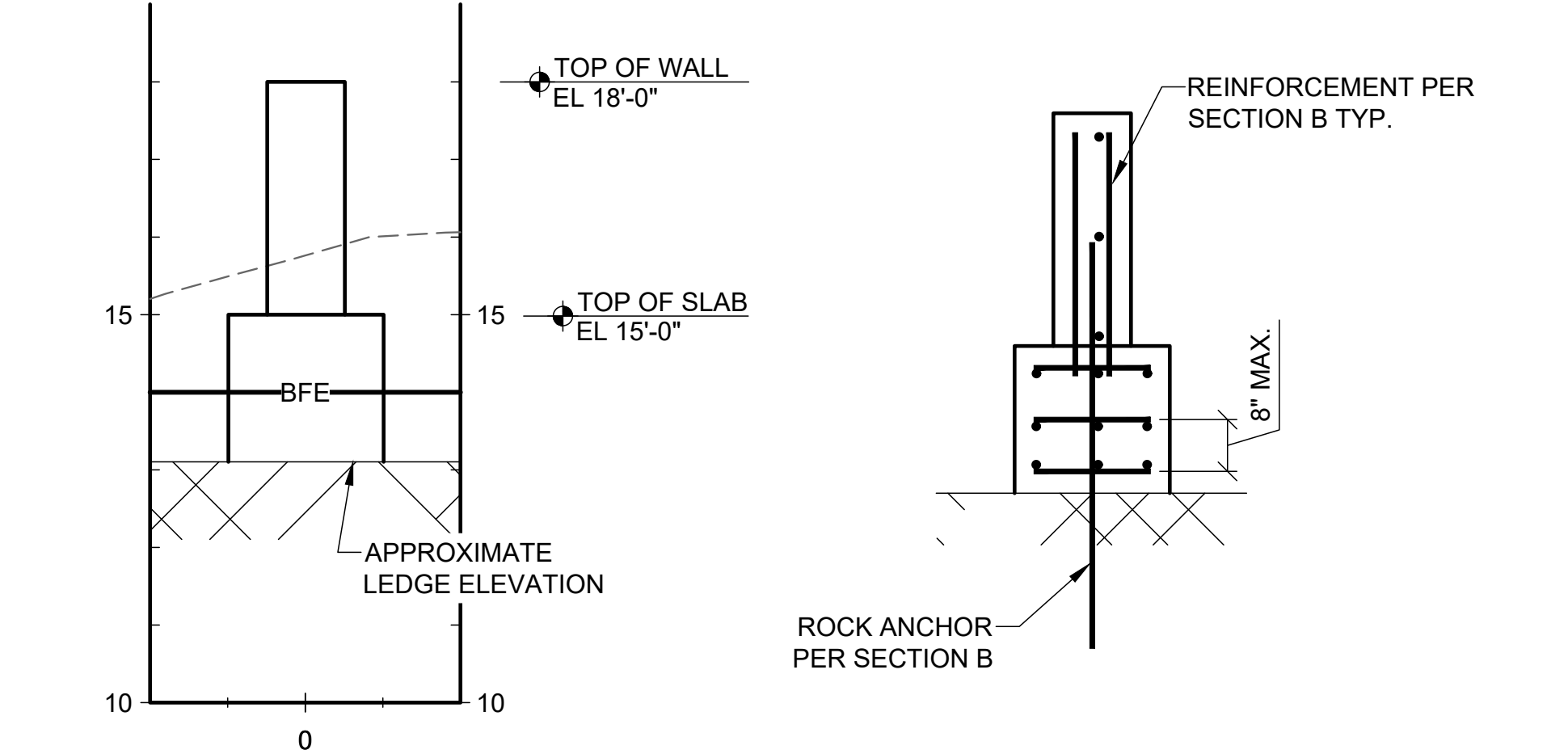


WEST WING WALL SECTION
SCALE: 6" = 1'-0"

SECTION
WEST WING WALL
SCALE: 6" = 1'-0"

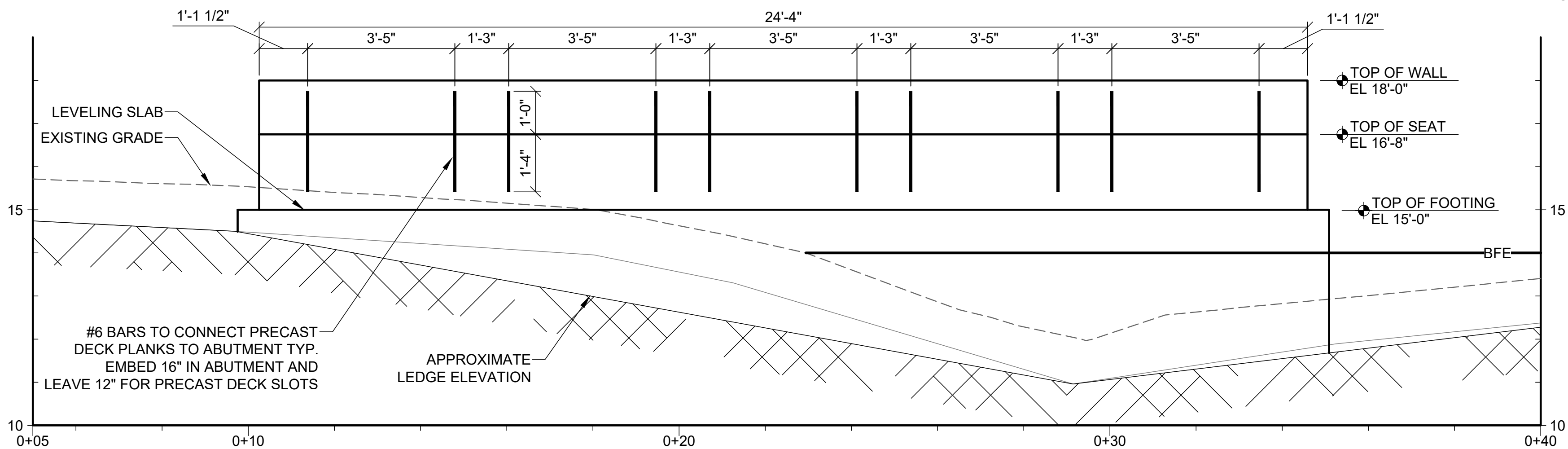


EAST WING WALL ELEVATION
SCALE: 6" = 1'-0"

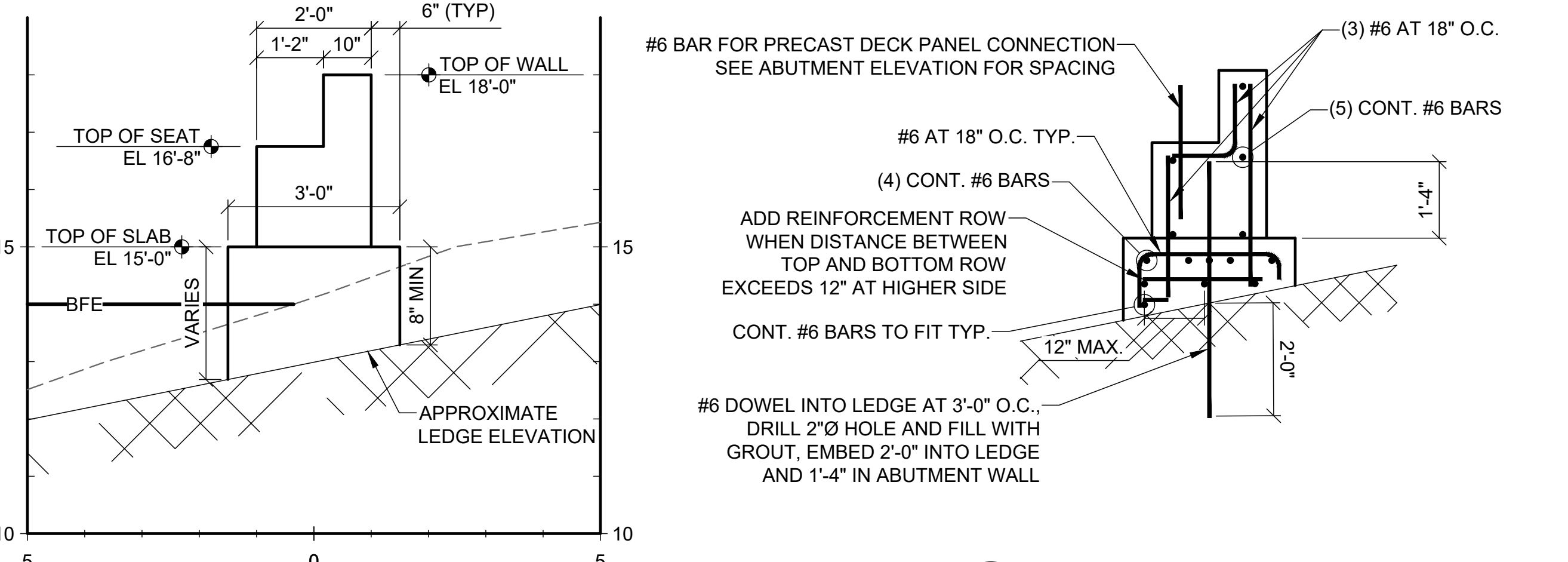


EAST WING WALL SECTION
SCALE: 6" = 1'-0"

SECTION
EAST WING WALL
SCALE: 6" = 1'-0"



ABUTMENT ELEVATION A
SCALE: 3" = 1'-0"



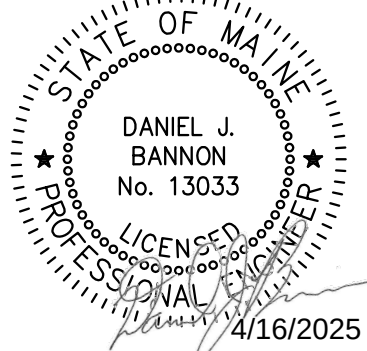
ABUTMENT SECTION
SCALE: 6" = 1'-0"

SECTION
ABUTMENT
REINFORCEMENT
SCALE: 6" = 1'-0"

ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.



Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



UNE
UNIVERSITY OF
NEW ENGLAND
11 HILLS BEACH RD.
BIDDEFORD, MAINE

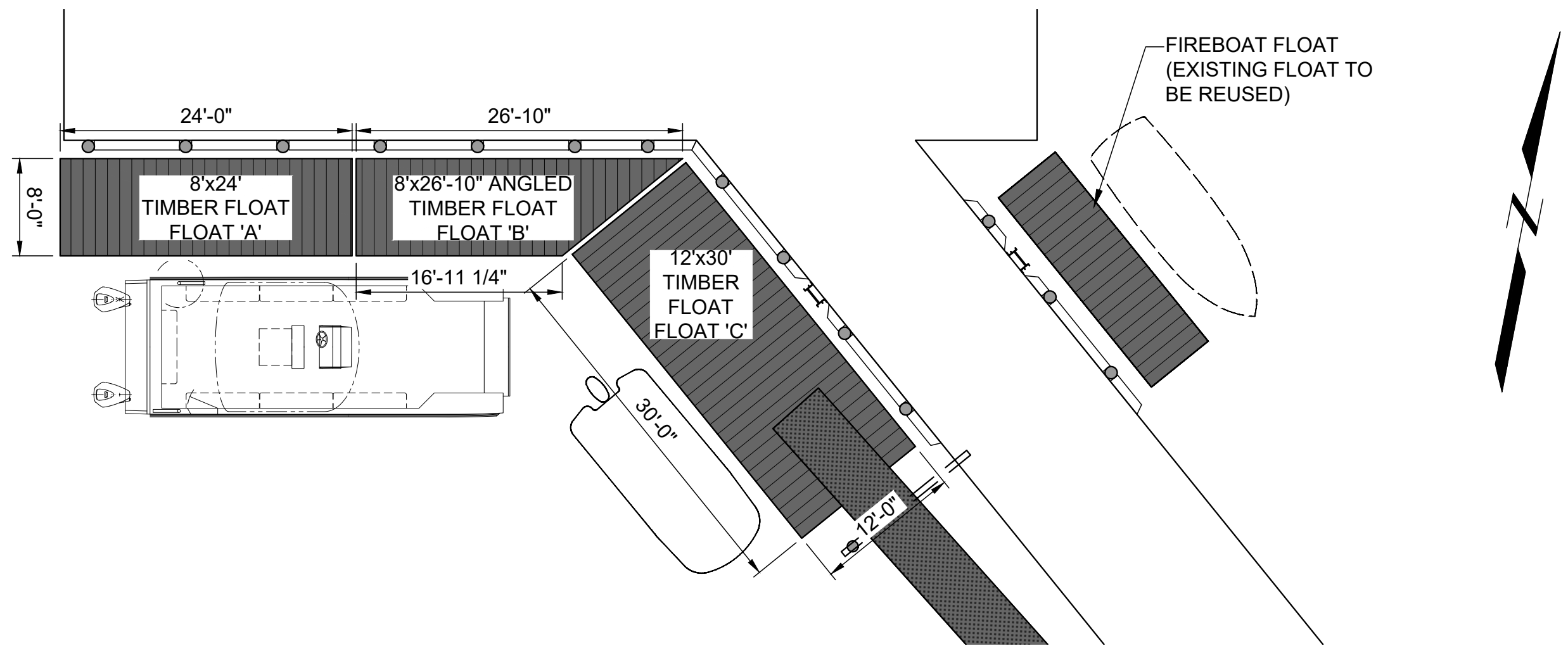
UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

NO	DATE	ISSUE/REVISION	APP
7	4/16/2025	BIDDEFORD PERMIT APP.	DJB
6	9/17/2024	REVISED PERMIT SET	DJB
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0	11/11/2022	15% DESIGN SUBMISSION	DJB

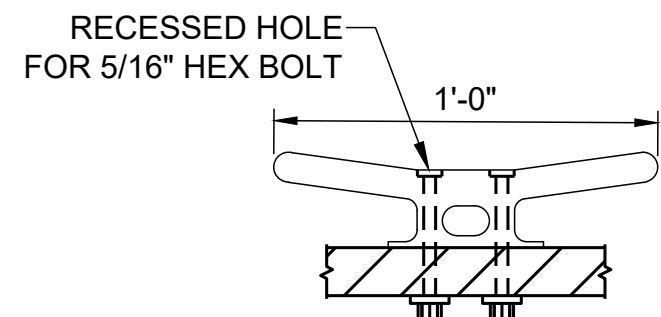
SHEET NAME	SHEET NO.
ABUTMENT DETAILS	S-014

FOR PERMIT

BANNON, DAN | geciconsultants.com\data\Bannan\Working\UNIVERSITY OF NEW ENGLAND\2203703 UNF Marine Science Center Pier\00_CADD\Design\Sheets\2203703-F-001.dwg - 4/16/2025

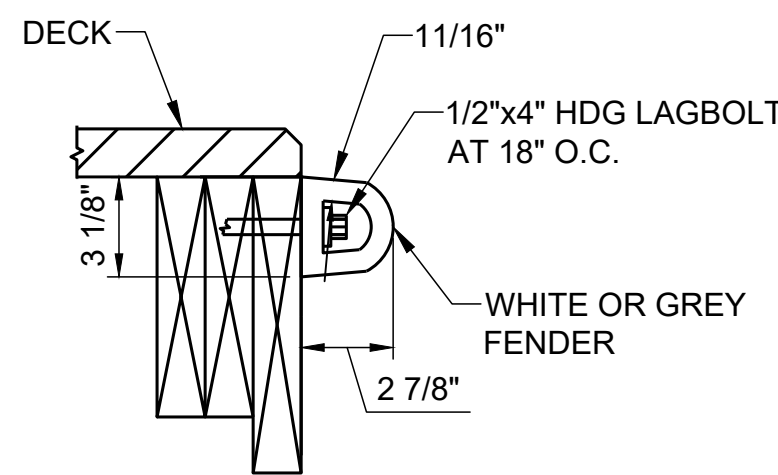


1 PLAN
FLOAT LAYOUT SCALE: 1" = 10'

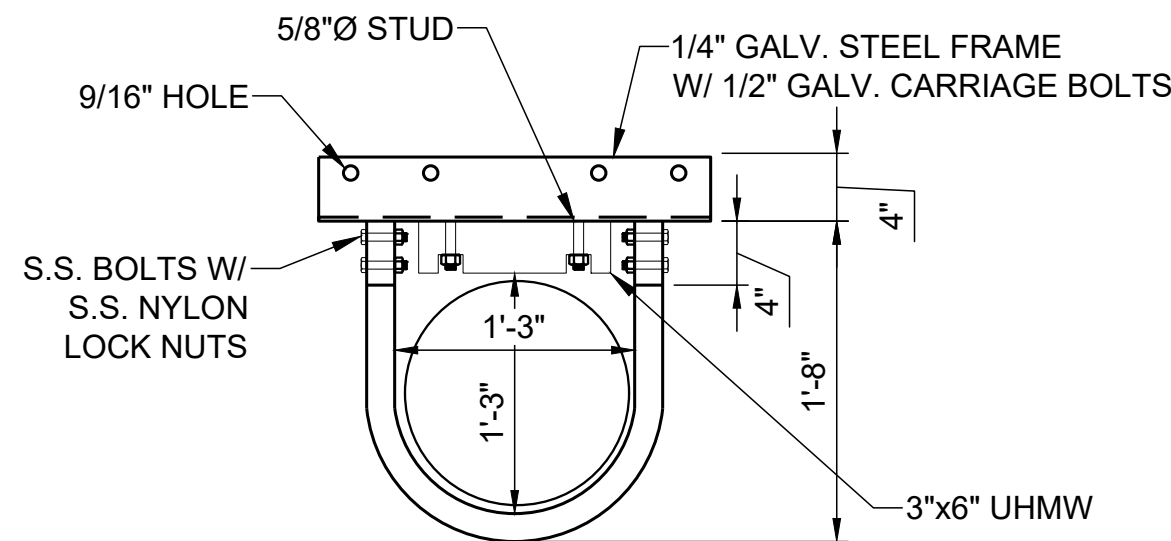


CLEAT LAYOUT:
FLOAT 'A' (4) @ EQ. SP ON SOUTH FACE
FLOAT 'B' (3) @ EQ. SP ON SOUTH FACE
FLOAT 'C' (4) @ EQ. SP ON WEST FACE

4 DETAIL
12" CLEAT SCALE: 2:1

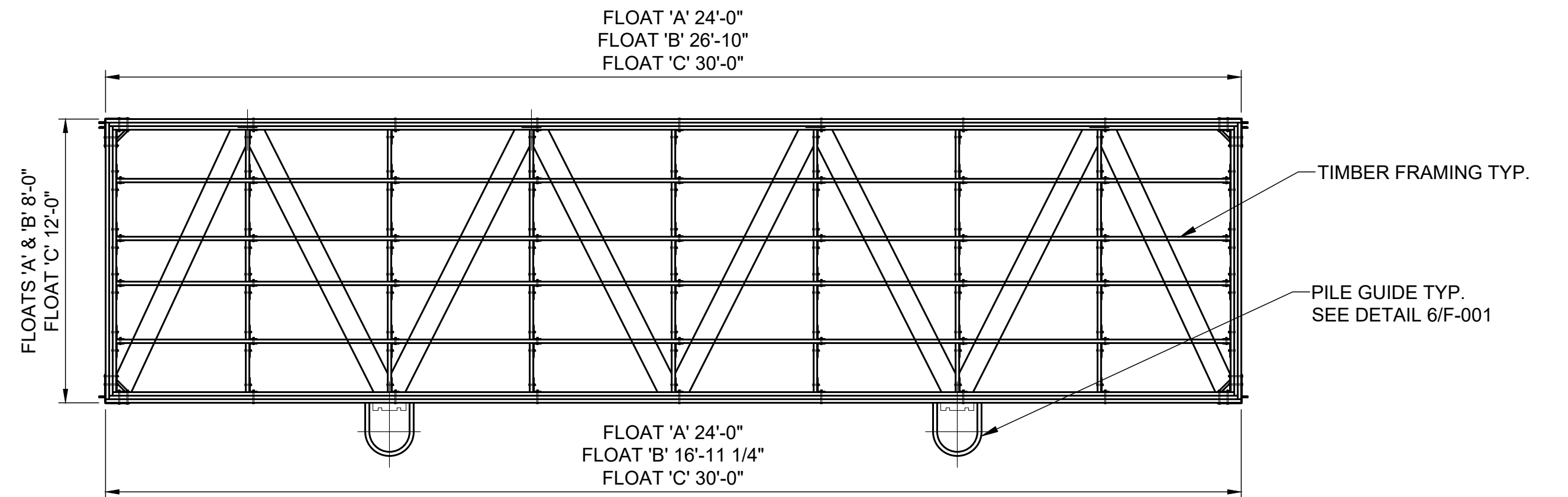


5 DETAIL
DOCK FENDER SCALE: 2:1



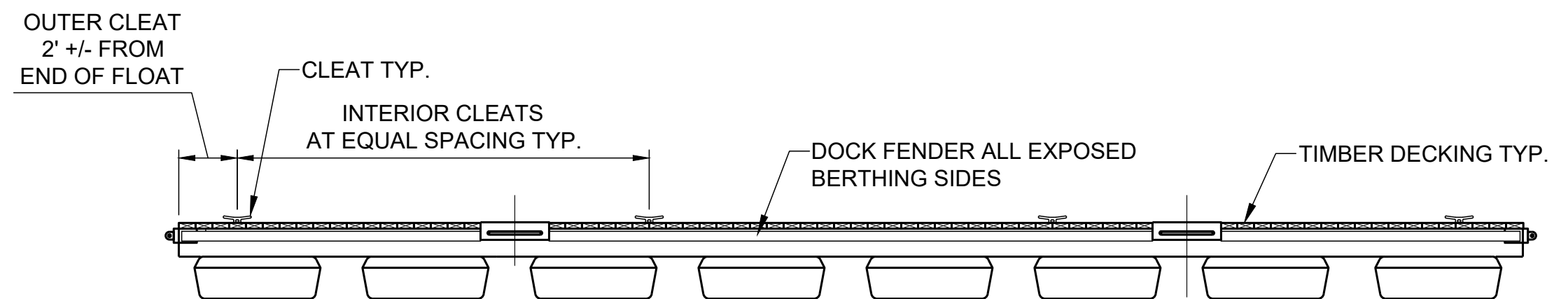
PILE GUIDE LAYOUT:
PROVIDE PILE GUIDES AT ALL TIMBER PILE LOCATIONS
FLOAT 'A' (3) REQ
FLOAT 'B' (4) REQ
FLOAT 'C' (4) REQ

6 DETAIL
PILE GUIDE SCALE: 1:1



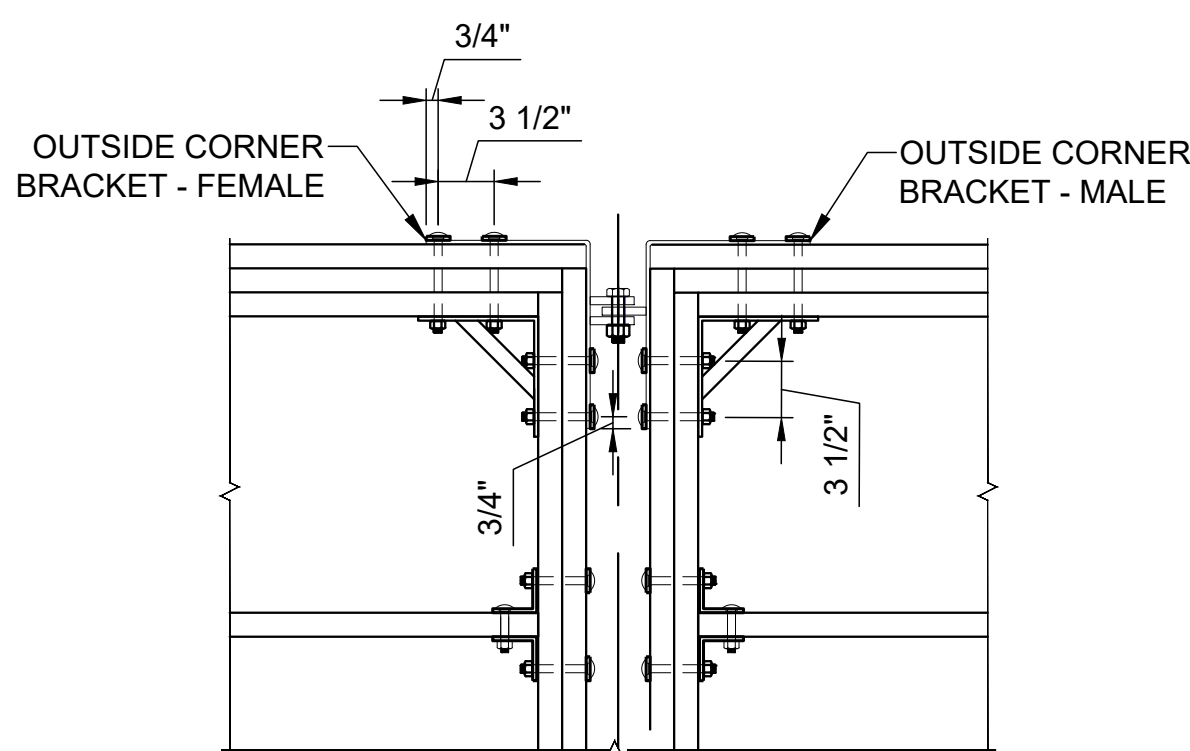
NOTES:
1. CONTRACTOR/FABRICATOR TO DETERMINE ACTUAL MEMBER SIZES PER LOADING REQUIREMENTS.

2 PLAN
TYP. FLOATING DOCK SCALE: 1" = 4'

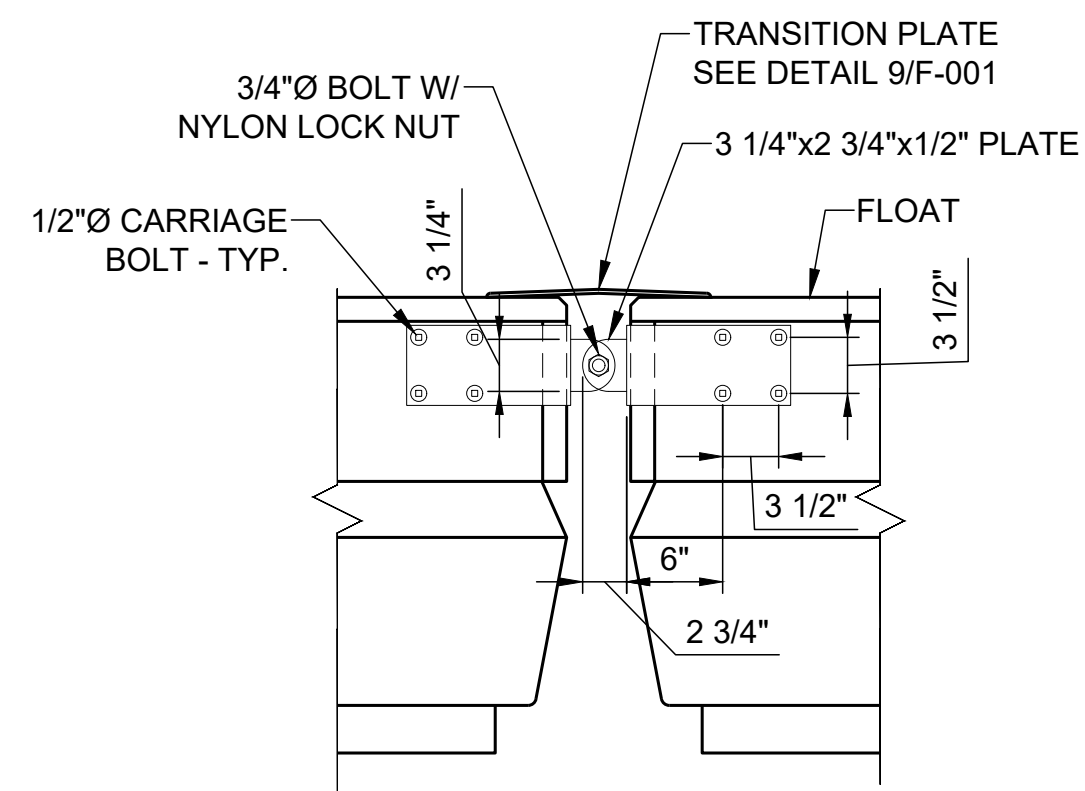


NOTES:
1. FLOTATION UNITS SHOWN ARE FOR GRAPHIC REPRESENTATION ONLY, CONTRACTOR/MANUFACTURER SHALL DETERMINE SIZE AND QUANTITY PER LOADING REQUIREMENTS.

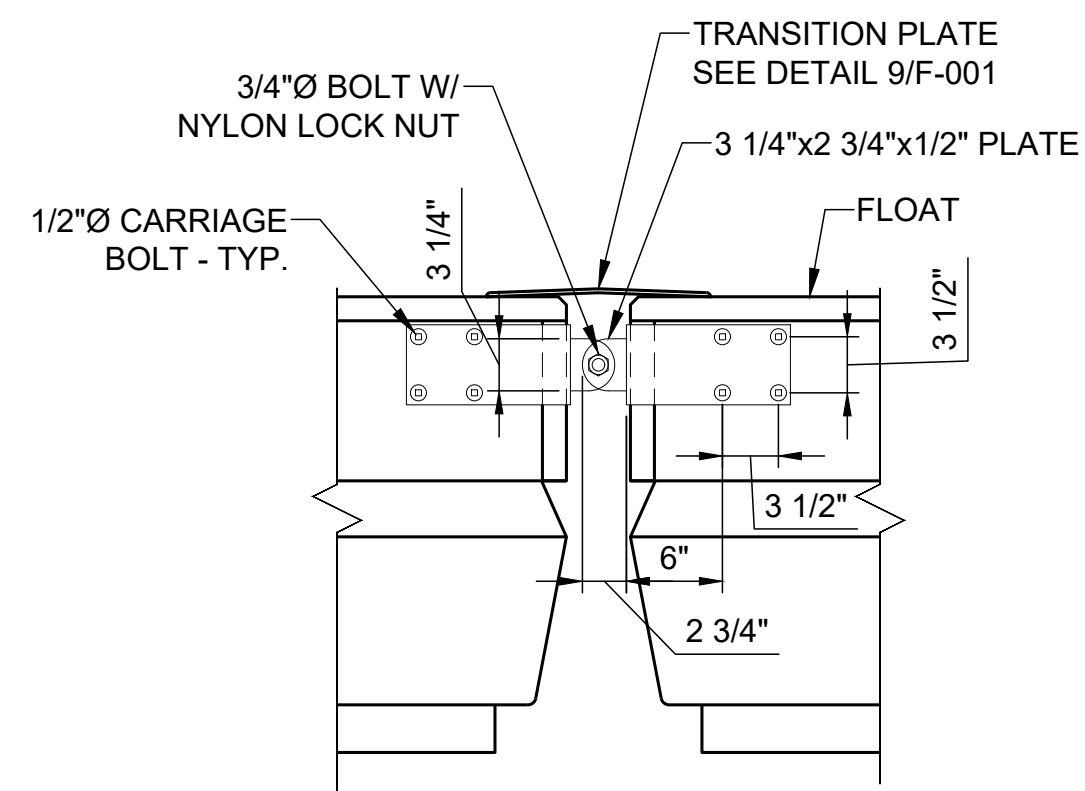
3 ELEVATION
TYP. FLOATING DOCK SCALE: 1" = 4'



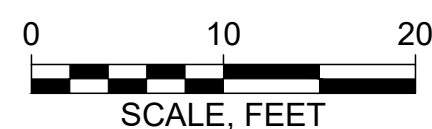
7 DETAIL
FLOAT CONNECTION SCALE: 1:1



8 SECTION
FLOAT CONNECTION SCALE: 1:1

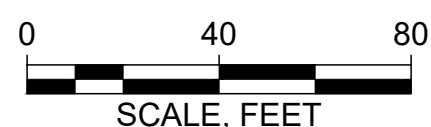


9 DETAIL
TRANSITION PLATE SCALE: 1:1

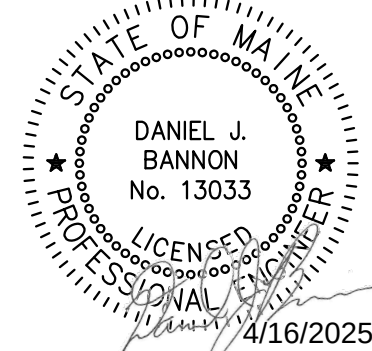


ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM



Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.



Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



UNE
UNIVERSITY OF
NEW ENGLAND
11 HILLS BEACH RD.
BIDDEFORD, MAINE

UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

NO	DATE	ISSUE/REVISION	APP
7	4/16/2025	BIDDEFORD PERMIT APP.	DJB
6	9/17/2024	REVISED PERMIT SET	DJB
5	6/27/2024	REVISED PERMIT SET	DJB
4	9/14/2023	DEP PERMIT SET	DJB
3	6/28/2023	75% DESIGN SUBMISSION	DJB
2	2/15/2023	30% DESIGN SUBMISSION	DJB
1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB

SHEET NAME
FLOAT PLAN AND
DETAILS

SHEET NO.
F-001

FOR PERMIT



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW ENGLAND DISTRICT
NEW ENGLAND DISTRICT OFFICE
696 VIRGINIA ROAD
CONCORD MASSACHUSETTS 01742-2751

March 28, 2025

Regulatory Division

Andrew Phillippe
University of New England
11 Hills Beach Road
Biddeford, Maine 04005
Via Email: aphilippe@une.edu

Dear Mr. Phillippe:

This letter is in response to the application you submitted to the U.S. Army Corps of Engineers (USACE), New England District on June 21, 2024 for a Department of the Army general permit verification. We have assigned this project file number NAE-2024-01628, which you should reference in all correspondence with this office.

A review of the information provided indicates the proposed work includes the construction of a permanent pier consisting of a 28-foot long by 24-foot-wide landing; a 90-foot long by 14-foot-wide approach pier; and an 80-foot long by 24-foot-long pier. Additionally, your project includes a floating dock system consisting of an 80-foot long by 5-foot-wide gangway; a 30-foot long by 12-foot wide float; a 24-foot long by 8-foot wide float; and a 27-foot long by 8-foot wide float, and a 20-foot long by 6-foot wide float. The project is located in the Saco River; at 11 Hills Beach Road, at Latitude 43.458630° and Longitude -70.389050°; in Biddeford, York County, Maine. The work is shown on the enclosed plans titled "University of New England Marine Science Center Pier", on 38 sheets, and dated 8/14/2024.

Based on the information you have provided; we verify that the activity is authorized under General Permit 2. *Structures, Floats, and Lifts* of the October 14, 2020, federal permit known as the Maine General Permits (GPs). If the extent of the project area and/or nature of the authorized impacts to waters are modified, a revised application must be submitted to this office for written approval before work is initiated. You can find a copy of these permits at:

<https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/>

Any deviation from the terms and conditions of the permit, or your submitted plans, may subject the permittee to the enforcement provisions of our regulations. Therefore, in the event changes to this project are contemplated, it is recommended you coordinate with this office prior to proceeding with the work. This office must approve any changes before you undertake them. You must perform this work in compliance

with the terms and conditions of the GPs listed above, and also in compliance with the following special conditions:

1. The permittee shall complete and return the enclosed Work-Start Notification Form to this office at least two weeks prior to the anticipated construction start date.
2. The permittee shall complete and return the enclosed Completion Certification Form to this office at least one month following the completion of the authorized work.
3. You must maintain the activity herein in good condition and in conformance with the terms and conditions of this authorization. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with a general condition of these GPs. Should you wish to cease to maintain the authorized activities, or should you desire to abandon it without a good faith transfer, you must obtain a modification of this authorization from this office, which may require restoration of the area.
4. All construction shall be completed in accordance with the limits of construction and construction sequences detailed on the enclosed plan drawings, titled "University of New England Marine Science Center Pier," on a total of 38 sheets, and dated 8/14/2024. If you change the plans or construction methods for work within or adjacent to the Saco River, please contact us immediately to discuss modification of this authorization. The USACE must approve any changes before you undertake them.
5. A "soft start" is required to allow animals an opportunity to leave the project vicinity before sound pressure levels increase. In addition to using a soft start at the beginning of the workday for pile driving, one must also be used at any time following cessation of pile driving for a period of 30 minutes or longer.
 - a) For impact pile driving: Pile driving will commence with an initial set of three strikes by the hammer at 40% energy, followed by a one-minute wait period, then two subsequent 3-strike sets at 40% energy, with one-minute waiting periods, before initiating continuous impact driving.
 - b) For vibratory pile installation: Pile driving will be initiated for 15 seconds at reduced energy followed by a one-minute waiting period. This sequence of 15 seconds of reduced energy driving, one-minute waiting period will be repeated two additional times, followed immediately by pile-driving at full rate and energy.
6. The work authorized herein shall not be conducted during the time of year (TOY) restriction of April 10 to November 7 in order to minimize adverse impacts to the Atlantic sturgeon, shortnose sturgeon.

This verification is valid until October 14, 2025. You must commence or be under contract to commence the work authorized herein by October 14, 2025 and complete

the work by October 14, 2026. If not, you must contact this office to determine the need for further authorization before beginning or continuing the activity. It is recommended that you contact this office before this authorization expires to discuss if permit reissuance is a possibility.

This GP verification and any associated authorizations does not preclude the necessity to obtain any other federal, state, or local permits, licenses, and/or certifications, which may be required.

If you have any questions related to this verification or have issues accessing documents referenced in this letter, please contact Jana Jacobson, Project Manager at (207) 233-2117, or by email at Jana.L.Jacobson@usace.army.mil. This agency continually strives to improve our customer service. To better serve you, please complete the Customer Service Survey located at: <https://regulatory.ops.usace.army.mil/customer-service-survey/>.

Sincerely,



Jon T. Coleman
Team Leader
Technical Regional Execution Center
North Atlantic Division

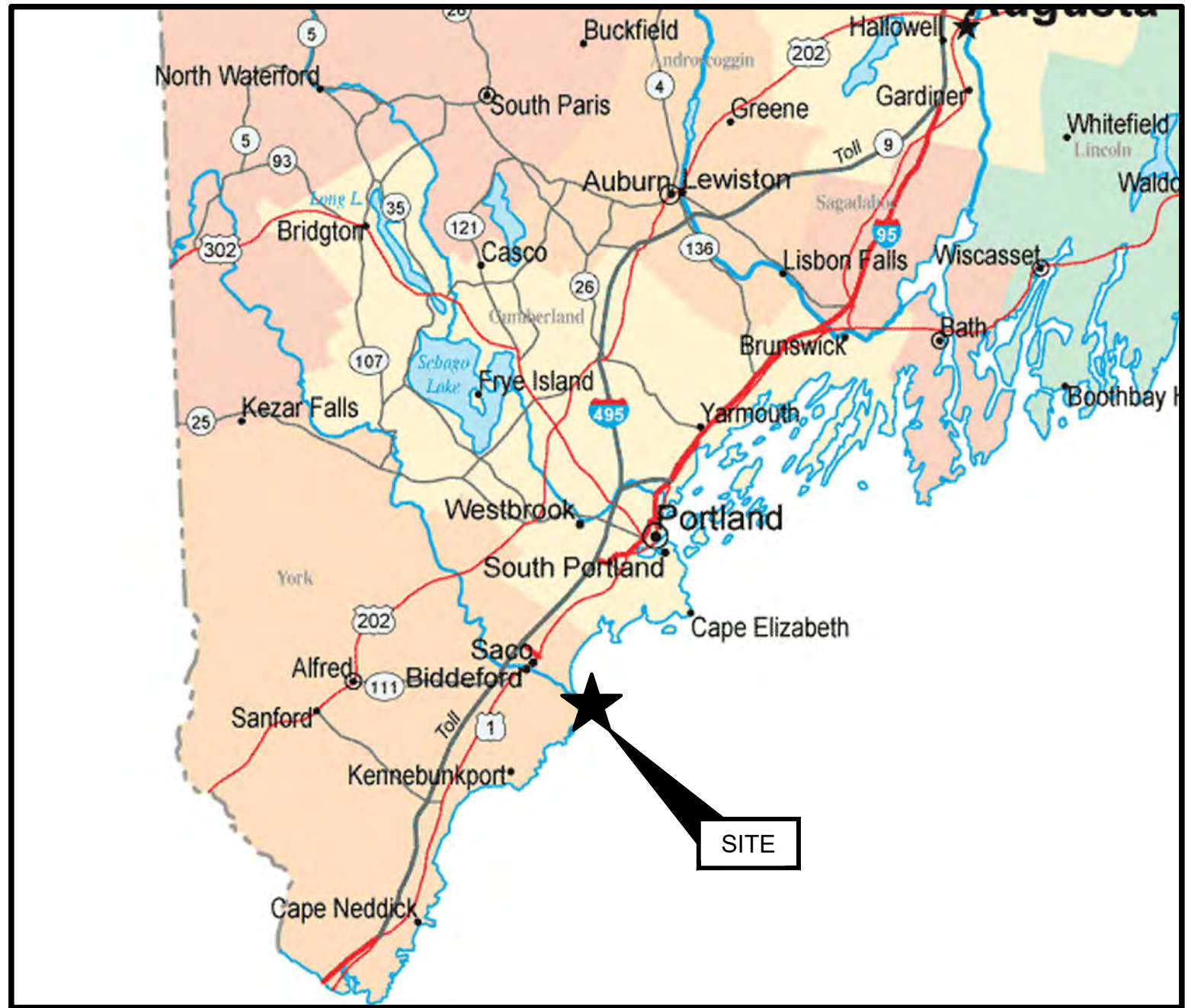
Enclosures

Cc (w/enclosures):

Tom Saucier, Site Design Associates (via tsaucier@sitedesignassociates.biz)

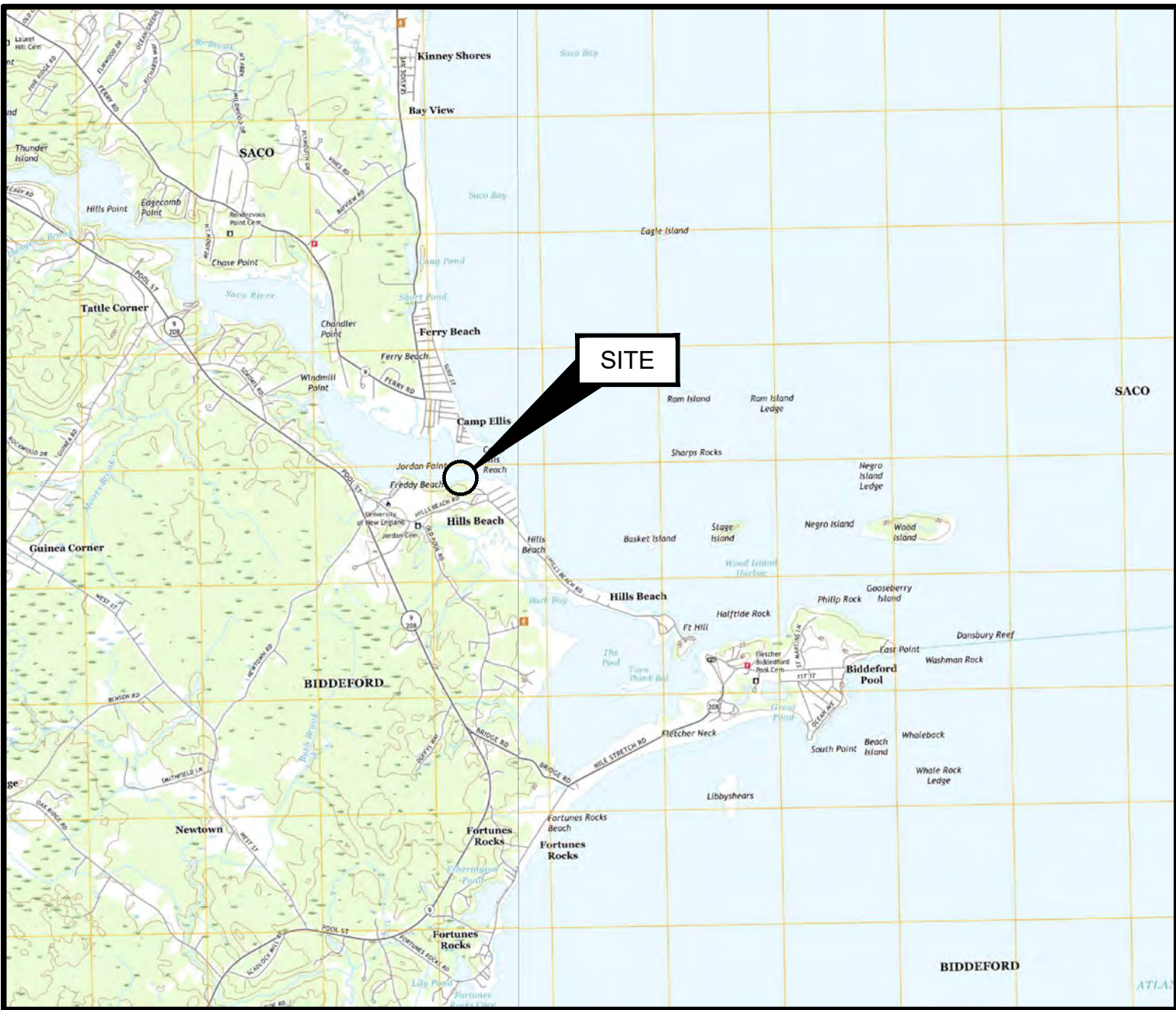
UNIVERSITY OF NEW ENGLAND MARINE SCIENCE CENTER PIER

BIDDEFORD, MAINE



SOURCE:
MAINE ROAD MAP, GOOGLE IMAGES, ACCESSED SEPTEMBER 2023.

STATE MAP
(NOT TO SCALE)



SOURCE:
USGS TOPOGRAPHICAL MAP OF BIDDEFORD, MAINE 2022

SITE LOCATION MAP
(NOT TO SCALE)

PREPARED FOR:

UNIVERSITY OF NEW ENGLAND
11 HILLS BEACH ROAD
BIDDEFORD, MAINE
(207)283-0171



PREPARED BY:

GEI CONSULTANTS, INC.
5 MILK STREET
PORTLAND, ME 04101
(207)797-8901



SHEET INDEX

SHEET NO.	DRAWING NO.	TITLE
1	G-001	COVER SHEET
2	G-002	GENERAL NOTES
3	G-003	VICINITY PLAN
4	B-001	BORING LOCATION PLAN
5	B-002	BORING LOGS (1 OF 3)
6	B-003	BORING LOGS (2 OF 3)
7	B-004	BORING LOGS (3 OF 3)
8	B-005	INTERPRETIVE SUBSURFACE PROFILE
9	C-001	EXISTING CONDITIONS PLAN
10	C-002	DEMOLITION AND CONSTRUCTION STAGING
11	C-003	SITE PLAN
12	C-004	GRADING AND DRAINAGE PLAN
13	C-005	EROSION CONTROL PLAN
14	C-006	ACCESS ROAD PLAN AND PROFILE STA 1+00 TO MATCHLINE STA 4+00
15	C-007	ACCESS ROAD PLAN AND PROFILE MATCHLINE STA 4+00 TO STA 6+60
16	C-008	ACCESS ROAD TYPICAL SECTION
17	C-009	ACCESS ROAD SECTIONS 2+00 TO 3+75
18	C-010	ACCESS ROAD SECTIONS 4+00 TO 5+75
19	C-011	SITE DETAILS I
20	C-012	EROSION CONTROL NOTES
21	C-013	EROSION CONTROL DETAILS I
22	C-014	EROSION CONTROL DETAILS II
23	C-015	REVEGETATION PLAN
24	S-001	PIER LAYOUT PLAN
25	S-002	PIER PLANS AND ELEVATIONS
26	S-003	TYPICAL PIER SECTIONS (1 OF 2)
27	S-004	TYPICAL PIER SECTIONS (2 OF 2)
28	S-005	PILE PLAN
29	S-006	PRECAST PILE CAP PLAN (1 OF 2)
30	S-007	PRECAST PILE CAP PLAN (1 OF 2)
31	S-008	PRECAST DECK PLANK PLAN
32	S-009	MISCELLANEOUS DETAILS (1 OF 5)
33	S-010	MISCELLANEOUS DETAILS (2 OF 5)
34	S-011	MISCELLANEOUS DETAILS (3 OF 5)
35	S-012	MISCELLANEOUS DETAILS (4 OF 5)
36	S-013	MISCELLANEOUS DETAILS (5 OF 5)
37	S-014	ABUTMENT DETAILS
38	F-001	FLOAT PLAN AND DETAILS



THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, IS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF GEI CONSULTANTS AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF GEI CONSULTANTS.

GEI PROJECT NO. 2203703

6	8/14/2024	REVISED PERMIT SET	DJB
5	6/27/2024	REVISED PERMIT SET	DJB
4	9/14/2023	DEP PERMIT SET	DJB
3	6/28/2023	75% DESIGN SUBMISSION	DJB
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1	12/9/2022	15% DESIGN SUBMISSION, REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO.	DATE	ISSUE/REVISION	APP

FOR PERMIT

DRAFT

DWG. NO.

G-001

SHEET NO.

1 OF 38

BANNON, DAN | geiconsultants.com\data\Data_Storage\Working\UNIVERSITY OF NEW ENGLAND\2203703 UN_E Maine Science Center Pier100_CAD\Design\Sheets\2203703-G-002.dwg 8/14/2024

- COORDINATION OF WORK:
- THE CONTRACTOR SHALL SCHEDULE ALL ACTIVITIES SO AS TO LIMIT IMPACT TO MARINE AND LANDSIDE USES.
 - WORK SHALL BE COORDINATED WITH THE OWNER AND THEIR REPRESENTATIVES:
UNE-A:A-A: ANDREW PHILIPPE 207-602-2365 (OFFICE) 207-400-6166 (CELL)
GEIA:A-B: DANIEL BANNON 207-347-2372 (OFFICE) 207-671-2583 (CELL)
SDA:A-A-C: TOM SAUCIER 207-449-4275
 - WORK IS SUBJECT TO THE FOLLOWING TIME OF YEAR AND TIMING OF ACTIVITY RESTRICTIONS:
 - TO BE DEFINED UPON PERMIT APPROVAL.
 - CONTRACTOR ACCESS TO THE SITE BY WATER SHALL AT NO TIME IMPACT USE OF THE ADJACENT FEDERAL NAVIGATION CHANNEL.
 - THE OWNER WILL PERMIT THE CONTRACTOR TO HAVE A LAYDOWN AREA ON THE UPLAND PROPERTY FOR USE DURING CONSTRUCTION. AN APPROXIMATE LAYDOWN AREA IS SHOWN ON SHEET C-005. THE FINAL LOCATION AND DIMENSIONS OF THE LAYDOWN AREA SHALL BE APPROVED BY THE OWNER.

SITE ENVIRONMENTAL CONTROLS:

- ALL WORK SHALL BE PERFORMED IN COMPLIANCE WITH CITY, STATE, AND FEDERAL PERMITS. COPIES OF PERMIT APPROVALS ARE PROVIDED IN THE PROJECT MANUAL.

OSHA REQUIREMENTS:

- PURSUANT TO 26 M.R.S.A. §565, THE CONTRACTOR SHALL ADHERE TO THE OCCUPATIONAL SAFETY AND HEALTH STANDARDS AS PROMULGATED BY THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AT 29-CFR PART 1926 AS MOST RECENTLY AMENDED.

EROSION CONTROL:

- EROSION AND SEDIMENTATION CONTROL MEASURES ARE PROPOSED TO CONTROL ACCELERATED EROSION AND SEDIMENTATION AND REDUCE ADVERSE IMPACTS FROM RUNOFF AND EROSION AT THE WORK SITE.
- APPLICATION OF TEMPORARY AND PERMANENT EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MAINE EROSION AND SEDIMENT CONTROL BMP'S PUBLISHED BY MAINE DEP AND AVAILABLE AT: [HTTPS://WWW.MAINE.GOV/DEP/LAND/EROSION/ESCBMPs/](https://www.maine.gov/dep/land/erosion/escbmps/)
- THE WORK SHALL BE PERFORMED BY A CONTRACTOR THAT IS CERTIFIED BY MAINE DEP IN EROSION AND SEDIMENT CONTROL MEASURES. A CERTIFIED INDIVIDUAL SHALL BE ONSITE DURING ALL CONSTRUCTION ACTIVITY.
- EROSION AND SEDIMENTATION DUE TO RUNOFF, TIDAL EXPOSURE, AND WAVE ACTION SHALL BE CONTROLLED BY STAGING CONSTRUCTION ACTIVITY TO MINIMIZE AREA AND TIME OF DISTURBANCE, APPLICATION OF SILT FENCE, BOOMS, BARRIERS, AND OTHER EROSION CONTROL MEASURES, AND PRESERVING NATURAL VEGETATION WHENEVER POSSIBLE.
- THE CONTRACTOR'S SEQUENCE OF OPERATIONS AND SCHEDULE FOR WORK ACTIVITIES SHALL ACT TO MINIMIZE EXPOSURE TO EROSION.
- THE CONTRACTOR SHALL TAKE CARE TO LIMIT THE AREA OF SOIL DISTURBANCE TO THE MINIMUM NECESSARY TO COMPLETE THE WORK.
- EROSION CONTROL MEASURES, SEEDING, AND VEGETATION SHALL BE INSPECTED WEEKLY AND AFTER RAINSTORMS, RUNOFF EVENTS, AND STORM EVENTS UNTIL FINAL ACCEPTANCE. REPAIRS SHALL BE MADE WHEN NO LONGER SERVICEABLE DUE TO DAMAGE OR ACCUMULATION OF SEDIMENT.
- AT THE COMPLETION OF CONSTRUCTION, ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND CONTOUR, UNLESS OTHERWISE INDICATED ON THE PLANS.

SITE PREPARATION:

- CONTRACTOR SHALL INSTALL ALL SIGNAGE PRIOR TO INITIATION OF CONSTRUCTION ACTIVITIES. INCLUDE OWNER PROJECT SIGNAGE AND FEDERAL AND STATE MANDATED WORK PLACE SIGNAGE.
- CONTRACTOR SHALL HAVE IN-PLACE TRASH AND SANITARY FACILITIES FOR THE WORK PLACE.
- DISCOVERY OF INCONSISTENT SITE INFORMATION OR CONDITIONS ARE TO BE IMMEDIATELY CONVEYED TO THE OWNER AND ENGINEER PRIOR TO COMMENCING OR CONTINUING CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY DIG SAFE PRIOR TO COMMENCING ANY WORK.
- LOCATIONS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY LOCATIONS OF UTILITIES AS MAY BE REQUIRED. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES OCCURRING AS A RESULT OF THE CONTRACTOR'S FAILURE TO LOCATE AND PROTECT UNDERGROUND UTILITIES. ALL REPAIRS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL MAINTAIN AND PROTECT ALL EXISTING UTILITIES AND DRAINAGE AT ALL TIMES. THE CONTRACTOR SHALL REPAIR ANY DAMAGE AND RESTORE TO THE PRE-EXISTING CONDITION AT NO COST TO THE OWNER.
- CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES AND SHALL PERFORM THE WORK IN A MANNER THAT AVOIDS DAMAGE TO EXISTING STRUCTURES. STRUCTURES INCLUDE, BUT ARE NOT LIMITED TO, BUILDINGS, PIERS, BULKHEADS, FLOATS, PIER UTILITIES AND FIXTURES, AND RIPRAP SLOPES. CONTRACTOR SHALL REPAIR ANY DAMAGE AT NO ADDITIONAL COST TO THE CITY.
- CONTRACTOR SHALL SUPPLY ALL NECESSARY TEMPORARY UTILITIES FOR CONSTRUCTION INCLUDING, BUT NOT LIMITED TO; WATER, POWER, LIGHTING, DATA, AND TELEPHONE.
- CONTRACTOR SHALL READ AND UNDERSTAND ALL REGULATORY CONDITIONS ASSOCIATED WITH THE PROJECT AND SHALL COMPLY WITH ALL ENVIRONMENTAL REQUIREMENTS AND PERMIT CONDITIONS.
- CONTRACTOR SHALL PROVIDE A CONFINED CONCRETE TRUCK WASHDOWN AREA AT A LOCATION TO BE APPROVED BY THE ENGINEER. WASHDOWN AREA SHALL INCLUDE PROTECTION TO PAVEMENT, A PERIMETER WALL AND A FILTER FABRIC LINER. NO RUNOFF CONTAINING CEMENT OR OTHER SUSPENDED SOLIDS WILL BE PERMITTED. ALL MATERIALS SHALL BE COMPLETELY REMOVED UPON COMPLETION OF CONSTRUCTION AND DISPOSED OF AT AN APPROVED DISPOSAL LOCATION.

CODES:

- MAINE DOT STANDARD SPECIFICATIONS, MARCH 2020 ED. WITH SUPPLEMENTAL SPECIFICATIONS THROUGH JUNE 16,2023.
- MAINE UNIFORM BUILDING AND ENERGY CODE (MUBEC).
- AMERICAN CONCRETE INSTITUTE (ACI) 318-14: BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, 2014 ED.
- CONCRETE REINFORCING STEEL INSTITUTE (CRSI):
- AMERICAN INSTITUTE FOR STEEL CONSTRUCTION (AISC) STEEL CONSTRUCTION MANUAL, 15TH ED.
- ALUMINUM ASSOCIATION, ALUMINUM DESIGN MANUAL, 2015 ED.
- AMERICAN WOOD COUNCIL, NATIONAL DESIGN SPECIFICATIONS (NDS) FOR WOOD CONSTRUCTION, 2015 ED.

SITE CONTROL AND BASELINES:

- PROJECT BASE PLAN HAS BEEN DEVELOPED FROM A COMPILATION OF MULTIPLE SURVEYS AS DESCRIBED UNDER "SURVEY AND PROPERTY NOTES".
- ELEVATIONS ARE PROVIDED IN NAVD88 VERTICAL DATUM UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL INSTALL SURVEY CONTROL AS NECESSARY TO PERFORM THE WORK. PERMANENT SURVEY CONTROL (AT LEAST 2 POINTS) SHALL BE ESTABLISHED FOR THE PROJECT AND PROTECTED FROM DAMAGE DURING CONSTRUCTION AND PROVIDED ON AS-BUILT DRAWINGS.
- THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN PROJECT BASELINES AND CONTROL AS REQUIRED TO ENSURE ACCURATE LOCATION OF ALL ELEMENTS OF THE PROJECT.

SURVEY AND PROPERTY NOTES:

- LOCUS PARCEL IS DEPICTED ON CITY OF BIDDEFORD, TAX MAP 52, LOT 4 AND IS LOCATED IN THE INSTITUTIONAL (IN) ZONE. A PORTION OF THE SITE IS LOCATED IN THE LIMITED RESIDENTIAL (LR) SHORELAND OVERLAY DISTRICT.
- THE RECORD OWNER IS THE UNIVERSITY OF NEW ENGLAND, BY DEED DATED APRIL 18, 1962, RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1484, PAGE 0145.
- UPLAND TOPOGRAPHY AND BASE SURVEY INFORMATION DEPICTED HEREON ARE BASED ON THE FOLLOWING SURVEYS:
 - "TOPOGRAPHIC SURVEY, MARINE SCIENCE CENTER, UNIVERSITY OF NEW ENGLAND" BY OWEN HASKELL, INC. DATED DEC. 13, 2022.
 - "TOPOGRAPHIC SURVEY AT MARINE SCIENCE CENTER" BY STATEWIDE SURVEYS, INC., DATED MAY 4, 2015.
- HYDROGRAPHIC DATA DEPICTED HEREON IS BASED ON 2022 SURVEY BY OWEN HASKELL SURVEY.
- FEDERAL CHANNEL LIMITS ARE DEPICTED BASED ON THE PLAN, "SACO RIVER, SACE AND BIDDEFORD, MAINE, CONDITION SURVEY" PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS, DATED JULY 3, 2021.
- HORIZONTAL COORDINATES ARE BASED ON NAD83 MAINE STATE PLANE WEST ZONE-1801 AND ARE EXPRESSED IN FEET. ELEVATIONS ARE BASED ON NAVD88 VERTICAL DATUM AND CONTROL POINTS PROVIDED BY UNE.
- UTILITY INFORMATION DEPICTED HEREON IS BASED ON FEBRUARY 2023 UTILITY LOCATION SURVEY PERFORMED BY BLOOD HOUND, LLC UNDERGROUND UTILITY LOCATORS AND MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTACT DIG SAFE (1-888-DIG-SAFE) AND VERIFY EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION OR EXCAVATION.
- PORTIONS OF THE PROPERTY ARE DEPICTED AS BEING IN A SPECIAL FLOOD HAZARD AREA BASED ON FEMA PRELIMINARY FIRM 23031C0459G DATED APRIL 14, 2017. THE SITE IS LOCATED IN A VE ZONE HAVING BASE FLOOD ELEVATION OF 14 FT NAVD88.
- SUBSURFACE INFORMATION IS BASED ON EXPLORATIONS PERFORMED IN 2015 AND 2022 CONSISTING OF BORINGS, PROBES, AND TEST PITS. REFER TO SHEETS B-001 - B-005 FOR SUBSURFACE INFORMATION.

CONCRETE

- CAST IN PLACE CONCRETE SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS BASED ON THE MAINE DOT STANDARD SPECIFICATION:

LOCATION	MDOT CLASS	fc
ALL CONCRETE	CLASS LP	5,000 PSI
- ALL REINFORCEMENT SHALL BE NEW DEFORMED BARS, GRADE 60 CONFORMING TO ASTM A615, HOT DIP GALVANIZED ACCORDING TO ASTM A767/A767M OR ASTM A1094/A1094M.
- REINFORCEMENT ACCESSORIES SHALL BE DIELECTRIC COATED STEEL OR APPROVED PLASTIC.
- GROUT SHALL BE A HIGH STRENGTH, NON-SHRINK GROUT WITH SALT WATER RESISTANCE.
- CONCRETE COVER SHALL BE A MINIMUM OF 3 INCHES UNLESS NOTED OTHERWISE.
- ALL EXPOSED EDGES OF CONCRETE AT COLD JOINTS SHALL HAVE A ROUGHENED FINISH AND BE COATED WITH EPOXY BONDING AGENT PRIOR TO CASTING ADJACENT POUR.
- PROVIDE 1 INCH CHAMFER ON ALL EXPOSED EDGES UNLESS NOTED OR DIRECTED OTHERWISE.
- TOP SURFACE OF EXPOSED CONCRETE SHALL RECEIVE A BROOM FINISH.
- COAT FINISHED SURFACES OF CONCRETE WITH A 100% SILANE PENETRATING CONCRETE SEALER SUITABLE FOR USE IN A MARINE ENVIRONMENT. SEALER SHALL BE LISTED ON THE MAINE DOT QUALIFIED PRODUCTS LIST.
- REINFORCEMENT DEVELOPMENT AND LAP SPlice LENGTHS SHALL BE IN ACCORDANCE WITH ACI 318.
- CONCRETE MIX DESIGN SHALL INCLUDE THE USE OF CORROSION INHIBITING ADMIXTURE AT DOSAGE SUITABLE FOR USE IN AN AGGRESSIVE MARINE ENVIRONMENT. CORROSION INHIBITOR SHALL BE LISTED ON THE MAINE DOT QUALIFIED PRODUCTS LIST.

EPOXY ANCHORS

- ANCHOR ROD, WASHERS, AND NUTS SHALL CONFORM TO ASTM F1554, GRADE 36, AND SHALL BE HOT DIP GALVANIZED.
- THE MINIMUM EDGE DISTANCE AND MINIMUM SPACING FOR ALL ANCHORS SHALL BE 6 BOLT DIAMETERS.
- ALL HOLES SHALL BE DRILLED TO THE RECOMMENDED DIAMETER PER MANUFACTURERS REQUIREMENTS USING CARBIDE DRILL BITS MEETING ANSI B212.5-1994.
- HOLES SHALL BE BRUSHED WITH NYLON BRUSH AND BLOWN CLEAN USING OIL-FREE COMPRESSED AIR A MINIMUM OF TWO TIMES.
- ALL HOLES SHALL BE FREE OF STANDING WATER BEFORE INSTALLING ANCHORS.
- EPOXY SHALL HAVE MINIMUM BOND STRENGTH OF 1,600 PSI @ 14 DAYS.

EARTHWORK

- EARTHWORK MATERIALS SHALL MEET THE FOLLOWING SPECIFICATIONS:

AGGREGATE BASE	TYPE A (MDOT 703.06A)
AGGREGATE SUBBASE	TYPE D (MDOT 703.06C)
WALL BACKFILL	CRUSHED STONE ¾" (MDOT 703.13)
DRAINAGE STONE	CRUSHED STONE 2 INCH (MDOT 703.31)
ORDINARY BORROW	SEE #2 BELOW.
- ORDINARY BORROW SHALL BE EXISTING GRANULAR SOIL WITH MAXIMUM 4 INCH STONE SUBJECT TO APPROVAL BY THE ENGINEER. ALL DEBRIS OR OTHER DELETERIOUS MATERIALS SHALL BE REMOVED FROM ORDINARY BORROW PRIOR TO REUSE.

STEEL

- STEEL ANGLE, STRAPS, AND MISCELLANEOUS FABRICATIONS SHALL BE ASTM A36 HOT DIP GALVANIZED AFTER FABRICATION, UNLESS OTHERWISE NOTED.
- ALL FASTENERS SHALL BE HOT-DIP GALVANIZED OR STAINLESS STEEL.
- ALL BOLTS SHALL CONFORM TO ASTM A307. MINIMUM SIZE SHALL BE ¾ INCH UNLESS OTHERWISE NOTED.

HEAVY TIMBER

- UNLESS OTHERWISE SPECIFIED, ALL TIMBER FRAMING TO BE USED SHALL BE NO. 1 AND BETTER SOUTHERN PINE AS GRADED BY SPIB AND WITH DESIGN VALUES PER NDS 2015.
- ALL TIMBER SHALL BE NEW AND SUPPLIED WITH NOMINAL DIMENSIONS UNLESS OTHERWISE NOTED.
- ALL NEW SOUTHERN YELLOW PINE TIMBER MEMBERS TO WHICH THE PUBLIC MAY BE EXPOSED SHALL BE TREATED WITH ALKALINE COPPER QUATERNARY (ACQ) IN ACCORDANCE WITH AWP& AWPB W/ MINIMUM RETENTION OF 0.40 LBS. PER CUBIC FOOT. ALL OTHER SOUTHERN YELLOW PINE MEMBERS SHALL BE CCA TREATED TO 2.5 PCF RETENTION.
- ALL EXPOSED EDGES SHALL BE PLANED OR SANDED TO PROVIDE SMOOTH SURFACE FREE OF ROUGH EDGES OR DEFECTS.
- ALL EXPOSED FASTENERS SHALL BE COUNTERSUNK.
- DOCK WASHERS SHALL BE PROVIDED BENEATH NUT OR BOLT HEAD OF ALL TIMBER BOLTED CONNECTIONS. TIMBER BOLTS SHALL BE CONSIDERED AN ACCEPTABLE ALTERNATIVE TO HEX HEADED BOLTS WITH DOCK WASHERS.
- STANDARD WASHERS SHALL BE PERMISSIBLE WHERE CONNECTED PARTS INCLUDE STEEL PLATES, ANGLES, BRACKETS, OR BACKER PLATES.

TIMBER PILES

- TIMBER PILES SHALL BE TROPICAL GREENHEART AND SHALL CONFORM TO ASTM D25.
- PROVIDE PROTECTION TO PILE TIP AND BUTT TO AVOID DAMAGE DURING DRIVING.
- PILES SHALL BE ORDERED MINIMUM 5 FT LONGER THAN TABULATED LENGTHS TO ALLOW FOR INSTALLATION VARIABILITY AND CUTOFF.
- ALL TIMBER PILES SHALL BE DRIVEN TO THE MINIMUM EMBEDMENT OR CAPACITY CRITERIA INDICATED IN THE PILE SCHEDULE. FENDER PILES MAY BE INSTALLED TO THE REQUIRED DEPTH USING A VIBRATORY HAMMER. IN THE EVENT THAT A VIBRATORY HAMMER IS UNABLE TO ACHIEVE THE MINIMUM REQUIRED EMBEDMENT, THE CONTRACTOR WILL BE RESPONSIBLE FOR COMPLETING FINAL SET USING AN IMPACT HAMMER.
- GREENHEART PILES SHALL BE Banded WITH ½ INCH STAINLESS STEEL UTILITY STRAPPING PRIOR TO CUTOFF. REFER TO DETAIL ON SHEET S-009.

ASPHALT

- PAVING GRADES SHALL PITCH TO EXISTING STRUCTURES.
- PAVEMENT SHALL CONSIST OF 4" OF HOT MIX ASPHALT PLACED IN TWO COURSES, SEE DETAIL.
- CONTRACTOR TO SAW CUT PAVEMENT AT LIMIT OF REMOVAL.
- CONTRACTOR TO PROVIDE SMOOTH TRANSITIONS BETWEEN NEW AND EXISTING ASPHALT.
- CONTRACTOR TO SEAL JOINT BETWEEN NEW AND EXISTING ASPHALT WITH BITUMINOUS JOINT SEALANT.

GEOTEXTILE

- GEOTEXTILE SEPARATION FABRIC SHALL BE MIRAFI FW700 OR EQUIVALENT.
- OVERLAP ALL SEAMS MINIMUM 2 FT.
- INSTALL PER MANUFACTURERS RECOMMENDATIONS.

STEEL PIPE PILES

- STEEL PIPE PILES SHALL CONFORM TO ASTM A252, GRADE 3.
- ALL PILES SHALL BE SEAMLESS.
- AN OPEN CUTTING SHOE IS REQUIRED.
- PIPE PILES SHALL BE COATED WITH FUSION BONDED EPOXY, COLOR BROWN. MINIMUM COATING THICKNESS SHALL BE 18-20 MIL. COATING SHALL EXTEND FROM TOP OF PILE DOWN TO MINIMUM 5-FEET BELOW GRADE.
- DAMAGE TO ANY STEEL COATING SHALL BE TOUCHED UP BY THE CONTRACTOR USING APPROVED MATERIALS AND METHODS.
- ALL PILES SHALL BE FILLED TO THE TOP WITH CONCRETE AFTER INSTALLATION. ROCK-SOCKETED PILES SHALL BE CLEANED OUT AND FILLED FOR THEIR ENTIRE LENGTH PRIOR TO CONCRETE FILLING. DRIVEN PILES SHALL BE CLEANED OUT TO MINIMUM 10-FEET BELOW ADJACENT MUDLINE.
- REFER TO PILE SCHEDULE ON SHEET S-005 FOR ESTIMATED PILE LENGTHS, COATING LENGTHS, SIZES, AND SOCKETING REQUIREMENTS.

TIMBER FLOATS

- Float MANUFACTURER SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS SIGNED AND SEALED BY A MAINE LICENSED PROFESSIONAL ENGINEER. MANUFACTURER SHALL BE RESPONSIBLE FOR FINAL DETERMINATION OF FLOAT FRAMING AND DRUM LAYOUT TO MEET BOUYANCY, LOADING, AND ENVIRONMENTAL EXPOSURE REQUIREMENTS IN ACCORDANCE WITH THE SPECIFICATIONS.
- UNLESS OTHERWISE SPECIFIED, ALL TIMBER TO BE USED SHALL BE NO. 1 AND BETTER SOUTHERN PINE AS GRADED BY SPIB AND WITH DESIGN VALUES PER NFPA NATIONAL DESIGN SPECIFICATION OR THE EQUIVALENT FOR DOUGLAS FIR AS GRADED BY WCLB AND WWPA.
- ALL TIMBER SHALL BE NEW AND SUPPLIED WITH NOMINAL DIMENSIONS.
- ALL TIMBER MEMBERS TO WHICH THE PUBLIC MAY BE EXPOSED SHALL BE TREATED WITH ALKALINE COPPER QUATERNARY (ACQ) IN ACCORDANCE WITH AWP& AWPB W/ MINIMUM RETENTION OF 0.40 LBS. PER CUBIC FOOT. ALL OTHER SOUTHERN YELLOW PINE MEMBERS SHALL BE CCA TREATED TO 2.5 PCF RETENTION.
- DECKING SHALL BE NO. 1 SOUTHERN PINE, MINIMUM SIZE 2X6.
- MISC. HARDWARE: GALVANIZED STEEL PLATES AND ALL BOLTS AND RELATED HARDWARE SHALL BE FASHIONED FROM STEEL AND GALVANIZED AFTER FABRICATION AND IN ACCORDANCE WITH REQUIREMENTS OF ASTM A123, AND/OR A153. BOLTS AND NUTS SHALL CONFORM TO ASTM A307.
- CONNECTION HARDWARE SHALL BE FABRICATED FROM ASTM-A36 GRADE STEEL WITH MINIMUM THICKNESS ¼".
- PROVIDE GUIDE/WEARING BRACKETS AT GANGWAY LANDING ON FLOAT 'C' PER DETAIL A ON SHEET S-012. BRACKETS SHALL BE LOCATED IN FIELD TO BE CENTERED ON GANGWAY RANGE OF TRAVEL AT MID-TIDE ELEVATION.
- TRANSITIONS BETWEEN FLOATING DOCKS SHALL INCLUDE ADA COMPLIANT TRANSITION PLATES ACROSS GAPS AT HINGE LOCATIONS.
- FLOATING DOCKS SHALL MEET THE FOLLOWING LOADING AND FREEBOARD CRITERIA:

DEAD LOAD	20 INCH FREEBOARD
20 PSF UNIFORM LIVE LOAD	MINIMUM 8 INCH FREEBOARD
40 PSF UNIFORM LIVE LOAD	MINIMUM ZERO FREEBOARD

DEAD LOADS SHALL INCLUDE ALL COMPONENTS AND ATTACHMENTS INCLUDING WEIGHT OF ALUMINUM GANGWAY BEARING ON FLOAT 'C'.

ALUMINUM GANGWAY

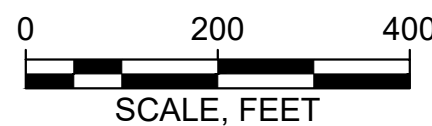
- GANGWAY MANUFACTURER SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS SIGNED AND SEALED BY A MAINE LICENSED PROFESSIONAL ENGINEER. MANUFACTURER SHALL BE RESPONSIBLE FOR FINAL DETERMINATION OF GANGWAY FRAMING AND CONFIGURATION TO MEET STRUCTURAL, PERFORMANCE, AND ACCESSIBILITY REQUIREMENTS IN ACCORDANCE WITH THE SPECIFICATIONS.
- GANGWAY SHALL MEET THE FOLLOWING LOADING AND DEFLECTION CRITERIA:
 - DEAD LOAD SHALL CONSIST OF WEIGHT OF THE ENTIRE GANGWAY STRUCTURE PLUS ANY UTILITIES AND ATTACHMENTS.
 - ALLOWABLE STRESSES IN DECK SURFACE, GANGWAY FRAMING, AND MOUNTING COMPONENTS SHALL NOT BE EXCEEDED AT A UNIFORM LIVE LOAD OF 100 PSF.
 - 50 PSF UNIFORM LIVE LOAD MAX. DEFLECTION L/360
 - 100 PSF UNIFORM LIVE LOAD MAX. DEFLECTION NOT TO EXCEED GANGWAY CAMBER
 - ALL HANDRAIL AND POSTS SHALL BE DESIGNED TO WITHSTAND A 200 LB LOAD APPLIED IN ANY DIRECTION OR A 50 LB/FT LOAD APPLIED ALONG THE HANDRAIL LENGTH.
- GANGWAY HINGES SHALL BE CAPABLE OF TRAVELING FREELY AND WITHOUT BINDING THROUGH THE ENTIRE RANGE OF WATER LEVELS FROM MLW TO BASE FLOOD ELEVATION PLUS TWO-FEET OF ADDITIONAL ELEVATION IN EITHER DIRECTION.

FOR PERMIT

SHEET NAME				SHEET NO.	
GENERAL NOTES				G-002	
6	8/14/2024	REVISED PERMIT SET	DJB		
5	6/27/2024	REVISED PERMIT SET	DJB		
4	9/14/2023	DEP PERMIT SET	DJB		
3	6/28/2023	75% DESIGN SUBMISSION	DJB		
2	2/15/2023	305 DESIGN SUBMISSION	DJB		
1	12/9/2022	15% DESIGN SUB REV	DJB		
0	11/11/2022	15% DESIGN SUBMISSION	DJB		
NO	DATE	ISSUE/REVISION	APP		



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Attention:

If this scale bar does not measure 1" then drawing is not original scale.

DRAFT

Designed: DJB

Drawn: JAM

Checked: BJB

Approved: BMM

P.E. No: 13033

GEI Project 2203703



UNIVERSITY OF
NEW ENGLAND

11 HILLS BEACH RD.
BIDDEFORD, MAINE

**UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER**

11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

NO	DATE	ISSUE/REVISION	APP
6	8/14/2024	REVISED PERMIT SET	DJB
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4	9/14/2023	DEP PERMIT SET	DJB
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SHEET NAME	SHEET NO.
VICINITY PLAN	G-003

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- LEGEND:**
- LB-1 BORINGS
 - ⊗ HP-1 PROBES
 - - - EXISTING CONTOUR
 - - - HAT SETBACK
 - - - MLLW
 - - - MHHW
 - - - HAT
 - - - BFE
 - - - 250' SHORELAND ZONE
 - - - TOP OF BANK
 - - - LEDGE
 - - - CENTER LINE
 - - - EDGE OF PAVEMENT
 - - - STRUCTURES

BORING LOCATIONS

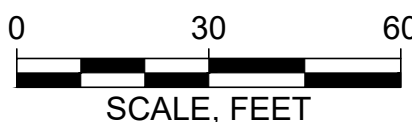
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B-1	228639.4694	2895328.6104	W70.2258652	N43.2737588
LB-1	228491.1316	2895484.7460	W70.2256530	N43.2736127
LB-3	228473.9539	2895507.7880	W70.2256217	N43.2735958
LB-8	228394.7680	2895765.9460	W70.2252714	N43.2735182
WB-1	228600.2367	2895310.1868	W70.2258901	N43.2737200
WB-2	228618.6209	2895404.4100	W70.2257624	N43.2737384
WB-3	228587.8279	2895361.5094	W70.2258204	N43.2737079
WB-4	228566.1309	2895421.9060	W70.2257385	N43.2736866

BORING LOCATIONS

BORING ID	NORTHING	EASTING	LONGITUDE	LATITUDE
ADD-1	228452.7149	2895499.3250	W70.2256331	N43.2735748
ADD-8	228365.9058	2895759.6110	W70.2252799	N43.2734897
ADD-9	228340.5054	2895746.7690	W70.2252972	N43.2734646
HP-1	228497.6520	2895482.1026	W70.2256566	N43.2736191
HP-2	228513.6726	2895503.0285	W70.2256283	N43.2736350
HP-3	228533.1223	2895461.2100	W70.2256851	N43.2736541
HP-4	228547.8975	2895443.6208	W70.2257090	N43.2736686
P-1	228577.9008	2895403.9741	W70.2257628	N43.2736982
P-2	228559.0882	2895420.8334	W70.2257399	N43.2736796

ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM



Attention:
0 1"
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DRAFT

Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



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BIDDEFORD, MAINE

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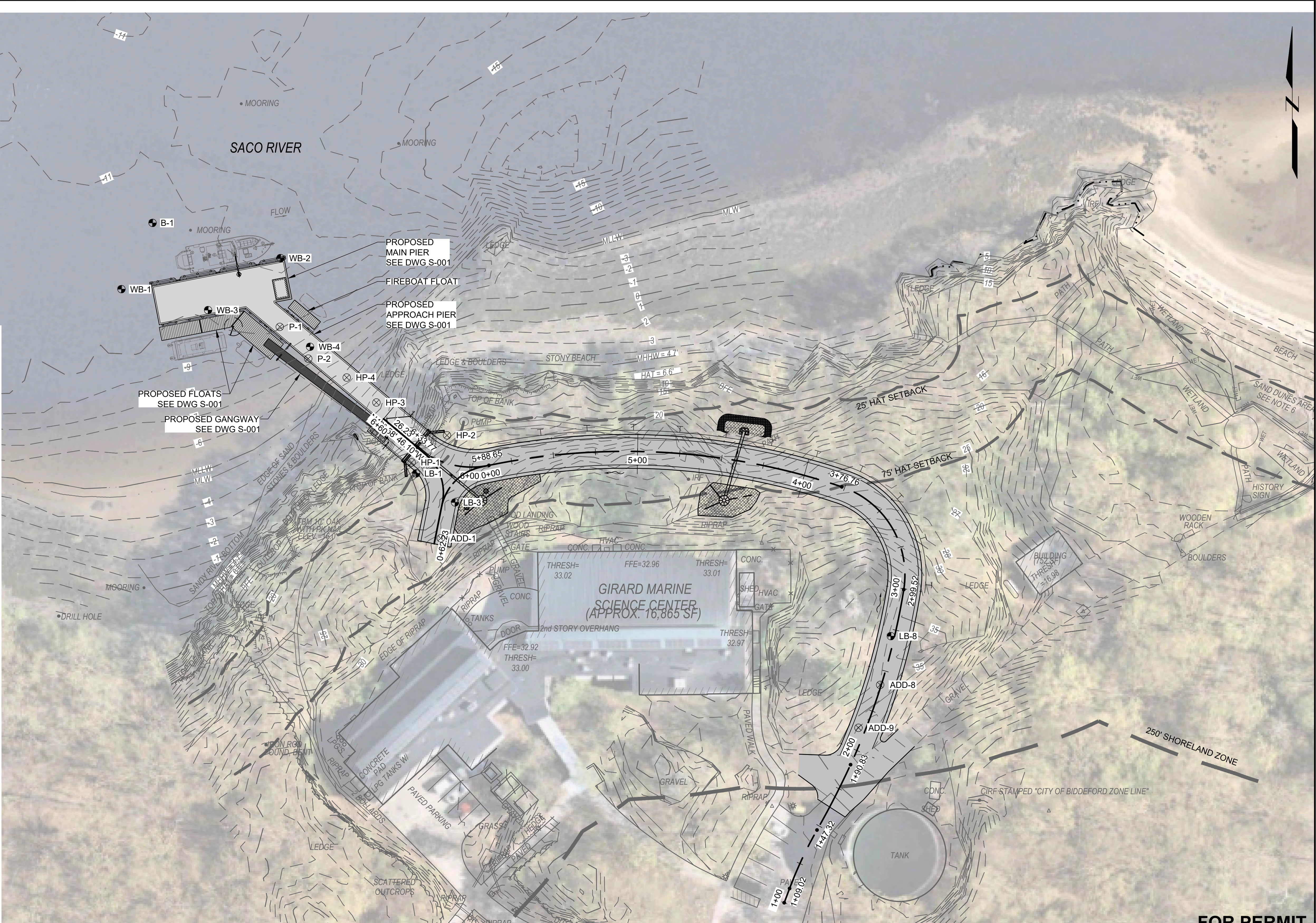
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

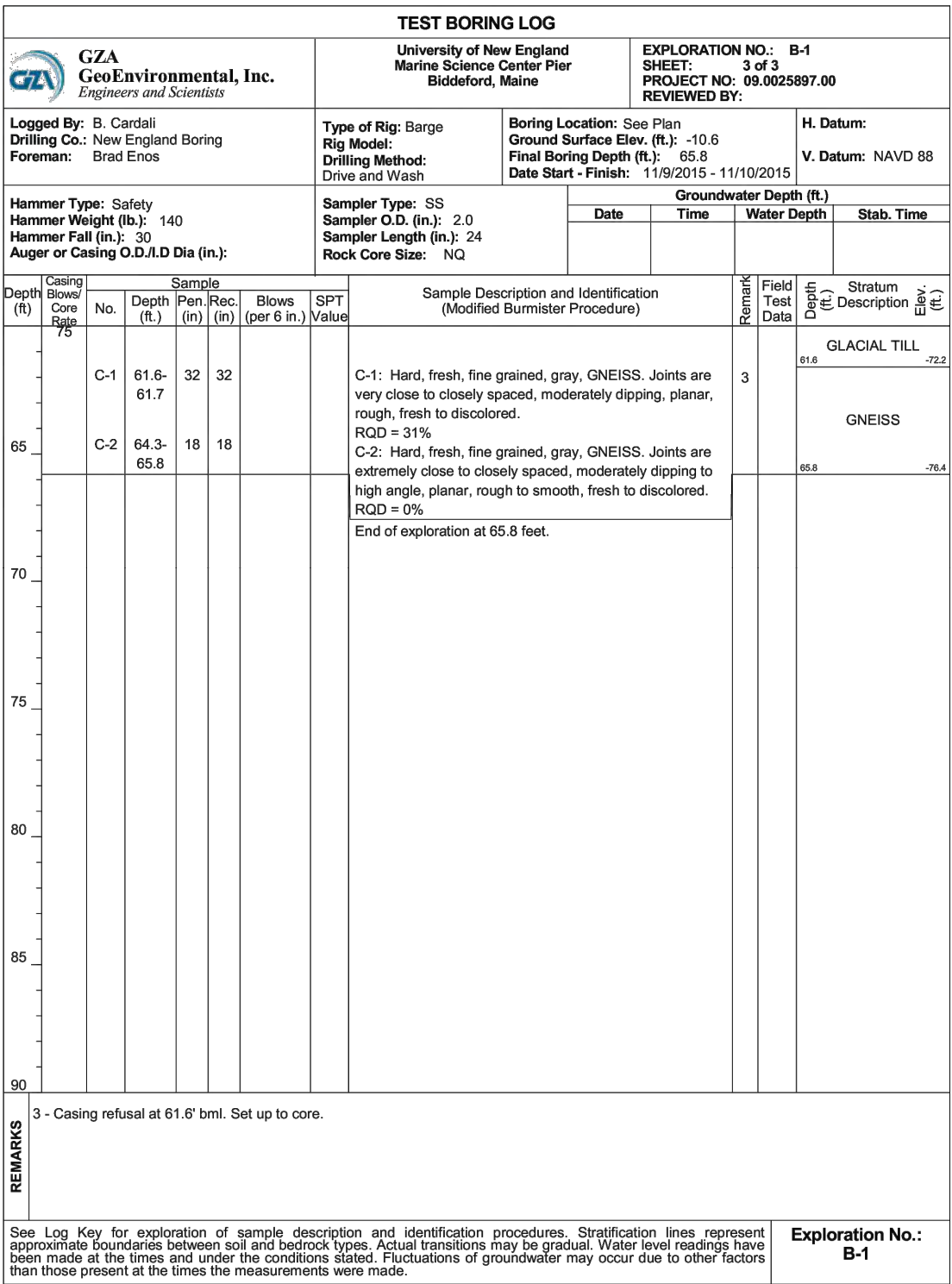
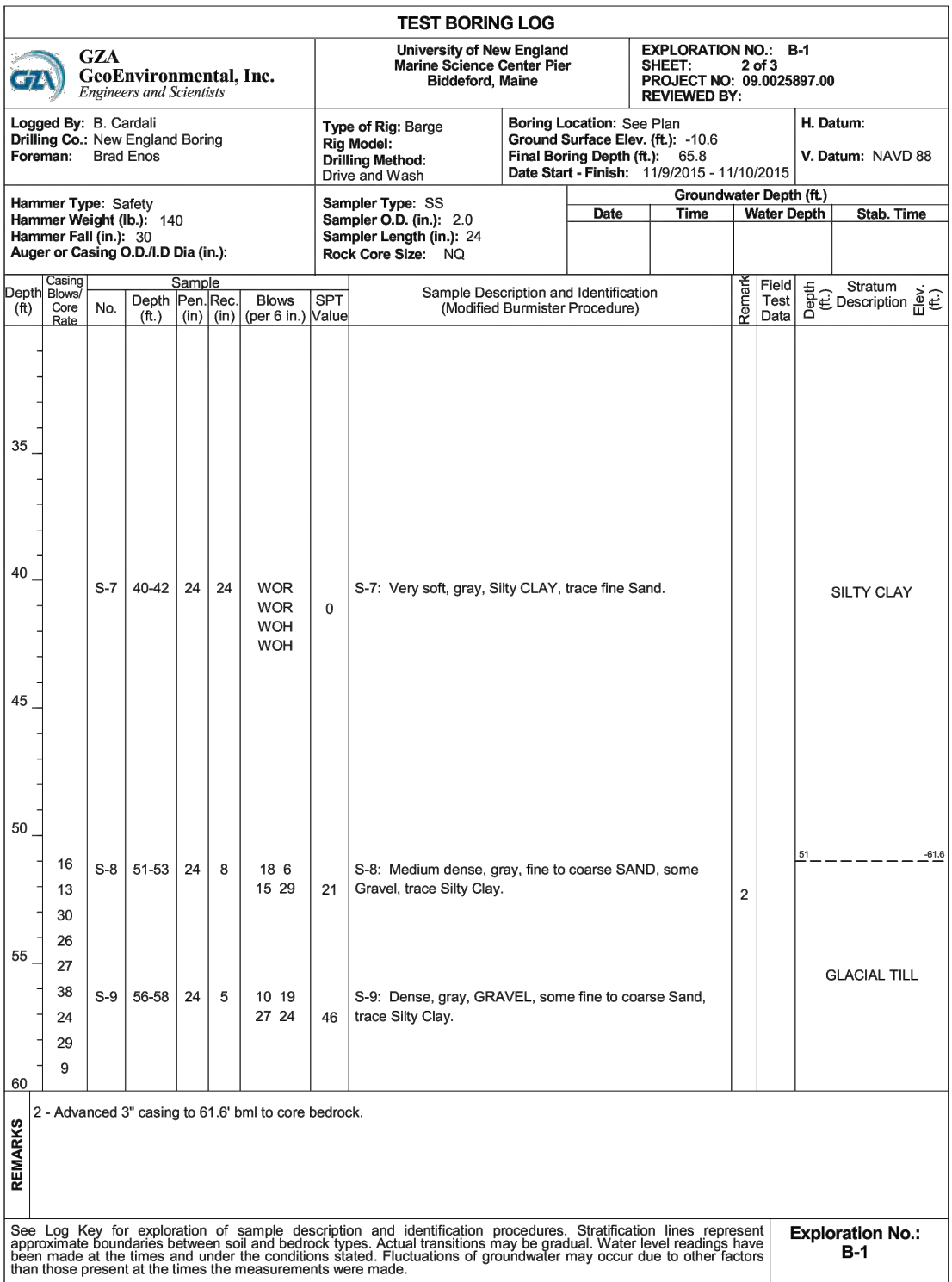
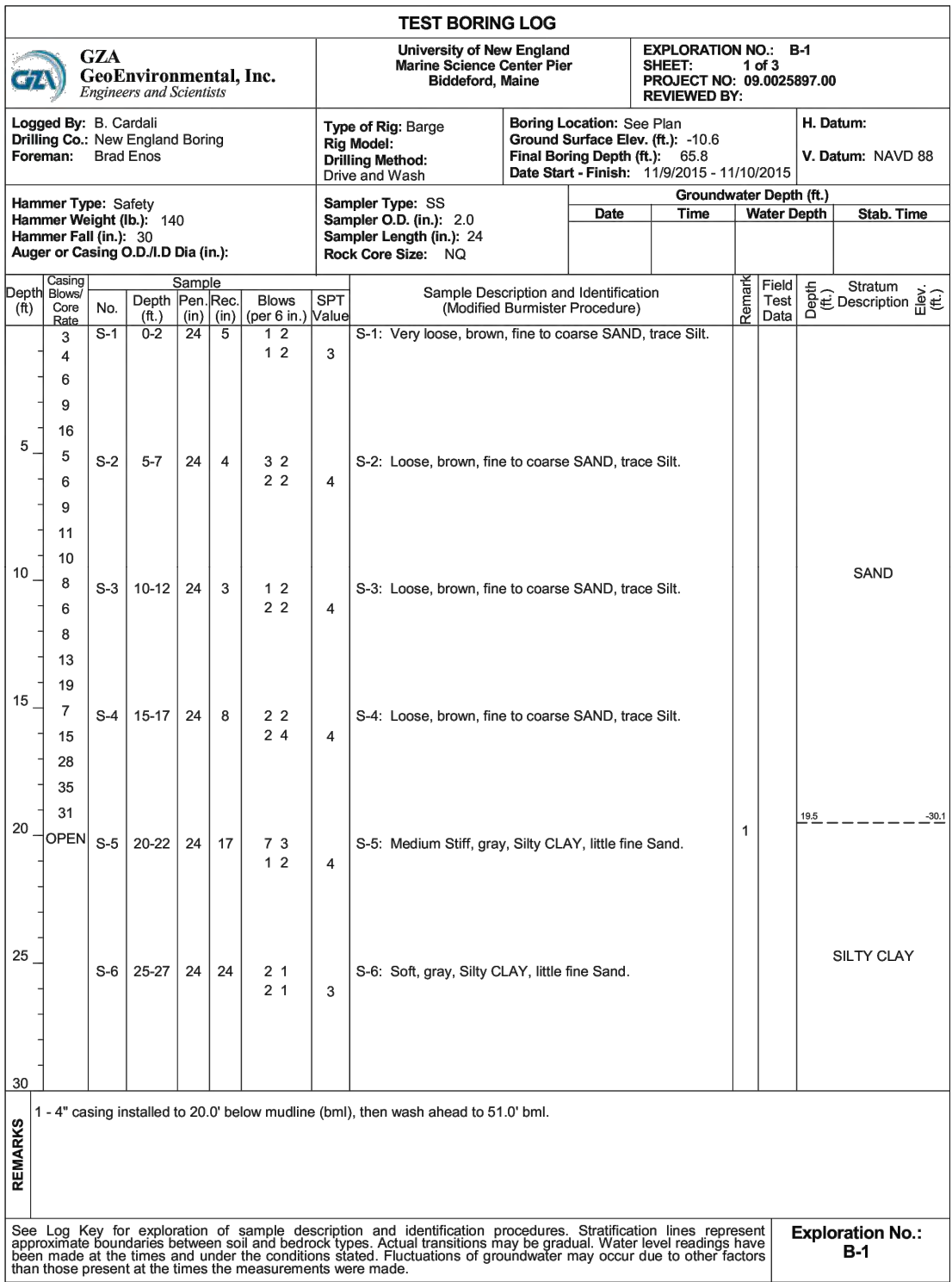
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SHEET NAME
BORING LOCATION
PLAN

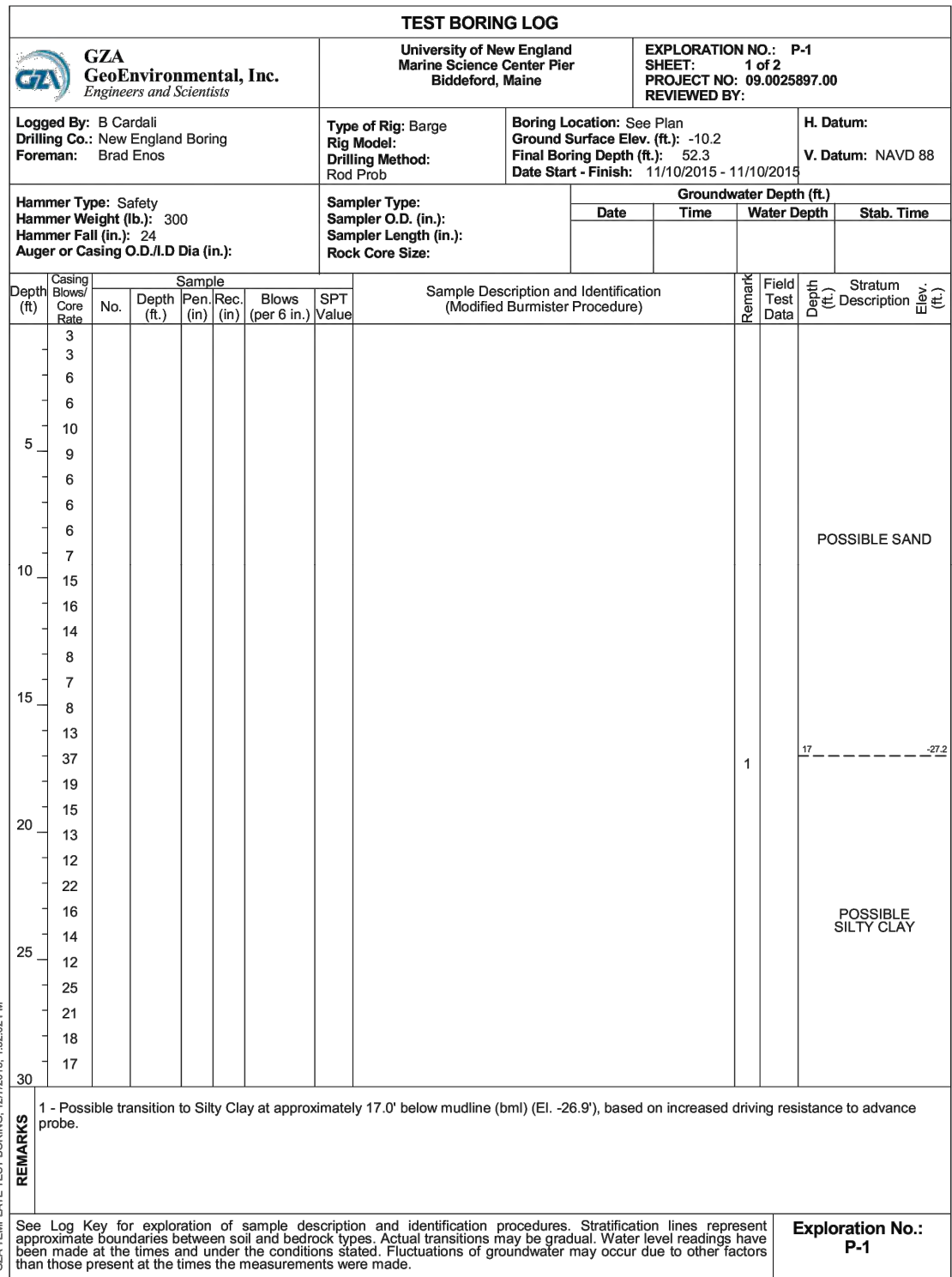
SHEET NO.
B-001

FOR PERMIT

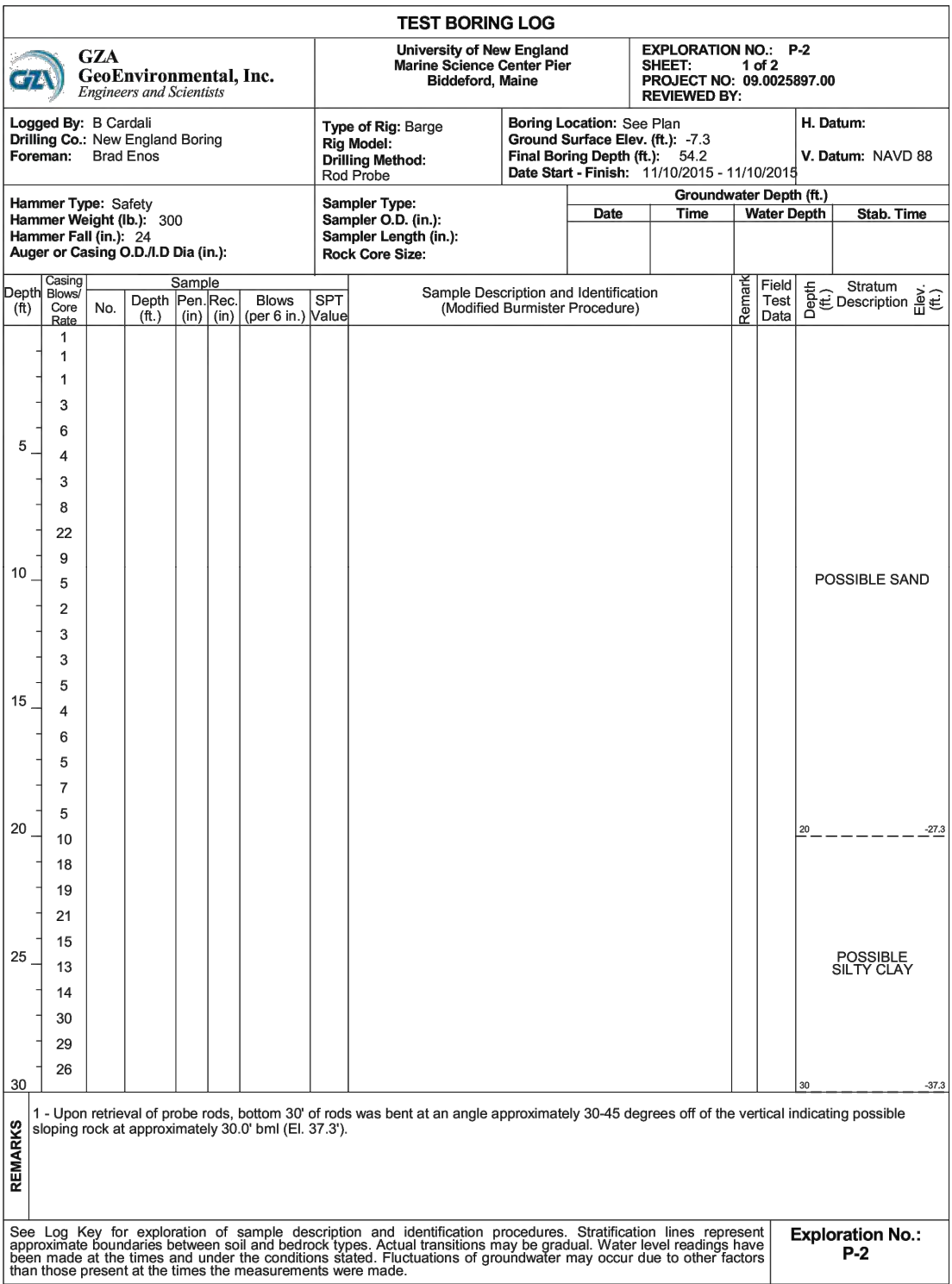
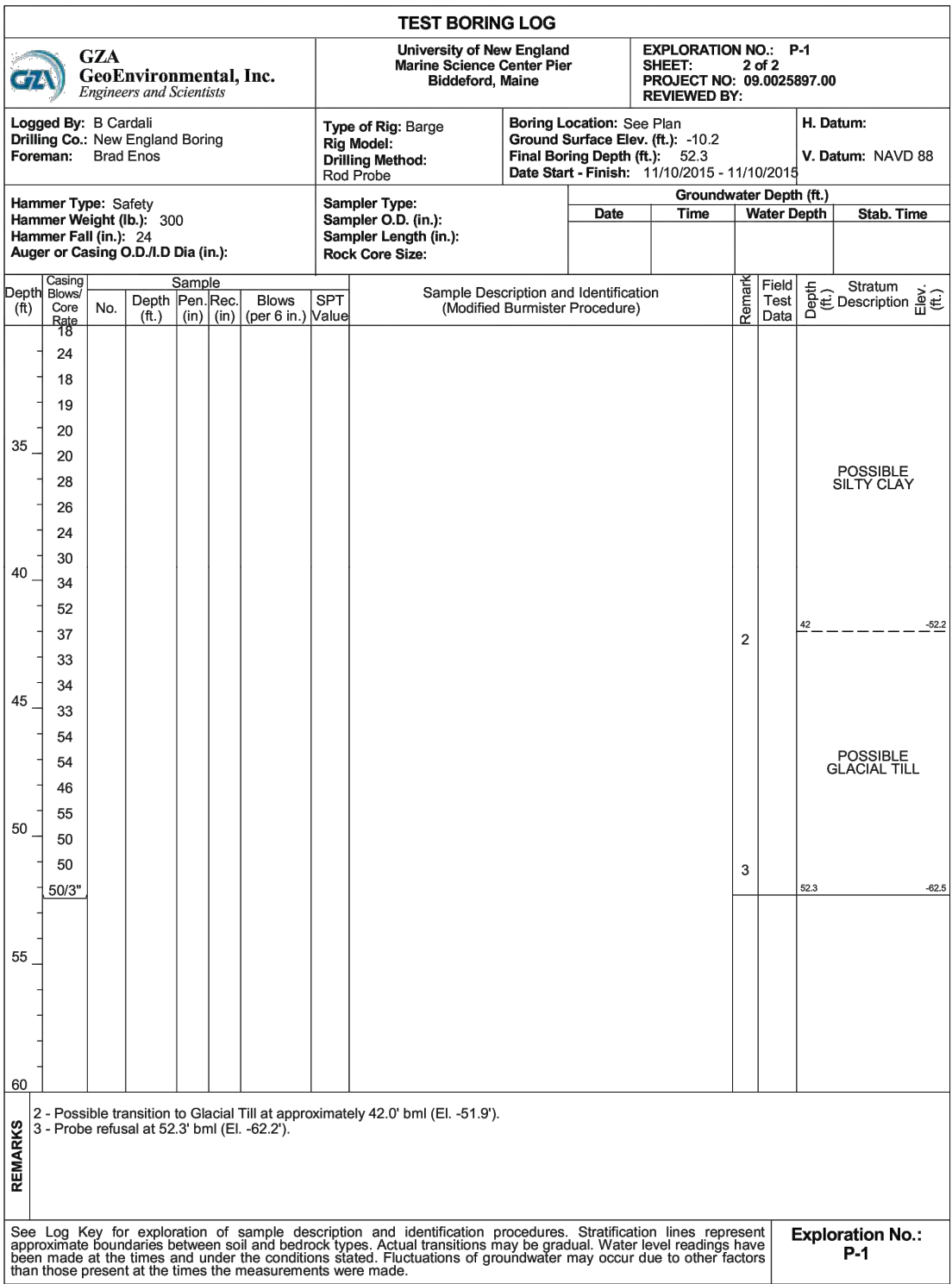


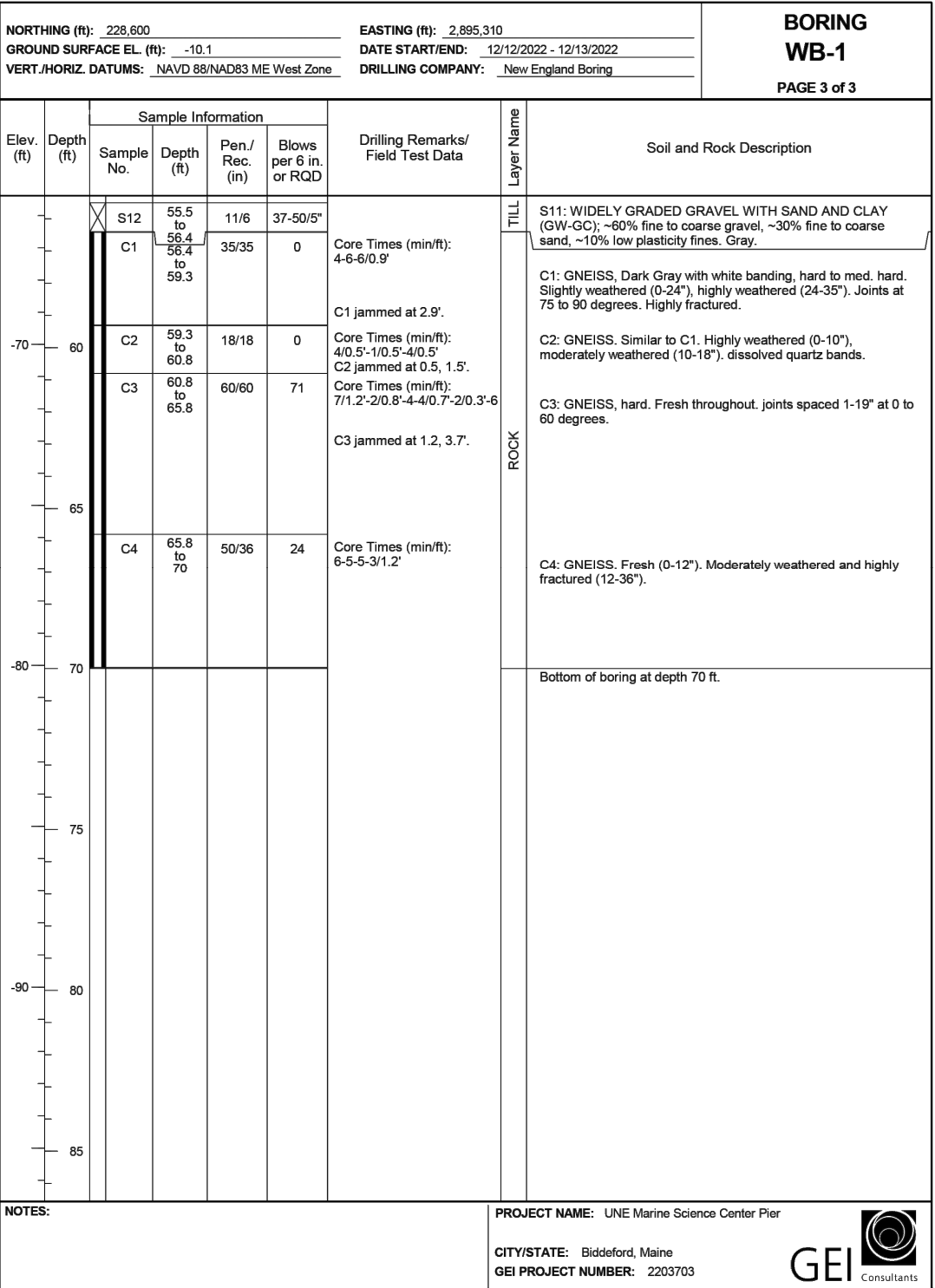
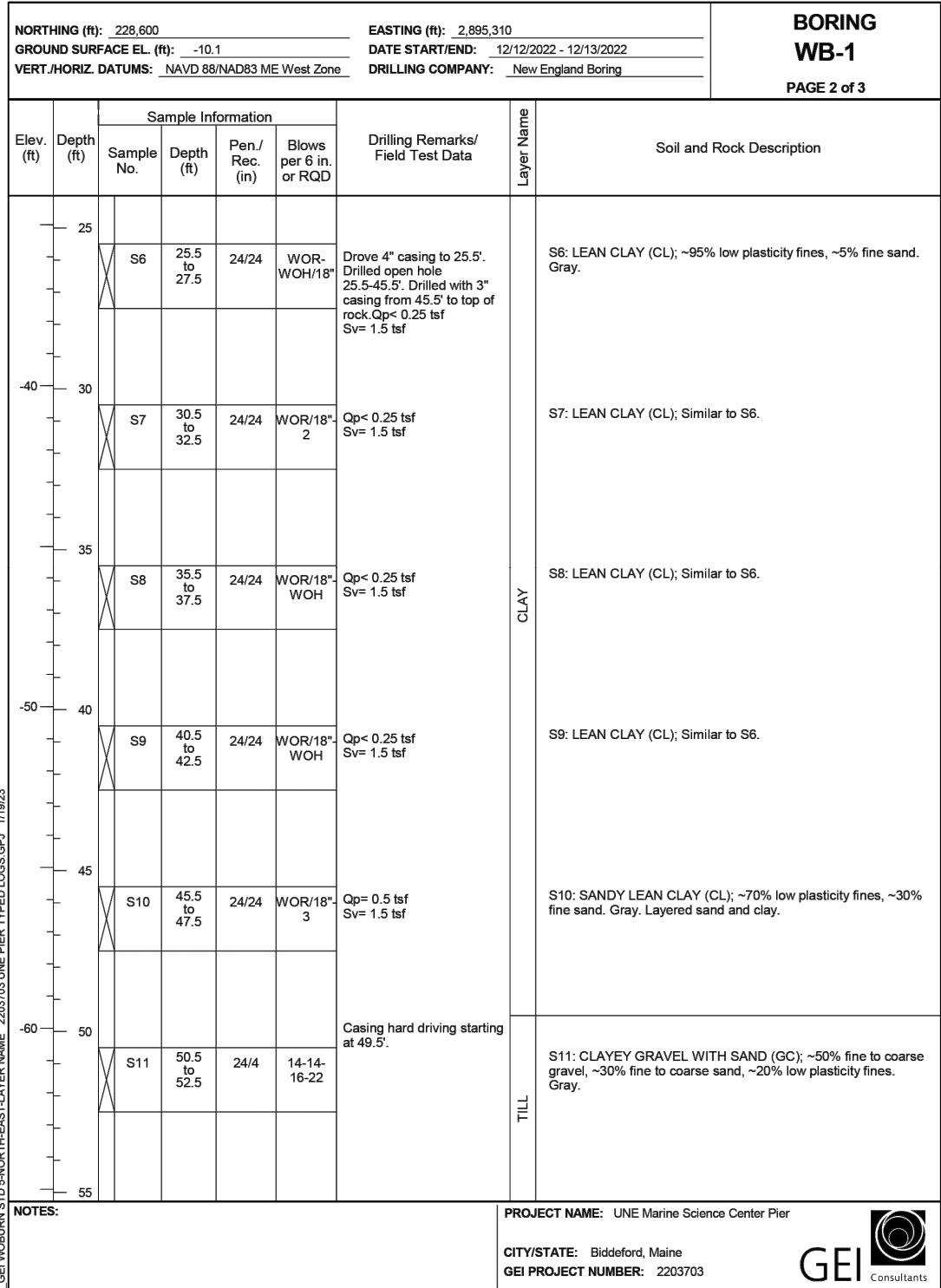
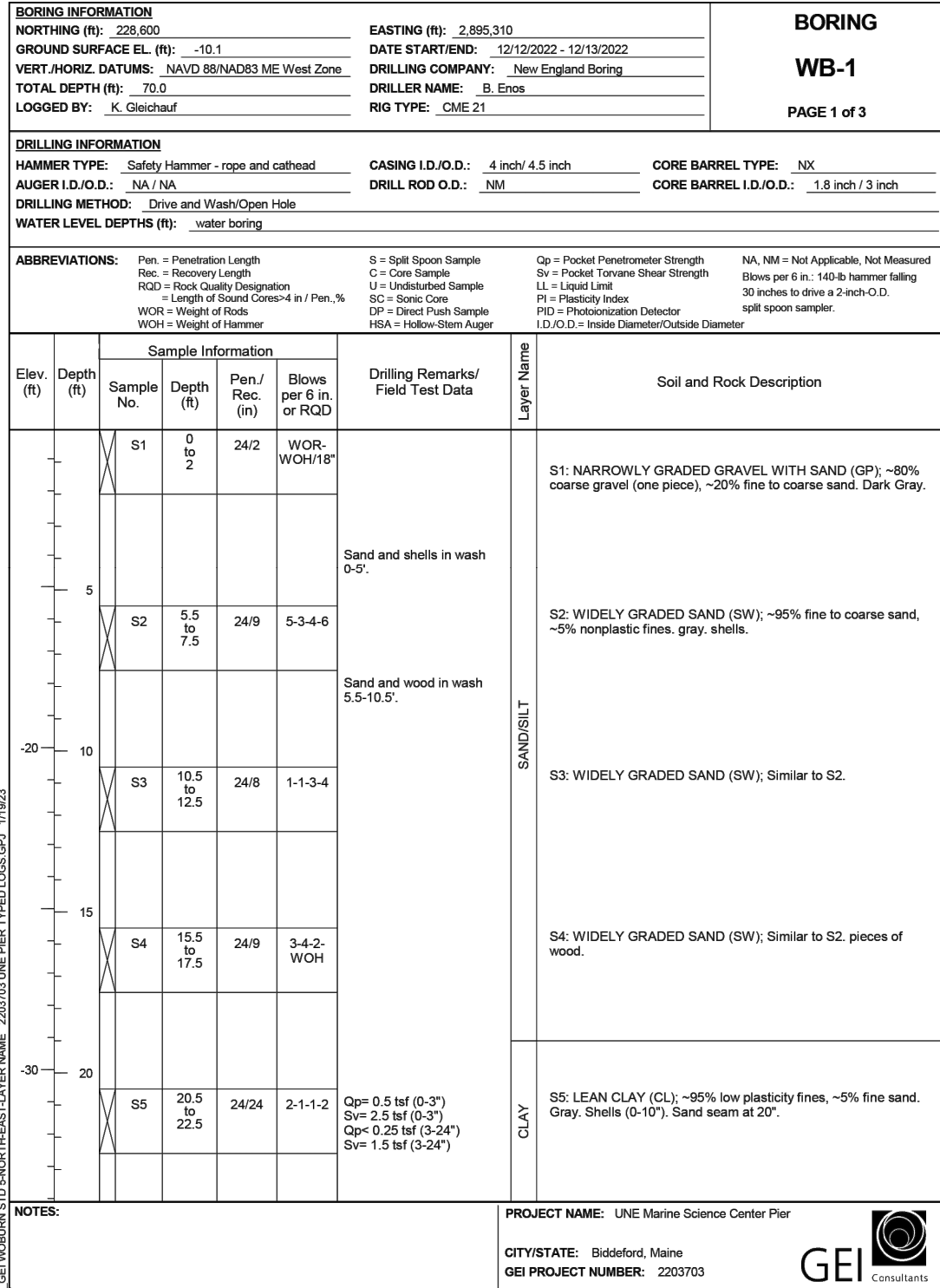


2015 BORING B-1

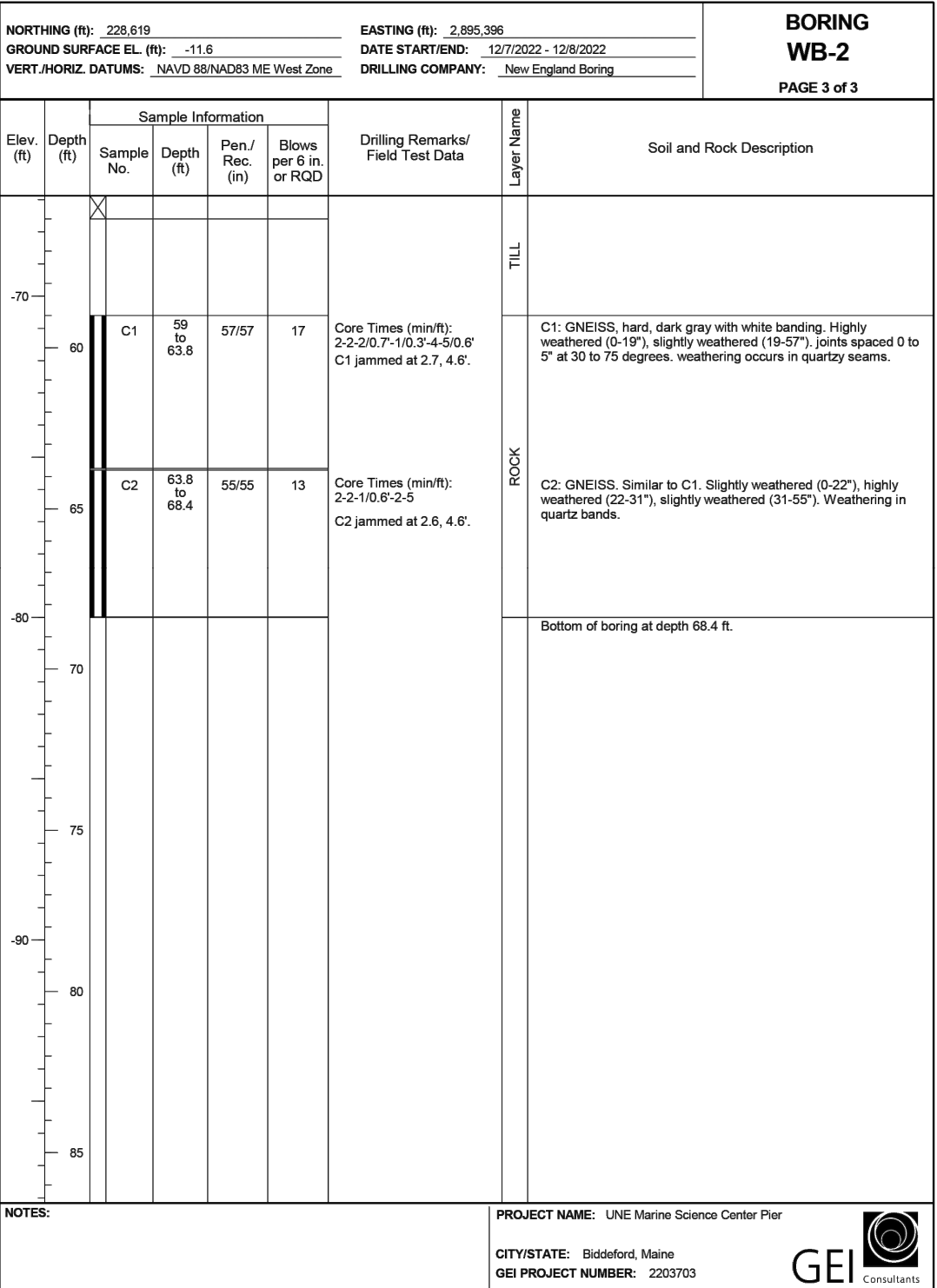
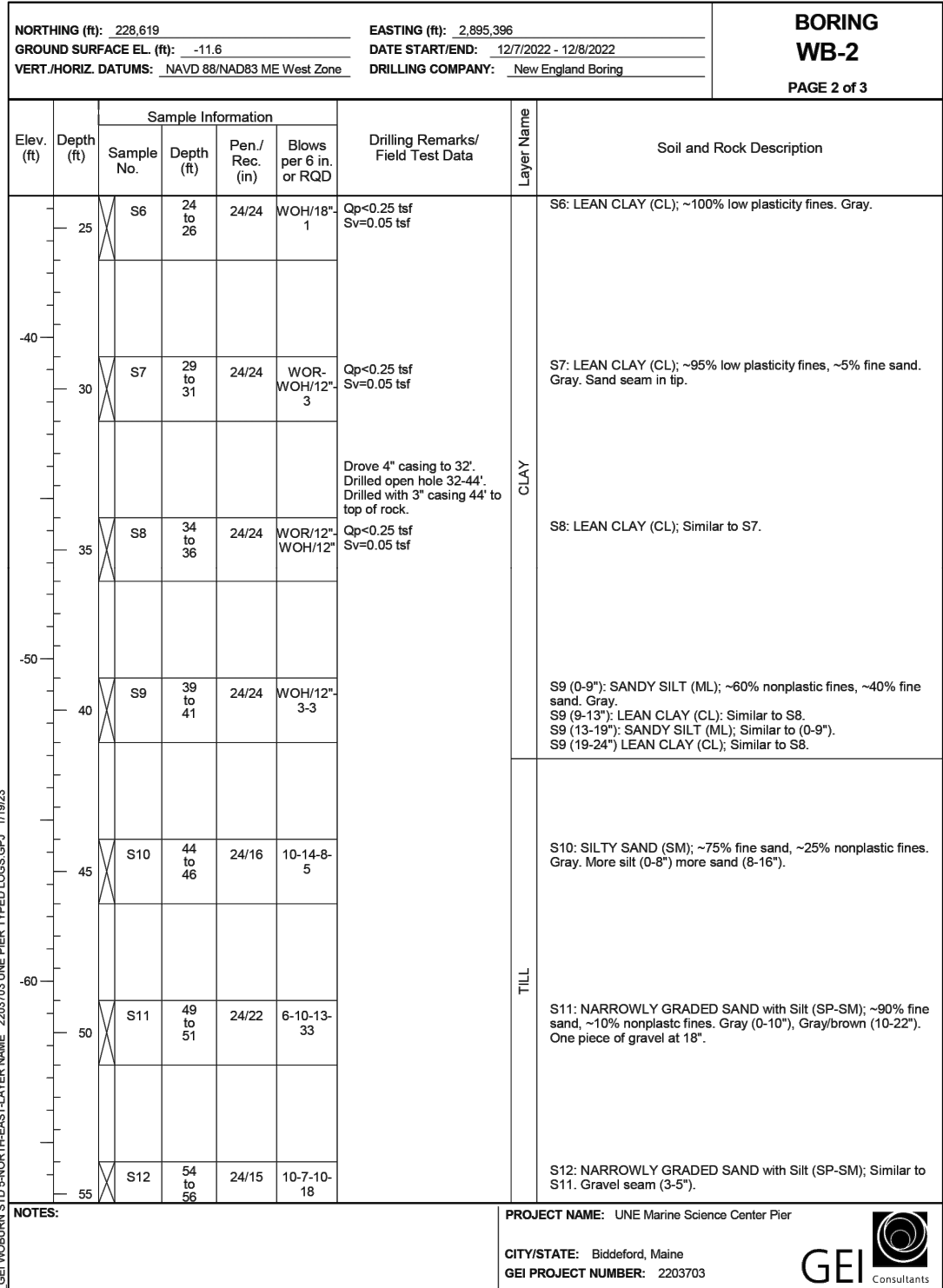
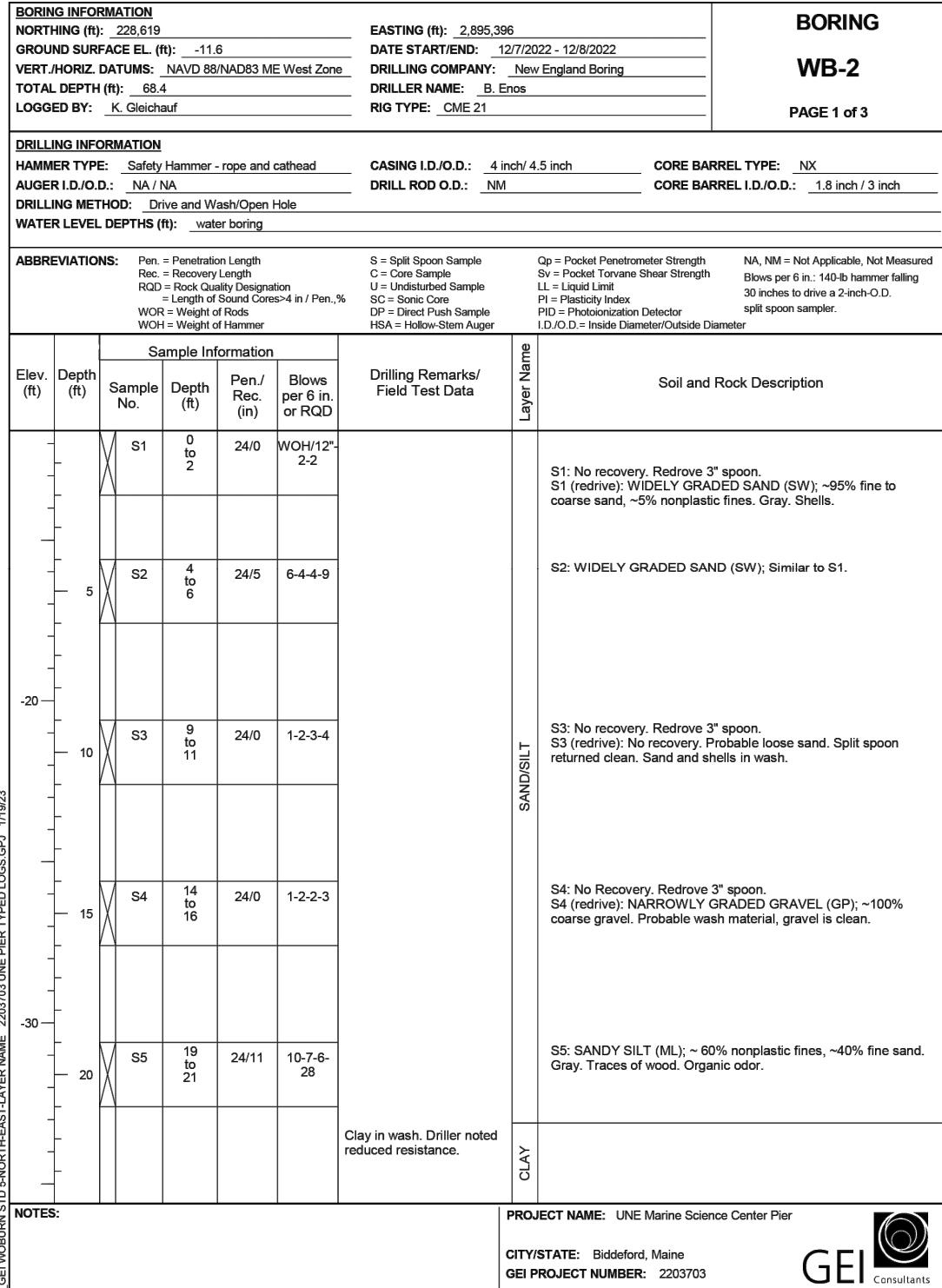


2015 PROBE P-1





2022 BORING WB-1



2022 BORING WB-2

ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
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DRAFT

Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



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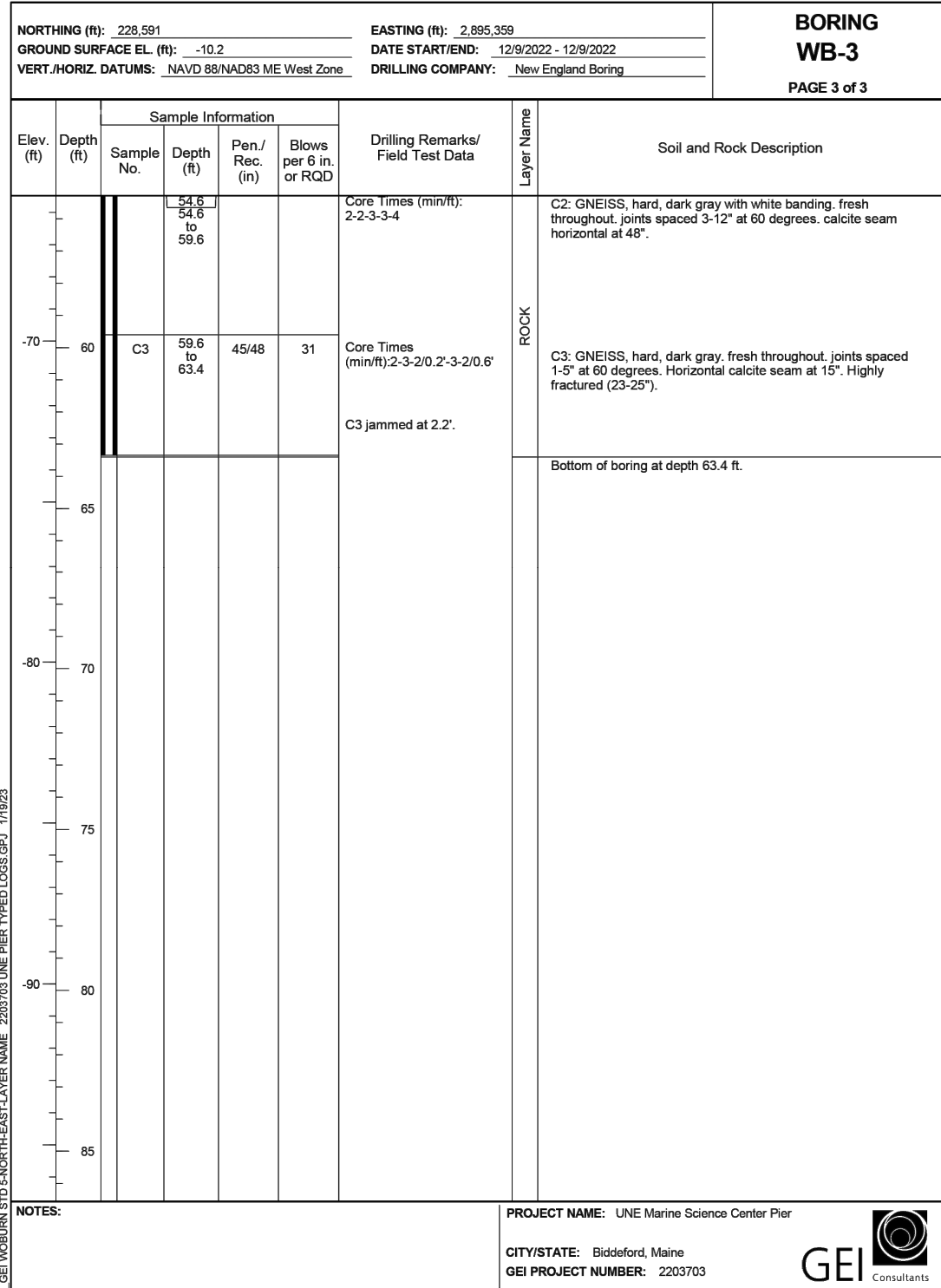
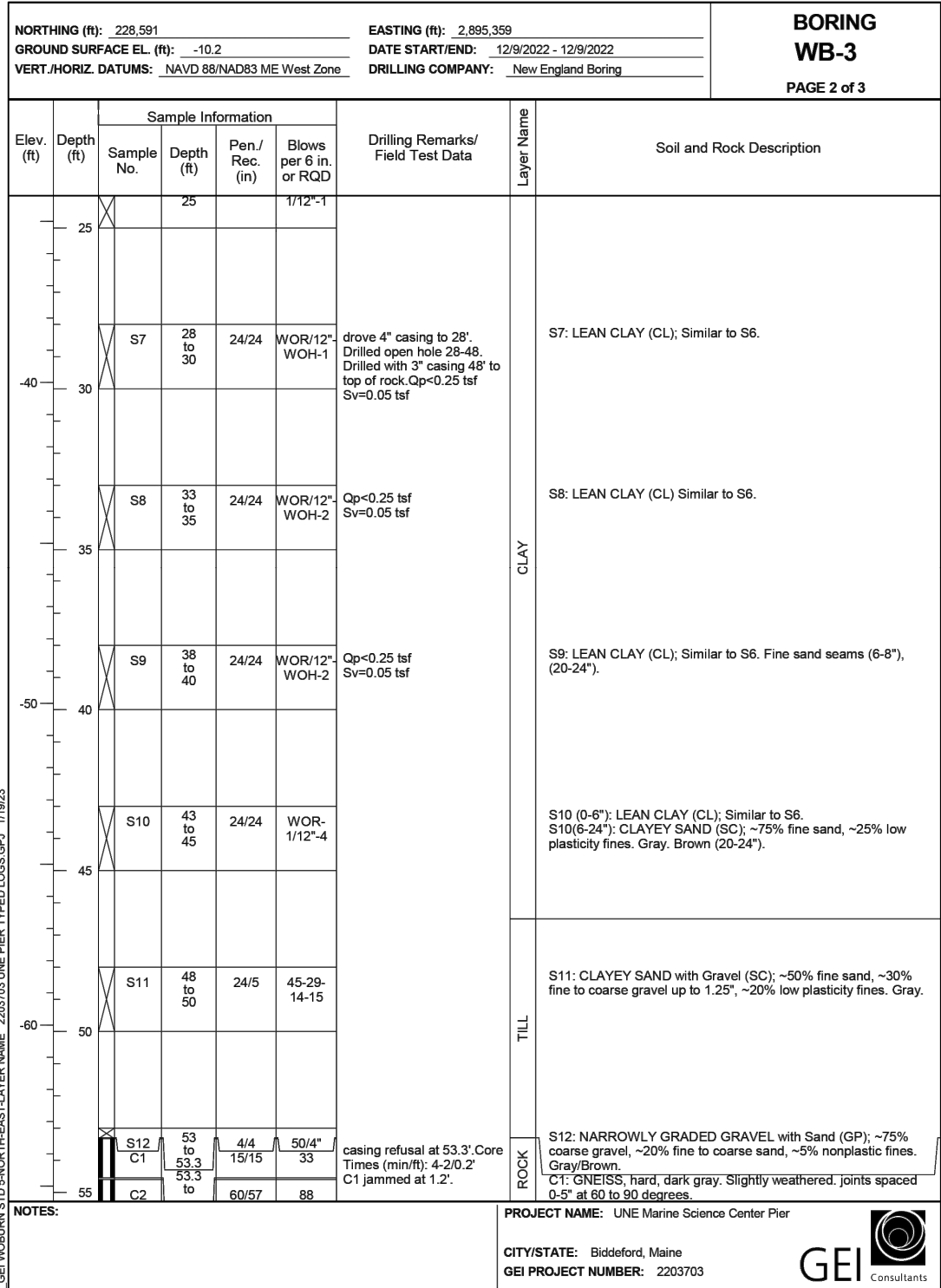
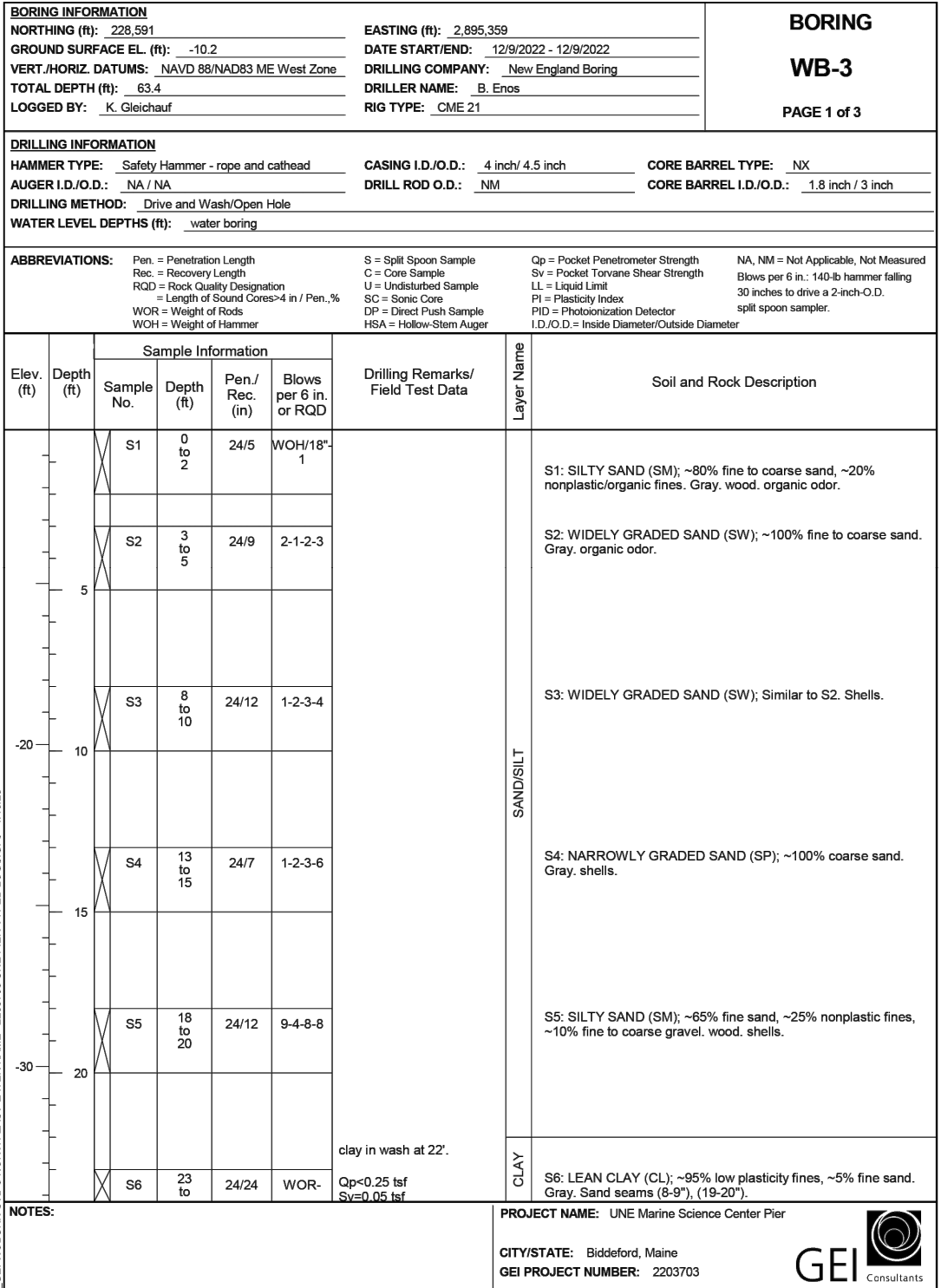
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BIDDEFORD, YORK COUNTY, MAINE

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0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

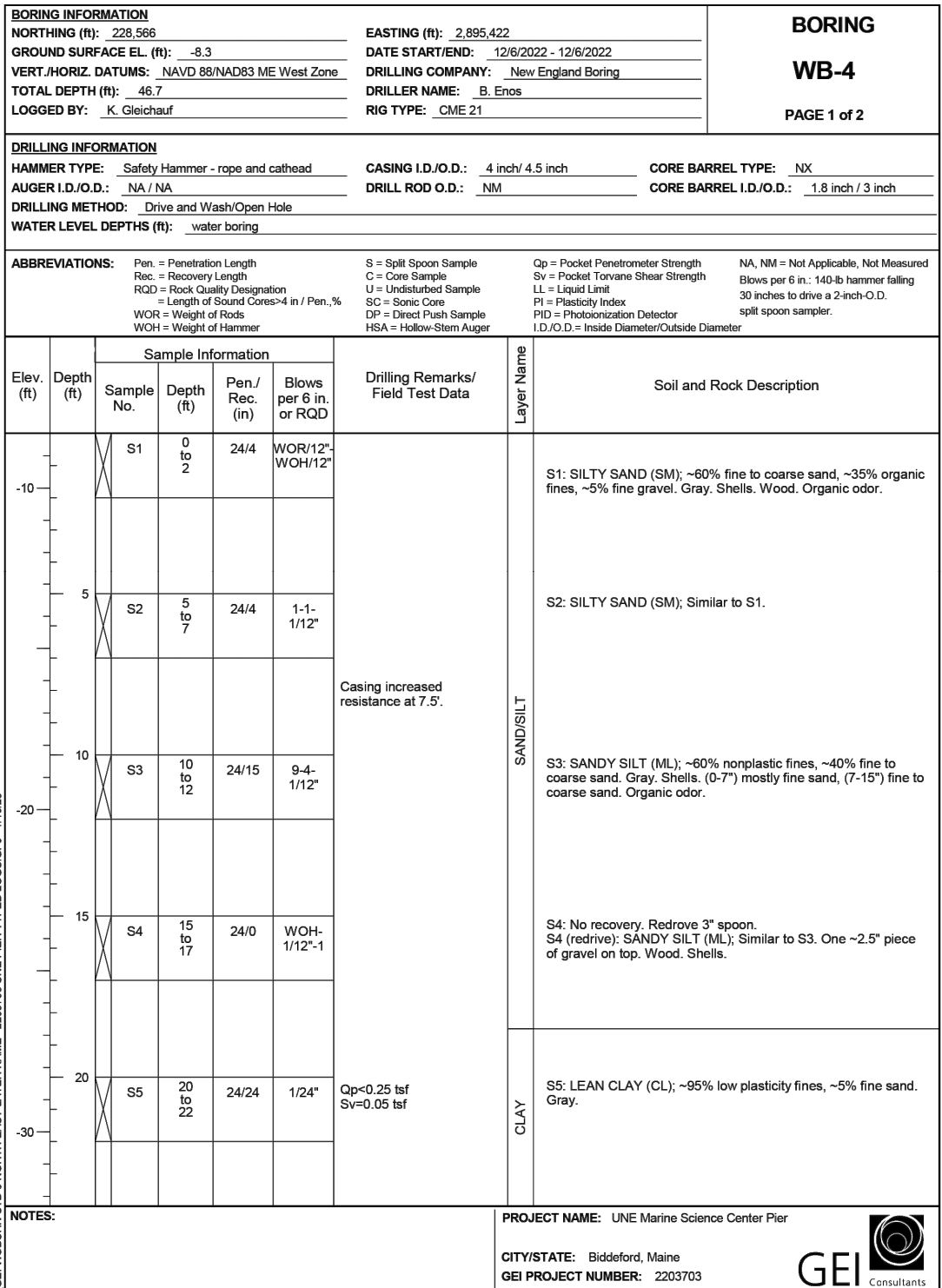
SHEET NAME
BORING LOGS
(SHEET 2 OF 3)

SHEET NO.
B-003

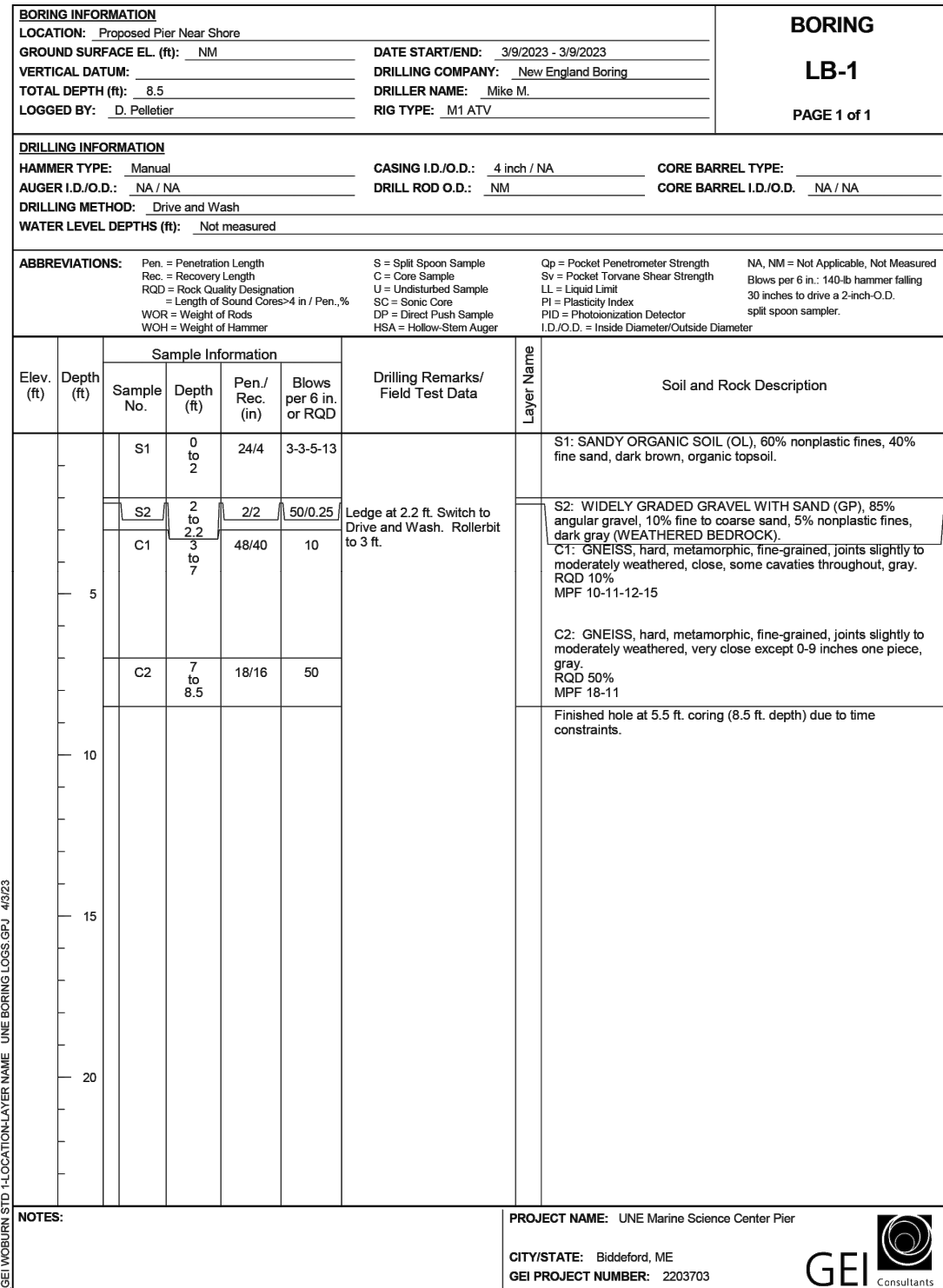
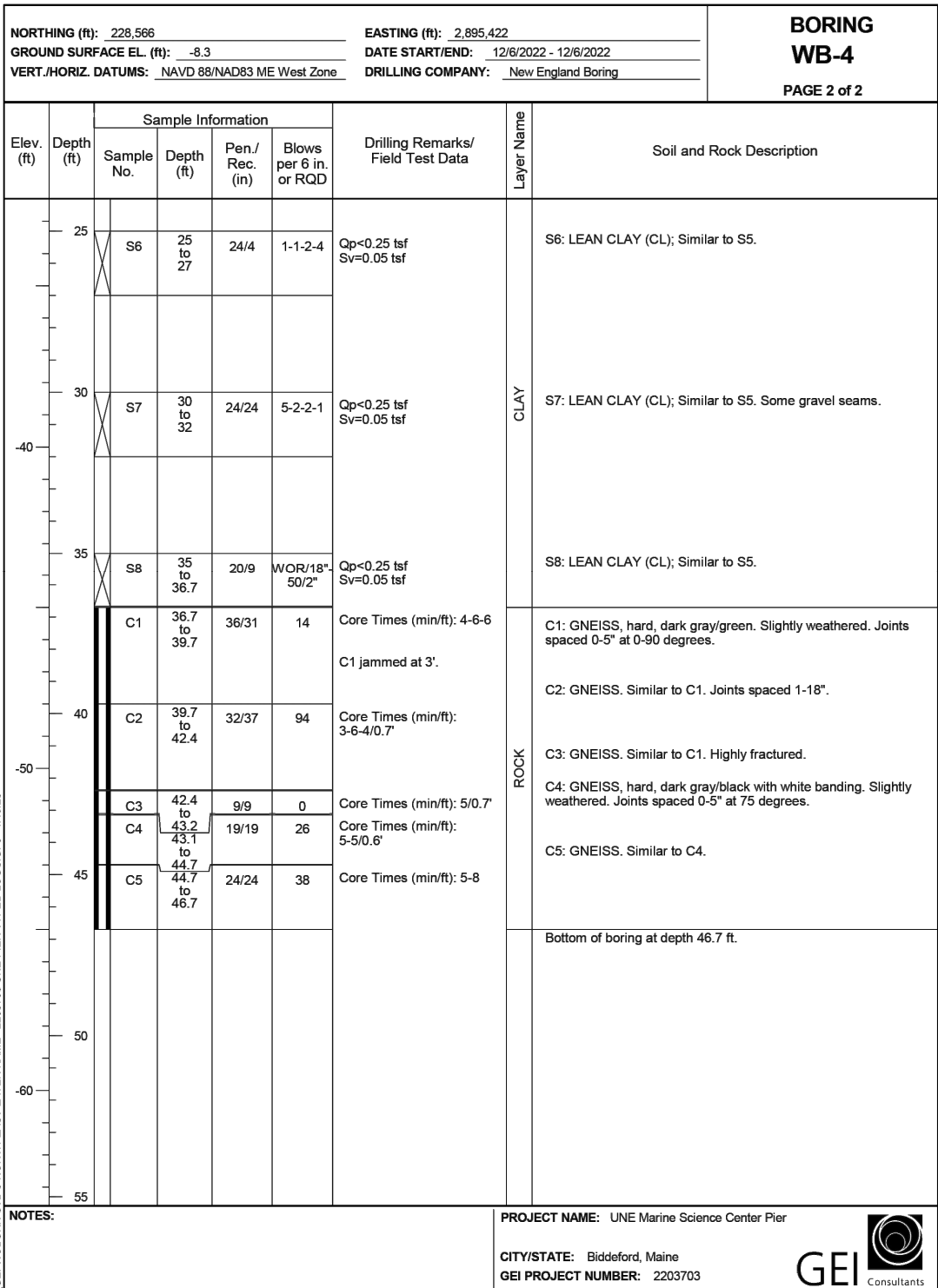
BANNON, DAN | geiconsultants.com\data/Data_Storage/Working/UNIVERSITY OF NEW ENGLAND/2023703 UNE Marine Science Center Pier100_CAD/Design/Sheets/2023703 B-004.dwg - 8/14/2024



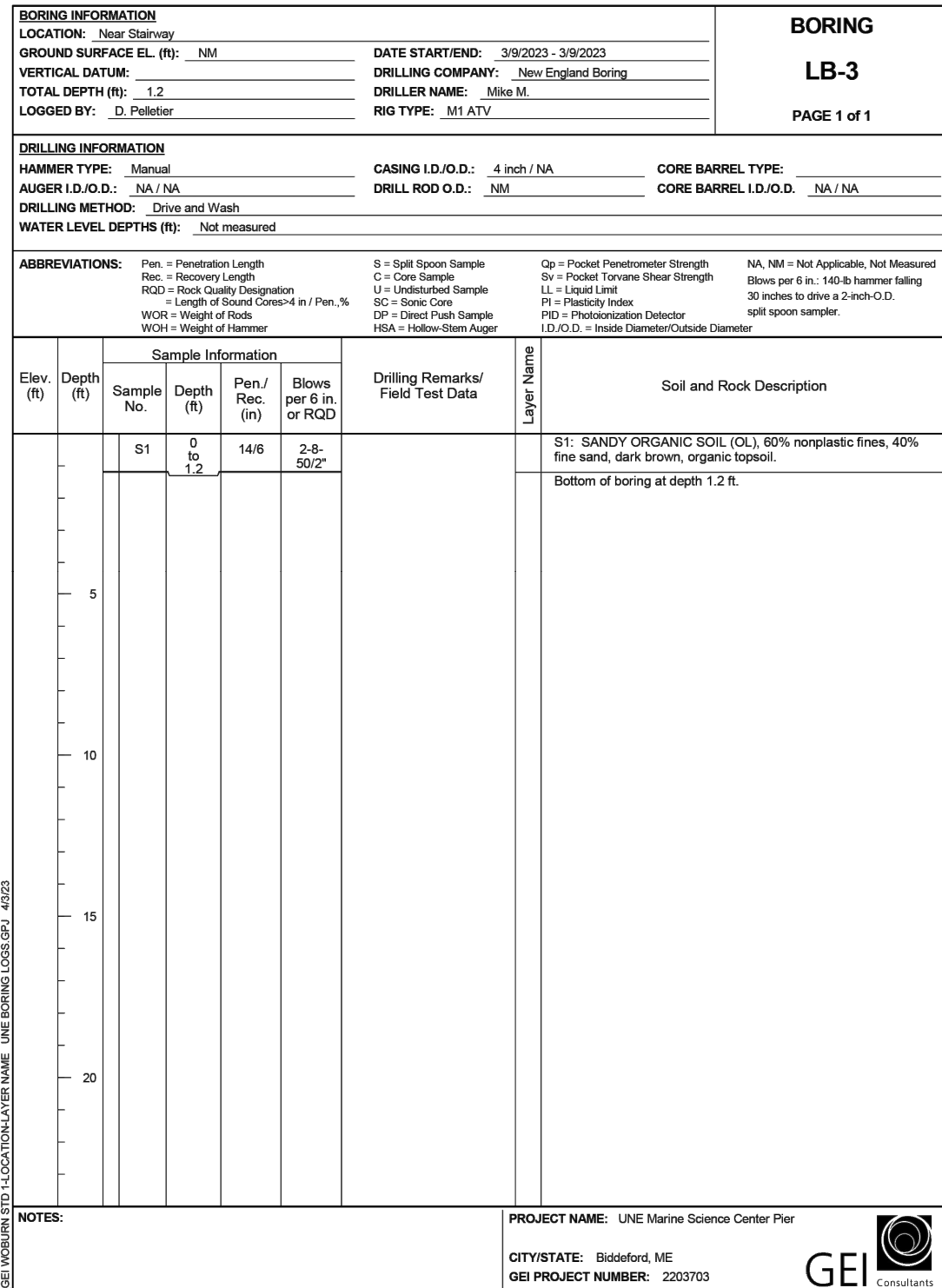
2022 BORING WB-3



2022 BORING WB-4



2023 BORING LB-1



2023 BORING LB-3

FOR PERMIT

ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

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DRAFT

Designed: DJB
Drawn: JAM
Checked: BJB
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GEI Project 2203703



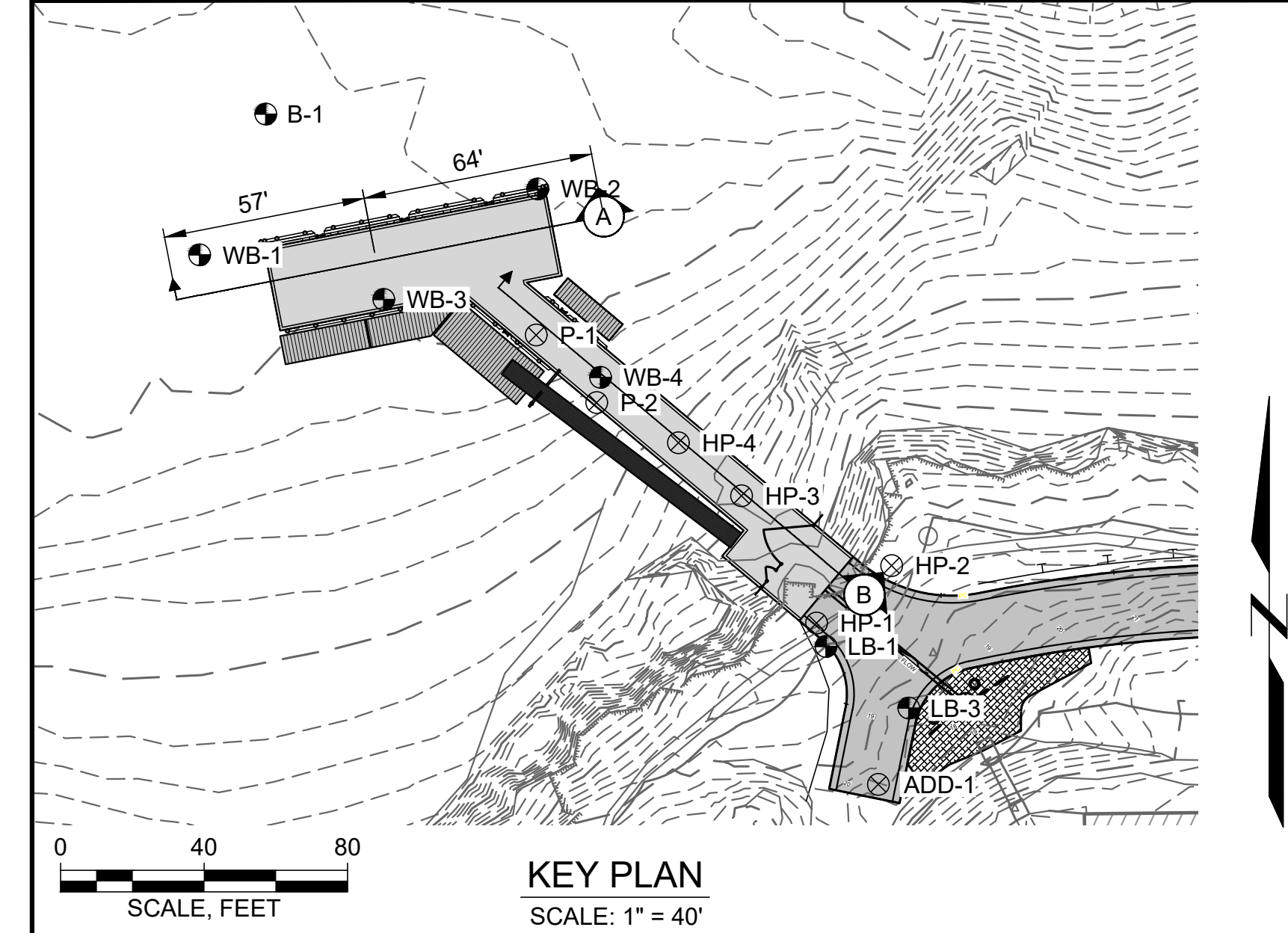
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11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

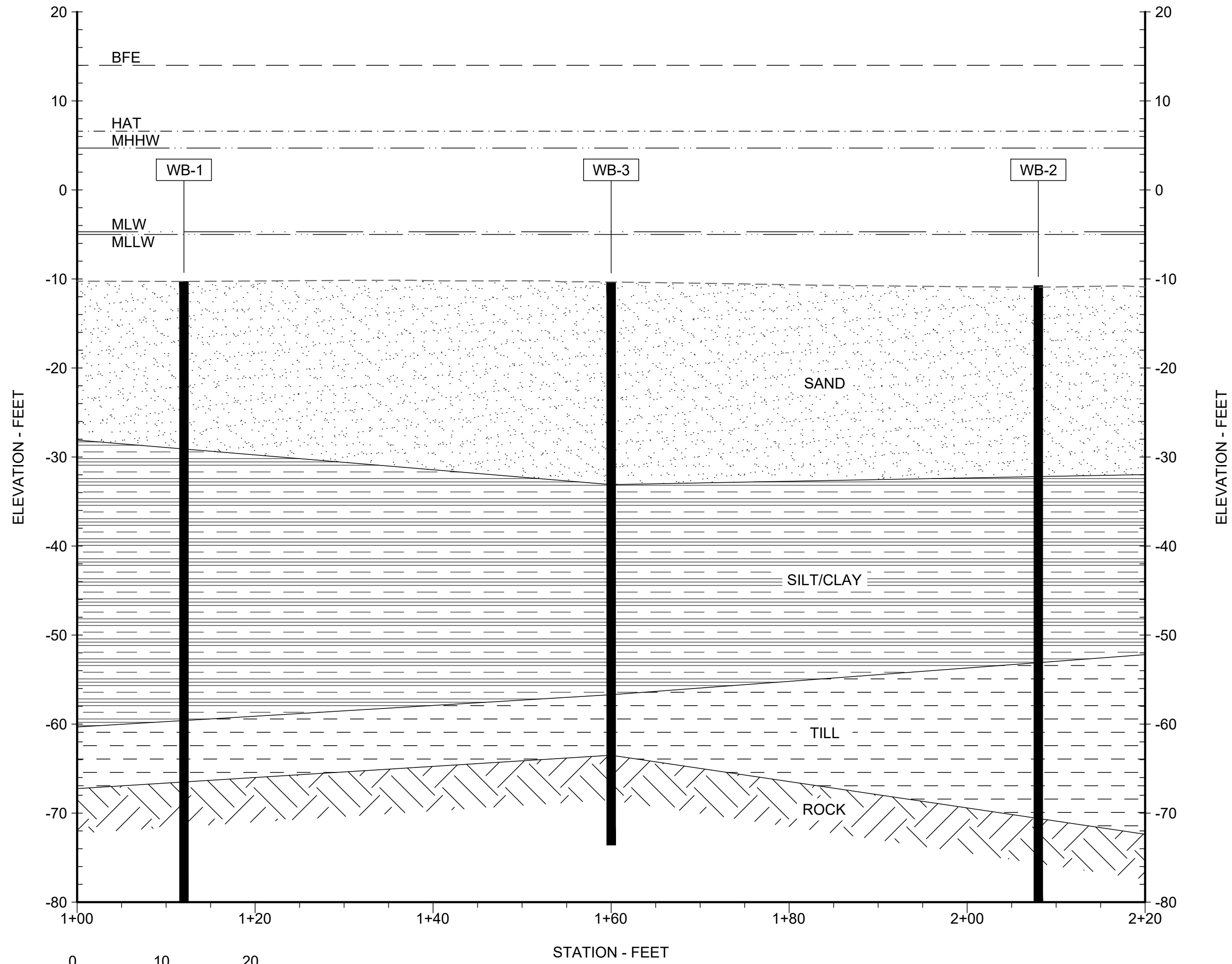
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NO	DATE	ISSUE/REVISION	APP

SHEET NAME
BORING LOGS
(SHEET 3 OF 3)

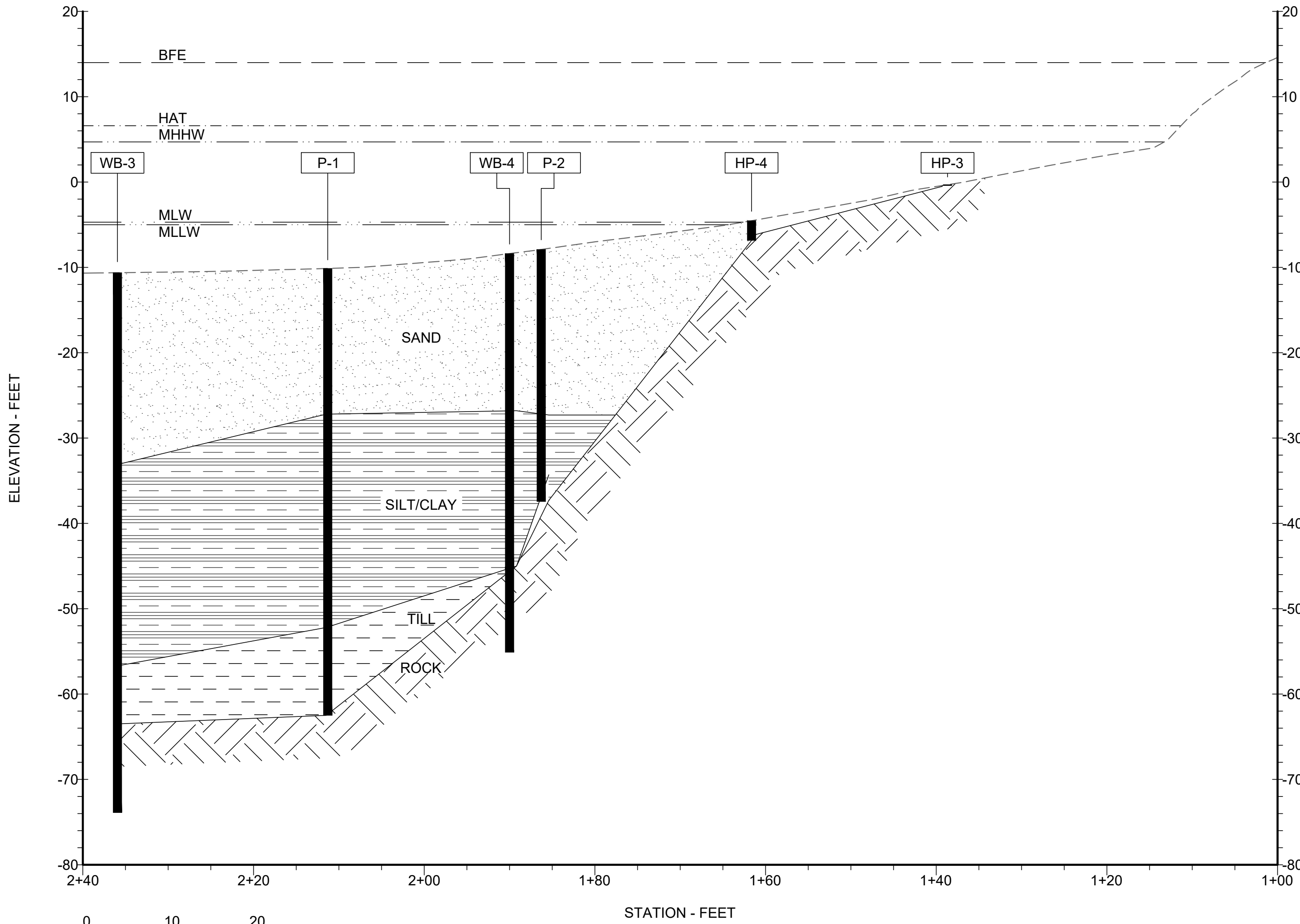
SHEET NO.
B-004



KEY PLAN
SCALE: 1" = 40'



PROFILE 'A'
SCALE: 1" = 10'



PROFILE 'B'
SCALE: 1" = 10'

ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
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DRAFT

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Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
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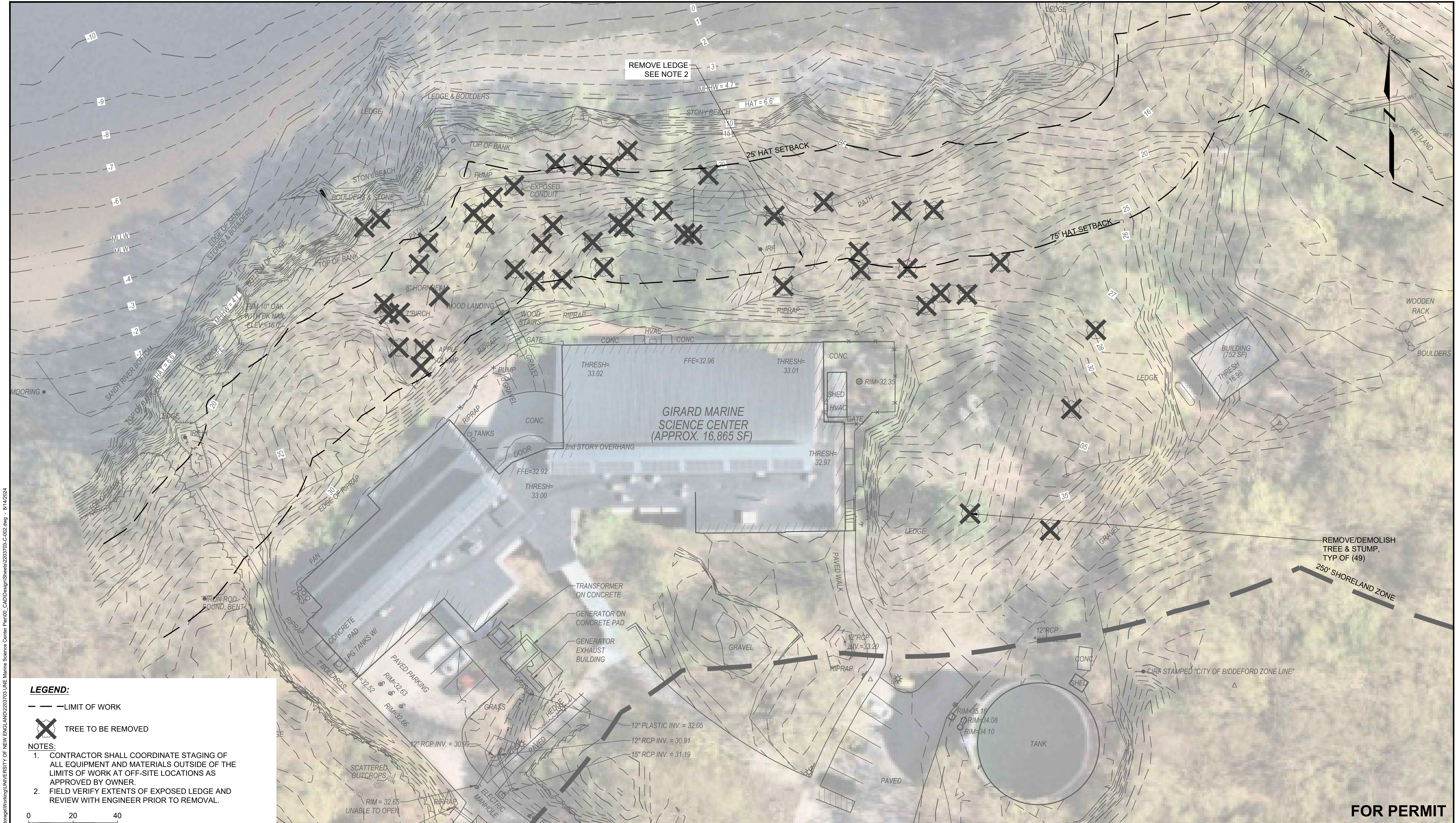
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SHEET NAME
INTERPRETIVE
SUBSURFACE
PROFILE

SHEET NO.
B-005

FOR PERMIT

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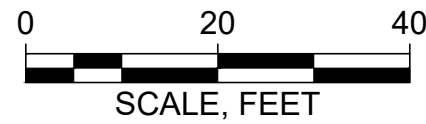
LEGEND:

— — LIMIT OF WORK

X TREE TO BE REMOVED

NOTES:

- CONTRACTOR SHALL COORDINATE STAGING OF ALL EQUIPMENT AND MATERIALS OUTSIDE OF THE LIMITS OF WORK AT OFF-SITE LOCATIONS AS APPROVED BY OWNER.
- FIELD VERIFY EXTENTS OF EXPOSED LEDGE AND REVIEW WITH ENGINEER PRIOR TO REMOVAL.



ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

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BIDDEFORD, YORK COUNTY, MAINE

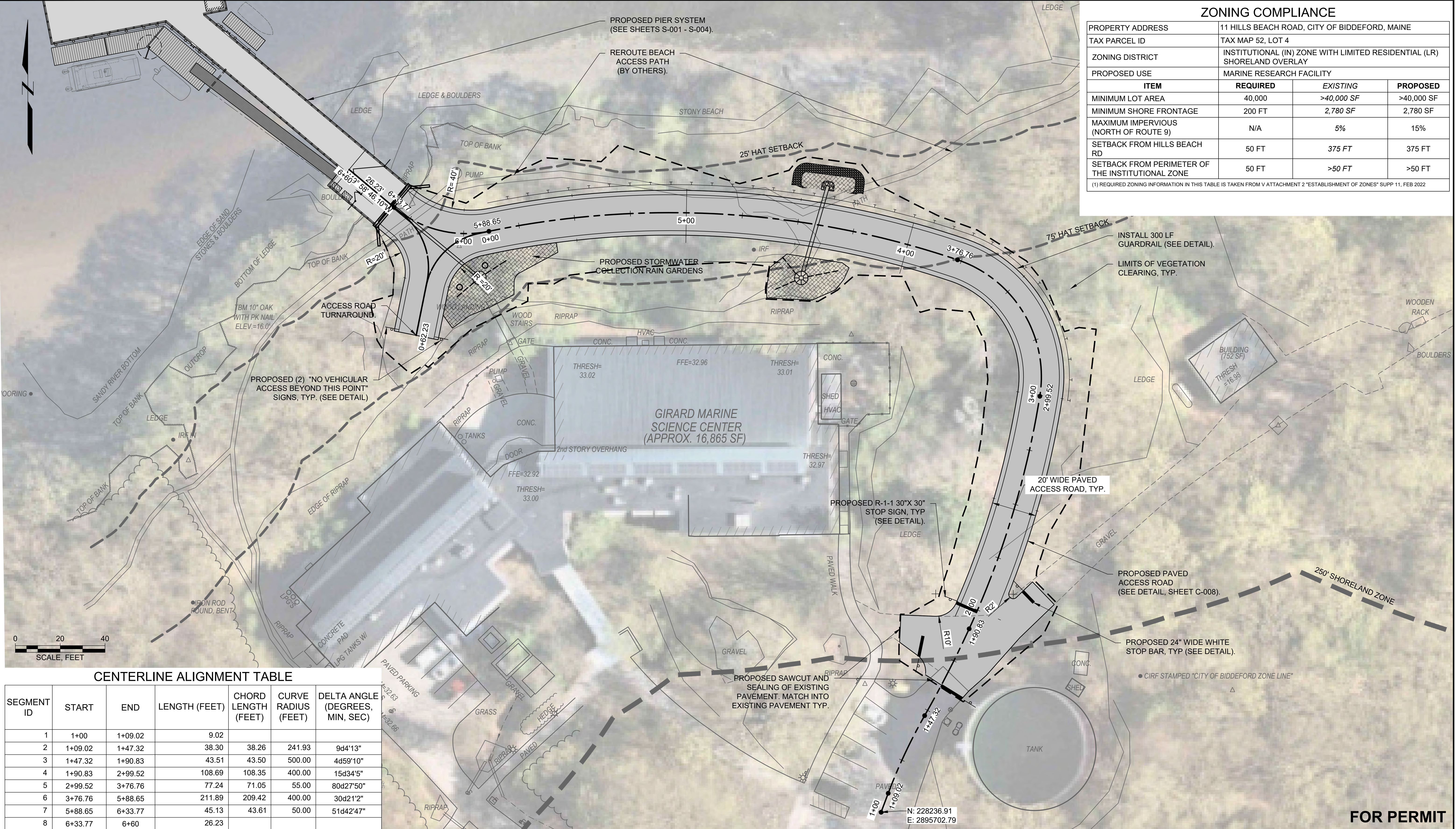
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SHEET NAME
DEMOLITION AND
CONSTRUCTION
STAGING

SHEET NO.
C-002

FOR PERMIT

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ZONING COMPLIANCE

PROPERTY ADDRESS	11 HILLS BEACH ROAD, CITY OF BIDDEFORD, MAINE		
TAX PARCEL ID	TAX MAP 52, LOT 4		
ZONING DISTRICT	INSTITUTIONAL (IN) ZONE WITH LIMITED RESIDENTIAL (LR) SHORELAND OVERLAY		
PROPOSED USE	MARINE RESEARCH FACILITY		
ITEM	REQUIRED	EXISTING	PROPOSED
MINIMUM LOT AREA	40,000	>40,000 SF	>40,000 SF
MINIMUM SHORE FRONTAGE	200 FT	2,780 SF	2,780 SF
MAXIMUM IMPERVIOUS (NORTH OF ROUTE 9)	N/A	5%	15%
SETBACK FROM HILLS BEACH RD	50 FT	375 FT	375 FT
SETBACK FROM PERIMETER OF THE INSTITUTIONAL ZONE	50 FT	>50 FT	>50 FT
(1) REQUIRED ZONING INFORMATION IN THIS TABLE IS TAKEN FROM V ATTACHMENT 2 "ESTABLISHMENT OF ZONES" SUPP 11, FEB 2022			

CENTERLINE ALIGNMENT TABLE

SEGMENT ID	START	END	LENGTH (FEET)	CHORD LENGTH (FEET)	CURVE RADIUS (FEET)	DELTA ANGLE (DEGREES, MIN, SEC)
1	1+00	1+09.02	9.02			
2	1+09.02	1+47.32	38.30	38.26	241.93	9d4°13"
3	1+47.32	1+90.83	43.51	43.50	500.00	4d59°10"
4	1+90.83	2+99.52	108.69	108.35	400.00	15d34°5"
5	2+99.52	3+76.76	77.24	71.05	55.00	80d27°50"
6	3+76.76	5+88.65	211.89	209.42	400.00	30d21°2"
7	5+88.65	6+33.77	45.13	43.61	50.00	51d42°47"
8	6+33.77	6+60	26.23			

ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

DRAFT

Designed:	DJB
Drawn:	JAM
Checked:	BJB
Approved:	BMM
P.E. No:	13033
GEI Project	2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

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11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

6	8/14/2024	REVISED PERMIT SET	DJB
5	6/27/2024	REVISED PERMIT SET	DJB
4	9/14/2023	DEP PERMIT SET	DJB
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1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

SHEET NAME

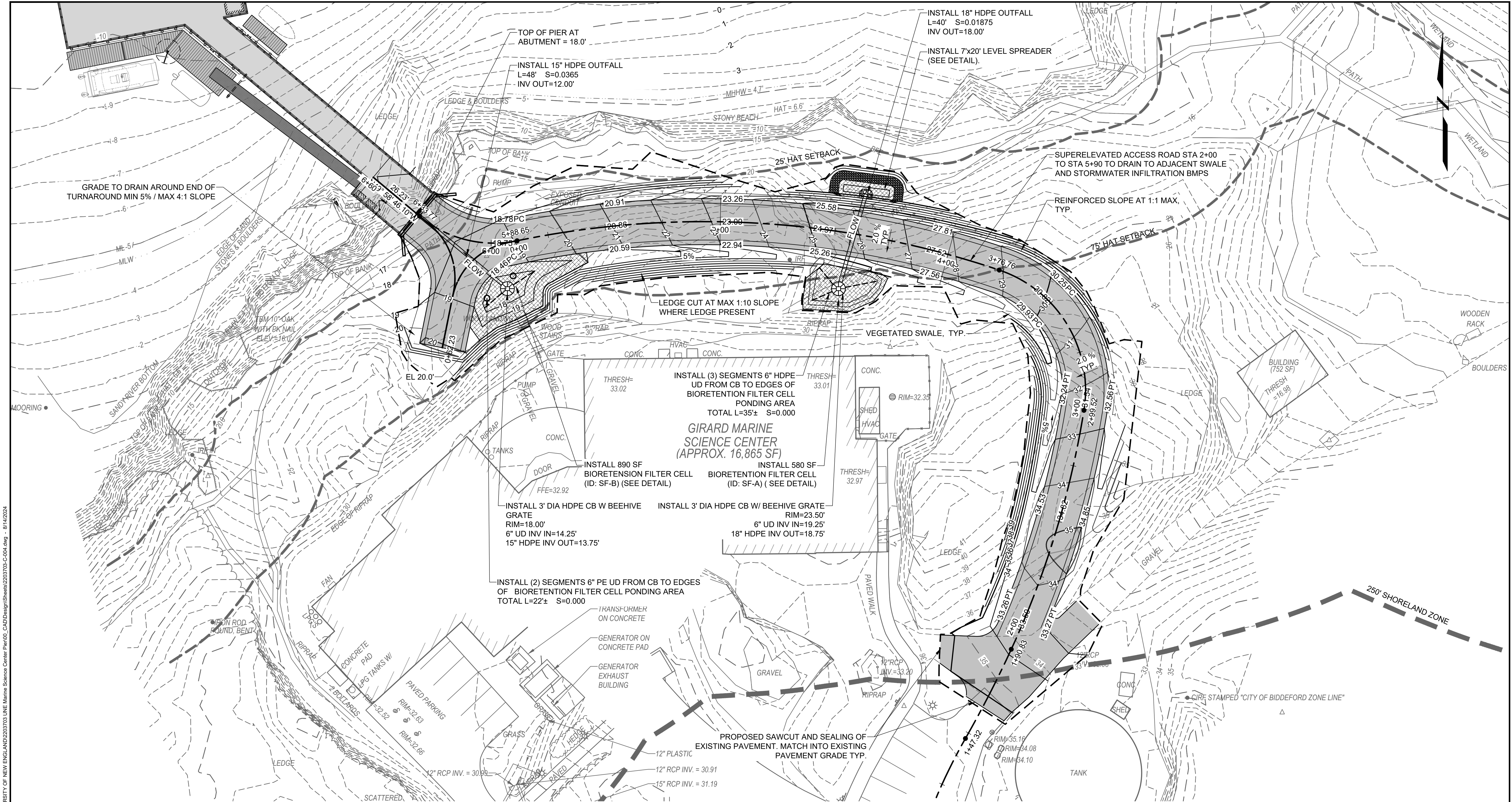
SITE PLAN

SHEET NO.

C-003

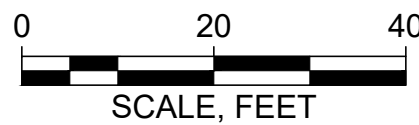
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PLAN

SCALE: 1" = 20'



Attention:
0 1"
If this scale bar
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1" then drawing is
not original scale.

Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



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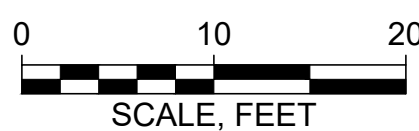
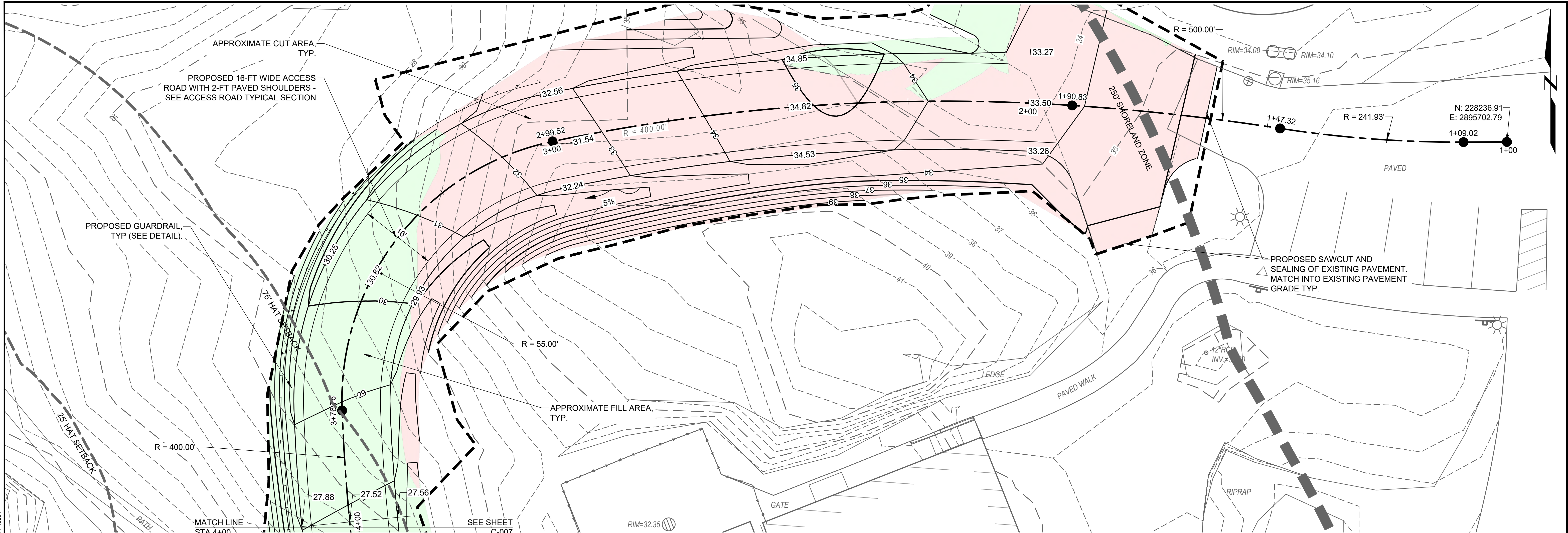
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4	9/14/2023	DEP PERMIT SET	DJB
3	6/28/2023	75% DESIGN SUBMISSION	DJB
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1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

SHEET NAME
**GRADING AND
DRAINAGE PLAN**

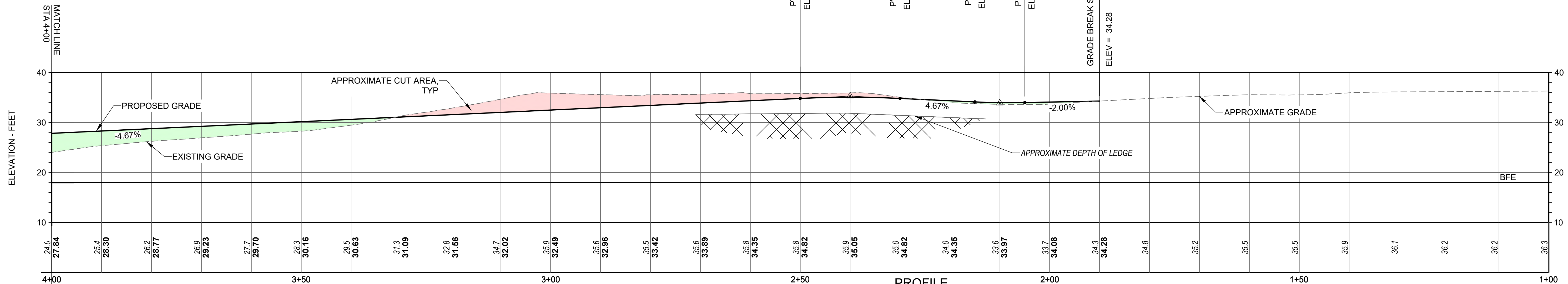
SHEET NO.
C-004

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PLAN
SCALE: 1" = 10'



CUT/FILL ANALYSIS

STRUCTURE	QUANTITY (CY)
CUT	2174.50
FILL	782.30
NET (FILL)	1392.20

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

DRAFT

Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

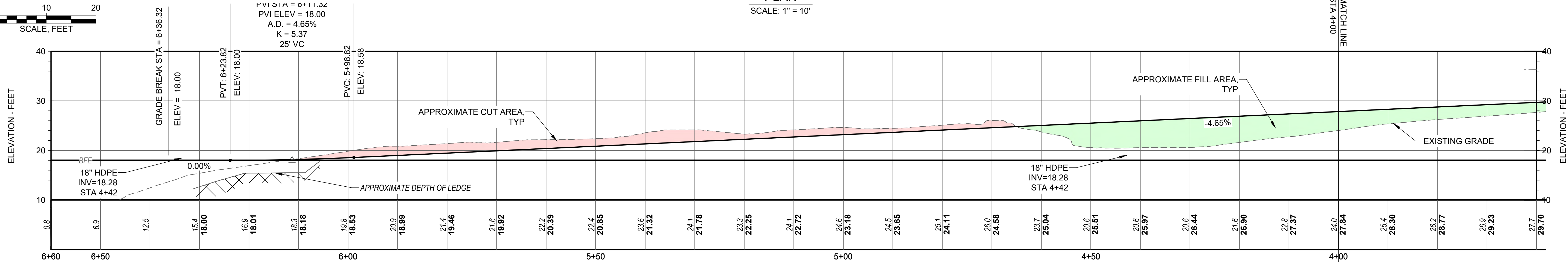
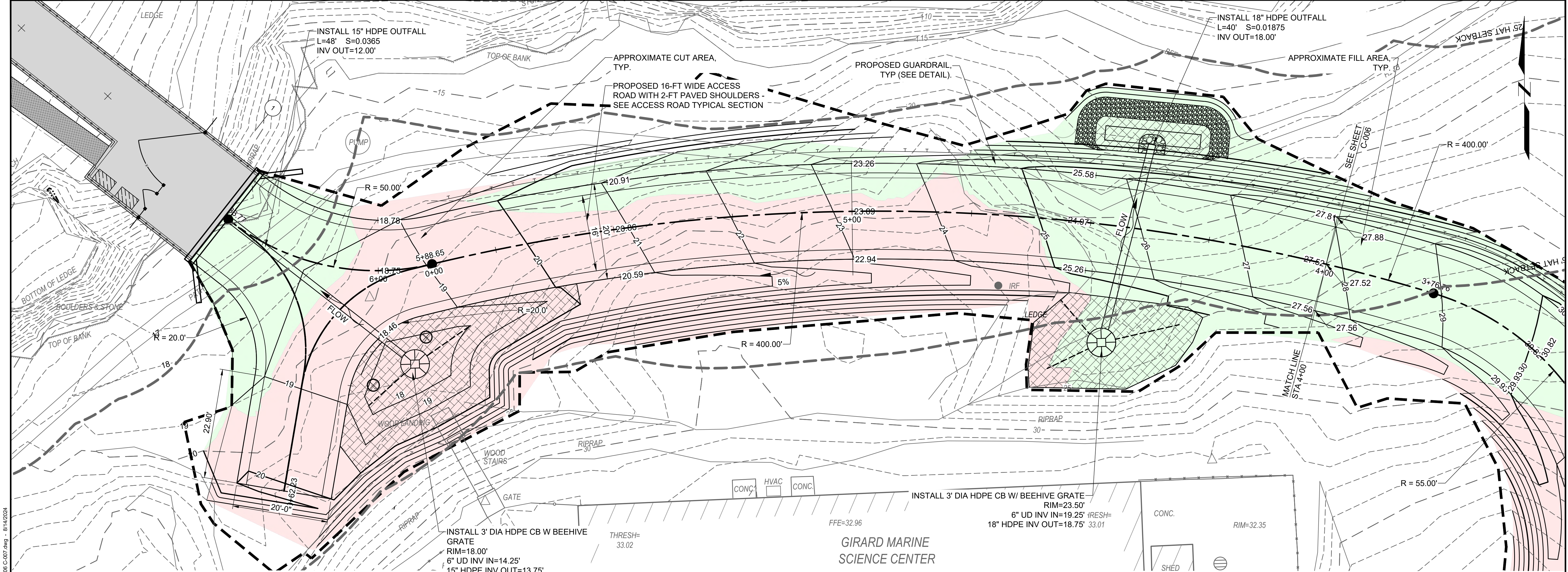
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NO	DATE	ISSUE/REVISION	APP
6	8/14/2024	REVISED PERMIT SET	DJB
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2	2/15/2023	305 DESIGN SUBMISSION	DJB
1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB

SHEET NAME
**ACCESS ROAD
PLAN AND PROFILE
STA 1+00 TO 4+00**

SHEET NO.
C-006

FOR PERMIT



CUT/FILL ANALYSIS

STRUCTURE	QUANTITY (CY)
CUT	2174.50
FILL	782.30
NET (FILL)	1392.20

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

DRAFT

Designed: DJB

Drawn: JAM

Checked: BJB

Approved: BMM

P.E. No: 13033

GEI Project 2203703



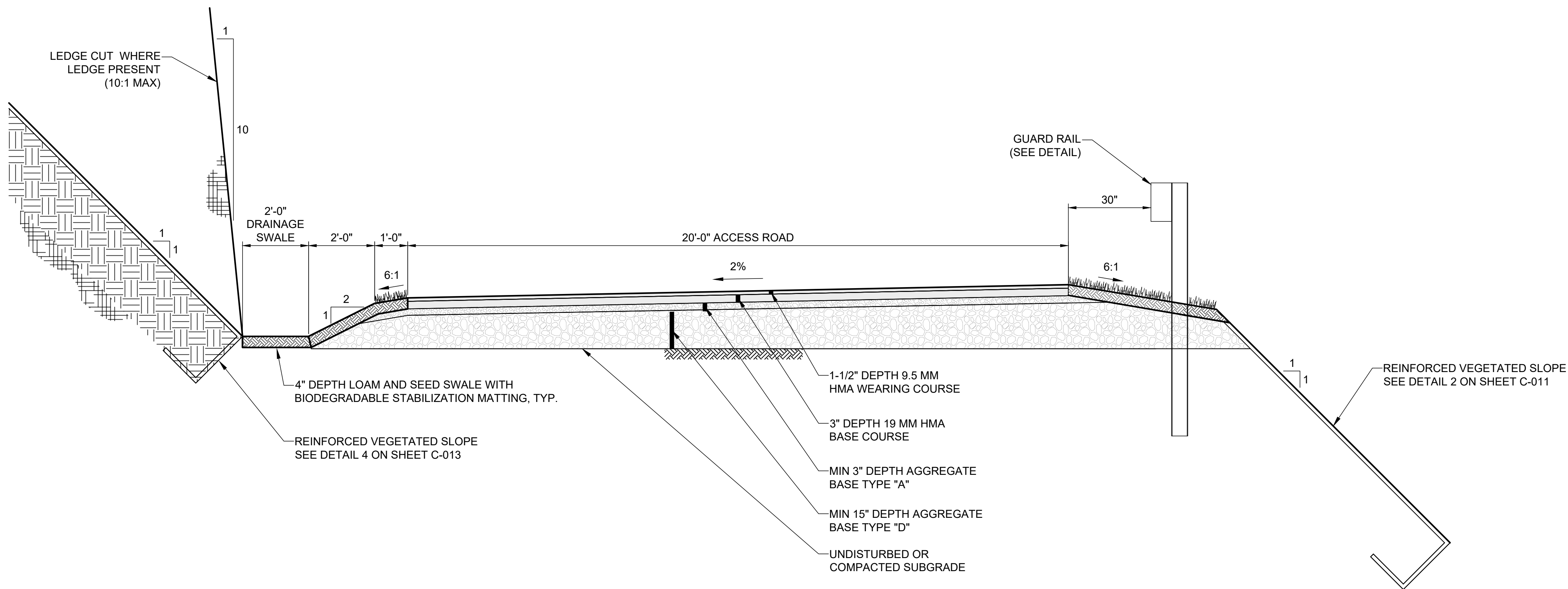
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BIDDEFORD, YORK COUNTY, MAINE

6	8/14/2024	REVISED PERMIT SET	DJB
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0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

SHEET NAME	SHEET NO.
ACCESS ROAD PLAN AND PROFILE STA 4+00 TO STA 6+60	C-007

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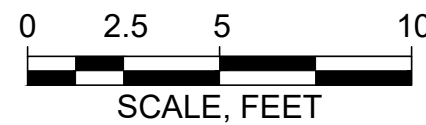
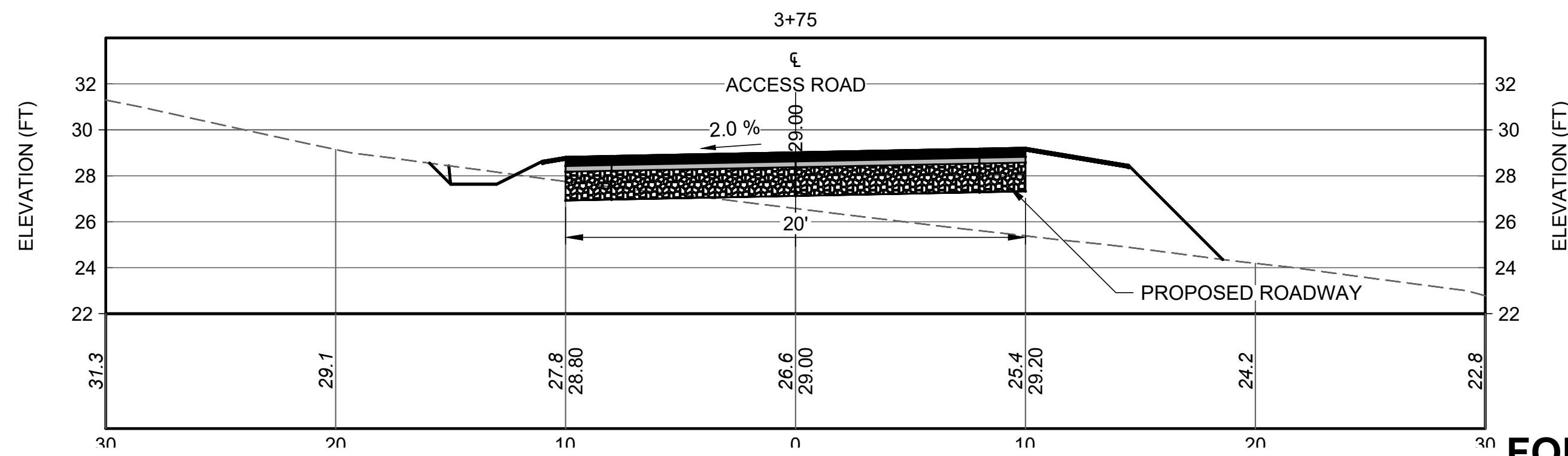
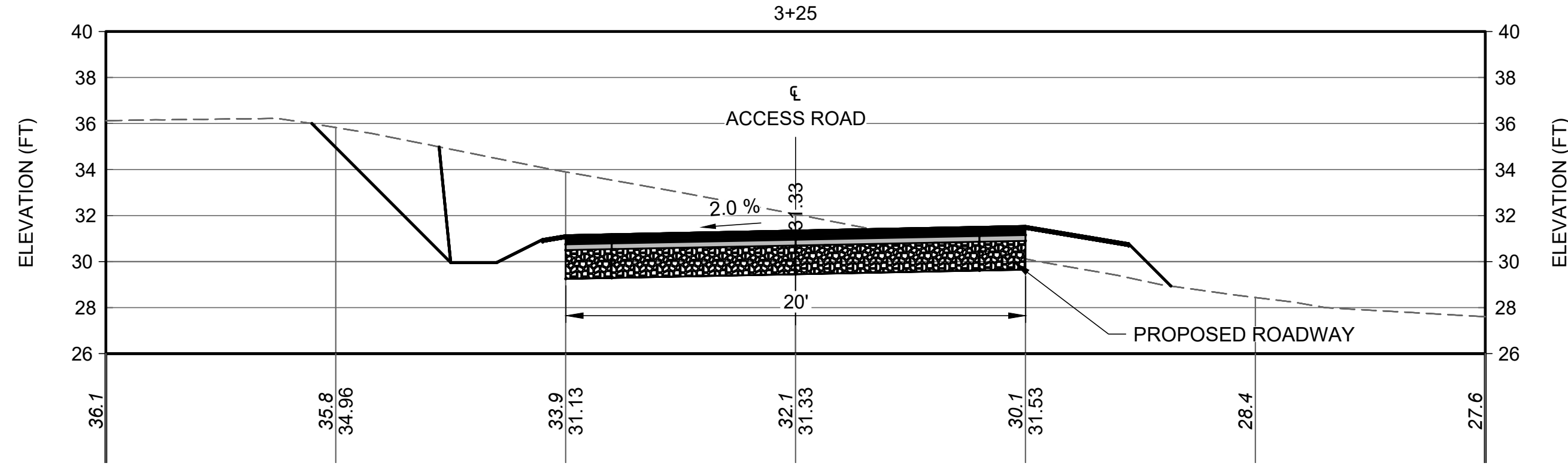
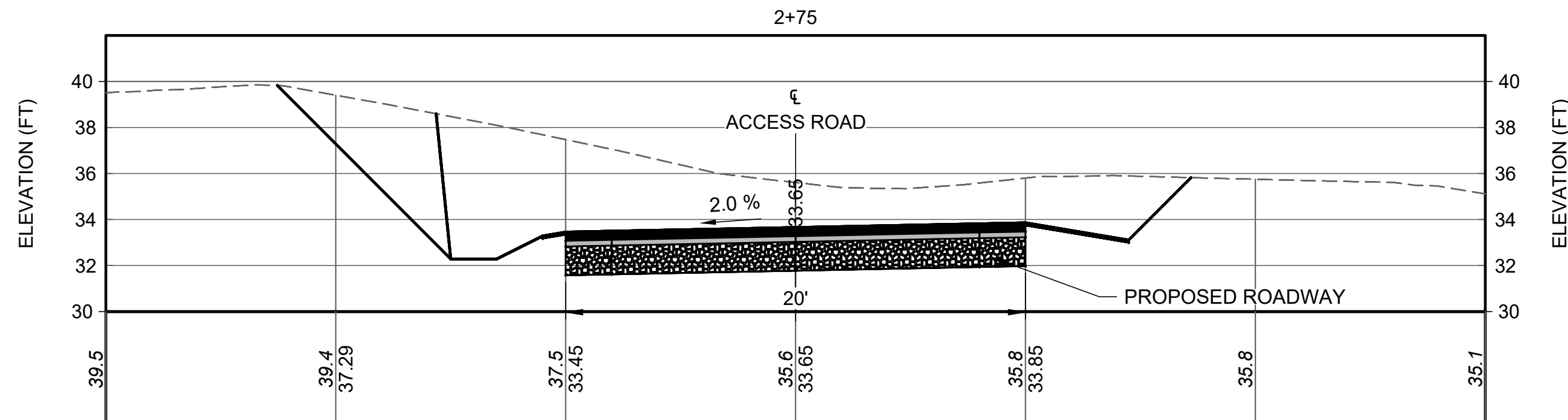
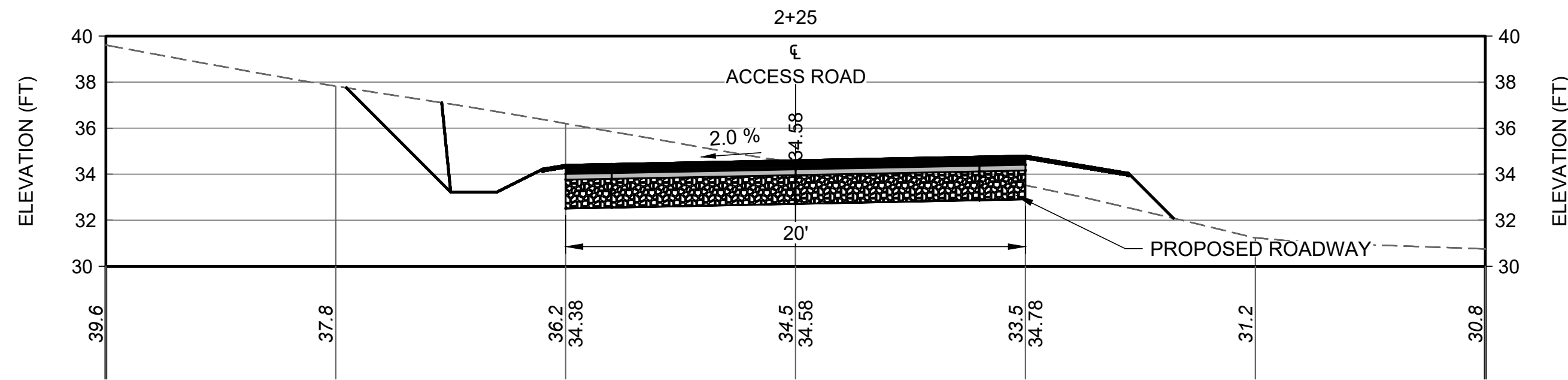
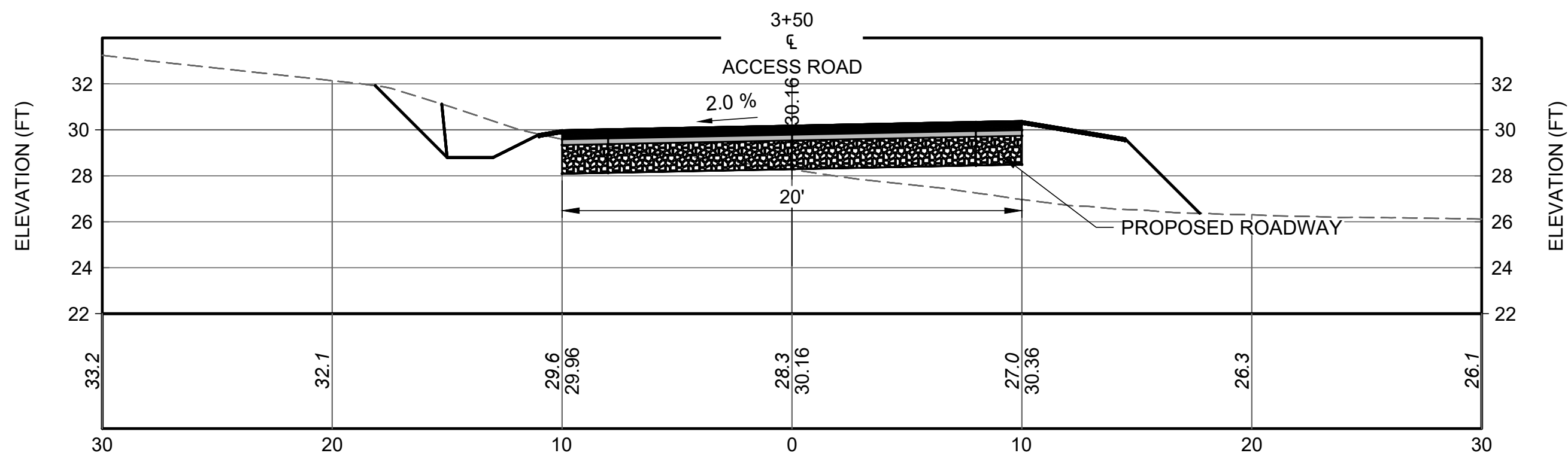
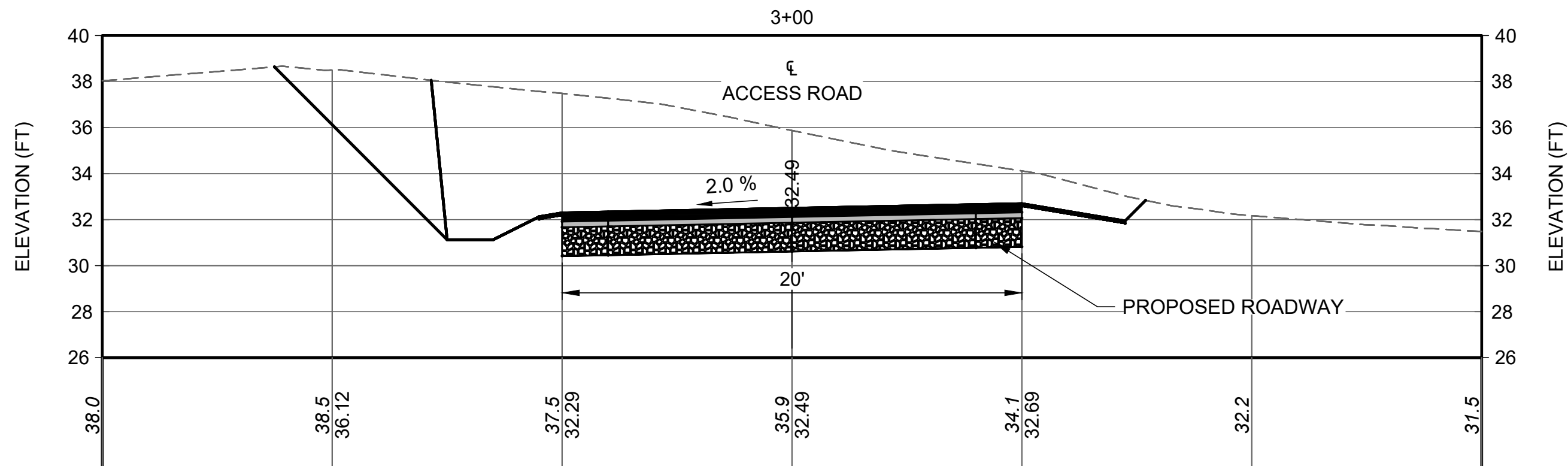
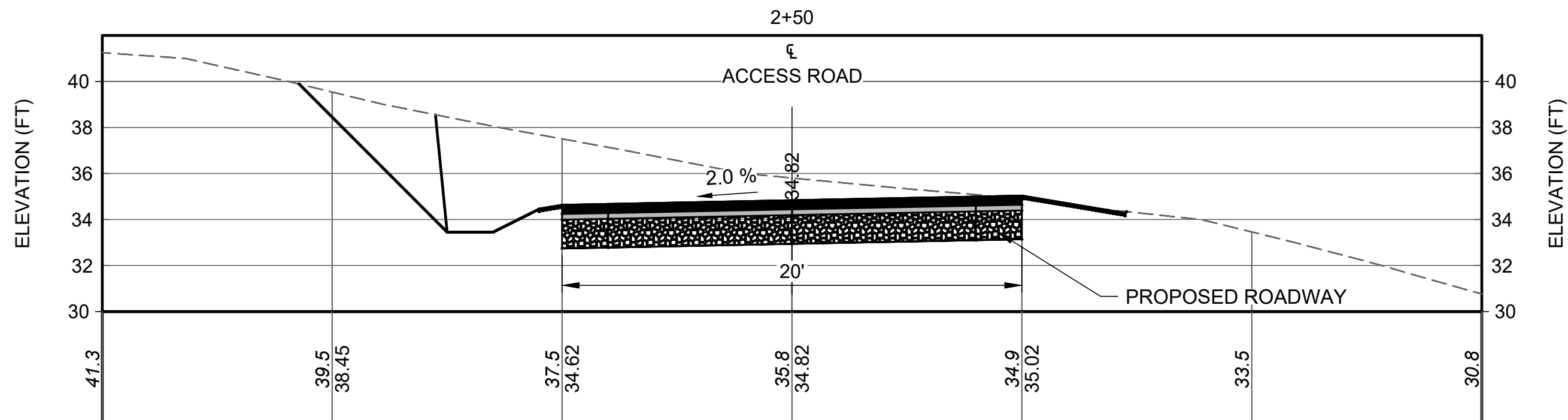
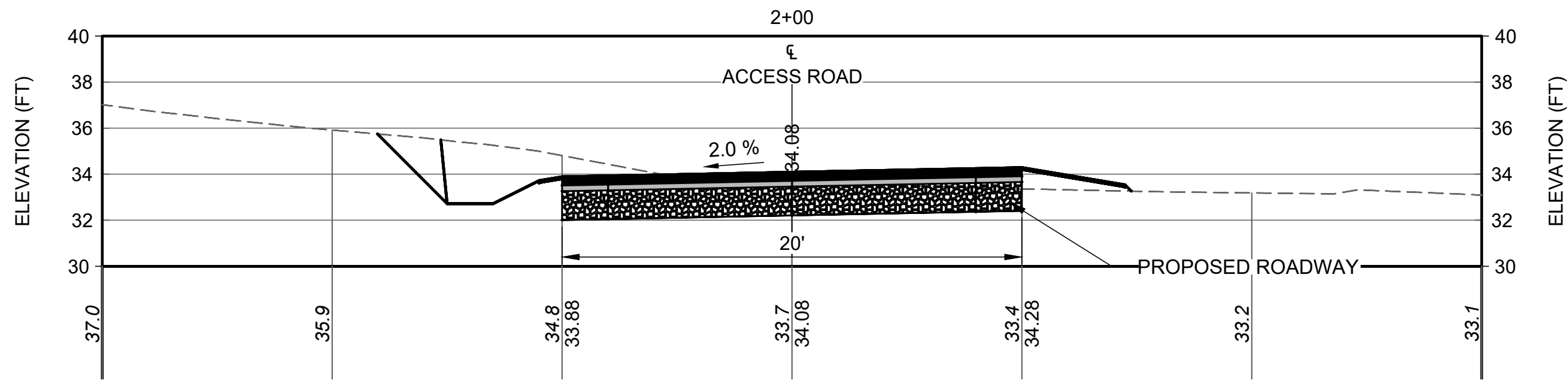


TYPICAL ACCESS ROAD SECTION
SCALE: NTS

FOR PERMIT

Attention: 01" If this scale bar does not measure 1" then drawing is not original scale.	Designed: DJB	GEI Consultants GEI CONSULTANTS, INC. 5 MILK STREET PORTLAND, ME 04101 (207)797-8901	UNE UNIVERSITY OF NEW ENGLAND 11 HILLS BEACH RD. BIDDEFORD, MAINE	UNIVERSITY OF NEW ENGLAND MARINE SCIENCE CENTER PIER 11 HILLS BEACH ROAD BIDDEFORD, YORK COUNTY, MAINE					SHEET NAME ACCESS ROAD TYPICAL SECTION	SHEET NO. C-008
	Drawn: JAM									
	Checked: BJB				6	8/14/2024	REVISED PERMIT SET	DJB		
	Approved: BMM				5	6/27/2024	REVISED PERMIT SET	DJB		
	P.E. No: 13033				4	9/14/2023	DEP PERMIT SET	DJB		
	GEI Project 2203703				3	6/28/2023	75% DESIGN SUBMISSION	DJB		
					2	2/15/2023	305 DESIGN SUBMISSION	DJB		
					1	12/9/2022	15% DESIGN SUB REV	DJB		
	0	11/11/2022	15% DESIGN SUBMISSION	DJB						
	NO	DATE	ISSUE/REVISION	APP						

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Attention:
0 1"
If this scale bar
does not measure
1" then drawing is
not original scale.

DRAFT

Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



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BIDDEFORD, YORK COUNTY, MAINE

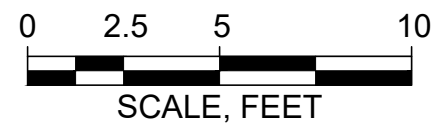
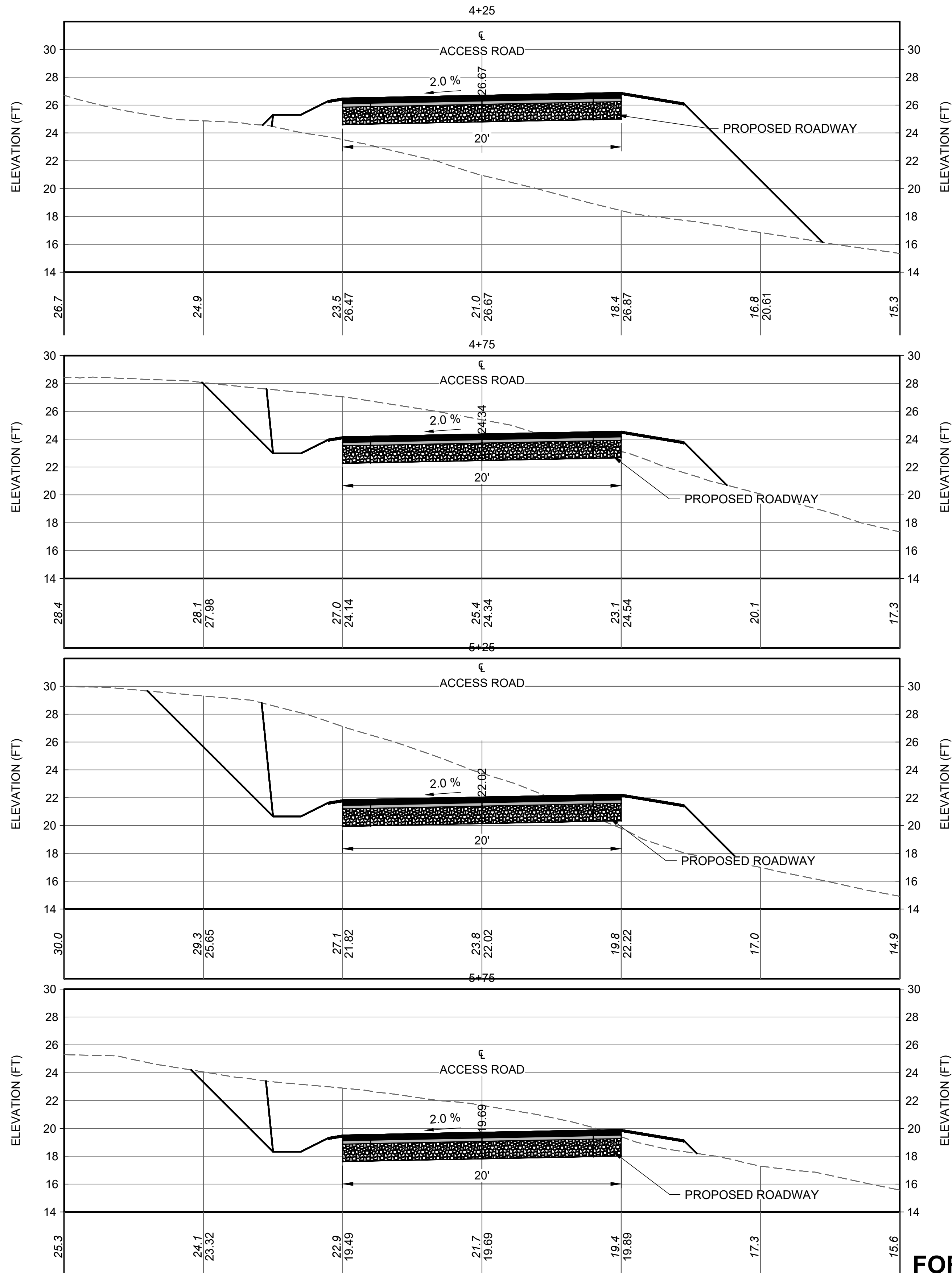
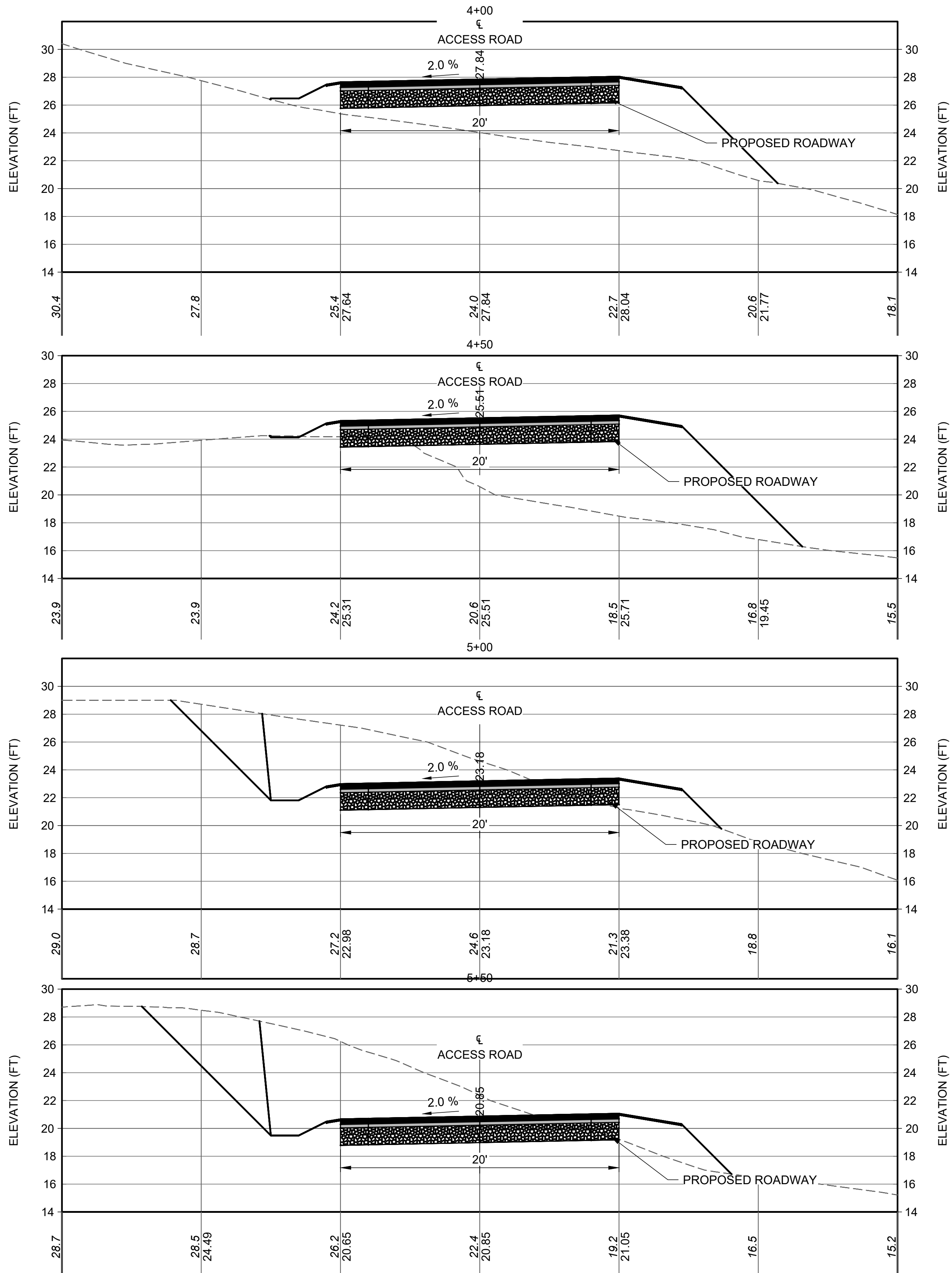
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0	11/11/2022	15% DESIGN SUBMISSION	DJB

SHEET NAME
**ROAD ACCESS
SECTIONS STA
2+00 TO 3+75**

SHEET NO.
C-009

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Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

DRAFT

Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



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BIDDEFORD, YORK COUNTY, MAINE

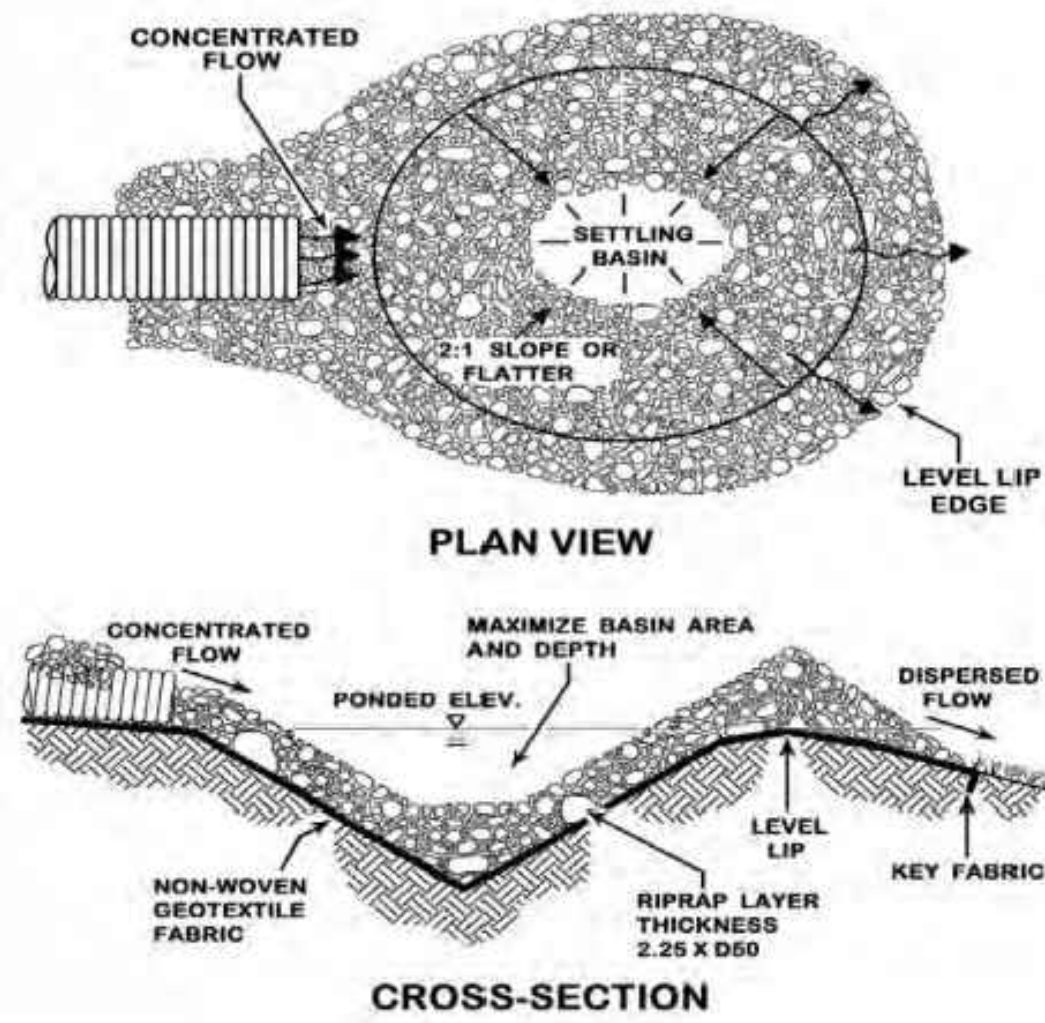
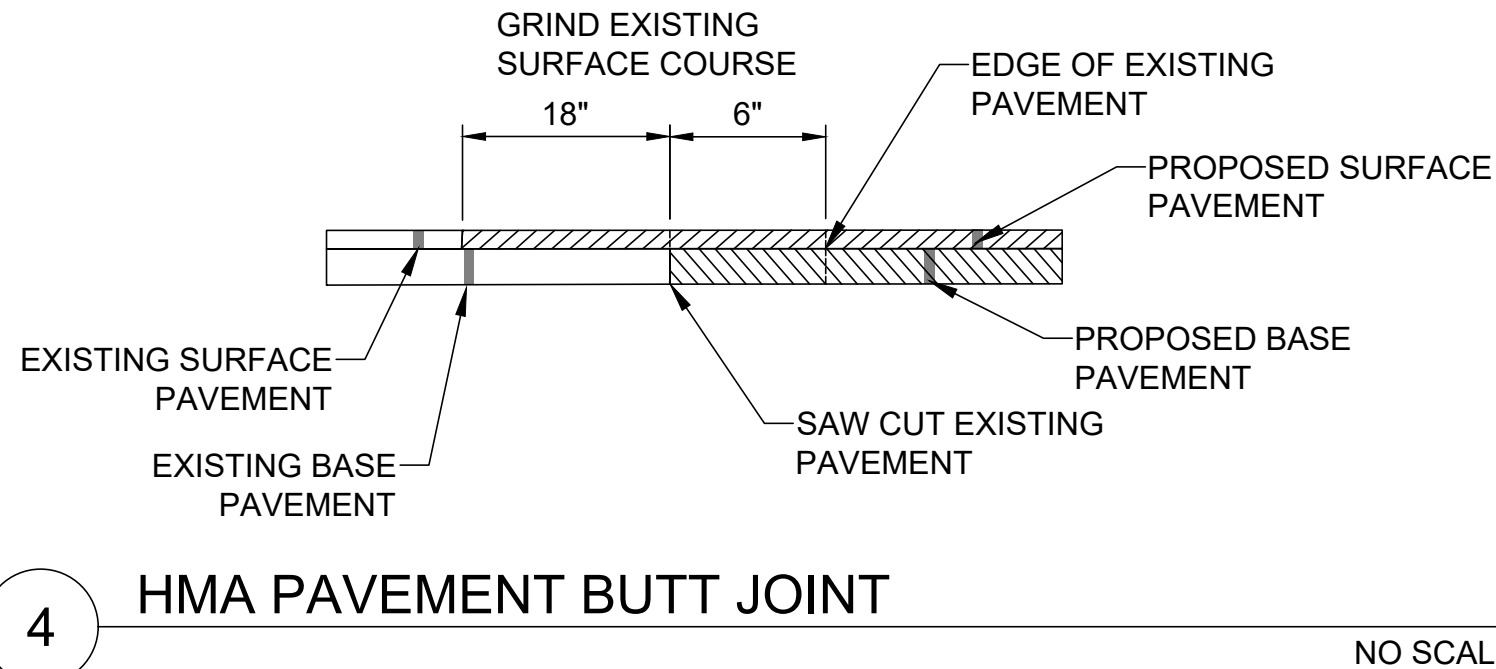
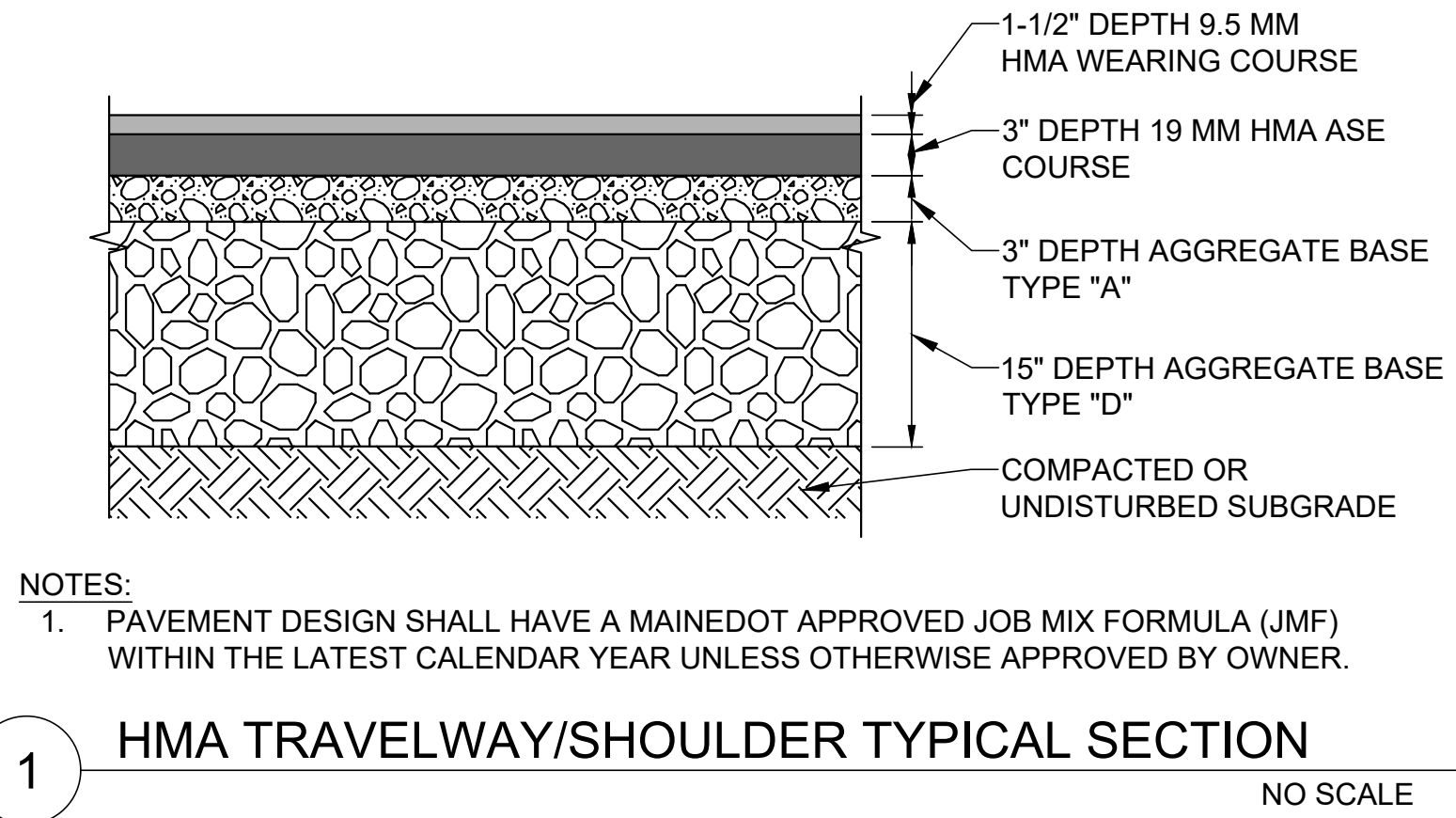
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0	11/11/2022	15% DESIGN SUBMISSION	DJB

SHEET NAME
**ROAD ACCESS
SECTIONS STA
4+00 TO 5+75**

SHEET NO.
C-010

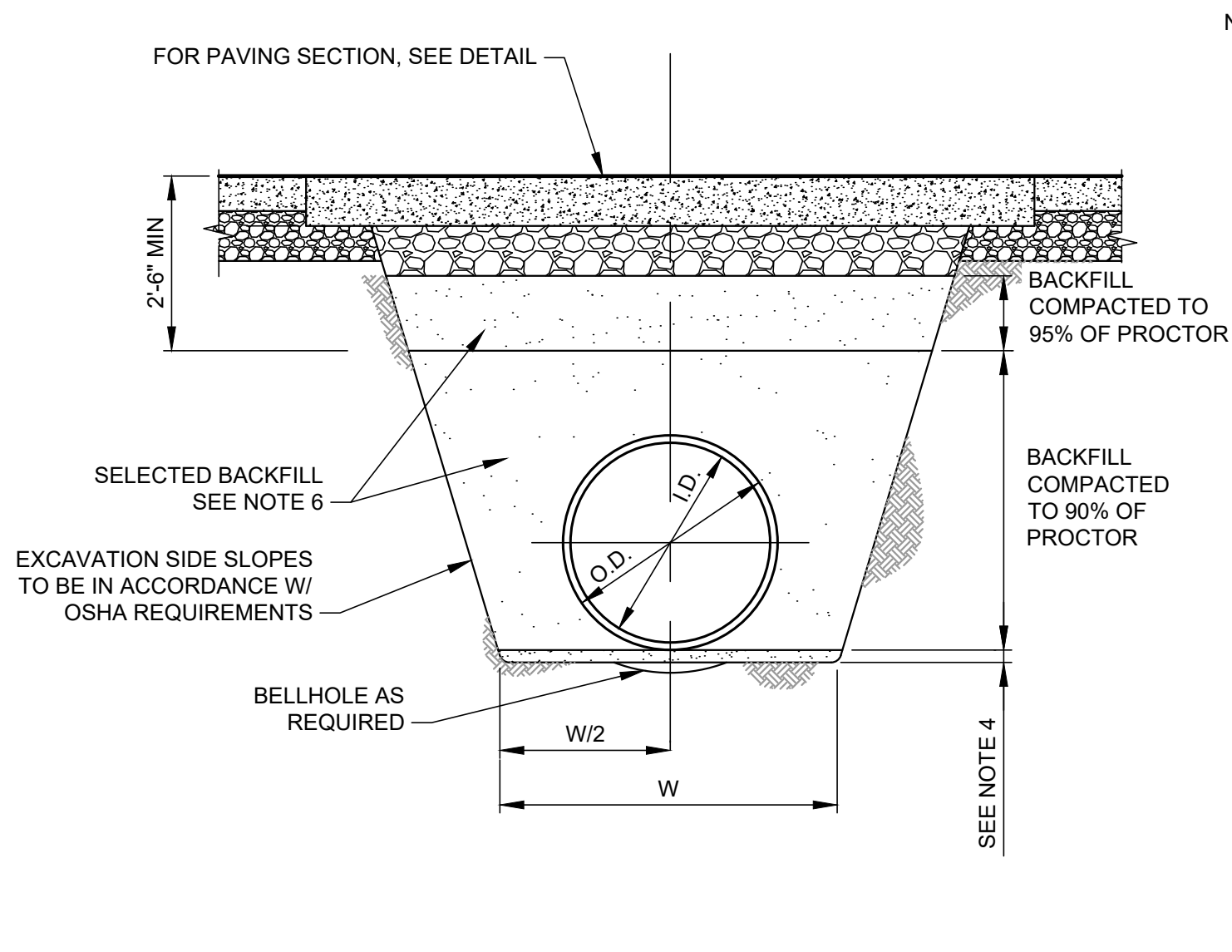
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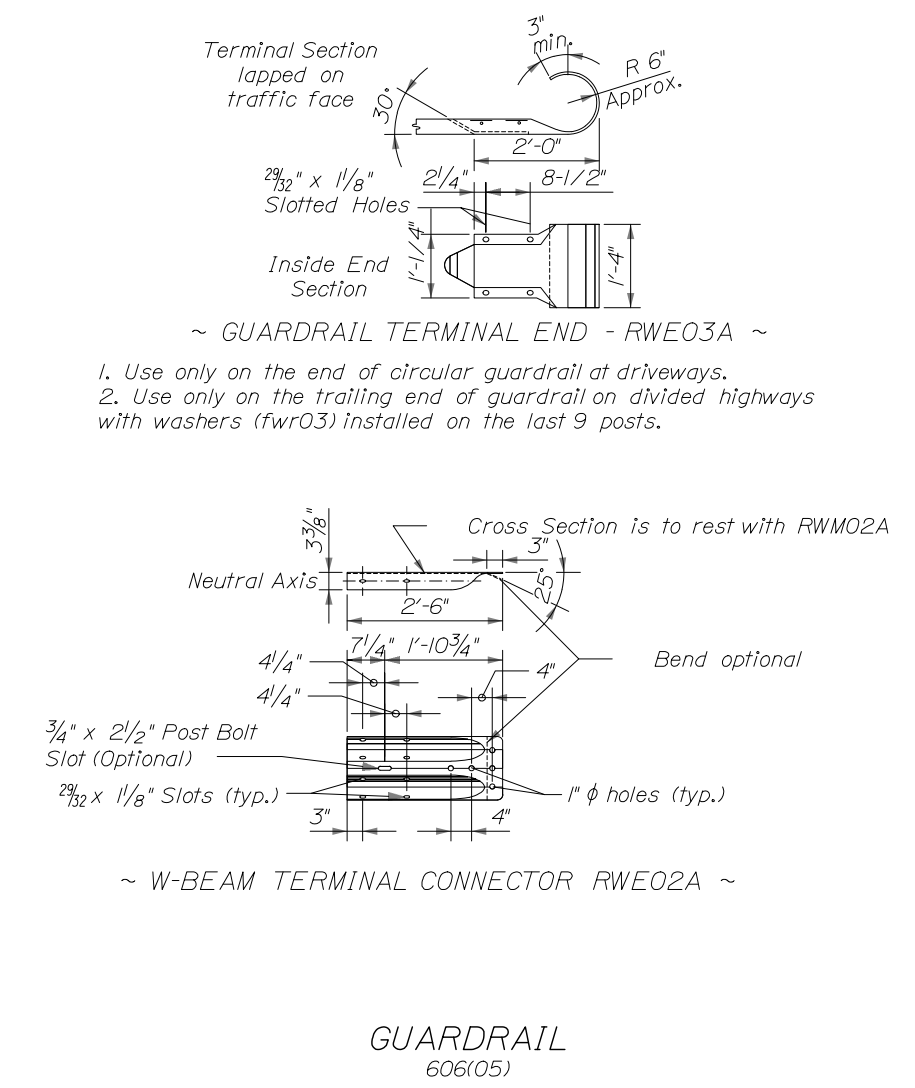
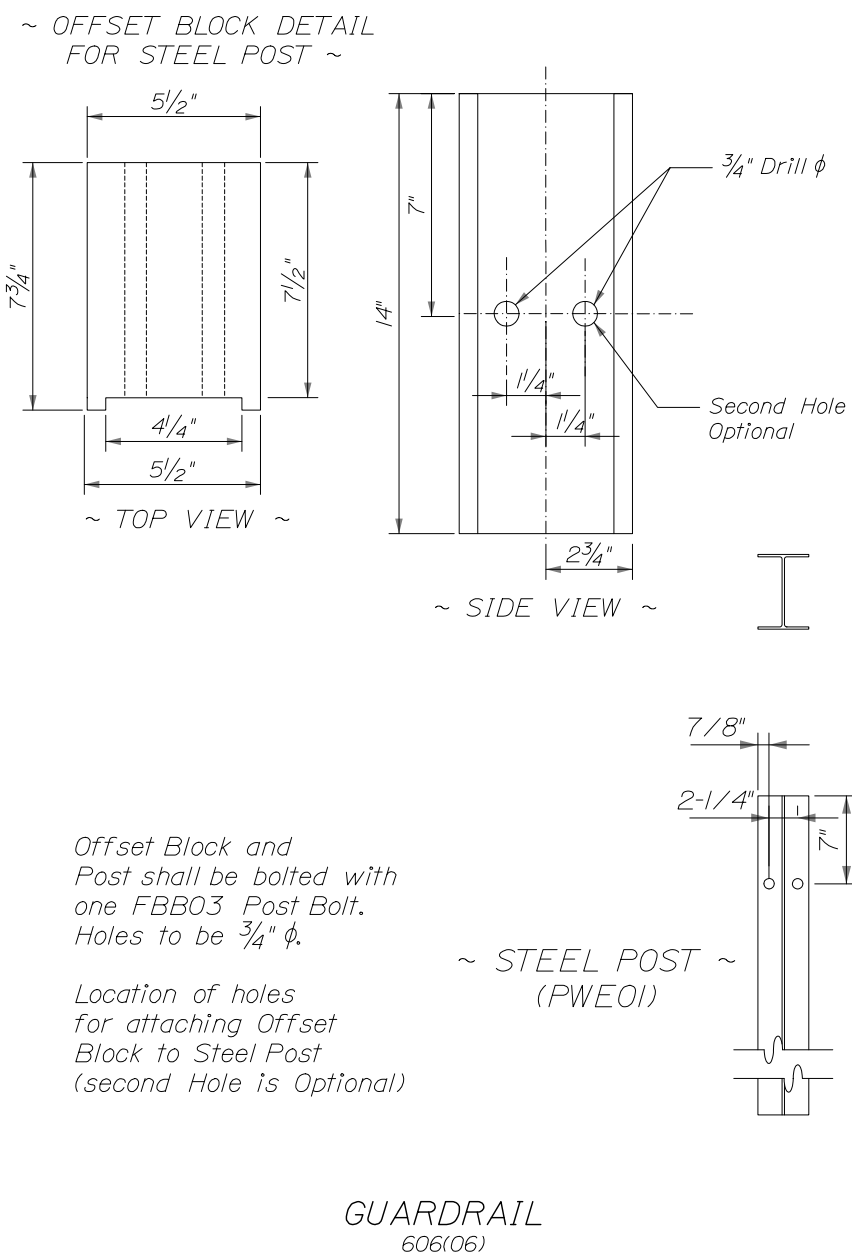
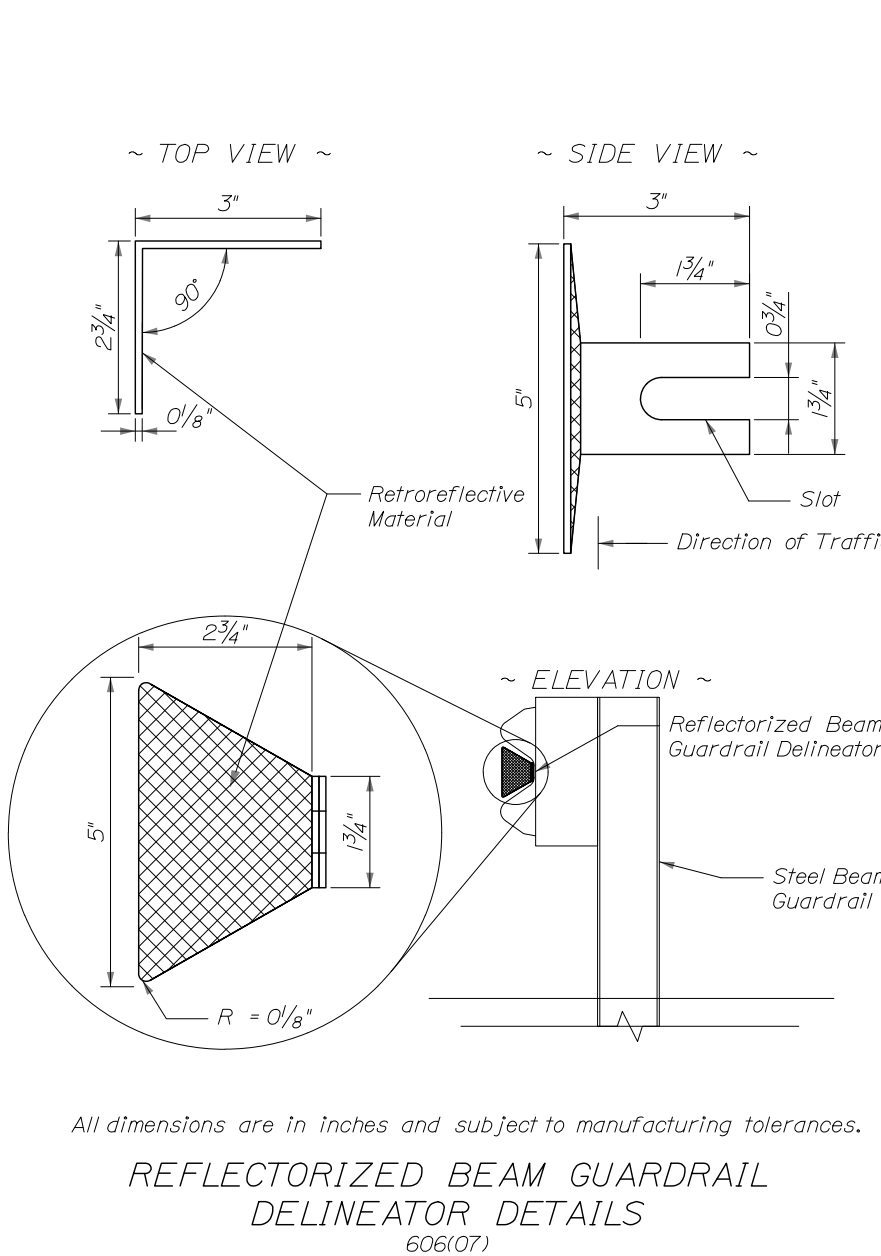
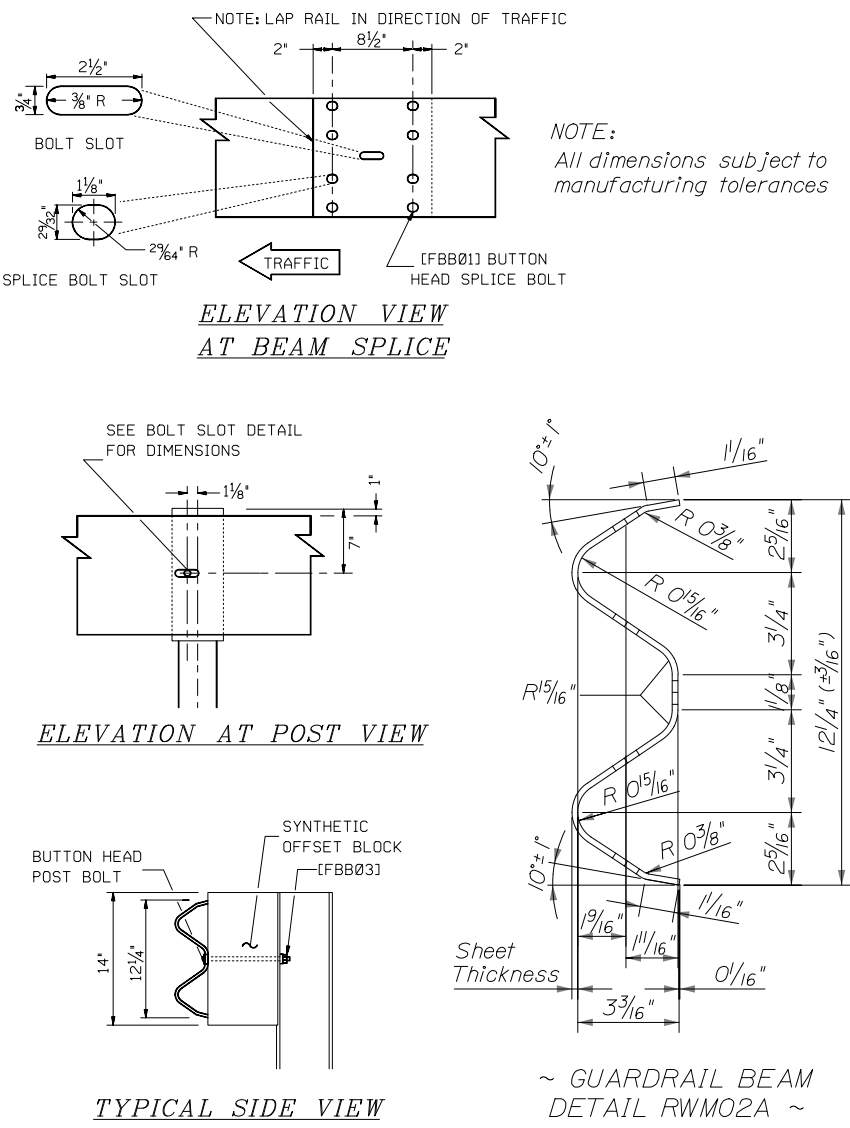
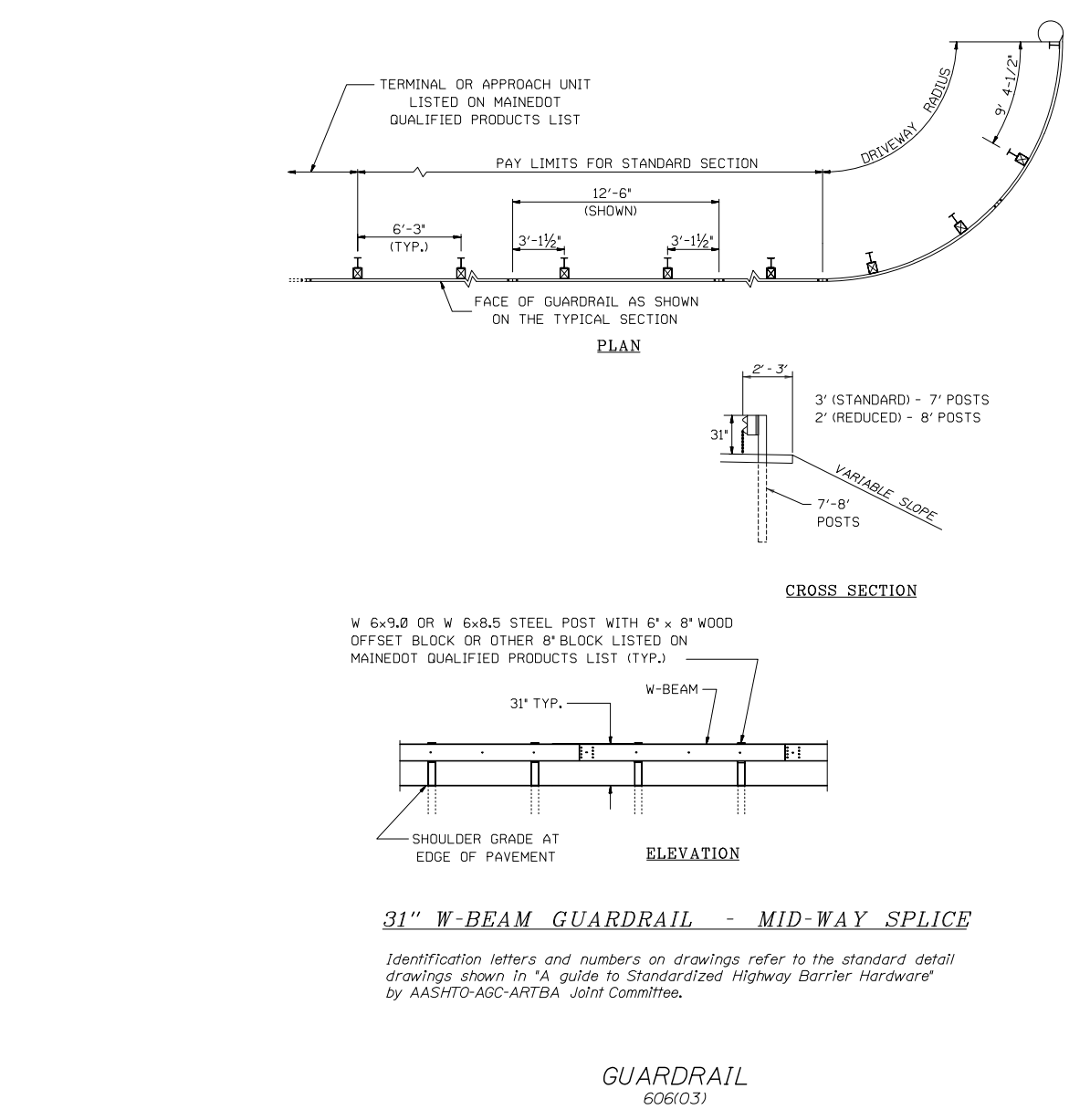


PLUNGE POOL SIZING (minimum)				
SIZE	RIPRAP SIZING (D ₅₀)	WIDTH At the narrow end of pipe	LENGTH For slow flows (no pressure head)	LENGTH For high flows (with pressure head)
12"	5"	3-4'	4-6'	8-10'
18"	8"	4-6'	6-8'	12-18'
24"	10"	6-8'	8-10'	18-22'
30"	12"	8-10'	12-14'	22-28'
36"	14"	10-12'	14-16'	28-32'

The diameter of the largest stone size in the mix should be about 1.5 times the D₅₀ and the smallest one about one half the size. The thickness of riprap should never be less than 2 times the rock D₅₀.



- NOTES:
1. TRENCH BOTTOM OR BEDDING FOR ALL PIPE SHALL BE GRADED TO PROVIDE UNIFORM SUPPORT FOR THE ENTIRE LENGTH OF THE PIPE EXCEPT AT BELLHOLES.
 2. BELLHOLES FOR PIPES SHALL HAVE A CLEARANCE OF 3" BETWEEN THE BOTTOM OF THE BELLHOLE AND THE EXTERIOR OF THE PIPE BARREL, BUT IN NO CASE SHALL BELLHOLES BE SMALLER THAN REQUIRED TO FACILITATE PLACING OF THE PIPE OR PROPER JOINING OF THE PIPE.
 3. COMPACTION BACKFILL SHALL BE COMPACTIONED TO A DEGREE AT LEAST EQUIVALENT TO THE EXISTING DEGREE OF COMPACTION OF ADJACENT IN-PLACE EARTH MATERIALS AGAINST WHICH SUCH COMPACTIONED BACKFILL IS TO BE PLACED, OR TO A MIN OF 95% OF THE LABORATORY STANDARD MAX ASTM D698 DENSITY, WHICHEVER IS GREATER.
 4. MIN 3" DEEP LAYER OF SCARIFIED MATERIAL WHEN IN HARD MATERIAL, IN UNSUITABLE MATERIAL, OVER EXCAVATE AS DIRECTED BY ENGINEER (6" MIN) AND REPLACE WITH COMPACTIONED BACKFILL.
 5. W = PIPE O.D. + 24" MIN
 6. ALL SELECTED BACKFILL IS TO BE IN CONFORMANCE WITH STATE STANDARD SPECIFICATION.



5 GUARD RAIL DETAILS
NO SCALE

Attention: 01" If this scale bar does not measure 1" then drawing is not original scale.	Designed: DJB	GEI Consultants GEI CONSULTANTS, INC. 5 MILK STREET PORTLAND, ME 04101 (207)797-8901	UNE UNIVERSITY OF NEW ENGLAND 11 HILLS BEACH RD. BIDDEFORD, MAINE	UNIVERSITY OF NEW ENGLAND MARINE SCIENCE CENTER PIER 11 HILLS BEACH ROAD BIDDEFORD, YORK COUNTY, MAINE					SHEET NAME SITE DETAILS	SHEET NO. C-011
	Drawn: JAM									
	Checked: BJB				6	8/14/2024	REVISED PERMIT SET	DJB		
	Approved: BMM				5	6/27/2024	REVISED PERMIT SET	DJB		
	P.E. No: 13033				4	9/14/2023	DEP PERMIT SET	DJB		
	GEI Project 2203703				3	6/28/2023	75% DESIGN SUBMISSION	DJB		
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	0	11/11/2022	15% DESIGN SUBMISSION	DJB	NO	DATE	ISSUE/REVISION	APP		

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EROSION AND SEDIMENTATION CONTROL NOTES:

INTRODUCTION
THE FOLLOWING PLAN FOR CONTROLLING SEDIMENTATION AND EROSION IN THIS PROJECT IS BASED ON CONSERVATION PRACTICES FOUND IN THE MAINE EROSION & SEDIMENT CONTROL BMPS MANUAL, OCTOBER 2016, AND MAINE EROSION AND SEDIMENT CONTROL PRACTICE FIELD GUIDE FOR CONTRACTORS, REVISED 2014, MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION. THE CONTRACTOR WHO IMPLEMENTS THIS PLAN SHALL BE FAMILIAR WITH THESE PUBLICATIONS AND ADHERE TO THEM AND THE PRACTICES PRESENTED HEREIN REFERENCE IS MADE TO THE EROSION CONTROL PLANS AND DETAILS (C-005 AND C-013) WITHIN THE PLAN SET, SHOWING THE LOCATIONS AND TYPES OF PROPOSED MEASURES TO BE IMPLEMENTED.

GENERAL EROSION AND SEDIMENTATION CONTROL NOTES:

1. EROSION AND SEDIMENTATION CONTROL MEASURES ARE PROPOSED TO CONTROL ACCELERATED EROSION AND SEDIMENTATION AND REDUCE ADVERSE IMPACTS FROM RUNOFF AND EROSION AT THE WORK SITE.
2. APPLICATION OF TEMPORARY AND PERMANENT EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MAINE EROSION AND SEDIMENT CONTROL BMPS PUBLISHED BY MAINE DEP AND AVAILABLE AT: [HTTPS://WWW.MAINE.GOV/DEP/LAND/EROSION/ESCBMPS/](https://www.maine.gov/dep/land/erosion/escbmps/)
3. THE WORK SHALL BE PERFORMED BY A CONTRACTOR THAT IS CERTIFIED BY MAINE DEP IN EROSION AND SEDIMENT CONTROL MEASURES. A CERTIFIED INDIVIDUAL SHALL BE ONSITE DURING ALL CONSTRUCTION ACTIVITY.
4. EROSION AND SEDIMENTATION DUE TO RUNOFF, TIDAL EXPOSURE, AND WAVE ACTION SHALL BE CONTROLLED BY STAGING CONSTRUCTION ACTIVITY TO MINIMIZE AREA AND TIME OF DISTURBANCE, APPLICATION OF SILT FENCE, BOOMS, BARRIERS, AND OTHER EROSION CONTROL MEASURES, AND PRESERVING NATURAL VEGETATION WHENEVER POSSIBLE.
5. THE CONTRACTOR'S SEQUENCE OF OPERATIONS AND SCHEDULE FOR WORK ACTIVITIES SHALL ACT TO MINIMIZE EXPOSURE TO EROSION.
6. THE CONTRACTOR SHALL TAKE CARE TO LIMIT THE AREA OF SOIL DISTURBANCE TO THE MINIMUM NECESSARY TO COMPLETE THE WORK.
7. EROSION CONTROL MEASURES, SEEDING, AND VEGETATION SHALL BE INSPECTED WEEKLY AND AFTER RAINSTORMS, RUNOFF EVENTS, AND STORM EVENTS UNTIL FINAL ACCEPTANCE. REPAIRS SHALL BE MADE WHEN NO LONGER SERVICEABLE DUE TO DAMAGE OR ACCUMULATION OF SEDIMENT.
8. AT THE COMPLETION OF CONSTRUCTION, ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND CONTOUR, UNLESS OTHERWISE INDICATED ON THE PLANS.

GENERAL EROSION AND SEDIMENTATION CONTROL PRACTICES

THE FOLLOWING IS A LIST OF GENERAL EROSION CONTROL PRACTICES THAT WILL BE USED TO PREVENT EROSION AND SEDIMENTATION BEFORE, DURING AND AFTER THE CONSTRUCTION OF THIS PROJECT. IN ADDITION, SPECIAL CARE SHALL BE USED AT ALL TIMES TO:

LIMIT DISTURBANCE AND, HENCE, EROSION

1. CORRECT ANY EROSION PROBLEMS IMMEDIATELY.
2. REGULARLY MONITOR THE IMPLEMENTED PRACTICES, ESPECIALLY AFTER EVERY RAINFALL.
3. REVEGETATE DISTURBED AREAS AS SOON AS POSSIBLE AFTER CONSTRUCTION.
4. CONFORM TO ALL REQUIREMENTS/STANDARDS OF THE SITE'S MAINE DEP EROSION & SEDIMENT CONTROL BMP MANUAL.

SILT FENCE AND/OR EROSION CONTROL MIX SEDIMENT BARRIERS

SILT FENCE AND/OR EROSION CONTROL MIX SEDIMENT BARRIERS WILL BE INSTALLED ALONG THE DOWN GRADIENT SIDE OF THE PROPOSED GROUND DISTURBANCE AREAS PRIOR TO ANY CONSTRUCTION ACTIVITIES WHERE SLOPES EXCEED 8% OR THERE IS FLOWING WATER BOTH SILT FENCE AND EROSION CONTROL MATTING BERMS SHALL BE USED.

CATCH BASIN PROTECTION

CATCH BASIN PROTECTION WILL BE INSTALLED AT THE FIRST DOWNGRADIENT CATCH BASIN IN STREET ADJACENT TO ANY CONSTRUCTION ACTIVITIES AND IN ALL ONSITE CATCH BASINS UNTIL SITE HAS BEEN COMPLETELY STABILIZED.

CONSTRUCTION PHASE

THE FOLLOWING GENERAL PRACTICES WILL BE IMPLEMENTED TO PREVENT EROSION DURING CONSTRUCTION ON THIS PROJECT:

1. EROSION AND SEDIMENTATION CONTROL BMPS SHALL BE INTALLED PRIOR TO THE COMMENCEMENT OF EARTHWORK ACTIVITIES.
2. ONLY THOSE AREAS UNDER ACTIVE CONSTRUCTION WILL BE CLEARED AND LEFT IN AN UNTREATED OR UNVEGETATED CONDITION. AN AREA NO LARGER THAN WHAT CAN BE MULCHED IN ONE DAY MAY BE OPEN AT ONCE. ONCE CONSTRUCTION OF AN AREA IS COMPLETE, FINAL GRADING, LOAMING AND SEEDING SHALL OCCUR IMMEDIATELY (REFER TO "POST CONSTRUCTION REVEGETATION" SECTION). IF DURING FINAL GRADING, LOAMING AND SEEDING CAN NOT OCCUR IMMEDIATELY, IT SHALL BE DONE PRIOR TO ANY STORM EVENT AND WITHIN 15 DAYS OF COMPLETING CONSTRUCTION IN THE AREA. IF FINAL GRADING, LOAMING AND SEEDING CANNOT OCCUR WITHIN 7 DAYS, OR IF THE AREA IS NOT UNDER ACTIVE CONSTRUCTION FOR A PERIOD LONGER THAN 7 DAYS, SEE ITEM NO. 4 BELOW.
3. PRIOR TO THE START OF CONSTRUCTION IN A SPECIFIC AREA, SILT FENCING SHALL BE INSTALLED ON DOWNGRADIENT PORTIONS OF THE SITE AS LOCATED ON THE PLANS TO PROTECT AGAINST ANY CONSTRUCTION RELATED EROSION.
4. TOPSOIL WILL BE STOCKPILED WHEN NECESSARY IN AREAS WHICH HAVE MINIMUM POTENTIAL FOR EROSION AND WILL BE KEPT AS FAR AS POSSIBLE FROM EXISTING DRAINAGE AREAS AND WETLANDS. ALL STOCKPILES EXPECTED TO REMAIN LONGER THAN 7 DAYS SHALL BE:
 - A. TREATED WITH ANCHORED MULCH (WITHIN 5 DAYS OF THE LAST DEPOSIT OF STOCKPILED SOIL).
 - B. SEEDDED WITH CONSERVATION MIX AND MULCHED IMMEDIATELY.
 - C. STOCKPILES SHALL BE EITHER PLACED UPHILL OF AN EXISTING SEDIMENT BARRIER ON THE SITE OR ENCIRCLED BY A HAY BALE OR SILT FENCE BARRIER THE FIRST DAY THAT STOCKPILING COMMENCES.
5. ALL DISTURBED AREAS EXPECTED TO REMAIN LONGER THAN 7 DAYS SHALL BE:
 - A. TREATED WITH STRAW AT A RATE OF 70-90 LBS. PER 1000 SQUARE FEET FROM 4/16 TO 10/1, OR AT A RATE OF 150-200 LBS. PER 1000 SQUARE FEET FROM 10/1 TO 4/15.
 - B. SEEDDED WITH CONSERVATION MIX OF PERENNIAL RYE GRASS (1.0 LBS/1000 SQ.FT.) AND MULCHED IMMEDIATELY. FROM 10/1 TO 4/15.
 - C. FOLLOW THE SEEDING RATES AS OUTLINED BELOW IN SUB-SECTION 4.D. OF THE "POST CONSTRUCTION REVEGETATION" SECTION.
 - C. MONITORED EVERY TWO WEEKS UNTIL SEEDING CAN OCCUR AND REMULCHED AS NEEDED TO PROTECT SLOPES.
6. ALL GRADING WILL BE HELD TO A MAXIMUM 3:1 SLOPE WHERE PRACTICAL. GREATER SLOPES MAY BE USED WHERE THE BANKS ARE PROTECTED WITH SOFT ARMOUR MATTING, EROSION CONTROL MATTING, OR RIPRAP. ALL SLOPES WILL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY AFTER FINAL GRADING IS COMPLETE. (IT IS UNDERSTOOD THAT IMMEDIATELY MEANS WITHIN 5 DAYS OF THE COMPLETION OF WORK. SEE POST-CONSTRUCTION REVEGETATION FOR SEEDING SPECIFICATION).
7. APPLICATION RATE MUST BE 2 BALES (70-90 LBS.) PER 1,000 SQUARE FEET OR 1.5 TO 2 TONS (90-100 BALES) PER ACRE TO COVER 75 TO 90% OF THE GROUND SURFACE. DRIVE OVER WITH TRACKED CONSTRUCTION EQUIPMENT ON GRADES OF 5% AND LESS.
8. CONSTRUCTION TRAFFIC WILL BE DIRECTED OVER THE EXISTING SITE ENTRANCE. THE ROAD SHALL BE

SWEEPED AND VACUUMED DAILY SHOULD SEDIMENT BE TRACKED ONTO IT.

9. ALL AREAS DRAINING TO A STORMWATER FILTER OR BMP SHALL BE STABILIZED PRIOR TO CONSTRUCTION OF FILTER MEDIA TO PREVENT SEDIMENT FROM CLOGGING MEDIA.

DEWATERING

1. ALL DEWATERING DISCHARGE LOCATIONS SHALL BE LOCATED ON RELATIVELY FLAT GROUND AT LEAST 75' FROM STREAMS AND 25' FROM WETLANDS. THE CONTRACTOR SHALL UTILIZE DIRTBAGS, EROSION CONTROL MIX BERMS, OR SIMILAR METHODS FOR FILTRATION OF DEWATERING AND SHALL CONFORM TO THE MAINE EROSION AND SEDIMENT CONTROL BMPS G-1, G-2, AND G-3.

POST CONSTRUCTION REVEGETATION

THE FOLLOWING GENERAL PRACTICES WILL BE IMPLEMENTED TO PREVENT EROSION AS SOON AS AN AREA IS READY TO UNDERGO FINAL GRADING:

1. A MINIMUM OF 6" OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND GRADED TO A UNIFORM DEPTH AND NATURAL APPEARANCE.
2. LAWN AREAS: "PARK MIX" GRASS SEED BY ALLEN, STERLING & LOTHROP (FALMOUTH, MAINE), OR APPROVED EQUAL.
3. MULCH SHALL BE HAY OR STRAW MULCHES THAT ARE DRY AND FREE FROM UNDESIRABLE SEEDS AND COURSE MATERIALS.
 - A. APPLICATION RATE MUST BE 2 BALES (70-90 LBS.) PER 1,000 SQUARE FEET OR 1.5 TO 2 TONS (90-100 BALES) PER ACRE TO COVER 75 TO 90% OF THE GROUND SURFACE.
 - B. DRIVE OVER WITH TRACKED CONSTRUCTION EQUIPMENT ON GRADES OF 5% AND LESS.
 - C. BLANKET WITH TACKED PHOTODEGRADABLE/BIODEGRADABLE NETTING ON GRADES GREATER THAN 5%.
4. HYDRO-MULCH SHALL CONSIST OF A MIXTURE OF ASPHALT, WOOD FIBRE OR PAPER FIBRE AND WATER, WHICH IS SPRAYED OVER A SEEDED AREA. HYDRO-MULCH SHALL NOT BE USED BETWEEN 10/1 AND 4/15.
5. CONSTRUCTION SHALL BE PLANNED TO ELIMINATE THE NEED FOR SEEDING BETWEEN OCTOBER 1ST AND APRIL 15TH. SHOULD SEEDING BE NECESSARY BETWEEN THESE DATES, THE FOLLOWING PROCEDURE SHALL BE FOLLOWED:
 - A. ONLY UNFROZEN LOAM SHALL BE USED.
 - B. LOAMING, SEEDING AND MULCHING WILL NOT BE DONE OVER SNOW OR ICE COVER. IF SNOW EXISTS, IT MUST BE REMOVED PRIOR TO PLACEMENT OF SEED.
 - C. WHERE PERMANENT SEEDING IS NECESSARY, ANNUAL WINTER RYE (1.2 LBS/1000 S.F.) SHALL BE SOWN INSTEAD OF THE PREVIOUSLY NOTED SEEDING RATE.
 - D. WHERE TEMPORARY SEEDING IS REQUIRED, ANNUAL WINTER RYE (2.5 LBS/1000 S.F.) SHALL BE SOWN INSTEAD OF THE PREVIOUSLY NOTED SEEDING RATE.
 - E. FERTILIZING, SEEDING AND MULCHING SHALL BE DONE ON LOAM THE DAY THE LOAM IS SPREAD.
 - F. HAY MULCH SHALL BE SECURED WITH PHOTODEGRADABLE/BIODEGRADABLE NETTING. TRACKING BY MACHINERY ALONE WILL NOT SUFFICE. WINTER MULCHING RATES, SHALL BE DOUBLE AS SPECIFIED ABOVE IN SUBSECTION 3.A OF THE "POST CONSTRUCTION REVEGETATION" SECTION, SHOULD BE APPLIED DURING THIS PERIOD.
6. FOLLOWING FINAL SEEDING, THE SITE WILL BE INSPECTED EVERY 30 DAYS UNTIL 90% COVER HAS BEEN ESTABLISHED. RESEEDING WILL BE CARRIED OUT BY THE CONTRACTOR WITHIN 10 DAYS OF NOTIFICATION BY THE DESIGN PROFESSIONAL THAT THE EXISTING CATCH IS INADEQUATE.

MONITORING SCHEDULE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING, MONITORING, MAINTAINING, REPAIRING, REPLACING AND REMOVING ALL OF THE EROSION AND SEDIMENTATION CONTROLS OR APPOINTING A QUALIFIED SUBCONTRACTOR TO DO SO. MAINTENANCE MEASURES WILL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL, AND AT LEAST ONCE A WEEK, A VISUAL INSPECTION WILL BE MADE OF ALL EROSION AND SEDIMENTATION CONTROLS AS FOLLOWS:

1. SILT FENCE SHALL BE INSPECTED AND REPAIRED. SEDIMENT TRAPPED BEHIND THESE BARRIERS SHALL BE EXCAVATED WHEN IT REACHES A DEPTH OF 6" AND REDISTRIBUTED TO AREAS UNDERGOING FINAL GRADING.
2. CONSTRUCTION ENTRANCE SHALL BE VISUALLY INSPECTED AND REPAIRED AS NEEDED. ANY AREAS SUBJECT TO RUTTING SHALL BE STABILIZED IMMEDIATELY. IF THE VOIDS OF THE CONSTRUCTION ENTRANCE BECOME FILLED WITH MUD, MORE CRUSHED STONE SHALL BE ADDED AS NEEDED. THE PUBLIC ROADWAY SHALL BE SWEEPED AND VACUUMED SHOULD MUD BE DEPOSITED/TRACKED ONTO THEM.

STANDARDS FOR STABILIZING SITES FOR THE WINTER

THE FOLLOWING STANDARDS AND METHODOLOGIES SHALL BE USED FOR STABILIZING THE SITE DURING THE WINTER CONSTRUCTION PERIOD:

1. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES (ANY AREA HAVING A GRADE GREATER THAN 25%) - THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15TH. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15TH, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.
 - A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS:
BY OCTOBER 1ST THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A RATE OF 3 POUNDS PER 1000 SQUARE FEET AND THEN INSTALL EROSION CONTROL MATS OR ANCHORED HAY MULCH OVER THE SEEDING AT TWICE THE RATE AS SPECIFIED ABOVE IN SUBSECTION 3.A OF THE "POST CONSTRUCTION REVEGETATION" SECTION. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS.
 - B. STABILIZE THE SLOPE WITH WOOD-WASTE COMPOST:
THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF WOOD-WASTE COMPOST ON THE SLOPE BY NOVEMBER 15TH. THE CONTRACTOR WILL NOT USE WOOD-WASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
 - C. STABILIZE THE SLOPE WITH STONE RIPRAP:
THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15TH. THE DEVELOPMENT'S OWNER WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS - BY SEPTEMBER 15TH THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON THE SITE. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ON OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

- A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION:
BY OCTOBER 1ST THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 1, THEN THE CONTRACTOR WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM III OF THIS STANDARD.
- B. STABILIZE THE SOIL WITH SOD:
THE CONTRACTOR WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.

- C. STABILIZE THE SOIL WITH MULCH: BY NOVEMBER 15TH THE CONTRACTOR WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, THE CONTRACTOR WILL ANCHOR THE MULCH WITH NETTING OR OTHER METHOD TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

EROSION CONTROL REMOVAL

AN AREA IS CONSIDERED STABLE IF IT IS PAVED OR IF 90% GROWTH OF PLANTED SEEDS IS ESTABLISHED. ONCE AN AREA IS CONSIDERED STABLE, THE EROSION CONTROL MEASURES CAN BE REMOVED AS FOLLOWS:

1. SILT FENCE: SILT FENCE SHALL BE DISPOSED OF LEGALLY AND PROPERLY OFF-SITE. ALL SEDIMENT TRAPPED BEHIND THESE CONTROLS SHALL BE DISTRIBUTED TO AN AREA UNDERGOING FINAL GRADING OR REMOVED AND RELOCATED OFF-SITE.
2. STABILIZED CONSTRUCTION ENTRANCE: THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE REMOVED ONCE THE COMPACTED ROADWAY BASE IN IN PLACE. STONE AND SEDIMENT FROM THE CONSTRUCTION ENTRANCE SHALL BE REDISTRIBUTED TO AN AREA UNDERGOING GRADING OR REMOVED AND RELOCATED OFFSITE.
3. MISCELLANEOUS: ONCE ALL THE TRAPPED SEDIMENTS HAVE BEEN REMOVED FROM THE TEMPORARY SEDIMENTATION DEVICES THE DISTURBED AREAS MUST BE REGRADED IN AN AESTHETIC MANNER TO CONFORM TO THE SURROUNDING TOPOGRAPHY. ONCE GRADED THESE DISTURBED AREAS MUST BE LOAMED (IF NECESSARY), FERTILIZED, SEEDDED AND MULCHED IN ACCORDANCE WITH THE RATES PREVIOUSLY STATED.

THE ABOVE EROSION CONTROLS MUST BE REMOVED WITHIN 30 DAYS OF FINAL STABILIZATION OF THE SITE. CONFORMANCE WITH THIS PLAN AND FOLLOWING THESE PRACTICES WILL RESULT IN A PROJECT THAT COMPLIES WITH THE STATE REGULATIONS AND THE STANDARDS OF THE NATURAL RESOURCES PROTECTION ACT, AND WILL PROTECT WATER QUALITY IN AREAS DOWNSTREAM ROM THE PROJECT.

MAINE CONSTRUCTION GENERAL PERMIT REQUIRED

SUBMISSION OF A MAINE CONSTRUCTION GENERAL PERMIT (MCGP) IS REQUIRED PRIOR TO COMMENCEMENT OF ANY EXCAVATION ACTIVITIES.

INSPECTION AND MAINTENANCE (APPENDIX B)

1. INSPECTION AND MAINTENANCE REQUIREMENTS: INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION AND STORMWATER CONTROL MEASURES, AREAS USED FOR STORAGE THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND AFTER A SIGNIFICANT STORM EVENT (0.5 INCHES OF RAINFALL IN A 24-HOUR PERIOD) AND PRIOR TO COMPLETION OF PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS IN THE MCGP AND ANY DEPARTMENTAL COMPANION DOCUMENT TO THE MCGP, MUST CONDUCT THE INSPECTION. THIS PERSON MUST BE IDENTIFIED IN THE INSPECTION LOG. IF BEST MANAGEMENT PRACTICES (BMPS) NEED TO BE MODIFIED OR IF ADDITIONAL BMPS ARE NECESSARY, IMPLEMENTATION MUST BE STARTED BY THE END OF THE NEXT WORKIN DAY, AND COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED. DOCUMENTATION OF CORRECTION ACTIONS SHALL BE MAINTAINED WITH THE INSPECTION FORMS.
2. INSPECTION LOG (REPORT): A LOG (REPORT) MUST BE KEPT SUMMARIZING THE SCOPE OF THE INSPECTION, NAME(S) AND QUALIFICATIONS OF THE PERSONNEL MAKING THE INSPECTION, THE DATE(S) OF THE INSPECTION, AND MAJOR OBSERVATIONS RELATING TO OPERATION OF EROSION AND SEDIMENTATION CONTROLS AND POLLUTION PREVENTION MEASURES. MAJOR OBSERVATIONS MUST INCLUDE BMPS THAT NEED MAINTENANCE. BMPS THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATIONS(S) WHERE ADDITIONAL BMPS ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPS, NOTE IN THE INSPECTION LOG THE CORRECT ACTION TAKEN AND WHEN IT WAS TAKEN. THE LOG MUST BE MADE ACCESSIBLE TO THE DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF THE PERMANENT STABILIZATION.

HOUSEKEEPING (APPENDIX C)

1. SPILL PREVENTION: CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON SITE TO ENTER STORMWATER, WHICH INCLUDES STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER. THE SITE CONTRACTOR OR OPERATOR MUST DEVELOP, AND IMPLEMENT AS NECESSARY, APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING MEASURES.

NOTE: ANY SPILL OR RELEASE OF TOXIC OR HAZARDOUS SUBSTANCES MUST BE REPORTED TO THE DEPARTMENT. FOR OIL SPILLS, CALL 1-800-482-0777 WHICH IS AVAILABLE 24 HOURS A DAY, FOR SPILLS OF TOXIC OR HAZARDOUS MATERIAL, CALL 1-800-452-4684 WHICH IS AVAILABLE 24 HOURS A DAY. FOR MORE INFORMATION, VISIT THE DEPARTMENT'S WEBSITE AT: [HTTP://WWW.MAINE.GOV/DEP/SPILLS/EMERGSPILLRESP/](http://www.maine.gov/dep/spills/emergspillresp/)

2. GROUNDWATER PROTECTION: DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE-TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.

NOTE: LACK OF APPROPRIATE POLLUTANT REMOVAL BEST MANAGEMENT PRACTICES (BMPS) MAY RESULT IN VIOLATIONS OF THE GROUNDWATER QUALITY STANDARD ESTABLISHED BY 38 M.R.S.A. §465-C(1).

3. FUGITIVE SEDIMENT AND DUST: ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF-SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEEPED IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.

NOTE: DEWATERING A STREAM WITHOUT A PERMIT FROM THE DEPARTMENT MAY VIOLATE STATE WATER QUALITY STANDARDS AND THE NATURAL RESOURCES PROTECTION ACT.

4. DEBRIS AND OTHER MATERIALS: MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

NOTE: TO PREVENT THESE MATERIALS FROM BECOMING A SOURCE OF POLLUTANTS, CONSTRUCTION AND POST-CONSTRUCTION ACTIVITIES RELATED TO A PROJECT MAY BE REQUIRED TO COMPLY WITH APPLICABLE PROVISION OF RULES RELATED TO SOLID, UNIVERSAL, AND HAZARDOUS WASTE, INCLUDING, BUT NOT LIMITED TO, THE MAINE SOLID WASTE AND HAZARDOUS WASTE MANAGEMENT RULES; MAINE HAZARDOUS WASTE MANAGEMENT RULES; MAINE OIL CONVEYANCE AND STORAGE RULES; AND MAINE PESTICIDE REQUIREMENTS.

5. EXCAVATION DEWATERING: EXCAVATION DEWATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

NOTE: DEWATERING CONTROLS ARE DISCUSSED IN THE "MAINE EROSION AND SEDIMENT CONTROL BMPS, MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION."

6. AUTHORIZED NON-STORMWATER DISCHARGES: IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE:..
 - DISCHARGES FROM FIREFIGHTING ACTIVITY;
 - FIRE HYDRANT FLUSHINGS;
 - VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE, AND TRANSMISSION WASHING IS PROHIBITED);
 - DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS AND APPENDIX C(3);
 - ROUTINE EXTERNAL BUILDING WASHDOWN, NOT INCLUDING SURFACE PAINT REMOVAL, THAT DOES NOT INVOLVE DETERGENTS;
 - PAVEMENT WASHWATER (WHERE SPILLS/LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE NOT OCCURRED, UNLESS ALL SPILLED MATERIAL HAD BEEN REMOVED) IF DETERGENTS ARE NOT USED;
 - UNCONTAMINATED AIR CONDITIONING OR COMPRESSOR CONDENSATE;
 - UNCONTAMINATED GROUNDWATER OR SPRING WATER;
 - FOUNDATION OR FOOTER DRAIN-WATER WHERE FLOWS ARE NOT CONTAMINATED;
 - UNCONTAMINATED EXCAVATION DEWATERING (SEE REQUIREMENTS IN APPENDIX C(5));
 - POTABLE WATER SOURCES INCLUDING WATERLINE FLUSHINGS; AND
 - LANDSCAPE IRRIGATION
7. UNAUTHORIZED NON-STORMWATER DISCHARGES: THE DEPARTMENT'S APPROVAL UNDER THIS CHAPTER DOES NOT AUTHORIZE A DISCHARGE THAT IS MIXED WITH A SOURCE OF NON-STORMWATER, OTHER THAN THOSE DISCHARGES IN COMPLIANCE WITH APPENDIX C (6). SPECIFICALLY, THE DEPARTMENT'S APPROVAL DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING:
 - WASTEWATER FROM THE WASHOUT OR CLEANOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS;
 - FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE;
 - SOAPS, SOLVENTS, OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING; AND
 - TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE.

ADDITIONAL REQUIREMENTS: ADDITIONAL REQUIREMENTS MAY BE APPLIED ON A SITE-SPECIFIC BASIS.

CONSTRUCTION OVERSITE

THE APPLICANT WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION FOR ALL STORMWATER MANAGEMENT STRUCTURES. IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE POND'S CONSTRUCTION PLAN FOR THE CONTRACTOR. ONCE ALL STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER WILL NOTIFY THE DEPARTMENT IN WRITING WITHIN 30 DAYS TO STATE THAT THE POND HAS BEEN COMPLETED. ACCOMPANYING THE ENGINEER'S NOTIFICATION MUST BE A LOG OF THE ENGINEER'S INSPECTIONS GIVING THE DATE OF EACH INSPECTION, THE TIME OF EACH INSPECTION, AND THE ITEMS INSPECTED ON EACH VISIT, AND INCLUDE ANY TESTING DATA OR SIEVE ANALYSIS DATA OF EVERY MINERAL SOIL AND SOIL MEDIA SPECIFIED IN THE PLANS AND USED ON SITE.

CONSTRUCTION SEQUENCE: THE SOIL FILTER MEDIA AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE FILTER AS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.

COMPACTION OF SOIL FILTER: FILTER SOIL MEDIA AND UNDERDRAIN BEDDING MATERIAL MUST BE COMPACTED BY FLOODING EACH LIFT. THE BED SHOULD BE INSTALLED IN AT LEAST 2 LIFTS OF 9 INCHES TO PREVENT POCKETS OF LOOSE MEDIA.

CONSTRUCTION INSPECTIONS: AT A MINIMUM, THE PROFESSIONAL ENGINEER'S INSPECTION WILL OCCUR:

- AFTER THE THE FILTER HAS BEEN CONSTRUCTED TO SUBGRADE.
- AFTER INSTALLATION OF THE FILTER LIMER.
- AFTER INSTALLATION OF THE UNDERDRAIN PIPES HAVE BEEN INSTALLED BUT NOT BACKFILLED.
- AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO INSTALLATION OF THE SOIL FILTER MEDIA.
- AFTER THE SOIL FILTER MEDIA HAS BEEN INSTALLED, SEEDDED AND MULCHED.
- AFTER ONE YEAR TO INSPECT VEGETATION AND MAKE CORRECTIONS.
- ALL THE MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY TO SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.

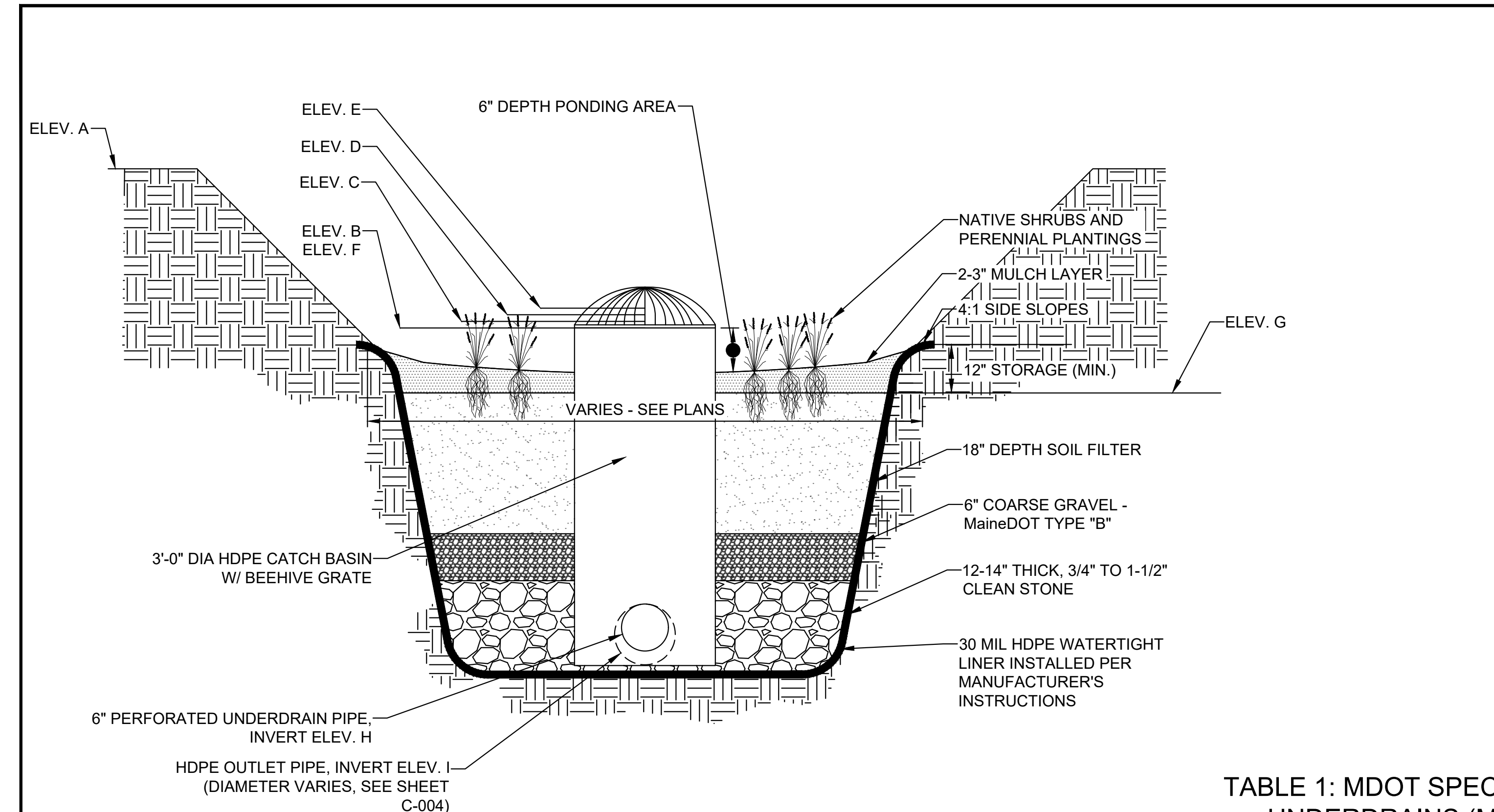
TESTING AND SUBMITTALS: THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE FILTER MEDIA. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL:

- SUBMIT SAMPLES OF EACH TYPE OF MATERIAL TO BE BLENDED FOR THE MIXED FILTER MEDIA AND SAMPLES OF THE UNDERDRAIN BEDDING MATERIAL. SAMPLES MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.
- PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES; 1996A) ON EACH TYPE OF THE SAMPLE MATERIAL.
- PERFORM A PERMEABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90-92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698.

FOR PERMIT

Attention: 01"= If this scale bar does not measure 1" then drawing is not original scale.				Designed: DJB Drawn: JAM Checked: BJB Approved: BMM P.E. No: 13033 GEI Project 2203703 GEI Consultants GEI CONSULTANTS, INC. 5 MILK STREET PORTLAND, ME 04101 (207)797-8901 UNIVERSITY OF NEW ENGLAND 11 HILLS BEACH RD. BIDDEFORD, MAINE UNIVERSITY OF NEW ENGLAND MARINE SCIENCE CENTER PIER 11 HILLS BEACH ROAD BIDDEFORD, YORK COUNTY, MAINE				SHEET NAME SHEET NO.			
				EROSION CONTROL NOTES				C-012			
6	8/14/2024	REVISED PERMIT SET	DJB								
5	6/27/2024	REVISED PERMIT SET	DJB								
4	9/14/2023	DEP PERMIT SET	DJB								
3	6/28/2023	75% DESIGN SUBMISSION	DJB								
2	2/15/2023	305 DESIGN SUBMISSION	DJB								
1	12/9/2022	15% DESIGN SUB REV	DJB								
0	11/11/2022	15% DESIGN SUBMISSION	DJB								
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SOIL FILTER MEDIA NOTES:

- SOIL FILTER MEDIA SHALL CONFORM TO MAINE DEP SOIL FILTER MEDIA OPTION 1, PER MAINE DEP STORMWATER BMP MANUAL CHAPTER 7.1. AS FOLLOWS:
- SOIL FILTER MEDIA SHALL CONSIST OF A SILTY SAND SOIL OR SOIL MIXTURE COMBINED WITH A MATURE, MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH.
 - THE RESULTING MIX SHALL CONTAIN NO LESS THAN 10% BY DRY WEIGHT ORGANIC MATERIAL.
 - THE RESULTING MIX SHALL CONTAIN 8% TO 12% PASSING THE NO. 200 SIEVE.
 - THE RESULTING MIX SHALL CONTAIN A MAXIMUM CLAY CONTENT OF 2%.

UNDERDRAIN OUTLET VALVE CALIBRATION NOTES:

- AFTER THE COMPLETION OF INSTALLATION OF THE SOIL FILTER MEDIA, THE CONTRACTOR SHALL PERFORM THE FOLLOWING PROCEDURE TO CALIBRATE THE UNDERDRAIN OUTLET VALVE TO ACHIEVE THE 0.75"/HOUR DESIGN FLOW RATE.
- BEGIN WITH VALVE HALF-OPEN.
 - CAREFULLY FLOOD THE BASIN UNTIL THERE IS 18" OF WATER STORED ABOVE THE SOIL FILTER MEDIA (UP TO THE HEIGHT OF OUTLET STRUCTURE RIM) WITHOUT CAUSING EROSION OF THE SOIL FILTER MEDIA.
 - RECORD THE TIME IT TAKES FOR THE 18" OF WATER TO DRAIN TO THE TOP OF THE SOIL FILTER MEDIA. THE TARGET DRAINDOWN TIME IS 24 HOURS.
 - IF THE 18" OF WATER DRAINS IN LESS THAN 24 HOURS, CLOSE THE VALVE SLIGHTLY AND REPEAT STEPS 2 & 3 ABOVE.
 - IF THE 18" OF WATER DRAINS IN MORE THAN 24 HOURS, OPEN THE VALVE SLIGHTLY AND REPEAT STEPS 2 & 3 ABOVE.
 - REPEAT THIS PROCESS UNTIL THE 18" OF WATER DRAINS IN 24 HOURS.

GRASSED UNDERDRAINED SOIL FILTER SCHEDULE

GRASSED UNDERDRAINED SOIL FILTER ID	EMBKMT. ELEV.	WATER QUALITY STORM ELEV.	2-YR STORM ELEV.	10-YR STORM ELEV.	25-YR STORM ELEV.	TOP OF OUTLET STRUCT ELEV.	BOTTOM OF STORAGE ELV.	INTERIOR UNDERDRAIN INVERT (START)	UNDERDRAIN OUTLET INVERT	FILTER AREA (SQ. FT.)
	A	B	C	D	E	F	G	H	I	
SF-A	24.50	23.50	23.62	23.67	23.71	23.50	23.00	19.25	18.75	580
SF-B	18.50	18.00	18.11	18.16	18.19	18.00	17.50	14.25	13.75	890

2 BIORETENTION FILTER CELL

NO SCALE

Attention: 0 1" If this scale bar does not measure 1" then drawing is not original scale.	Designed:	DJB
	Drawn:	JAM
	Checked:	BJB
	Approved:	BMM
	P.E. No:	13033
GEI Project		2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

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PIER

11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

6	8/14/2024	REVISED PERMIT SET	DJB
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0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

SHEET NAME
**EROSION CONTROL
DETAILS I**

SHEET NO.

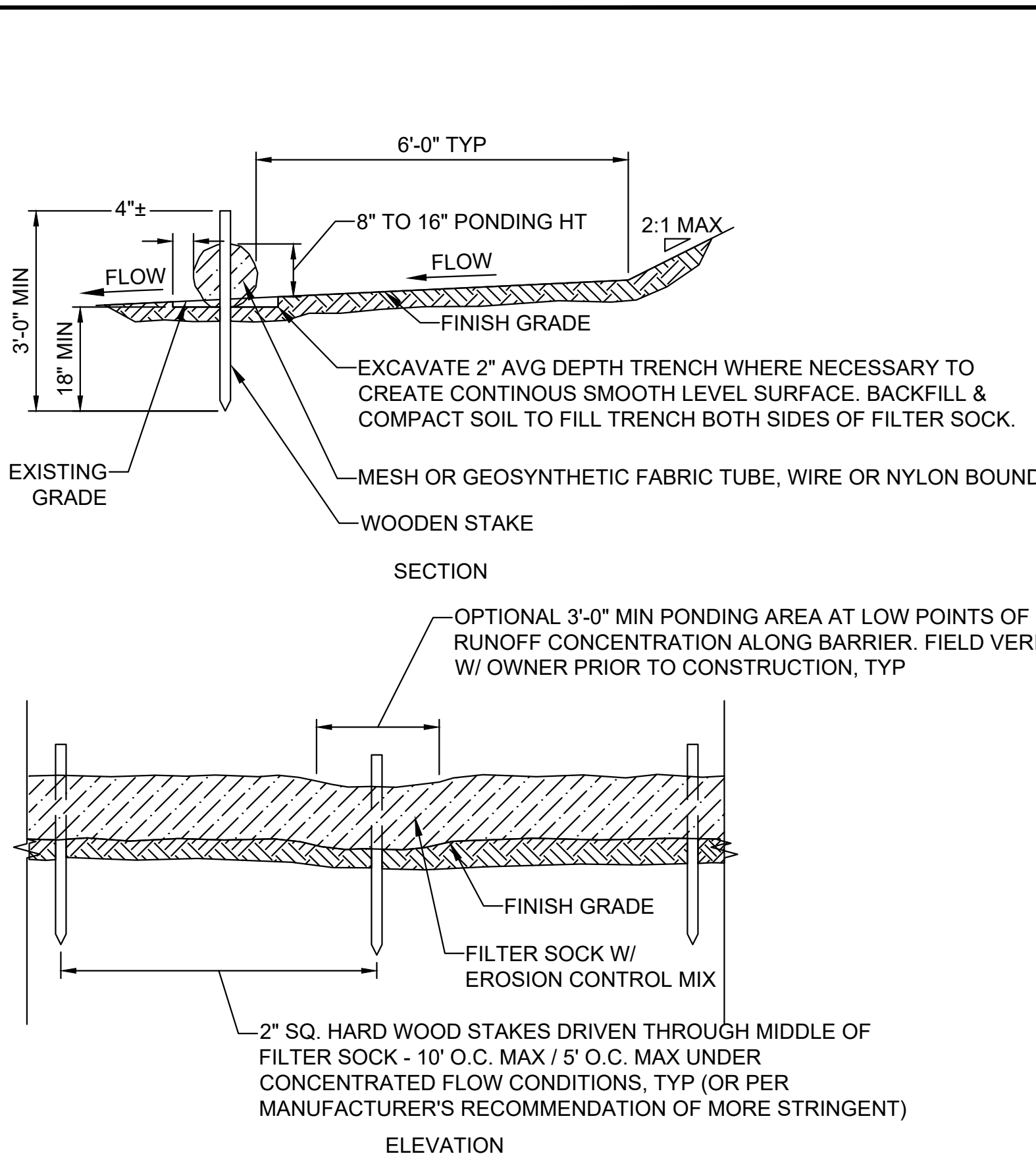
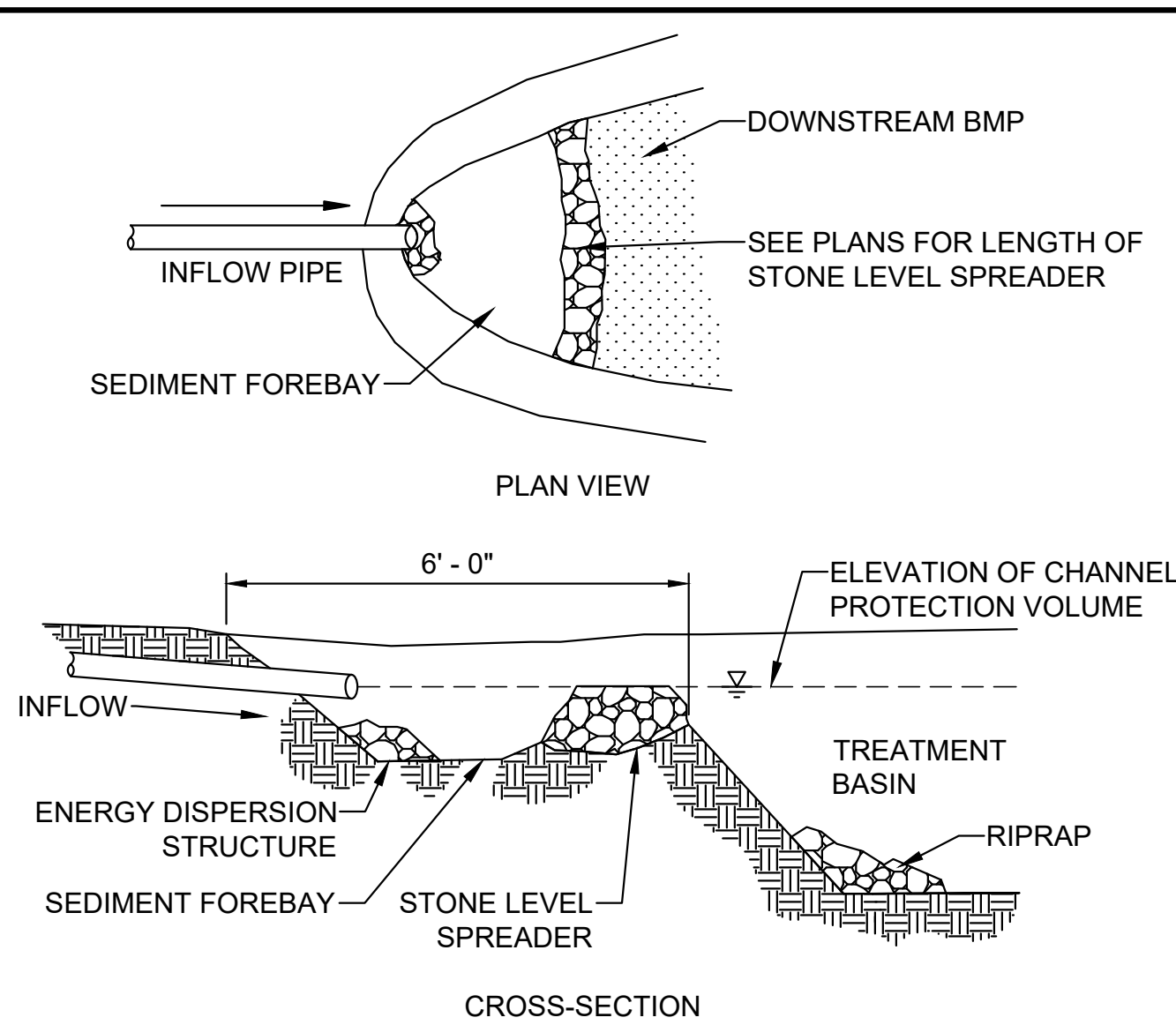
C-013

NOTES:

- STONE SHALL BE AASHTO #3 STONE, UNIFORMLY GRADED, CLEAN.

3 LEVEL SPREADER DESIGN

NO SCALE

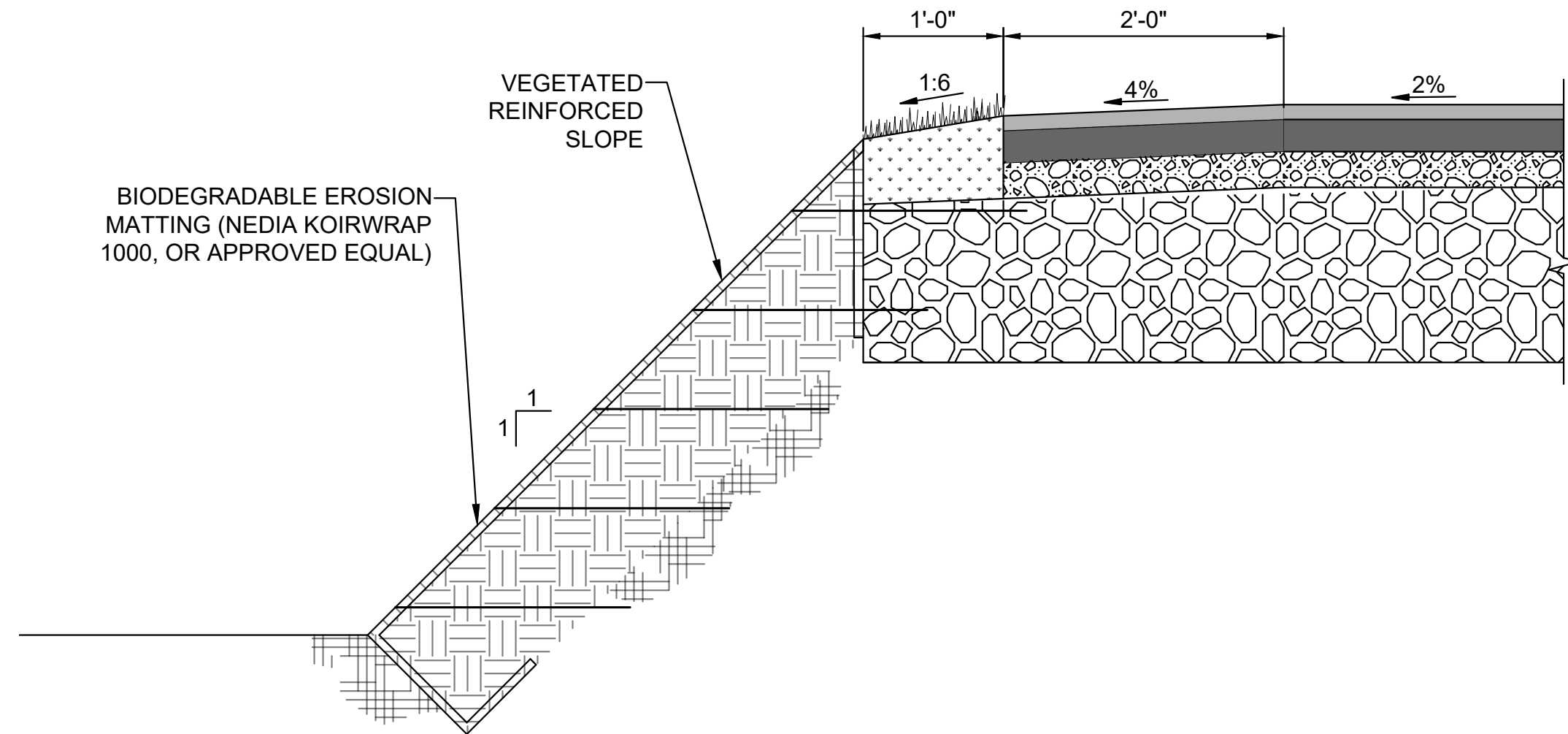


NOTES:

- FILTER SOCKS SHALL BE INSTALLED IN CONTINUOUS SEGMENT AND IN FULL CONTACT WITH THE GROUND ON A SMOOTH LEVEL SURFACE.
- FOLLOW MANUFACTURER'S REQUIREMENTS FOR INSTALLATION, MAINTENANCE AND REMOVAL OF FILTER SOCK MATERIALS.
- AREAS DISTURBED BY EROSION BARRIERS SHALL BE STABILIZED AFTER REMOVAL.

1 SEDIMENT BARRIER - FILTER SOCK

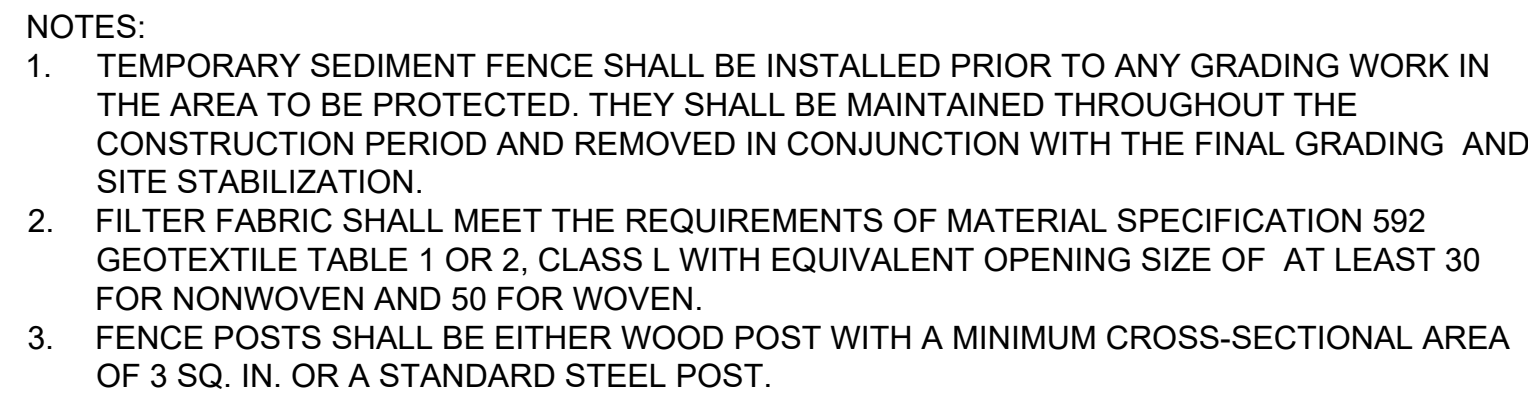
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4 1:1 VEGETATED REINFORCED SLOPE

NO SCALE

FOR PERMIT



NO SCALE



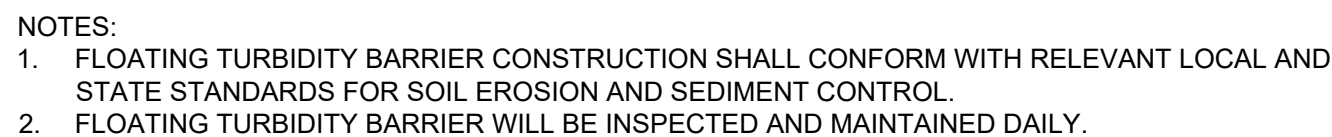
STABILIZED CONSTRUCTION ENTRANCE

NO SCALE

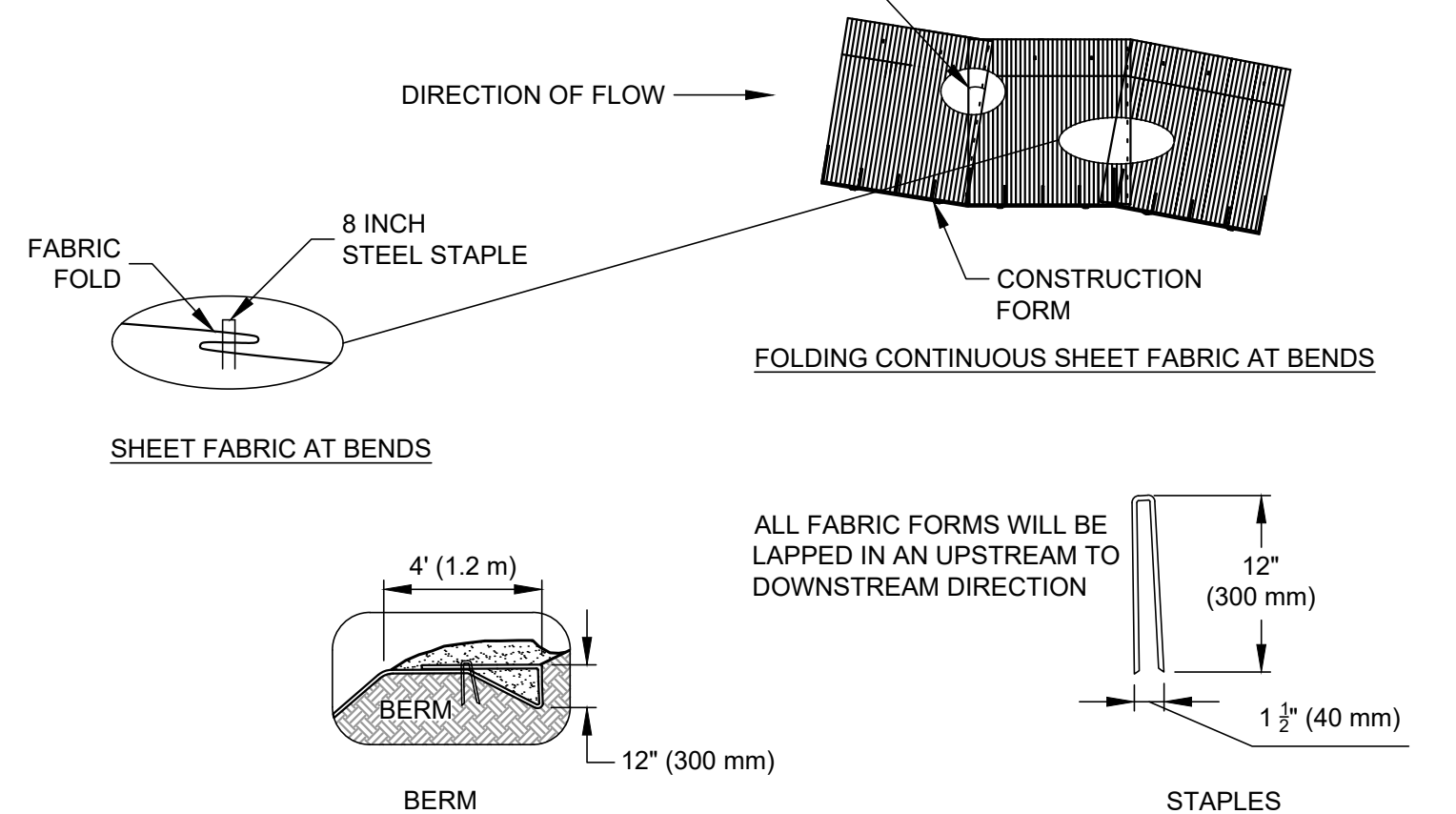


1. THE DIMENSION CHART ABOVE IS FOR STANDARD CATCH BASINS AND INLETS ONLY. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE CORRECT SIZE DEVICE FOR EACH INLET.
2. FOR NON-STANDARD CATCH BASINS AND INLETS, THE CONTRACTOR SHALL MEASURE DIMENSIONS IN THE FIELD AND ORDER THE APPROPRIATE SIZE(S).
3. THE INLET SEDIMENT CONTROL DEVICE SHALL BE OF HIGH FLOW DESIGN (200 GAL/MIN/FT), AS PER THE MANUFACTURER'S SPECS.
4. THE SEDIMENT CONTROL DEVICE SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED A MINIMUM ONCE PER MONTH OR WITHIN THE 48 HOURS FOLLOWING A STORM EVENT. FILTER SHALL BE CLEANED IN A MANNER WHICH ENSURES THAT ALL SEDIMENT REMAINS ON SITE.
5. SUBSTITUTION OF A SHEET OF FILTER FABRIC PLACED OVER THE OPENING OF THE INLET IS NOT APPROVED.
6. RECESSED CURB INLET CATCH BASINS MUST BE BLOCKED WHEN USING FILTER FABRIC INLET SACKS, SIZE OF FILTER INLET SACK TO BE DETERMINED BY MANUFACTURER.
7. THE FILTER SHALL BE REPLACED OR CLEANED WHEN THE BAG BECOMES HALF FULL.
8. SEE INLET PROTECTION NOTES STD. DETAIL E3.

SCALE: N.T.S.



SCALE: N.T.S.



NO SCALE



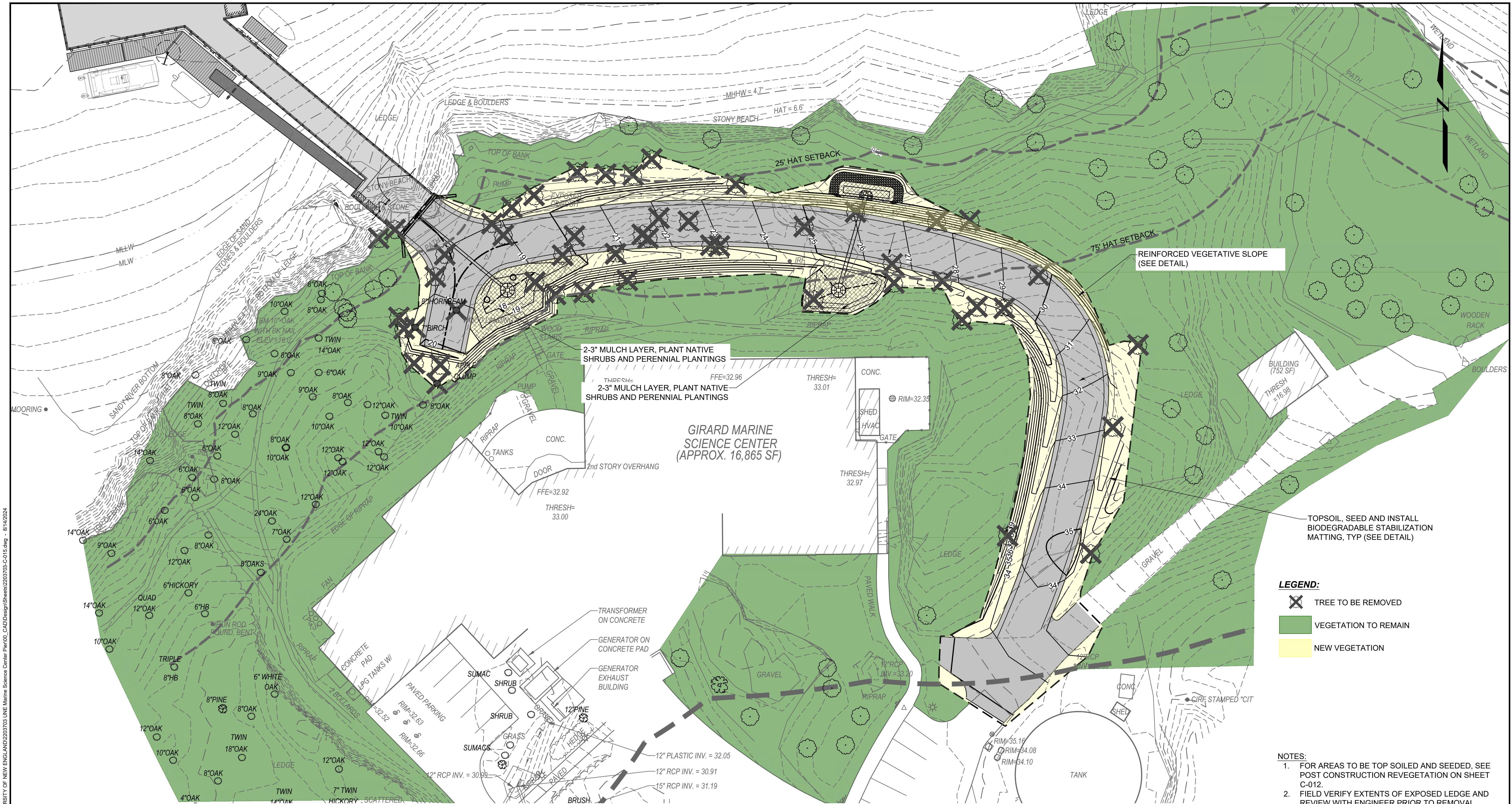
1. INSTALL THE FILTER BAG PRIOR TO INITIATING ANY ACTIVITIES WHICH WILL REQUIRE DEWATERING.
2. THE TYPE OF FABRIC SHOULD BE BASED ON THE SIZE OF SOIL PARTICLES TO BE TRAPPED (I.E. A WOVEN MATERIAL FOR COARSE PARTICLES AND A NONWOVEN MATERIAL FOR FINER PARTICLES).
3. A FILTER BAG SHOULD BE LOCATED IN AN AREA MOSTLY LEVEL (WITH LESS THAN 5% SLOPE). A PAD OF CRUSHED GRAVEL MAY BE PROVIDED.
4. AVOID DISCHARGING TO AN AREA THAT IS BARE OF VEGETATION OR NEWLY VEGETATED. ANY SIGN OF EROSION OR CHANNELIZATION FROM THE DISCHARGED WATER REQUIRES IMMEDIATELY CORRECTION.
5. FILTER BAGS HAVE A FINITE CAPACITY FOR SEDIMENT COLLECTION AND MAY BE PRONE TO PLUGGING. AVOID OVER-PRESSURIZING THE BAG OR IT MAY BURST.

NO SCALE

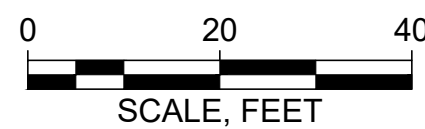
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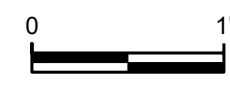
C-014

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PLAN
SCALE: 1" = 20'



Attention:  If this scale bar does not measure 1" then drawing is not original scale.	Designed:	DJB
	Drawn:	JAM
	Checked:	BJB
	Approved:	BMM
	P.E. No:	13033
GEI Project		2203703



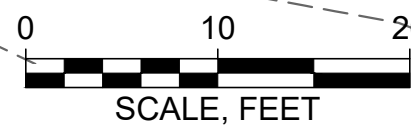
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11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

NO	DATE	ISSUE/REVISION	APP
6	8/14/2024	REVISED PERMIT SET	DJB
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1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB

SHEET NAME	SHEET NO.
REVEGETATION PLAN	C-015

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NOTES:
AREA OF FIXED PIER BEYOND
MLW LINE = 2770 SF, BASED ON
LIMITS OF CONCRETE DECK



ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:

If this scale bar
does not measure
1" then drawing is
not original scale.

DRAFT

Designed:	DJB
Drawn:	JAM
Checked:	BJB
Approved:	BMM
P.E. No:	13033
GEI Project	2203703



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BIDDEFORD, MAINE

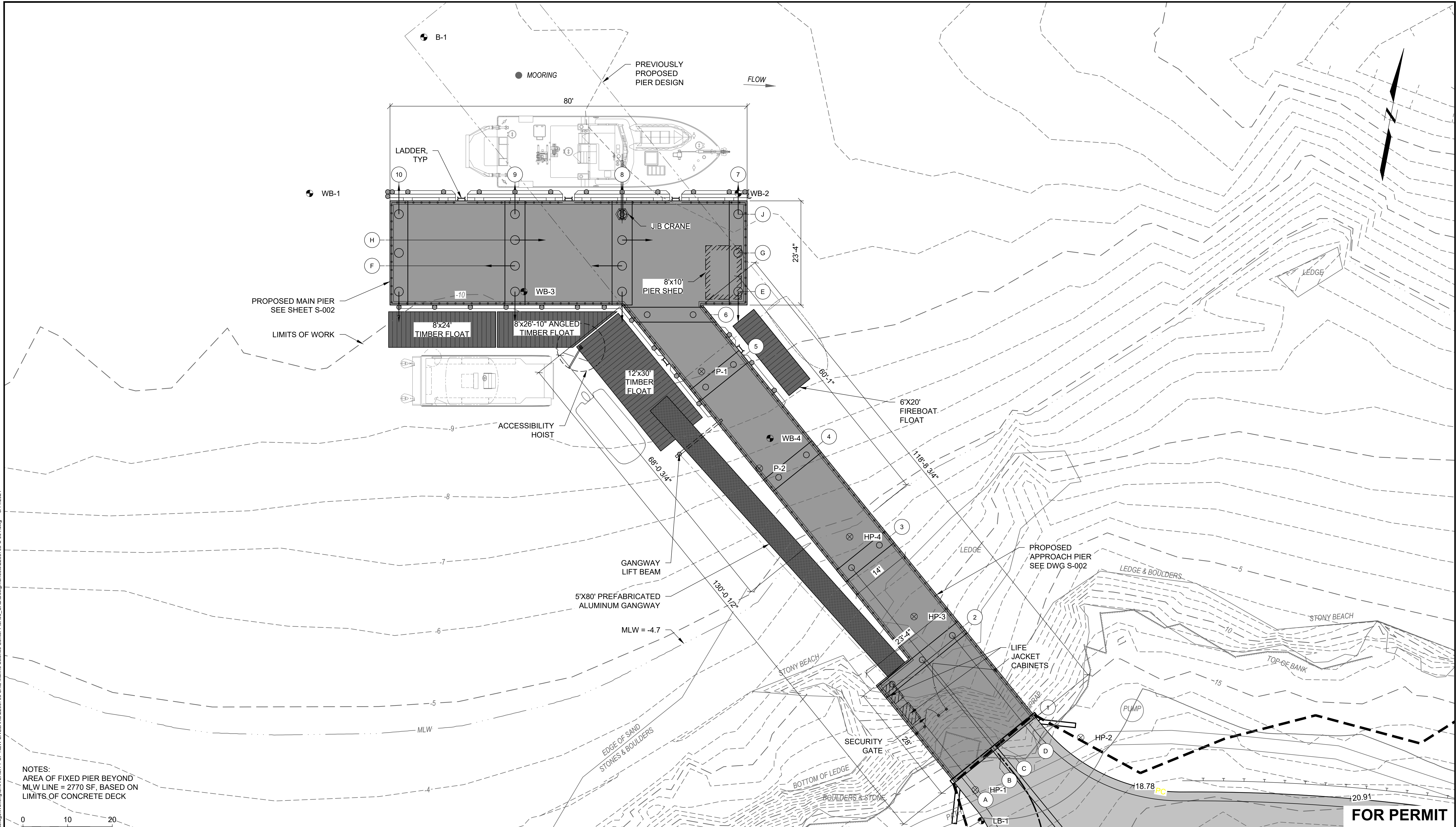
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PIER

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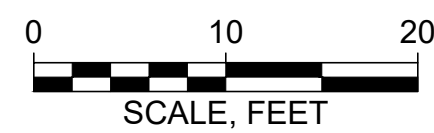
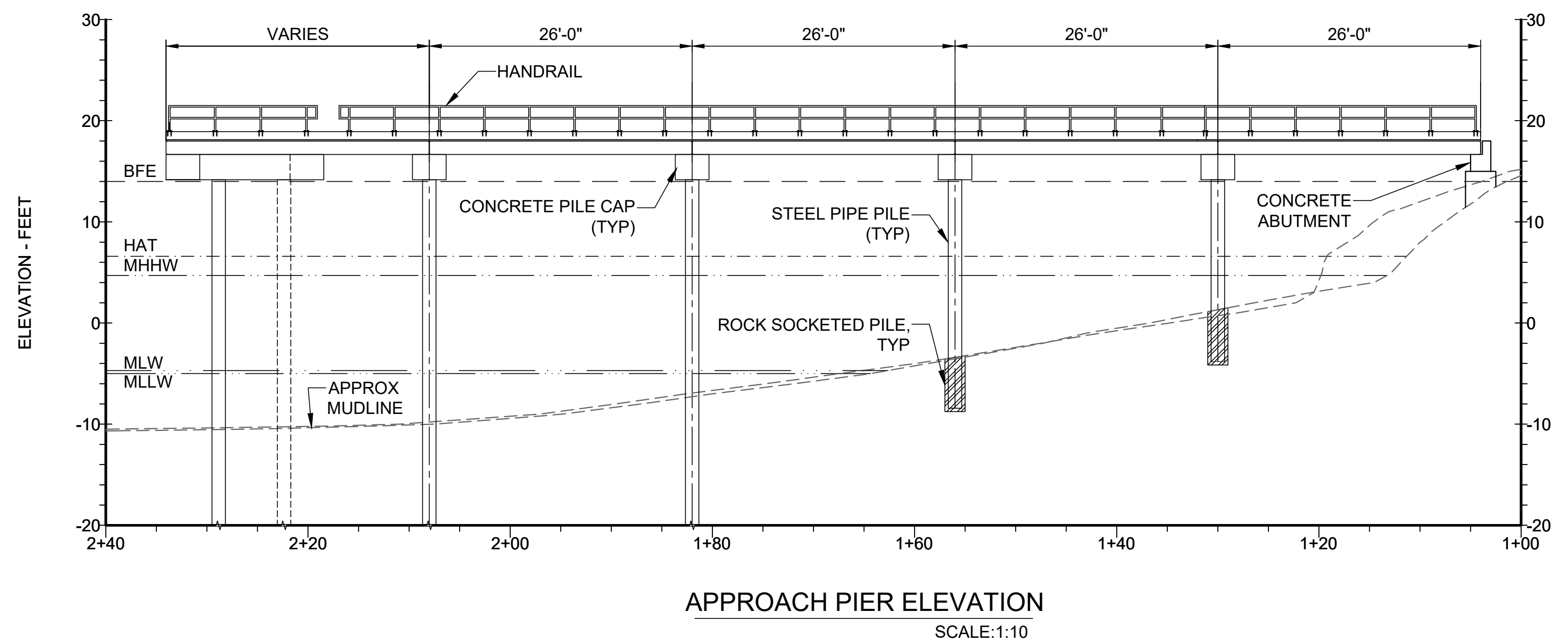
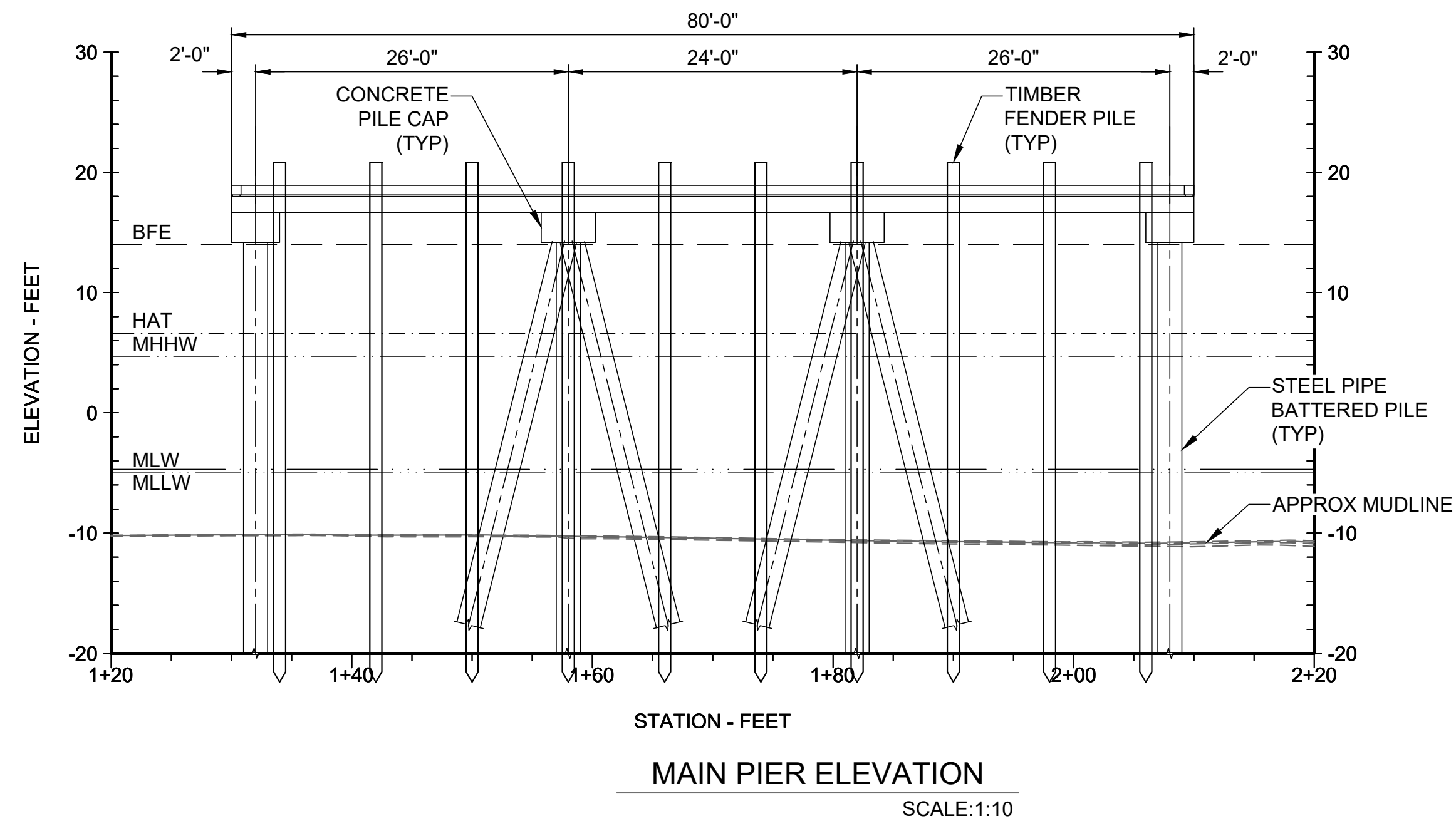
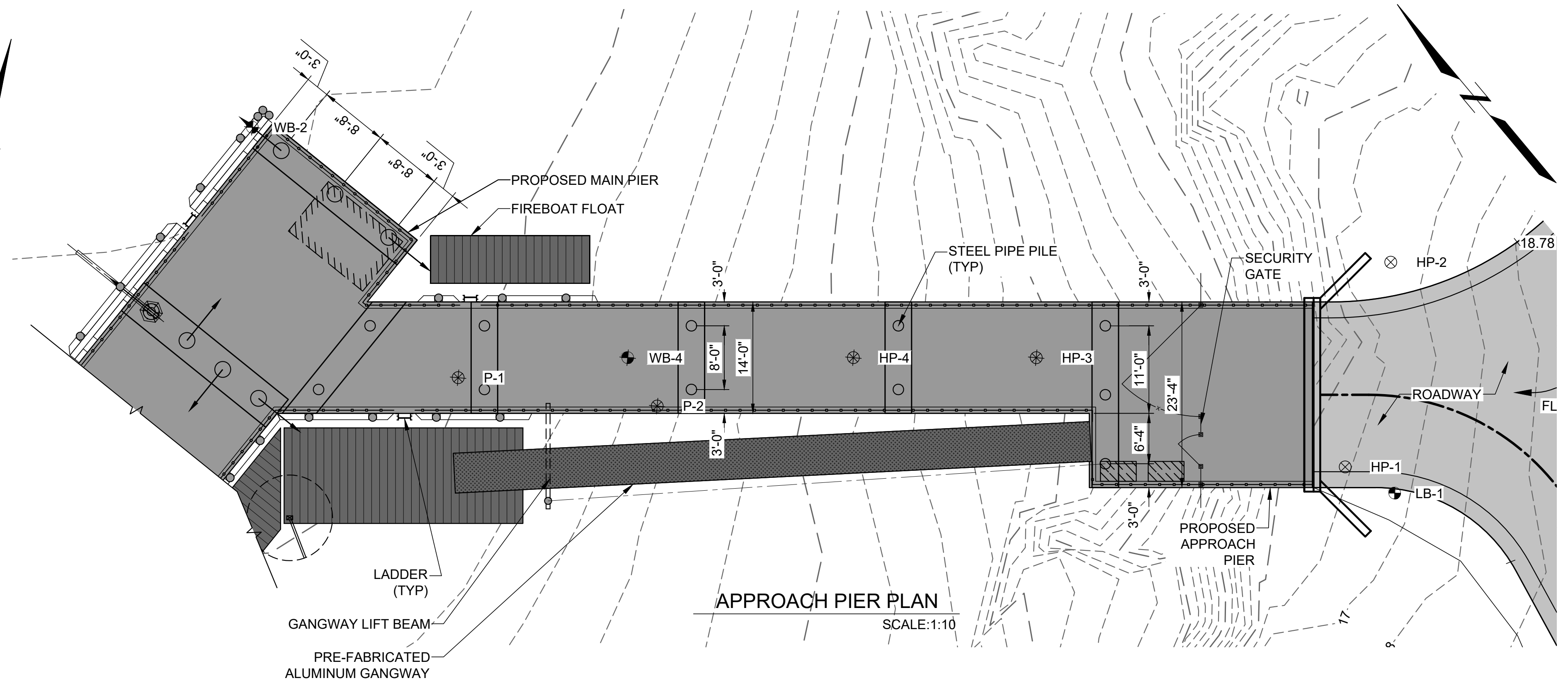
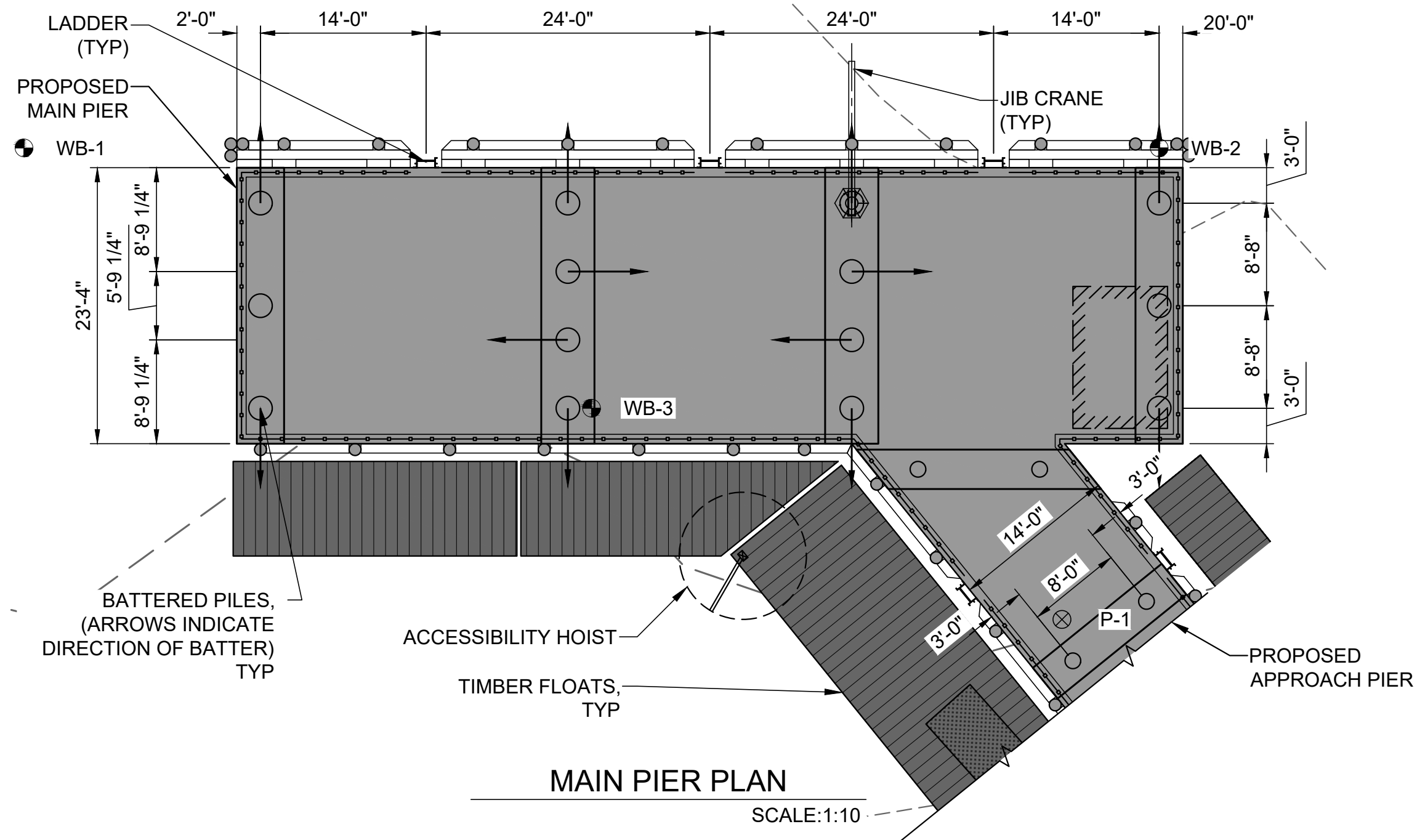
SHEET NAME
PIER LAYOUT PLAN

SHEET NO.
S-001



FOR PERMIT

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ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

DRAFT

Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



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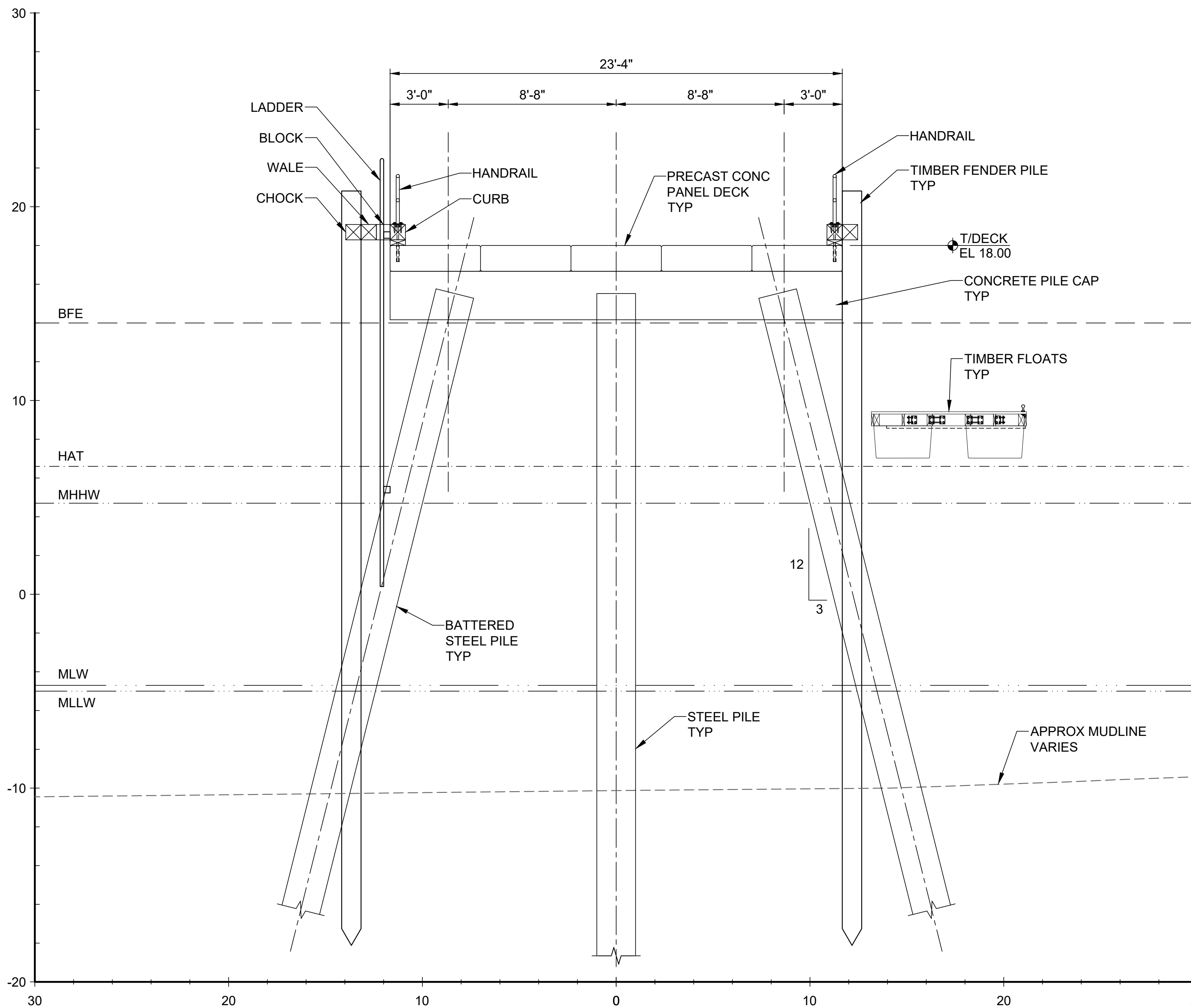
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PIER PLANS
AND
ELEVATIONS

SHEET NO.

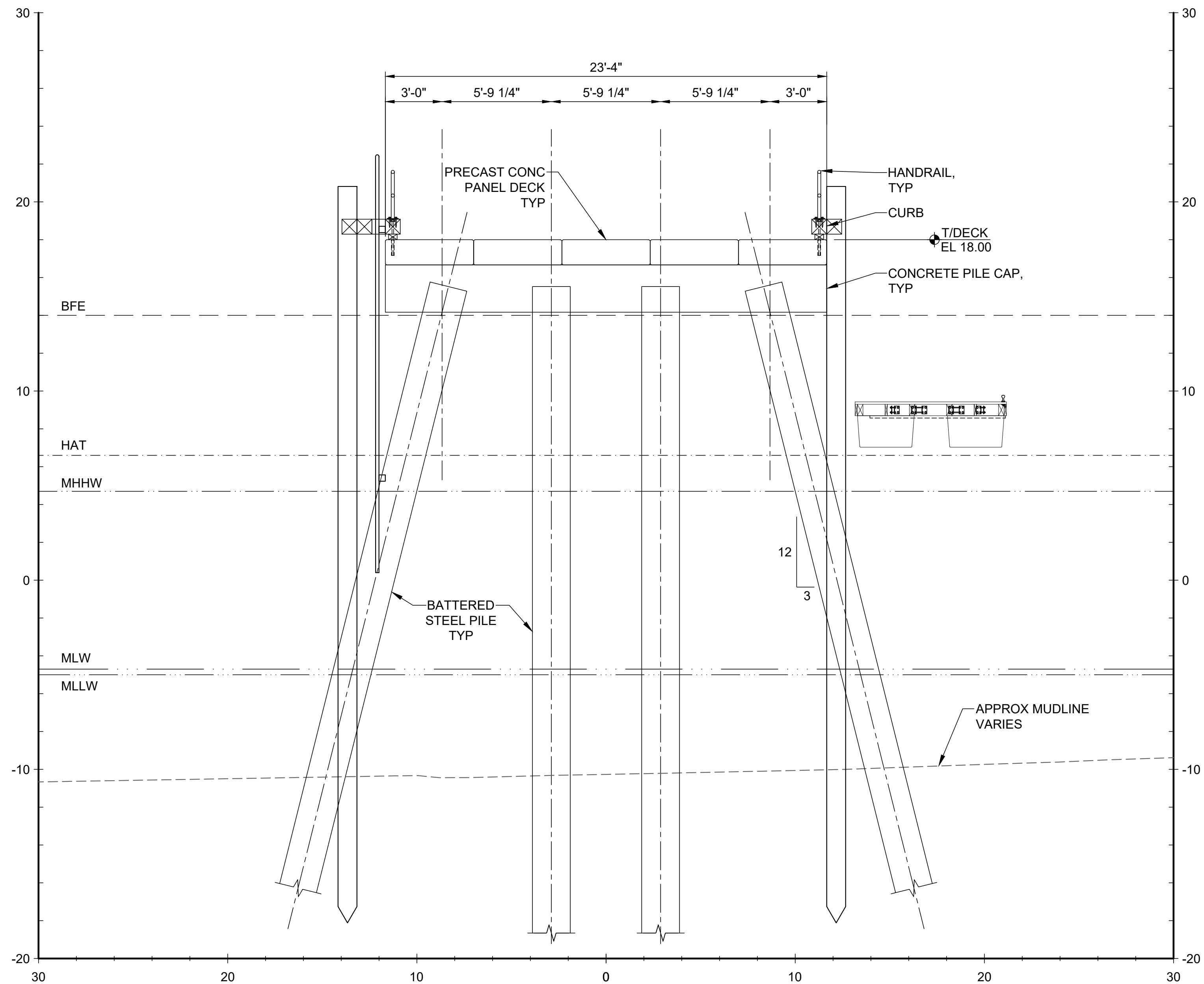
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FOR PERMIT

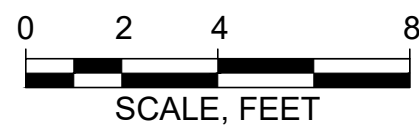
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SECTION
MAIN PIER AT BENT 10
SCALE: 1"=4'



SECTION
MAIN PIER AT BENT 9
SCALE: 1"=4'



ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:

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does not measure
1" then drawing is
not original scale.

DRAFT

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Checked:	BJB
Approved:	BMM
P.E. No:	13033
GEI Project	2203703



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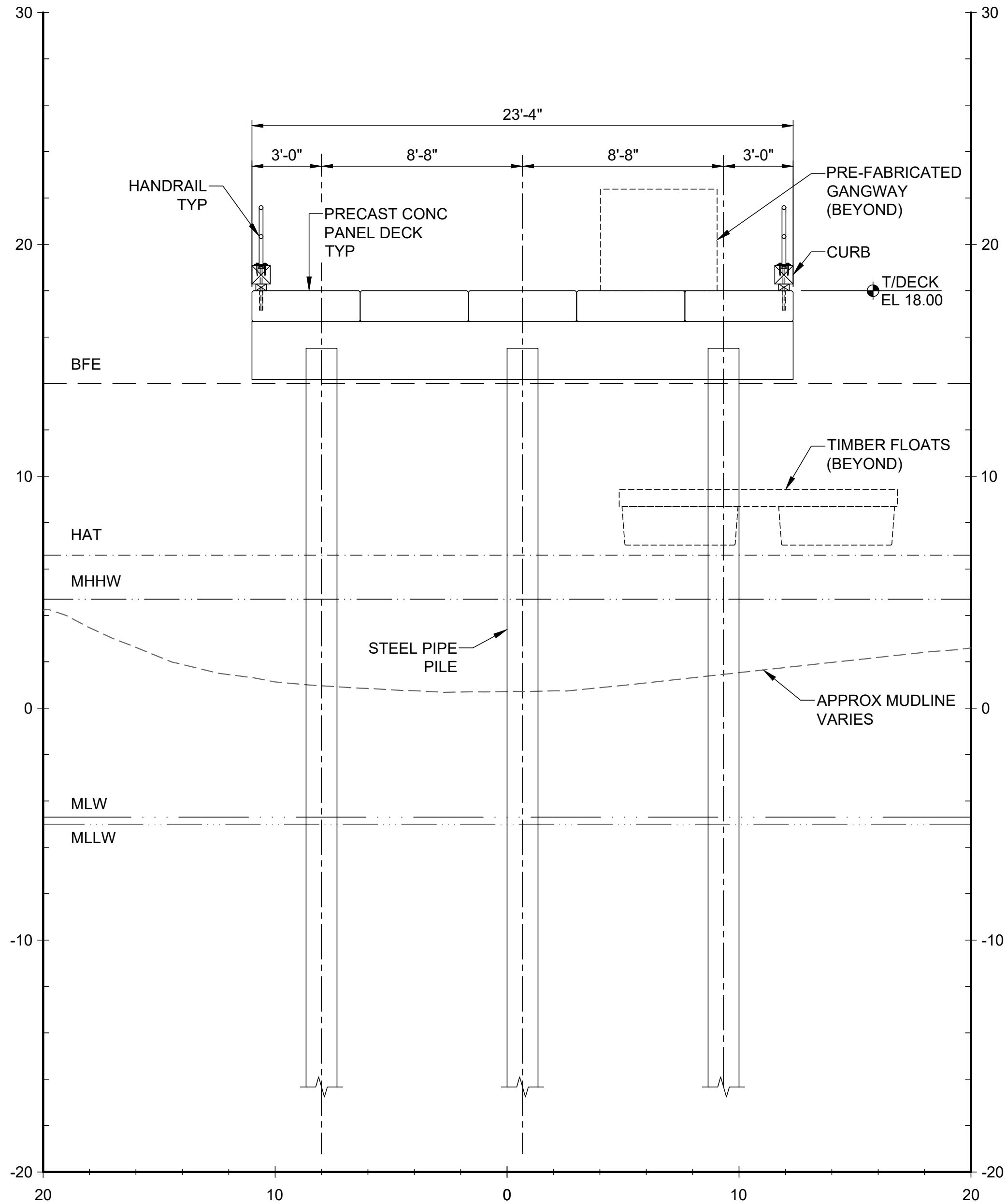
SHEET NAME
**TYPICAL PIER SECTIONS
(1 OF 2)**

SHEET NO.

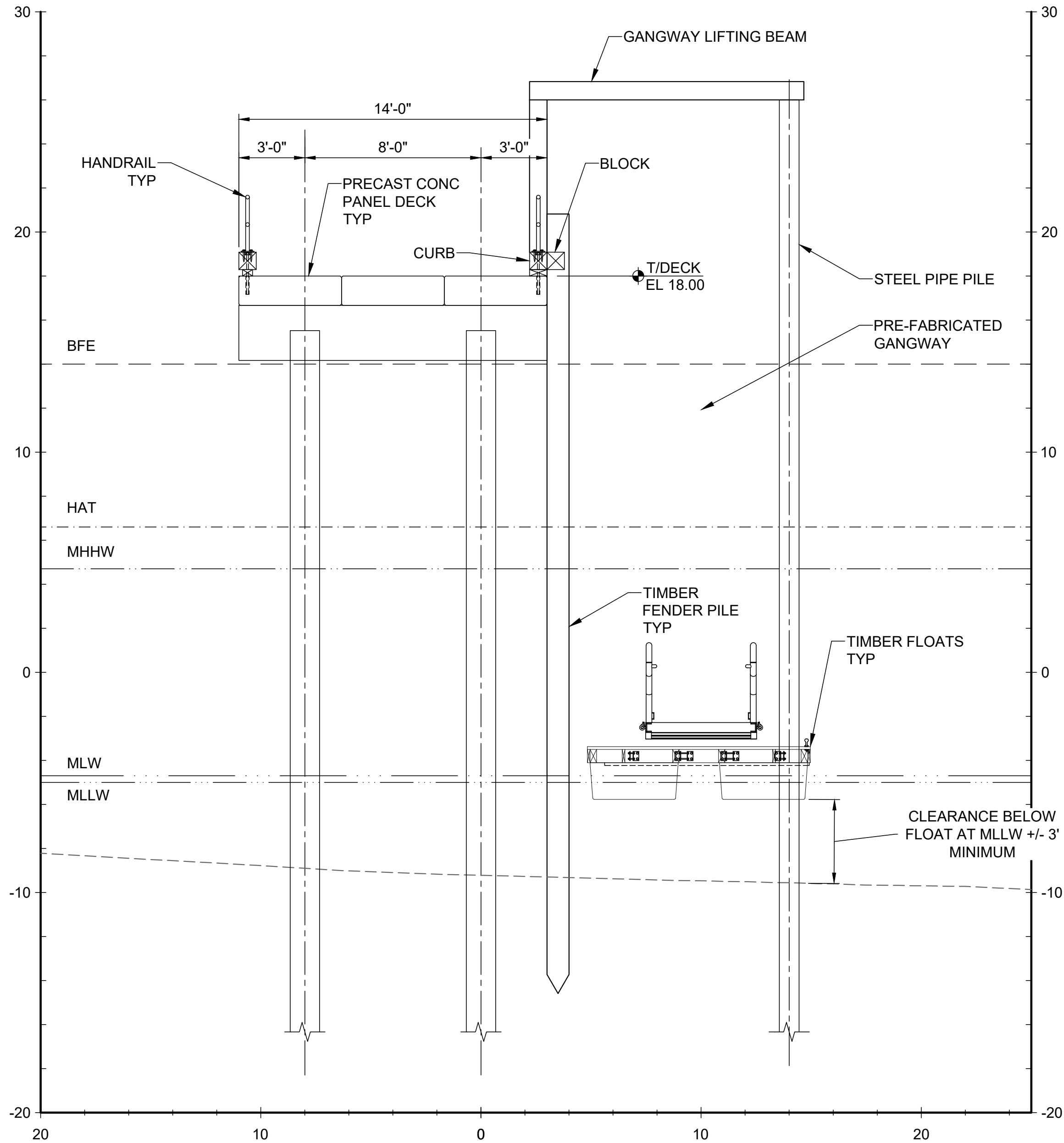
S-003

FOR PERMIT

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SECTION
28' WIDE APPROACH PIER AT BENT 2 SCALE: 1"=4'



SECTION
14' WIDE APPROACH PIER AT GANGWAY HOIST SCALE: 1"=4'



ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:

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DRAFT

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Drawn:	JAM
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GEI Project	2203703



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BIDDEFORD, YORK COUNTY, MAINE

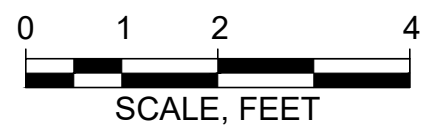
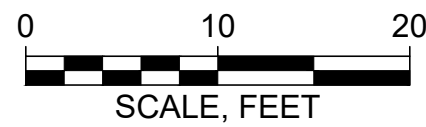
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SHEET NAME
**TYPICAL PIER SECTIONS
(2 OF 2)**

SHEET NO.
S-004

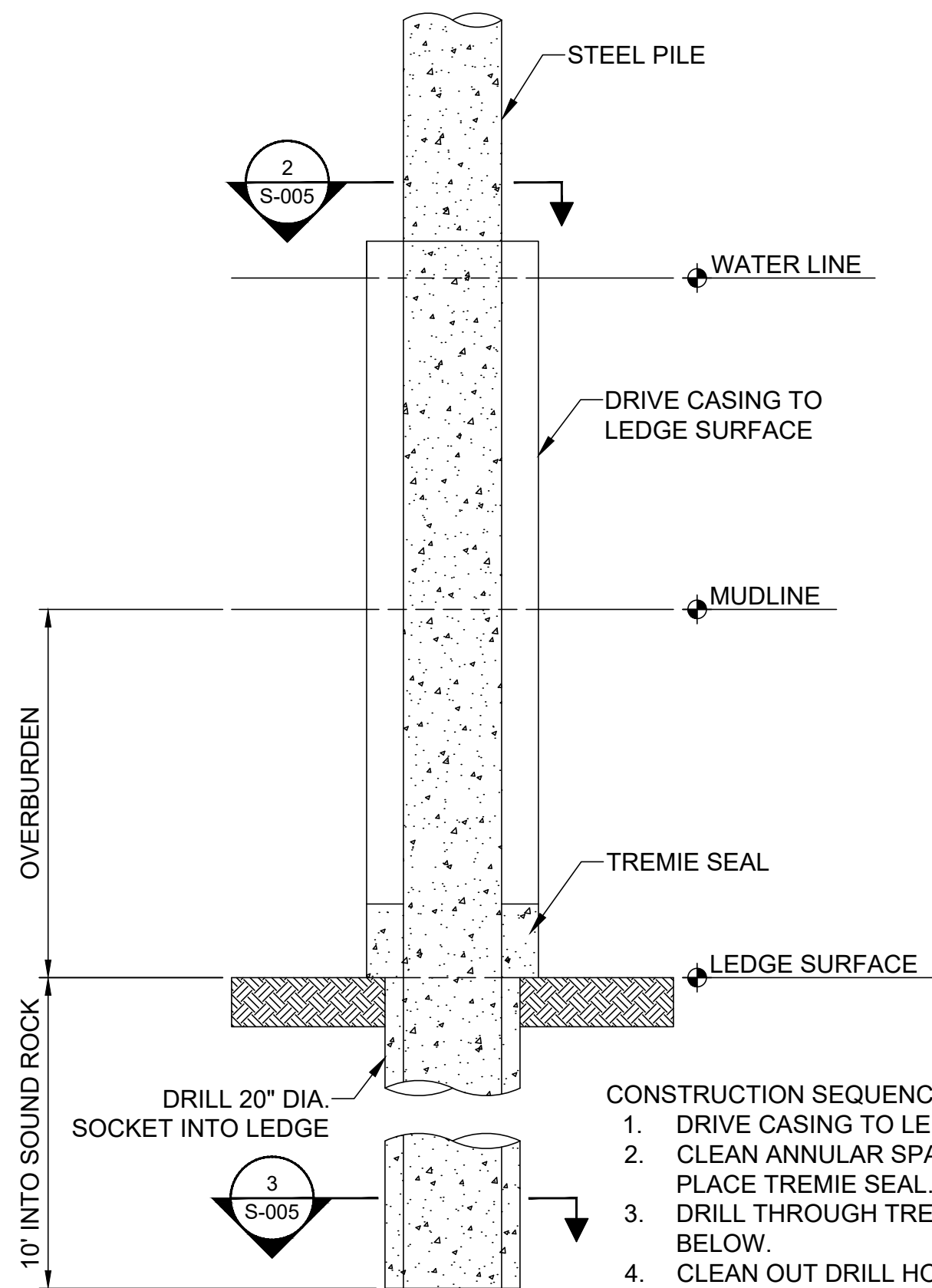
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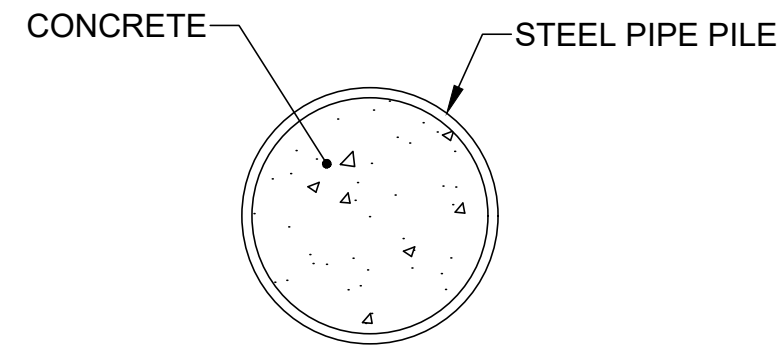
ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

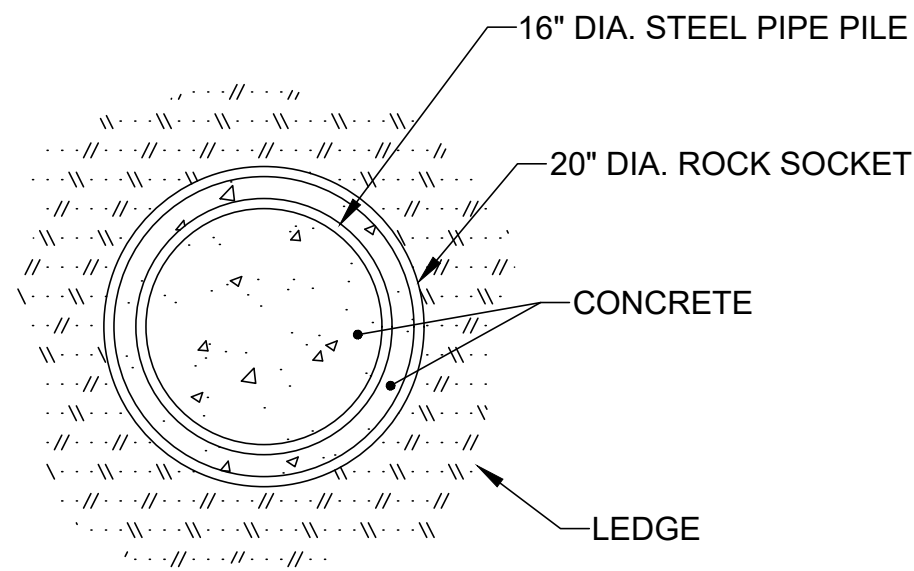


1 **DETAIL**
PILE SOCKET SCALE: 1" = 2'

- CONSTRUCTION SEQUENCE
1. DRIVE CASING TO LEDGE SURFACE.
 2. CLEAN ANNULAR SPACE TO LEDGE SURFACE, PLACE TREMIE SEAL.
 3. DRILL THROUGH TREMIE INTO SOUND ROCK BELOW.
 4. CLEAN OUT DRILL HOLE.
 5. INSERT PILE AND GROUT TO SURFACE.
 6. REMOVE CASING.
 7. FILL STEEL PIPE PILE TO TOP WITH CONCRETE.



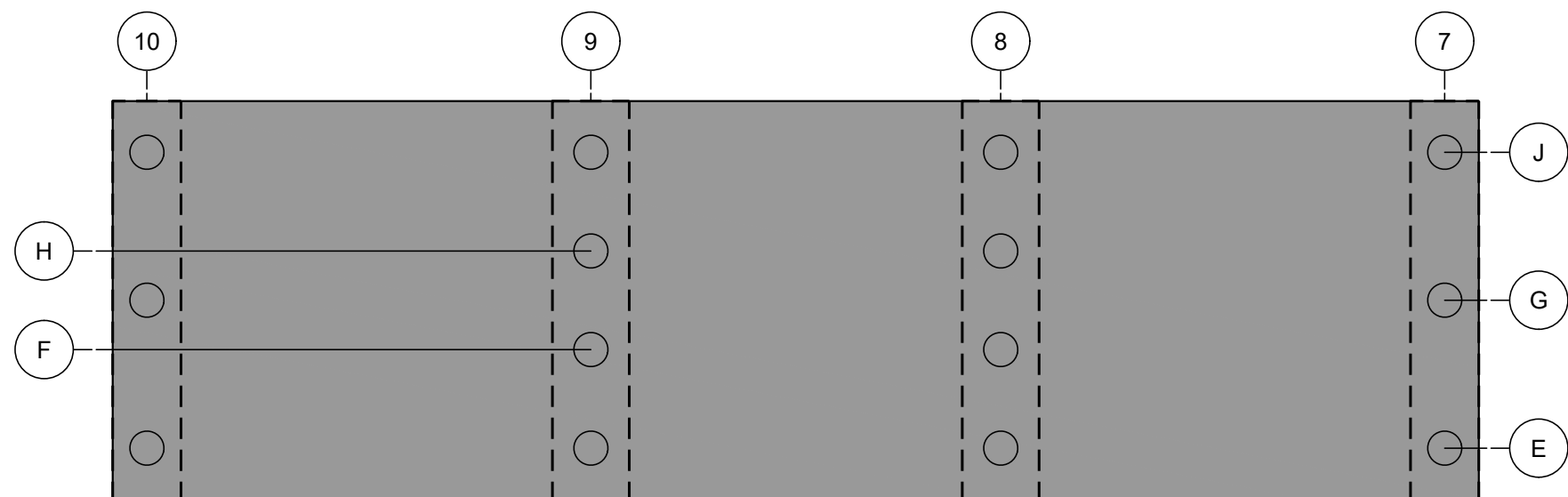
2 **SECTION**
CONCRETE FILLED SCALE: 1" = 1'
STEEL PIPE PILE



3 **SECTION**
ROCK SOCKET SCALE: 1" = 1'

CONCRETE FILLED STEEL PIPE PILE SCHEDULE									
PILE DESIGNATION	PILE SIZE (INCHES)	BATTER	CUTOFF ELEVATION (FT)	EXISTING GRADE ELEVATION (FT)	ESTIMATED LEDGE ELEVATION (FT)	ROCK SOCKET LENGTH (FT)	MIN. ESTIMATED PILE TIP ELEVATION (FT)	ESTIMATED TOTAL PILE LENGTH (FT)	MIN. COATING LENGTH (FT)
2A	16x5/8	VERTICAL	15.52	1	1	10	-9	24.52	19.52
2B	16x5/8	VERTICAL	15.52	1	1	10	-9	24.52	19.52
2D	16x5/8	VERTICAL	15.52	1	1	10	-9	24.52	19.52
3C	16x5/8	VERTICAL	15.52	-4	-5	10	-15	30.52	24.52
3D	16x5/8	VERTICAL	15.52	-4	-5	10	-15	30.52	24.52
4C	16x5/8	VERTICAL	15.52	-8	-33	10	-43	58.52	28.52
4D	16x5/8	VERTICAL	15.52	-8	-33	10	-43	58.52	28.52
4.1-A.1	10.75x5/8	VERTICAL	27	-10	-54	-	-54	81	42
5C	16x5/8	VERTICAL	15.52	-10	-60	-	-60	75.52	30.52
5D	16x5/8	VERTICAL	15.52	-10	-60	-	-60	75.52	30.52
6C	16x5/8	VERTICAL	15.52	-11	-63	-	-63	78.52	31.52
6D	16x5/8	VERTICAL	15.52	-11	-63	-	-63	78.52	31.52
7E	24x5/8	3:12	15.42	-11	-71	-	-71	86.42	31.42
7G	24x5/8	VERTICAL	15.52	-11	-71	-	-71	86.52	31.52
7J	24x5/8	3:12	15.42	-11	-71	-	-71	86.42	31.42
8E	24x5/8	3:12	15.42	-11	-67	-	-67	82.42	31.42
8F	24x5/8	3:12	15.28	-11	-67	-	-67	82.28	31.28
8H	24x5/8	3:12	15.28	-11	-67	-	-67	82.28	31.28
8J	24x5/8	3:12	15.42	-11	-67	-	-67	82.42	31.42
9E	24x5/8	3:12	15.42	-11	-64	-	-64	79.42	31.42
9F	24x5/8	3:12	15.28	-11	-64	-	-64	79.28	31.28
9H	24x5/8	3:12	15.28	-11	-64	-	-64	79.28	31.28
9J	24x5/8	3:12	15.42	-11	-64	-	-64	79.42	31.42
10E	24x5/8	3:12	15.42	-11	-66	-	-66	81.42	31.42
10G	24x5/8	VERTICAL	15.52	-11	-66	-	-66	81.52	31.52
10J	24x5/8	3:12	15.42	-11	-66	-	-66	81.42	31.42
TOTAL								1821.5	

SCHEDULE NOTES
1. ALL ELEVATIONS REFERENCED IN TABLE ARE IN NAVD88 DATUM.



GANGWAY LIFTING BEAM
SUPPORT PILE

DETAIL
MAIN PIER SCALE: 1" = 10"

Attention:

DRAFT

Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703

GEI CONSULTANTS, INC.
5 MILK STREET
PORTLAND, ME 04101
(207)797-8901

UNIVERSITY OF
NEW ENGLAND
11 HILLS BEACH RD.
BIDDEFORD, MAINE

**UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER**
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

6	8/14/2024	REVISED PERMIT SET	DJB
5	6/27/2024	REVISED PERMIT SET	DJB
4	9/14/2023	DEP PERMIT SET	DJB
3	6/28/2023	75% DESIGN SUBMISSION	DJB
2	2/15/2023	305 DESIGN SUBMISSION	DJB
1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

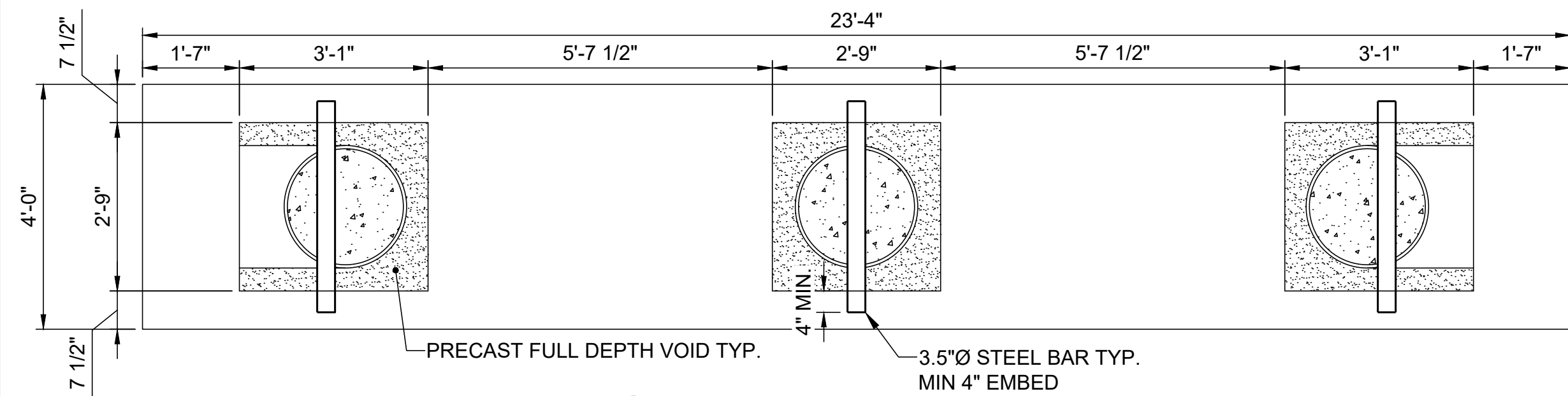
SHEET NAME

PILE PLAN

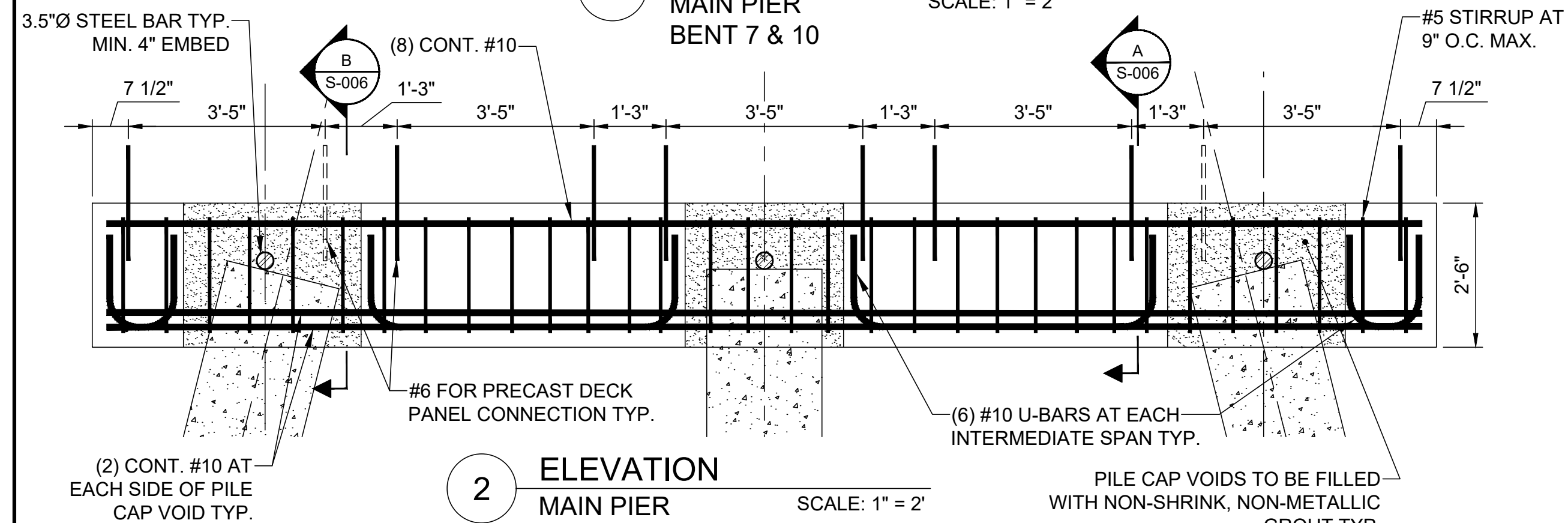
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S-005

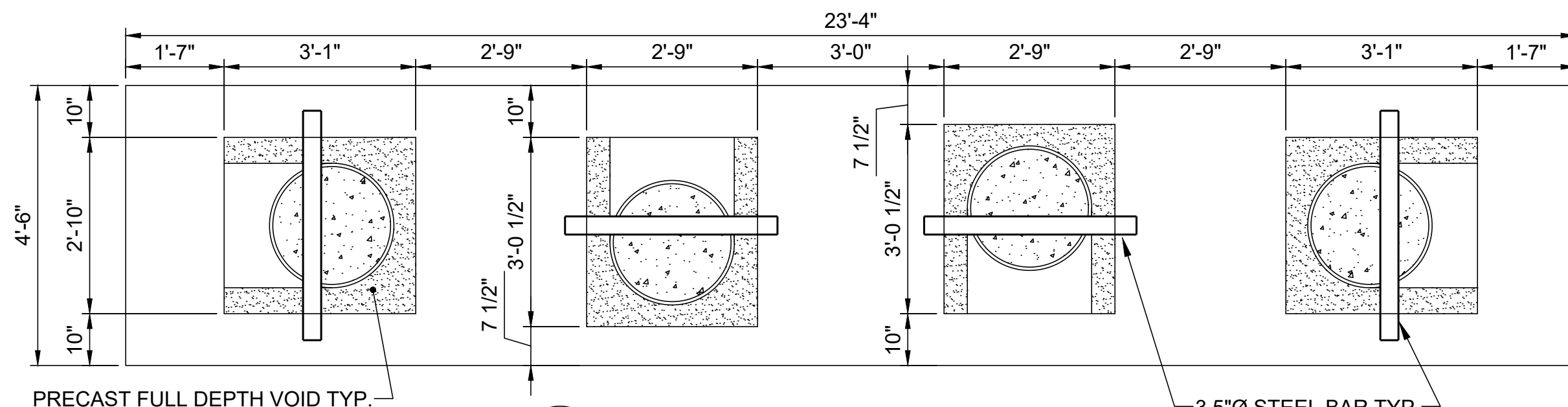
BANNON, DAN | geiconsultants.com\data\Bann\Working\UNIVERSITY OF NEW ENGLAND\2203703 UNE Marine Science Center Pier100_CADD\Design\Sheets\2203703 S-006.dwg - 8/14/2024



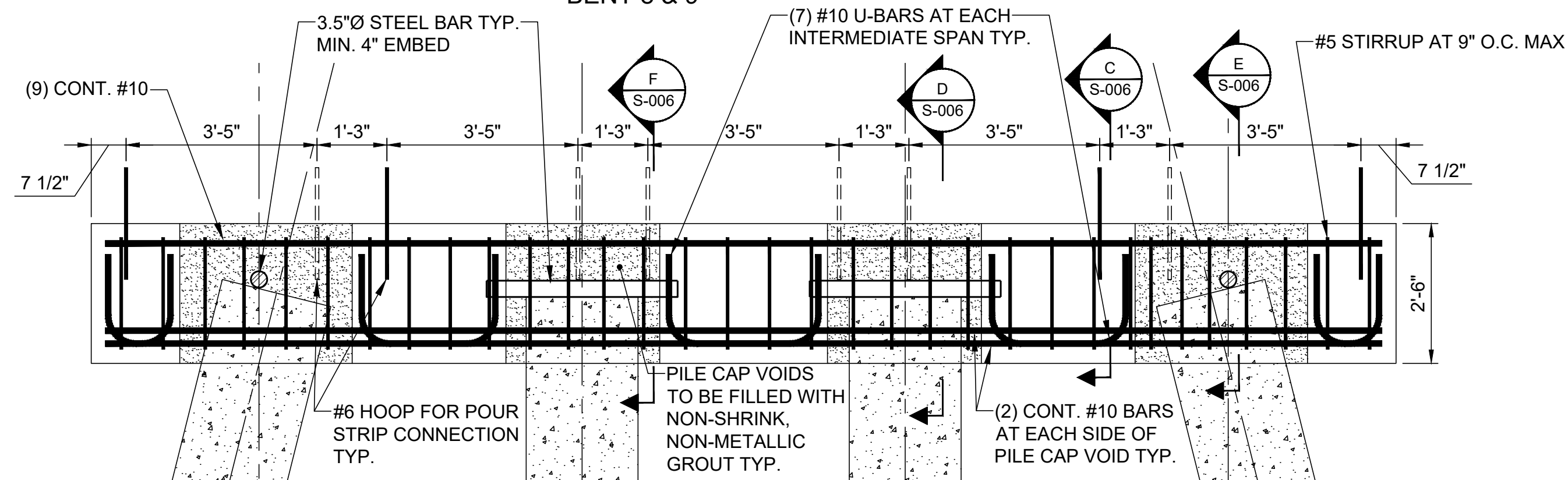
1
DETAIL-PLAN
MAIN PIER
BENT 7 & 10
SCALE: 1" = 2'



2
ELEVATION
MAIN PIER
BENT 7 & 10
SCALE: 1" = 2'



3
DETAIL-PLAN
MAIN PIER
BENT 8 & 9
SCALE: 1" = 2'



4
ELEVATION
MAIN PIER
BENT 8 & 9
SCALE: 1" = 2'



ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
If this scale bar
does not measure
1" then drawing is
not original scale.

DRAFT

Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER

11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

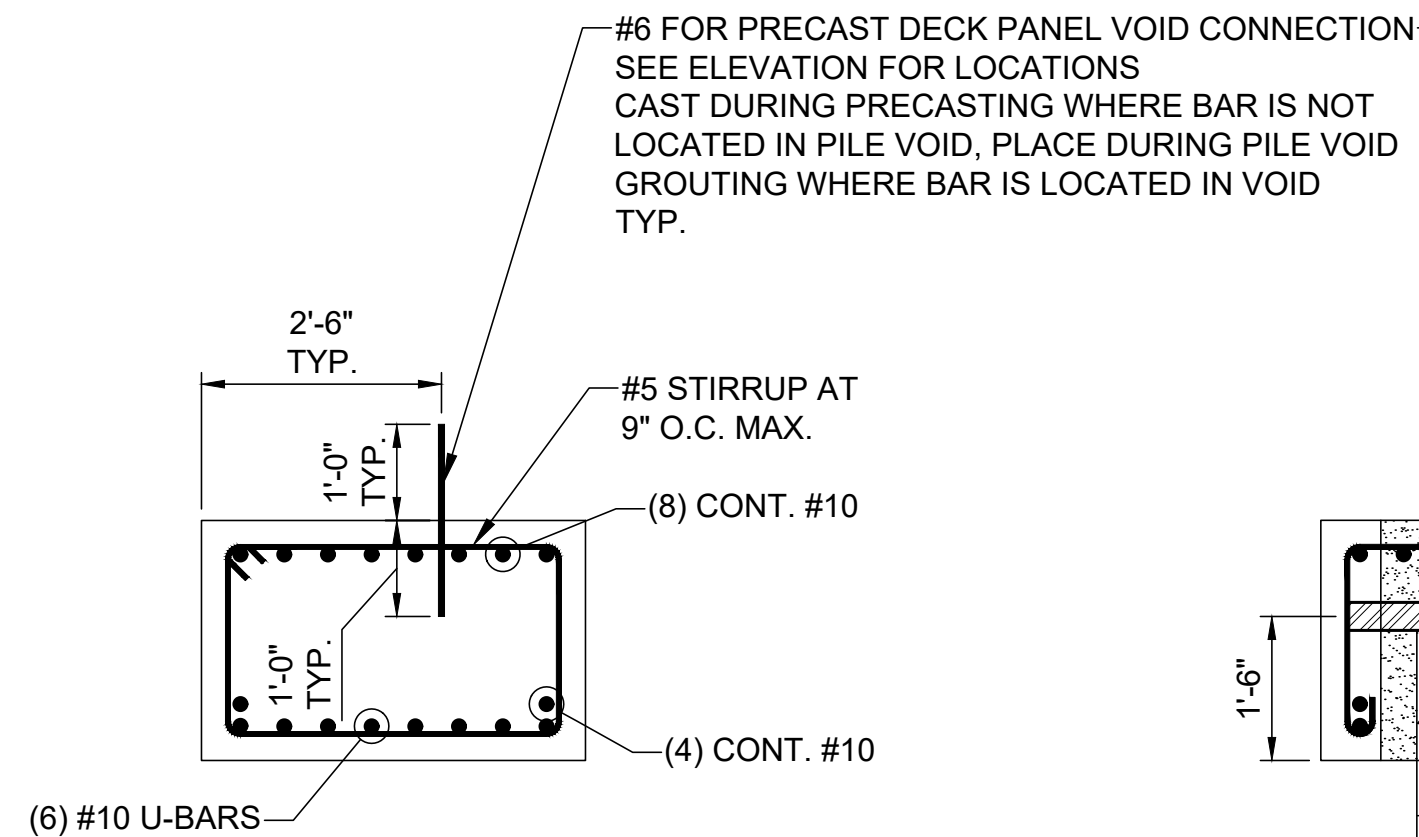
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4	9/14/2023	DEP PERMIT SET	DJB
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2	2/15/2023	305 DESIGN SUBMISSION	DJB
1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB

SHEET NAME
PRECAST PILE CAP PLAN
AND SECTIONS
1 OF 2

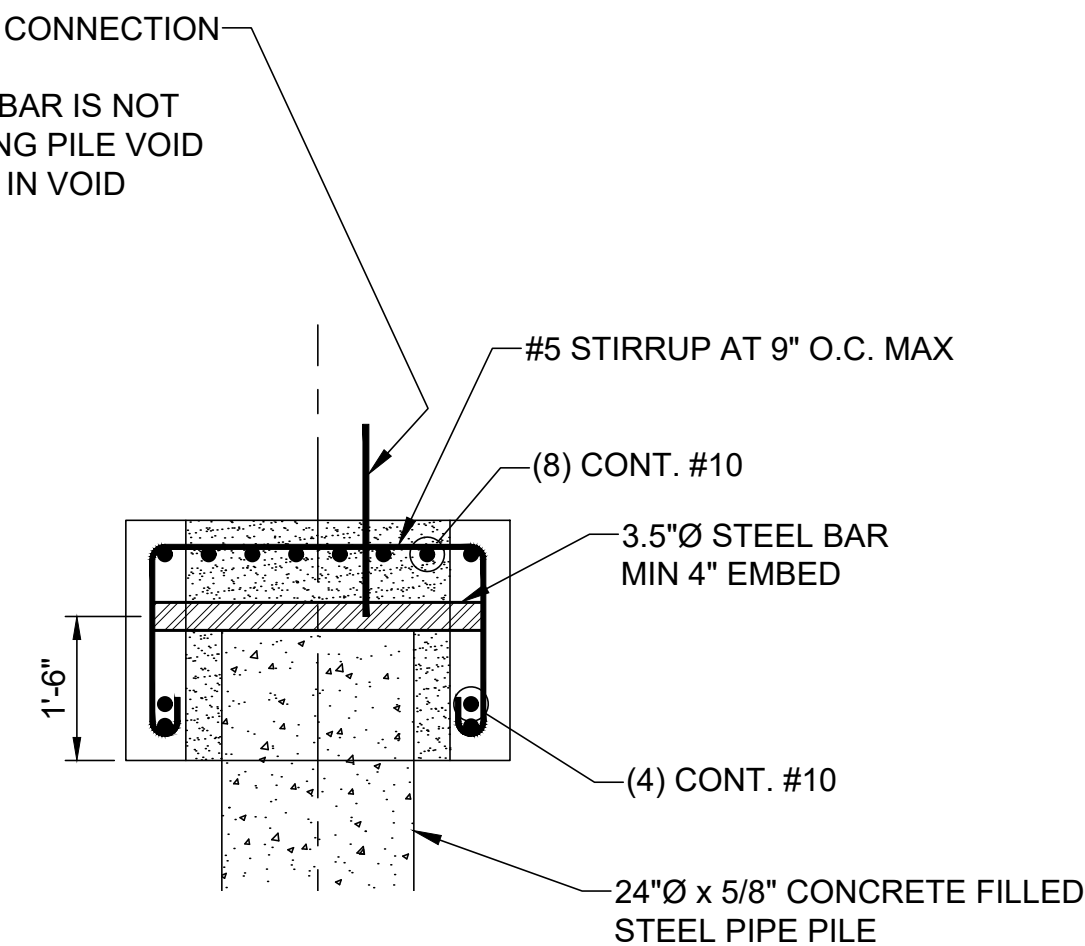
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S-006

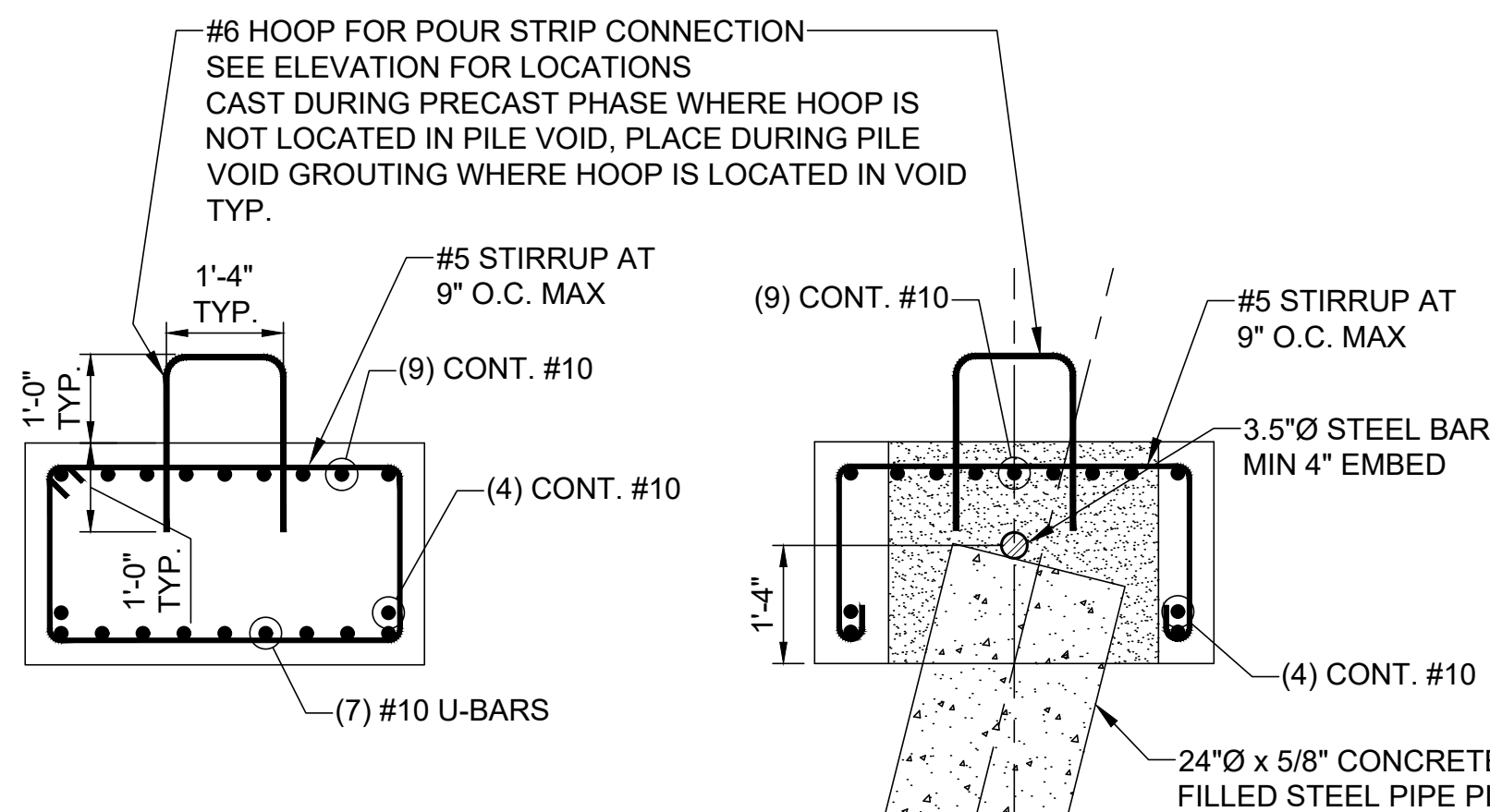
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SECTION
MAIN PIER
BENT 7 & 10
SCALE: 1" = 2'



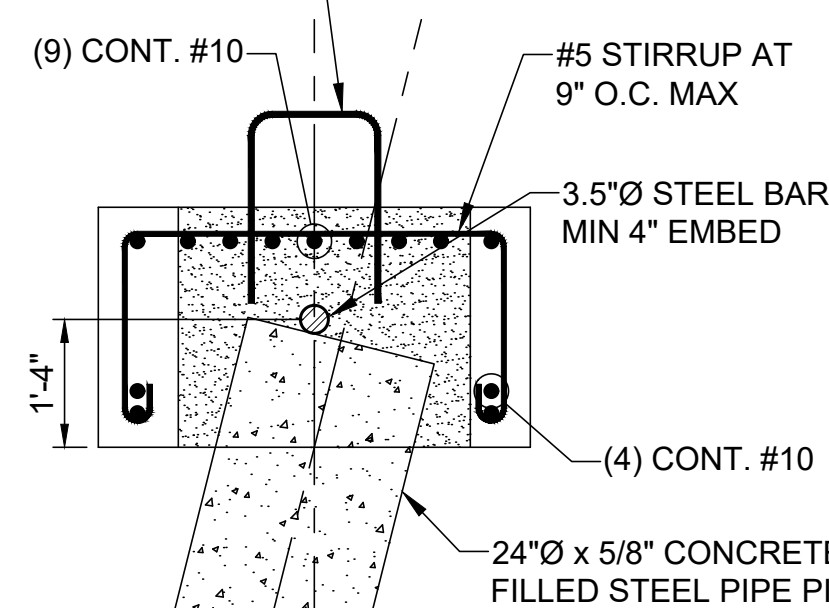
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SECTION
MAIN PIER
BENT 7 & 10
SCALE: 1" = 2'



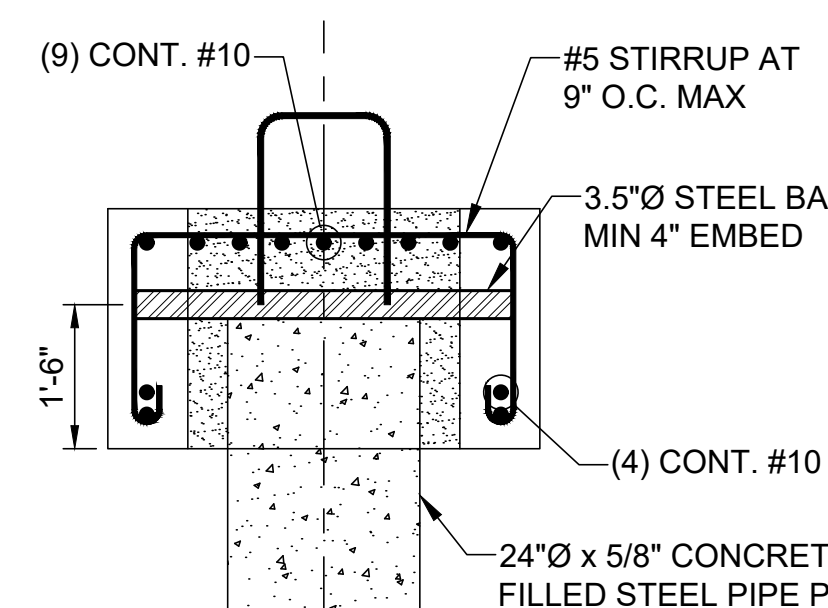
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SECTION
MAIN PIER
BENT 8 & 9
SCALE: 1" = 2'



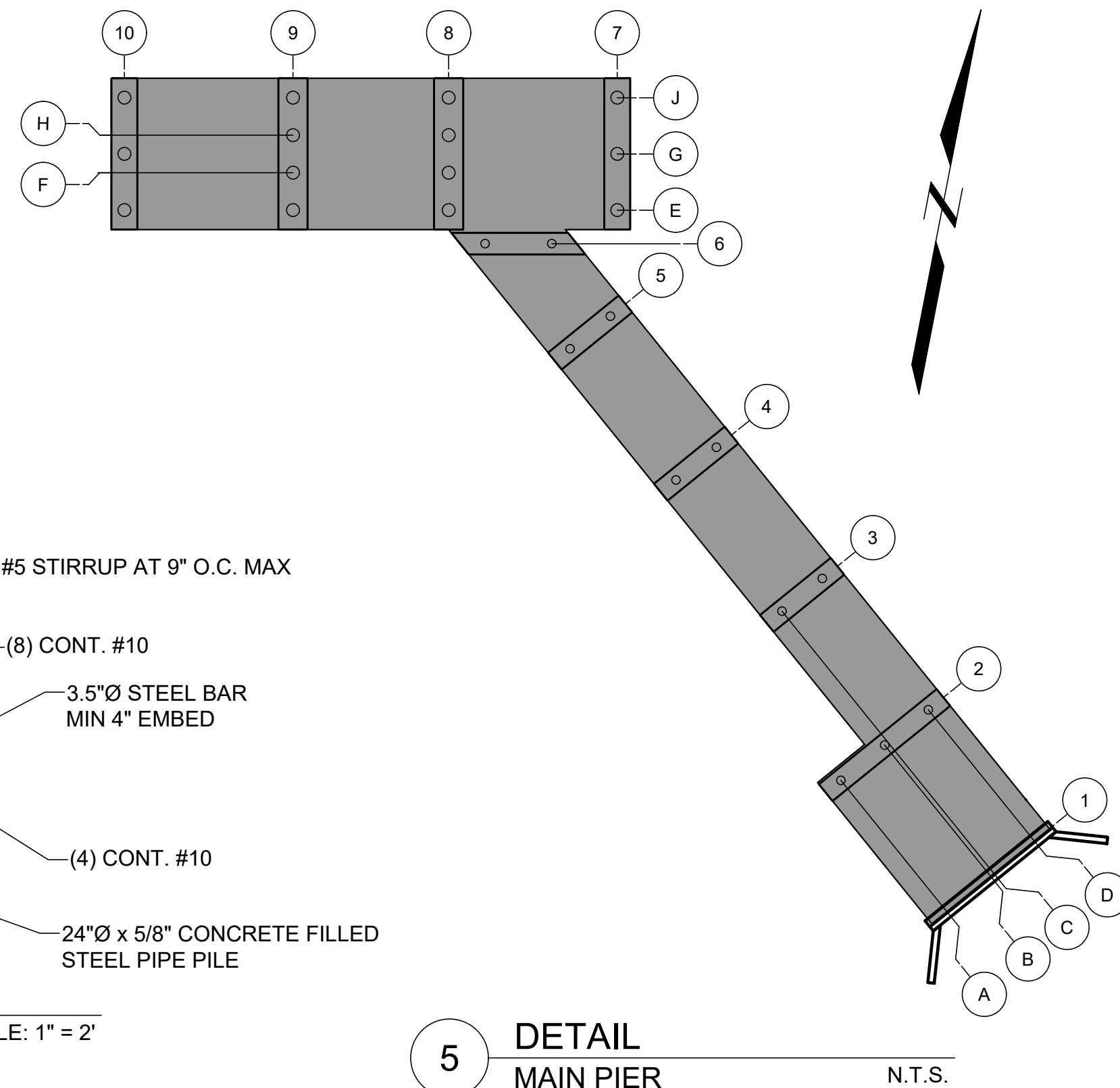
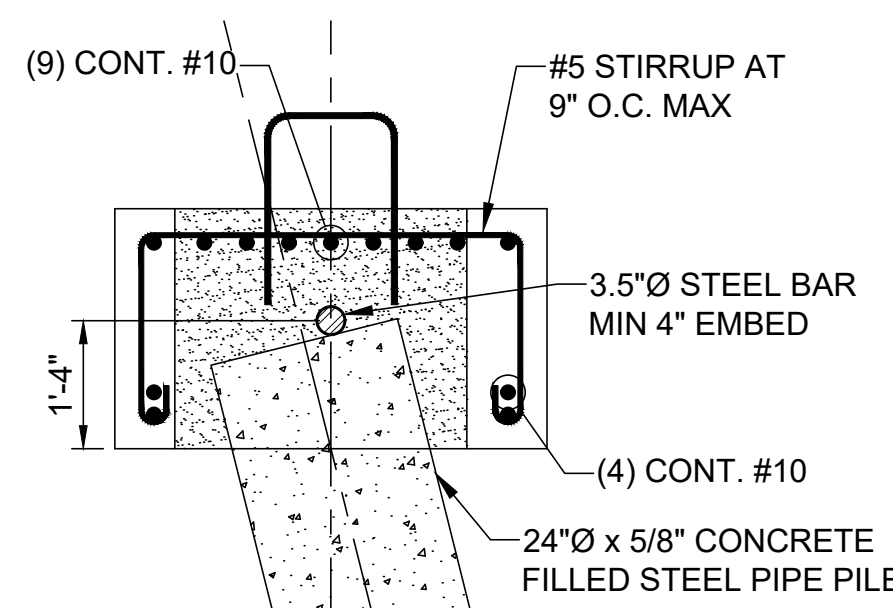
D
SECTION
MAIN PIER
BENT 8 & 9
SCALE: 1" = 2'



E
SECTION
MAIN PIER
BENT 8 & 9
SCALE: 1" = 2'

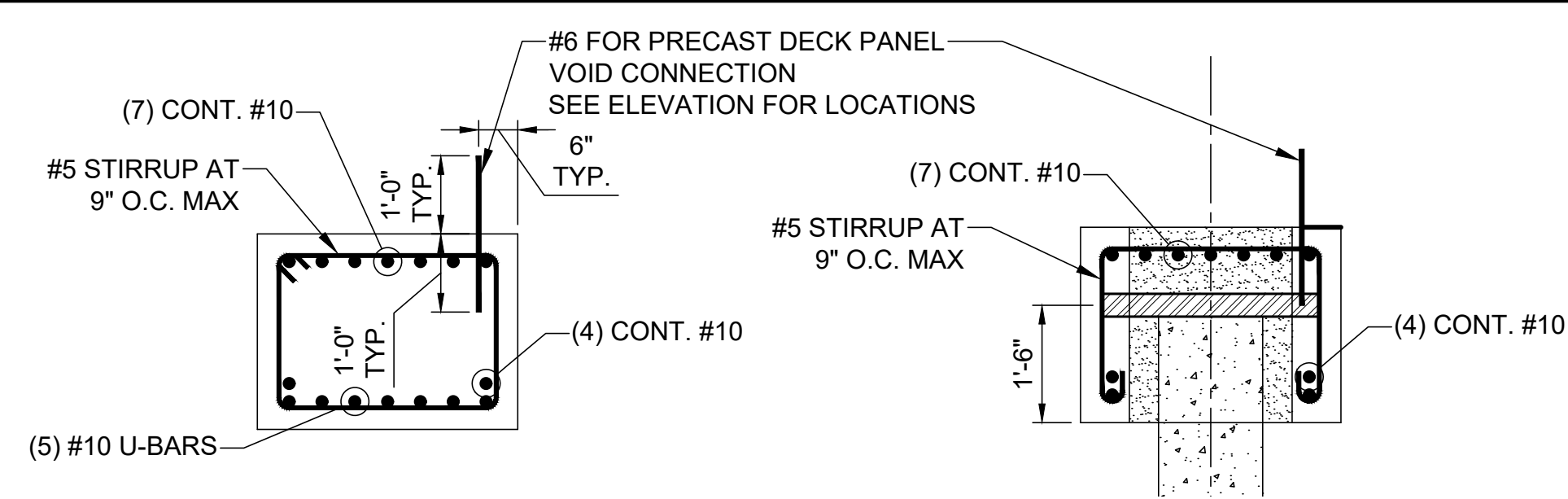


F
SECTION
MAIN PIER
BENT 8 & 9
SCALE: 1" = 2'



5
DETAIL
MAIN PIER
N.T.S.

FOR PERMIT



SECTION APPROACH PIER BENT 6

10 9 8 7

H F J G E

6 5 4 3 2 1

D C B A

16"Ø x 5/8" CONCRETE FILLED
STEEL PIPE PILE

(4) CONT. #10

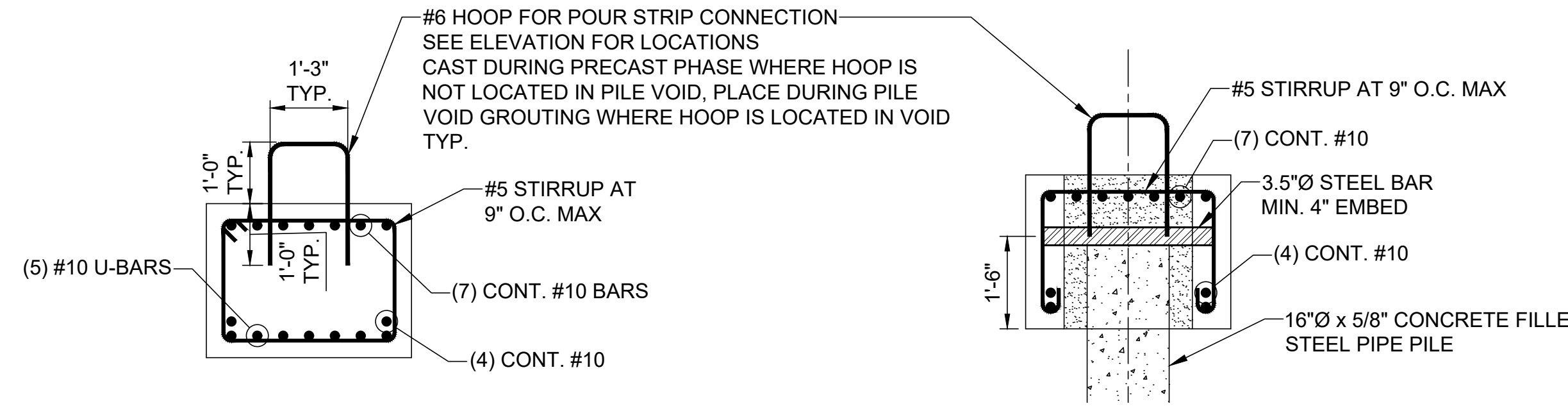
3.5"Ø STEEL BAR
MIN. 4" EMBED

(7) CONT. #10

#5 STIRRUP AT 9" O.C. MAX

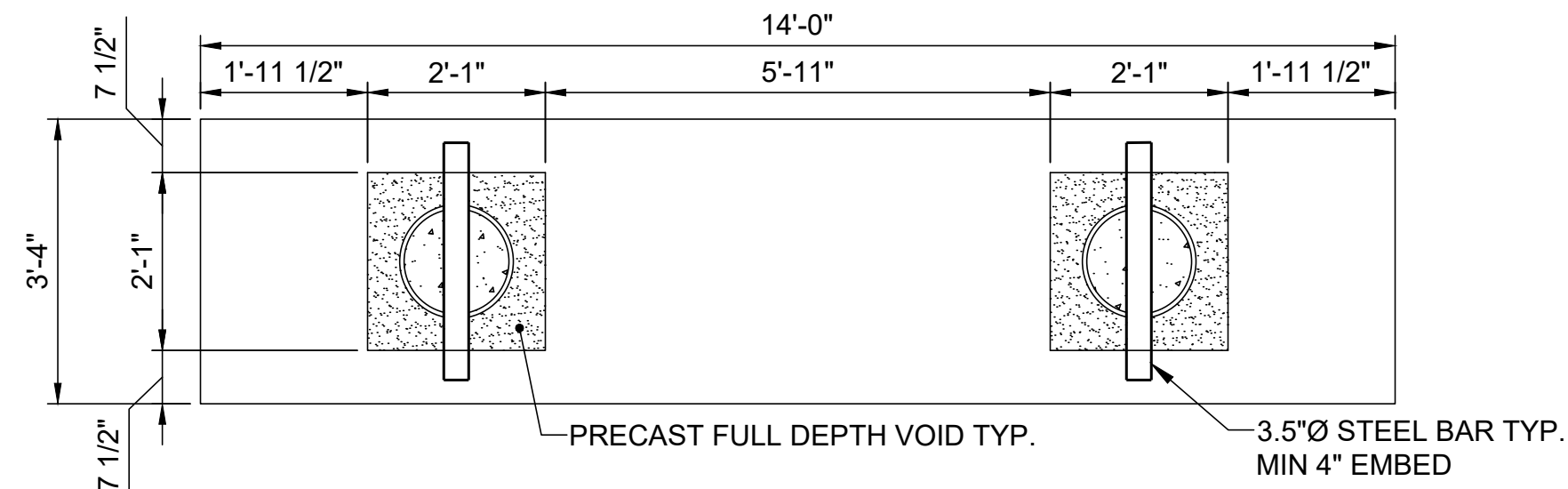
2' =

North Arrow

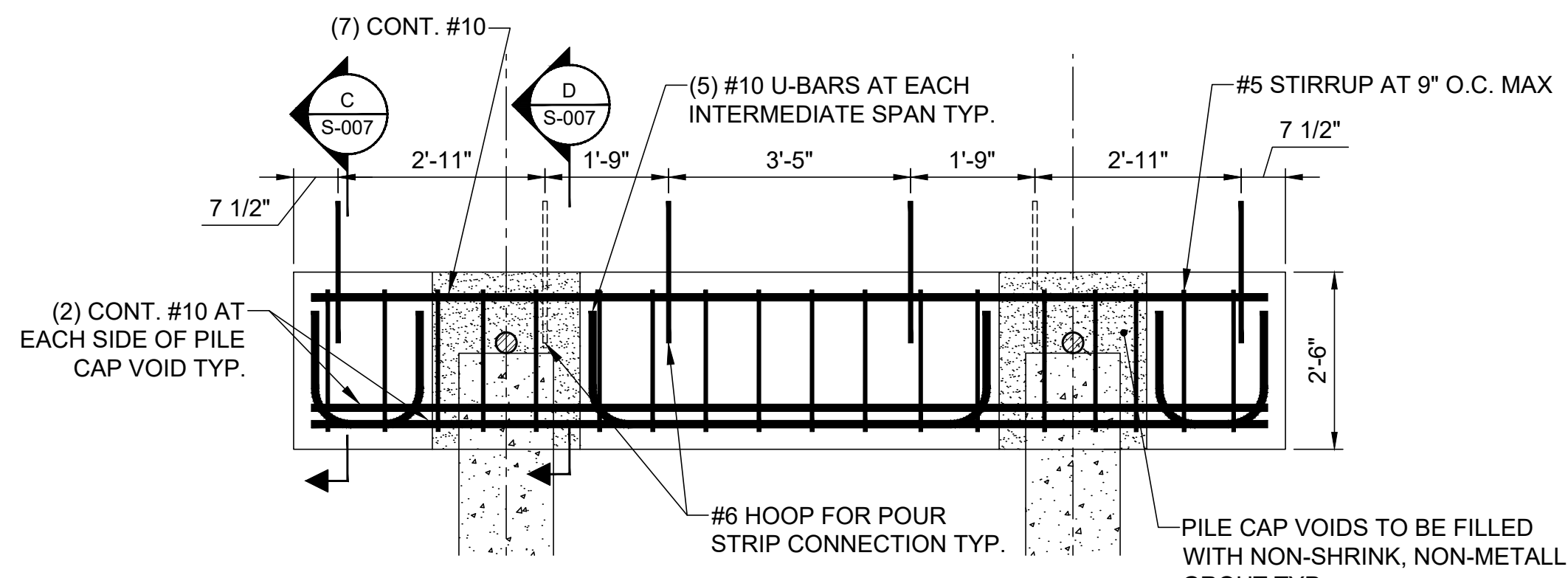


C SECTION
APPROACH PIER
BENTS 2-5

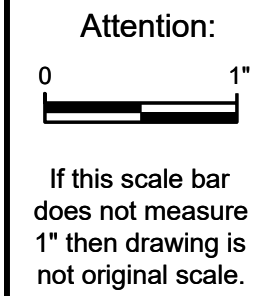
7	DETAIL MAIN PIER	N.T.
---	---------------------	------



5 **DETAIL-PLAN**
APPROACH PIER
BENTS 3-5 SCALE: 1" = 2'



6 ELEVATION
APPROACH PIER SCALE: 1" = 2'
BENTS 3-5



DRAFT

<i>Designed:</i>	DJB
<i>Drawn:</i>	JAM
<i>Checked:</i>	BJB
<i>Approved:</i>	BMM
<i>P.E. No:</i>	13033
<i>GEI Project</i>	2203703



11 HILLS BEACH RD
BIDDEFORD, MAINE

11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

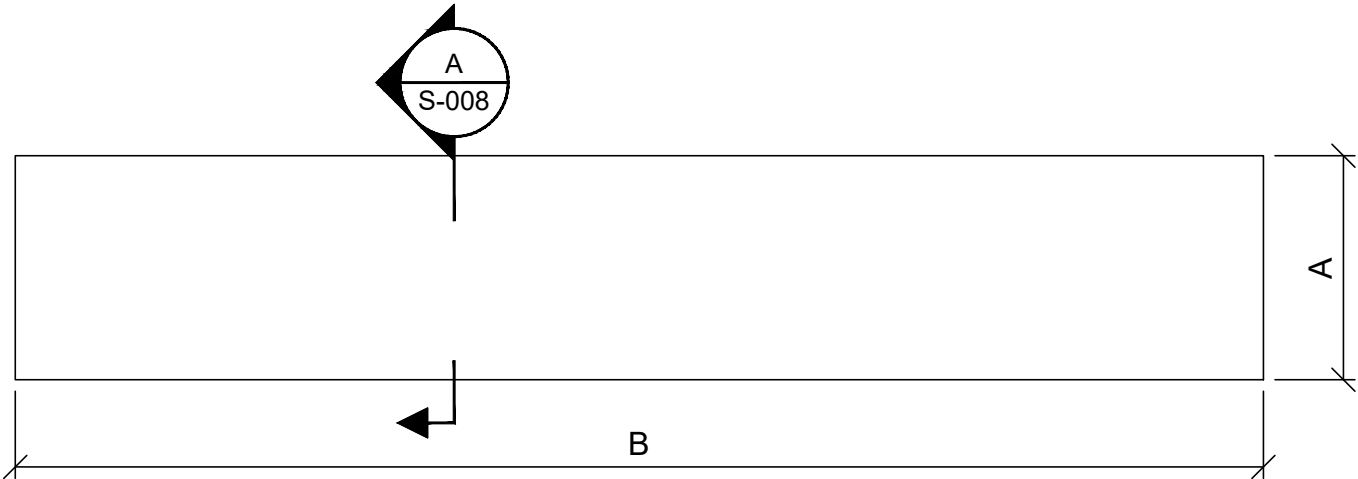
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4	9/14/2023	DEP PERMIT SET	DJB
3	6/28/2023	75% DESIGN SUBMISSION	DJB
2	2/15/2023	305 DESIGN SUBMISSION	DJB
1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

FOR PERMIT

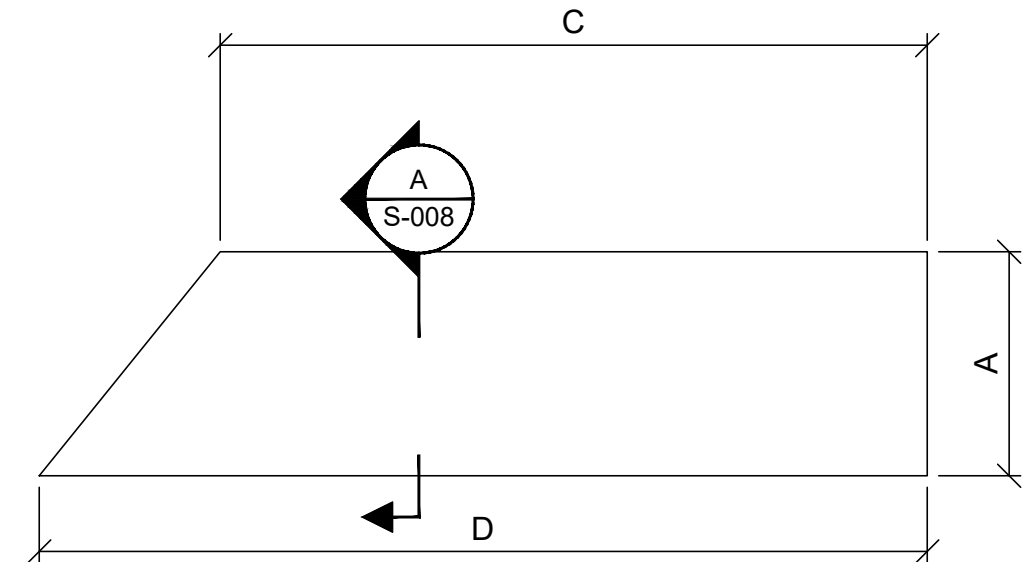
S-007

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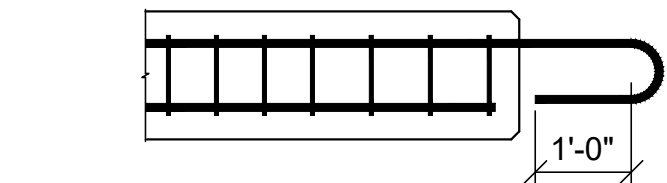
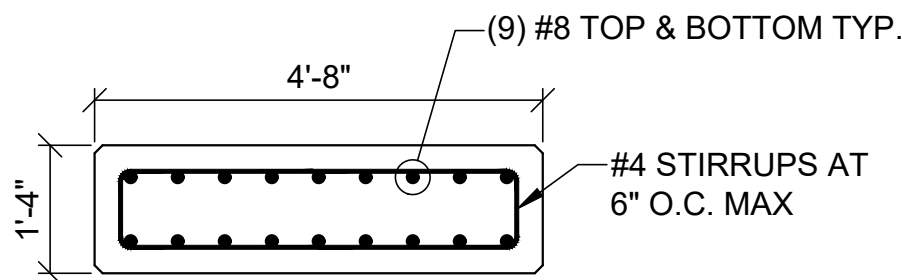
PRECAST DECK PANEL SCHEDULE					
PANEL ID	A	B	C	D	QTY.
A	4'-8"	25'-2"	-	-	5
B	4'-8"	24'-3"	-	-	9
C	4'-8"	-	13'-3"	17'-0"	1
D	4'-8"	-	17'-0"	20'-9 1/2"	1
E	4'-8"	-	20'-9 1/2"	24'-7"	1
F	4'-8"	26'-0"	-	-	10
G	4'-8"	22'-0"	-	-	5



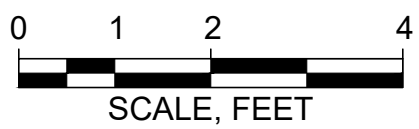
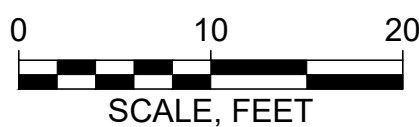
1 DETAIL-PLAN
PRECAST DECK PANEL SCALE: 1"=4'



A SECTION
PRECAST DECK PANEL SCALE: 1"=2'

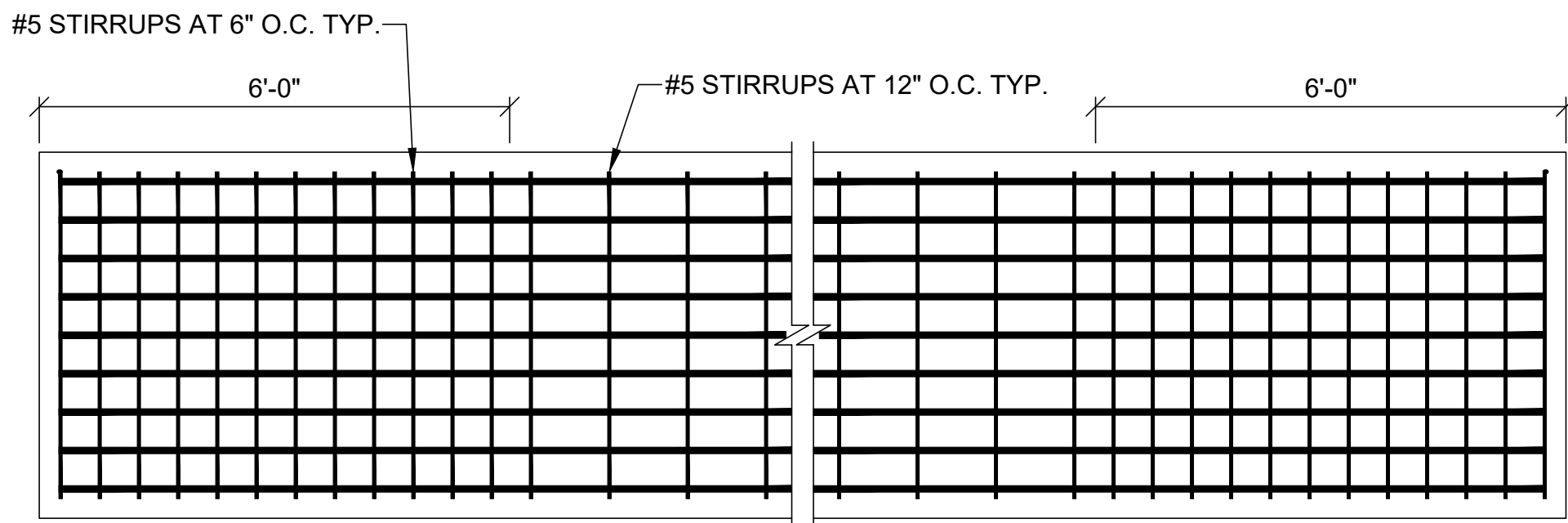


B SECTION
PRECAST DECK PANEL CONNECTION END 2 & 3 SCALE: 1"=2'

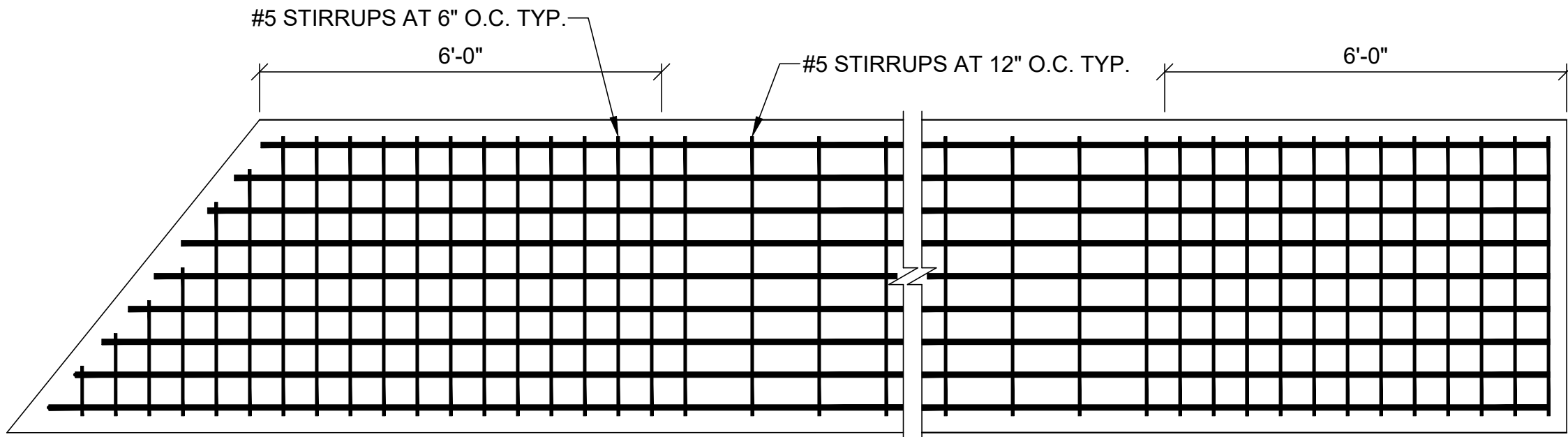


ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

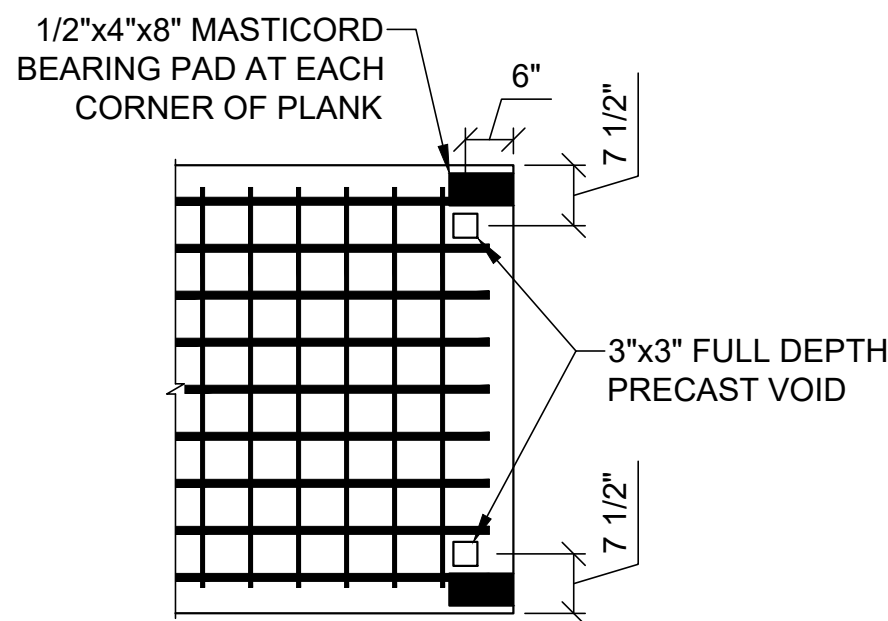
*PROJECT DATUM



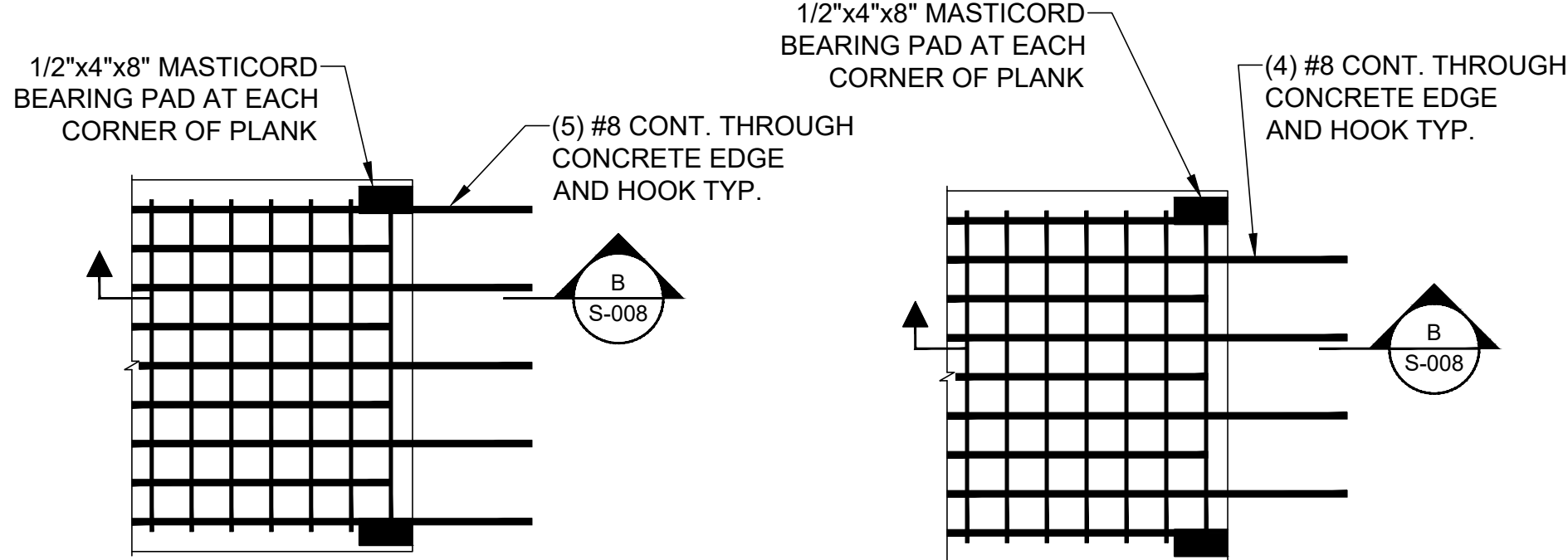
3 DETAIL-PLAN PLANKS A, B, F, & G
PRECAST DECK PANEL STIRRUP SPACING SCALE: 1"=2'



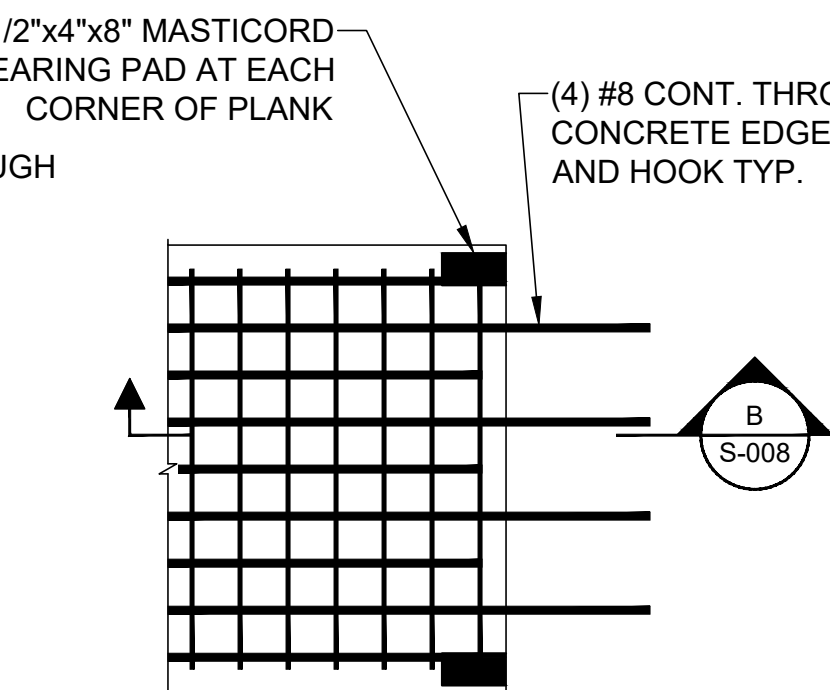
4 DETAIL-PLAN PLANKS C, D, & E
PRECAST DECK PANEL STIRRUP SPACING SCALE: 1"=2'



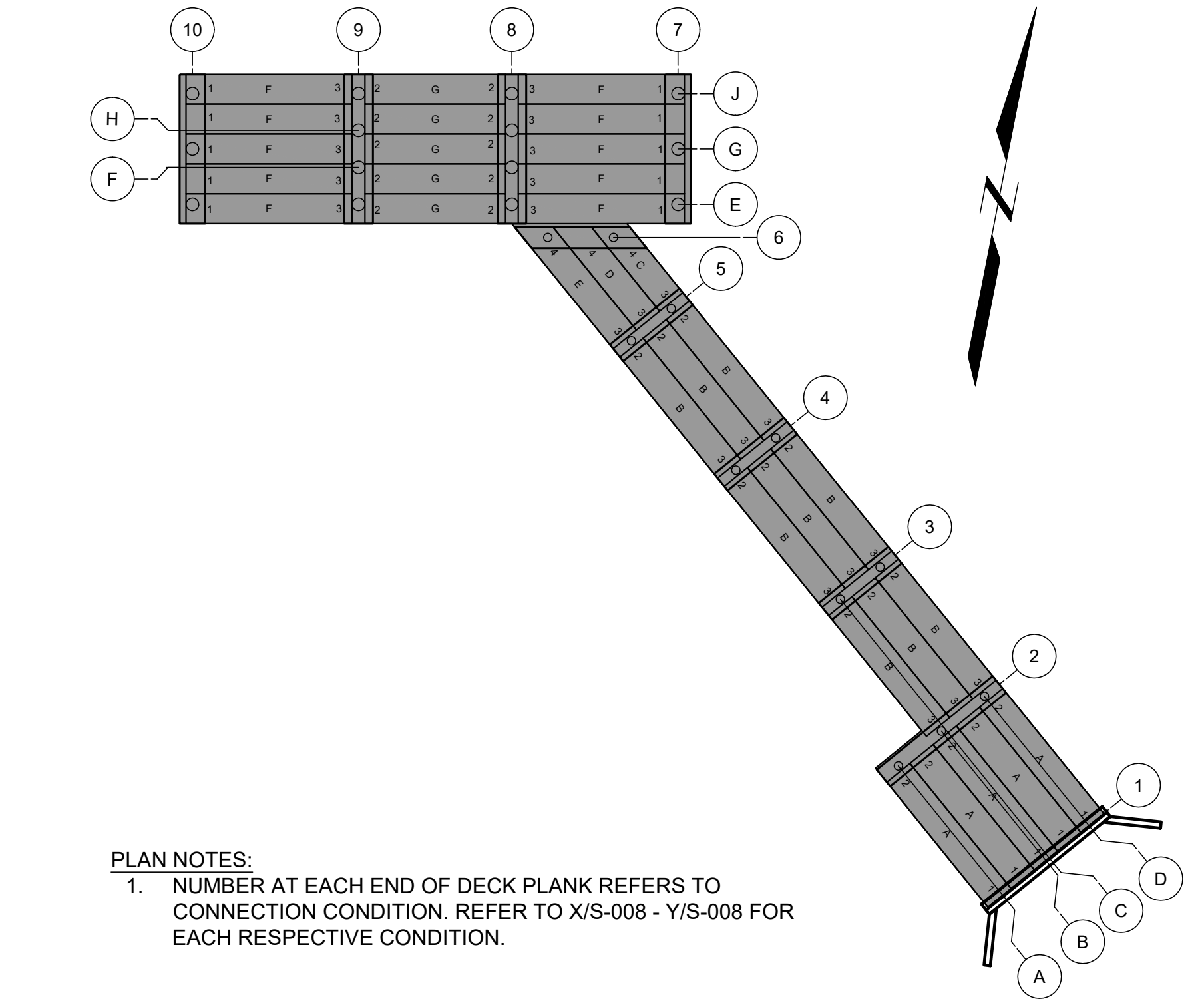
5 DETAIL - PLAN
DECK PANEL CONNECTION 1 SCALE: 1"=2'



6 DETAIL - PLAN
DECK PANEL CONNECTION 2 SCALE: 1"=2'

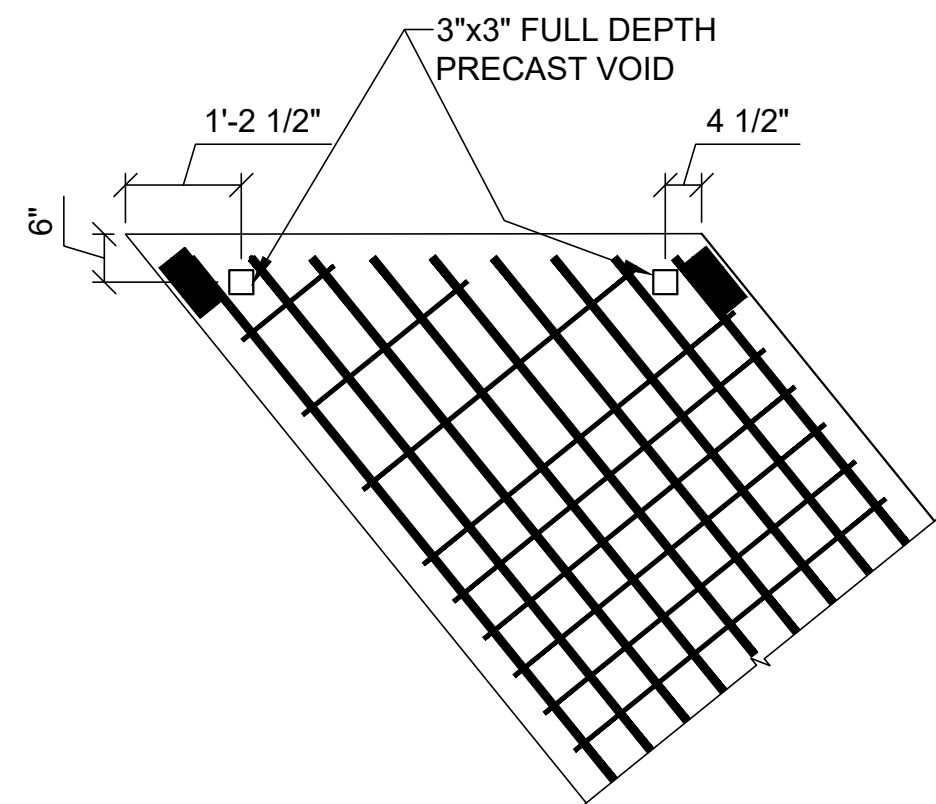


7 DETAIL - PLAN
DECK PANEL CONNECTION 3 SCALE: 1"=2'



PLAN NOTES:
1. NUMBER AT EACH END OF DECK PLANK REFERS TO CONNECTION CONDITION. REFER TO X/S-008 - Y/S-008 FOR EACH RESPECTIVE CONDITION.

9 DETAIL
PIER DECK PANELS N.T.S.



8 DETAIL - PLAN
DECK PANEL CONNECTION 1 SCALE: 1"=2'

DRAFT

Attention:
0 1" If this scale bar does not measure 1" then drawing is not original scale.

Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

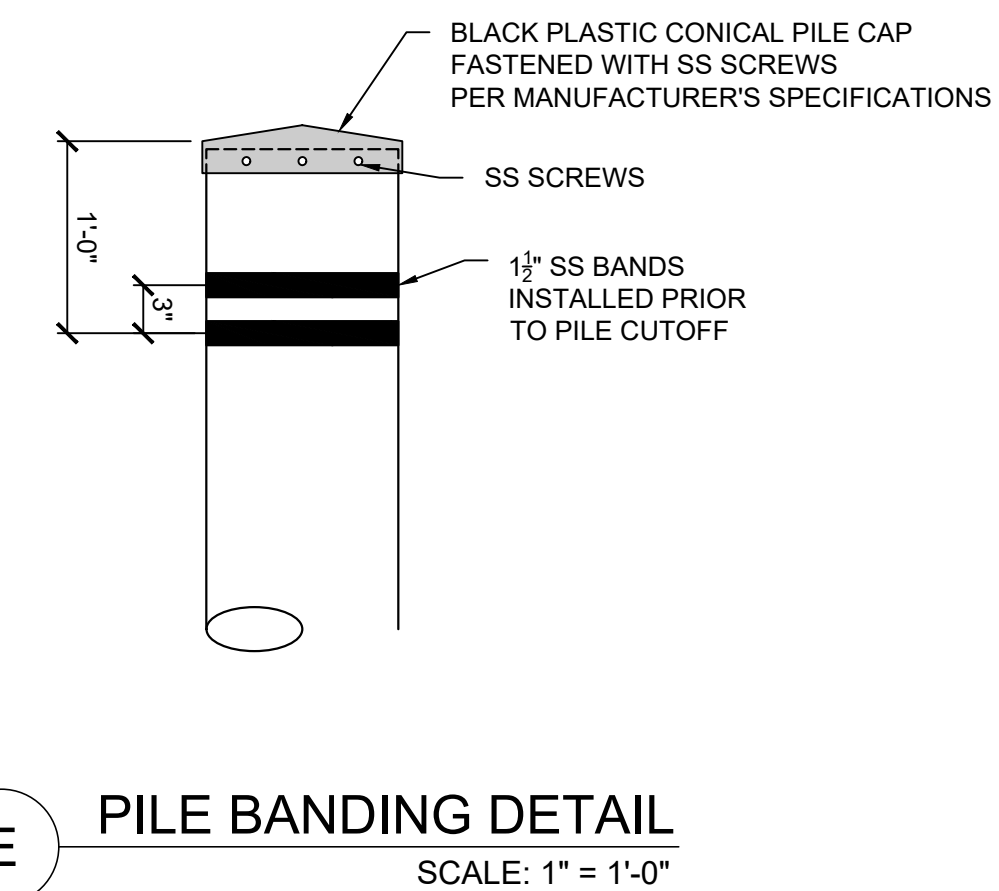
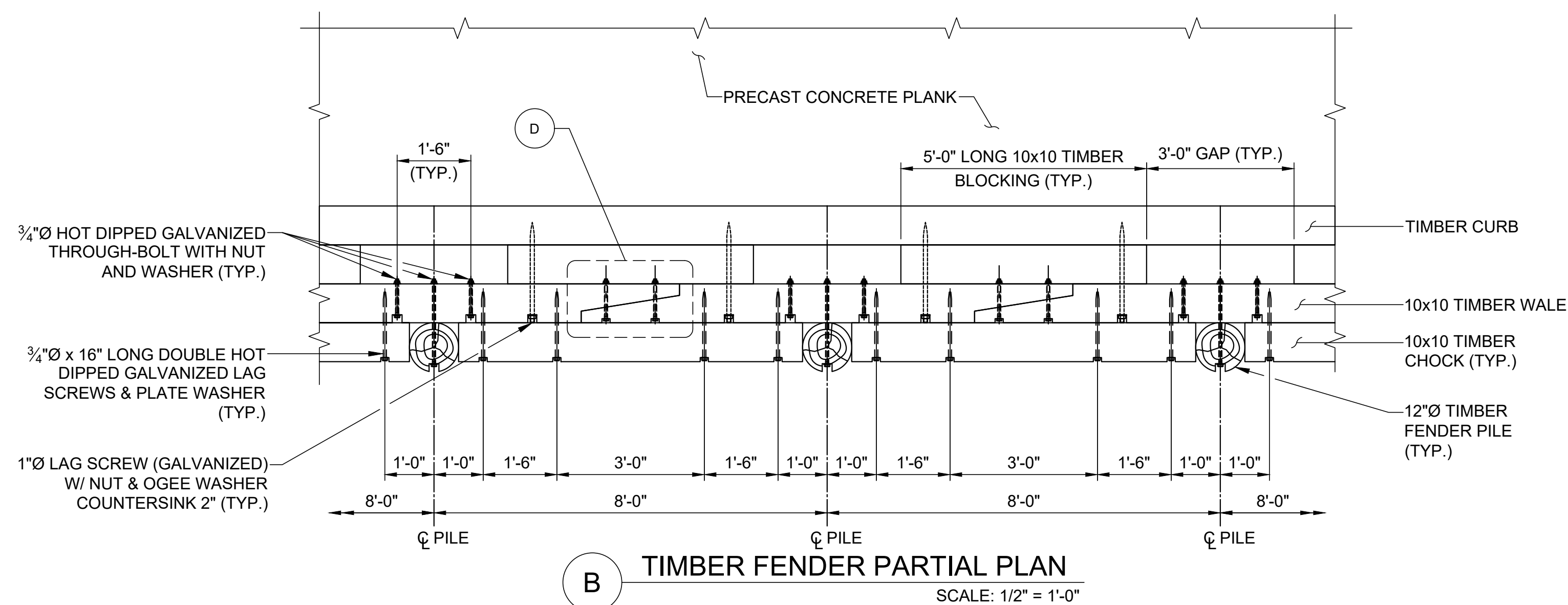
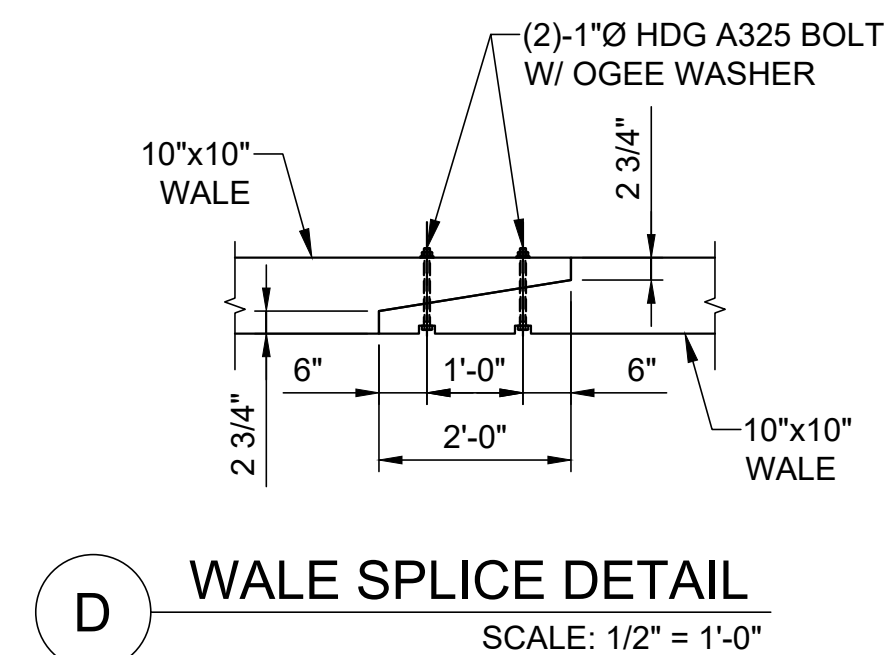
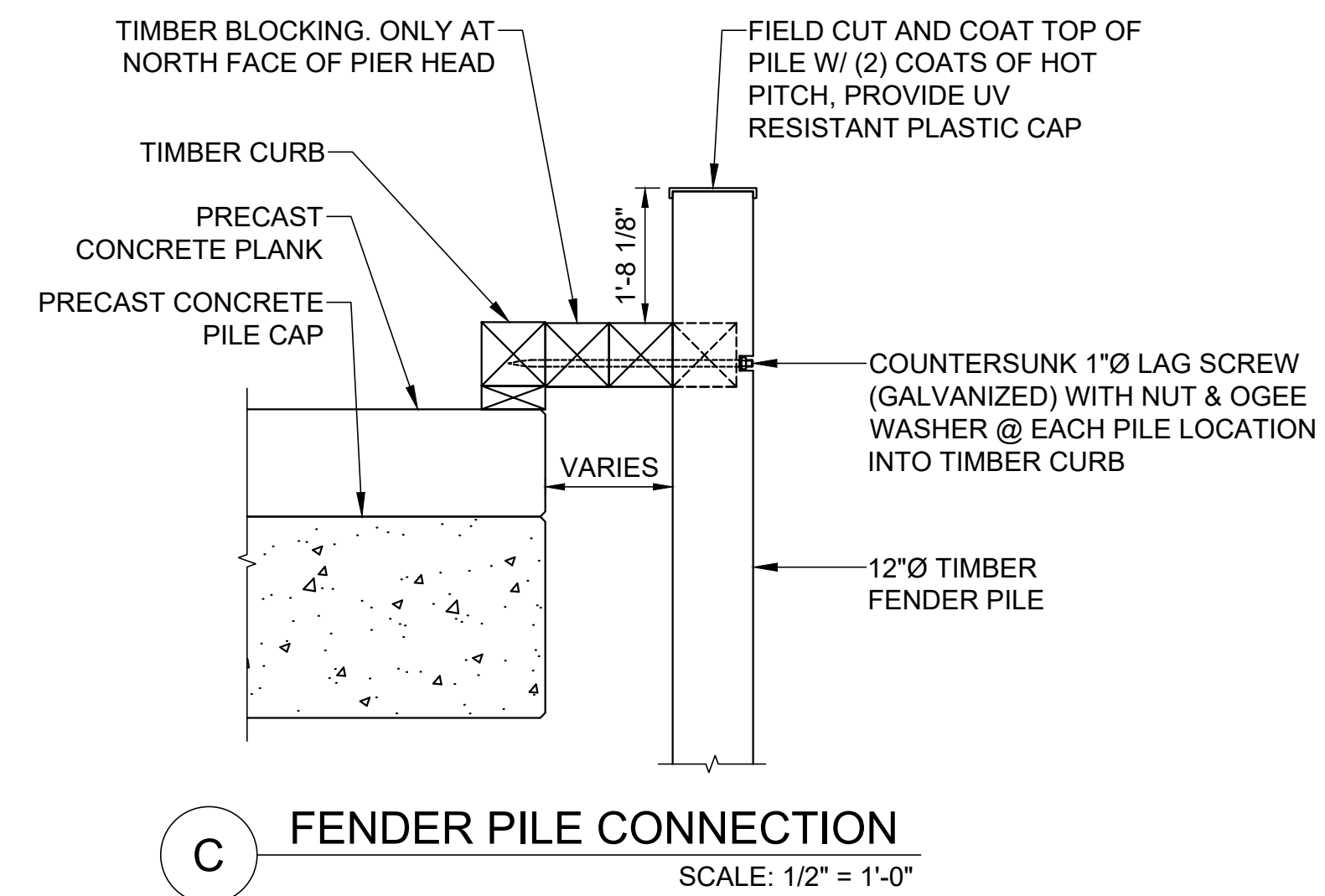
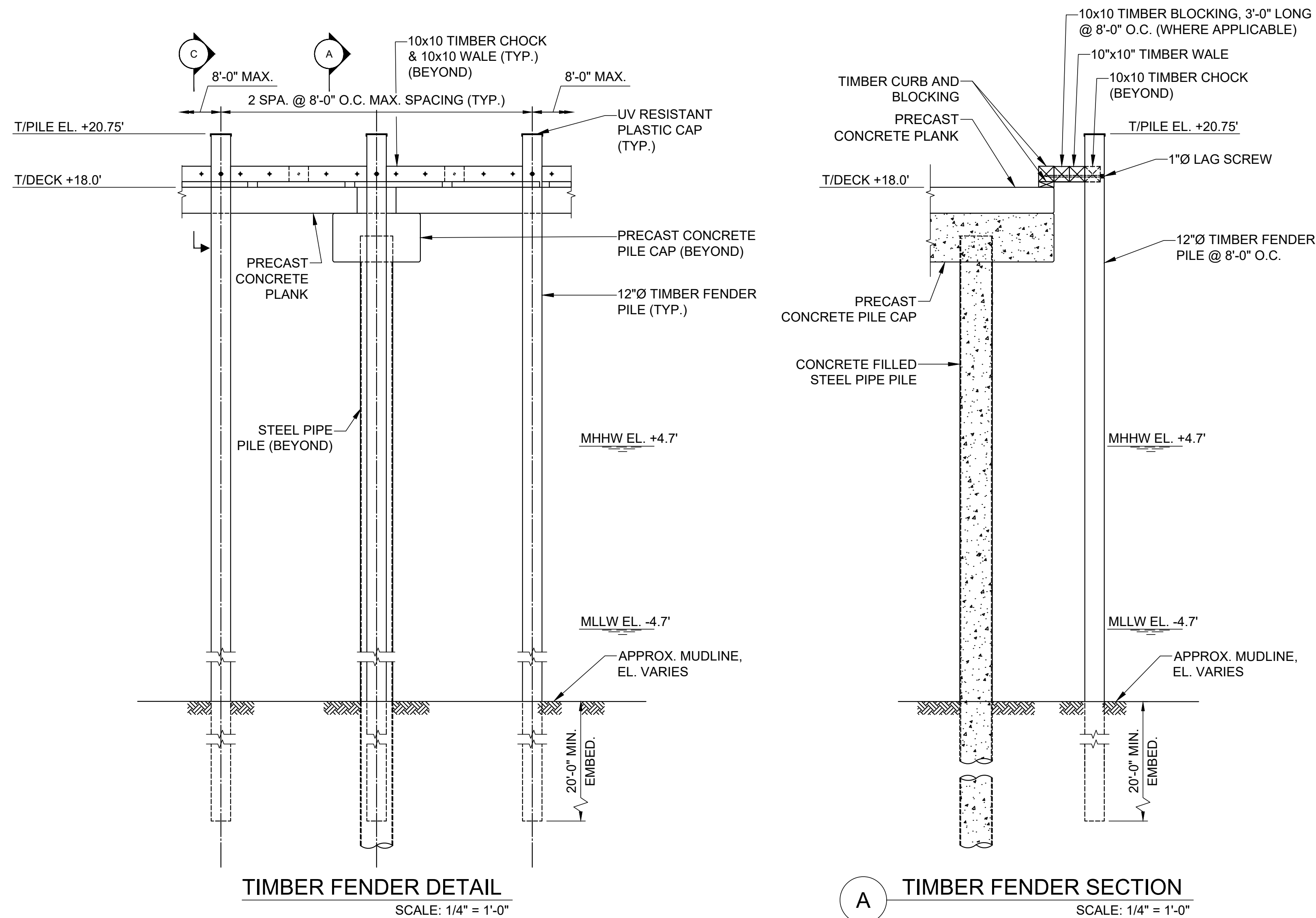
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5	6/27/2024	REVISED PERMIT SET	DJB
4	9/14/2023	DEP PERMIT SET	DJB
3	6/28/2023	75% DESIGN SUBMISSION	DJB
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0	11/11/2022	15% DESIGN SUBMISSION	DJB

SHEET NAME
PRECAST DECK PANEL
PLAN

SHEET NO.

S-008

FOR PERMIT



ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

Attention:

1"

If this scale bar does not measure 1" then drawing is not original scale.

DRAFT

<i>Designed:</i>	DJB
<i>Drawn:</i>	JAM
<i>Checked:</i>	BJB
<i>Approved:</i>	BMM
<i>P.E. No:</i>	13033
<i>GEI Project</i>	2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

**UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER**
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

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1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APPROVAL

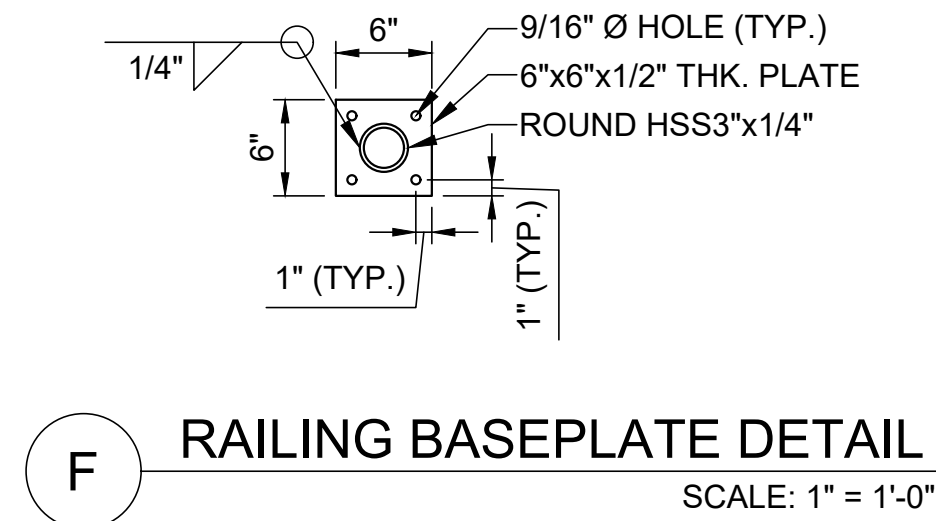
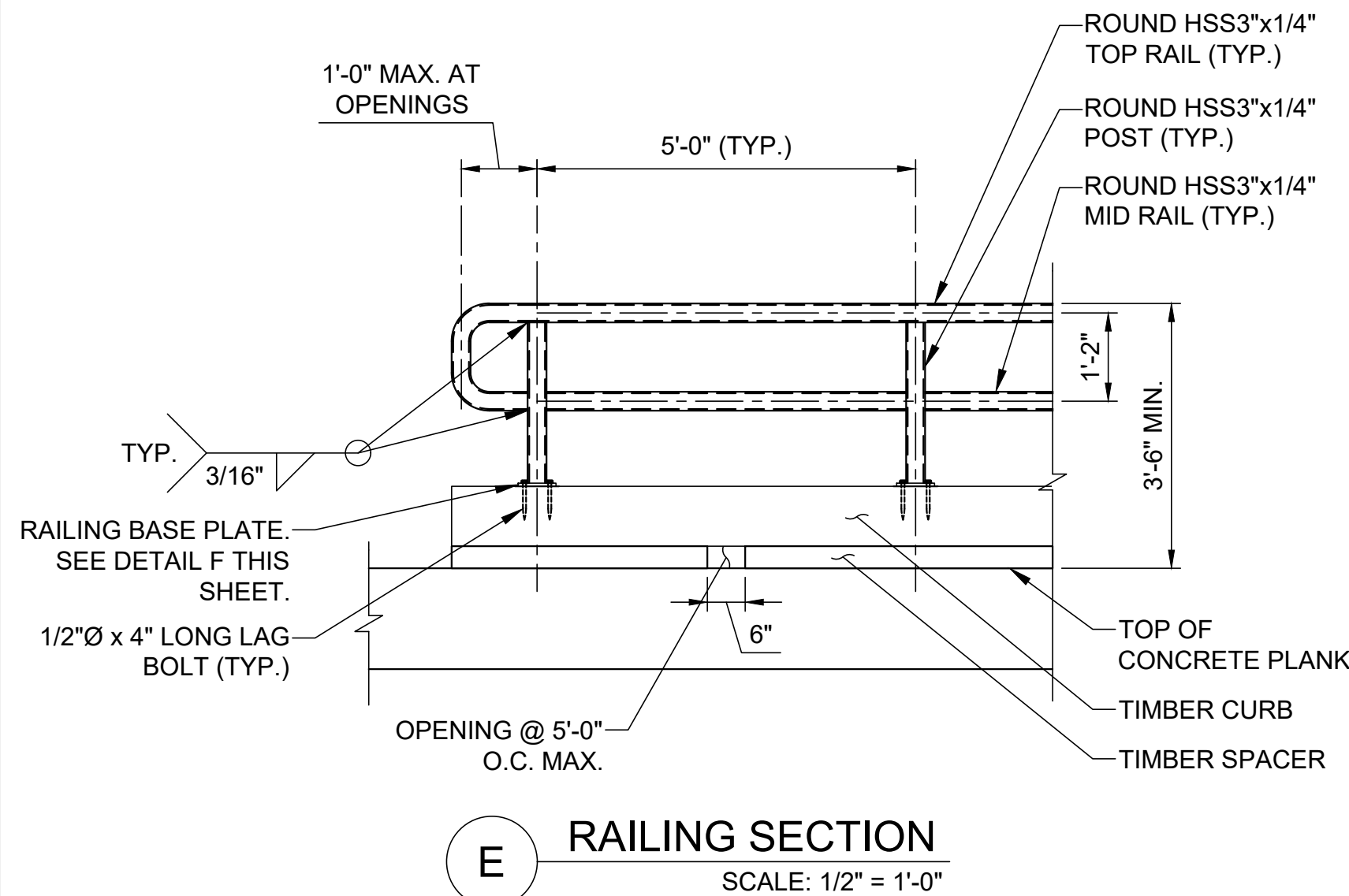
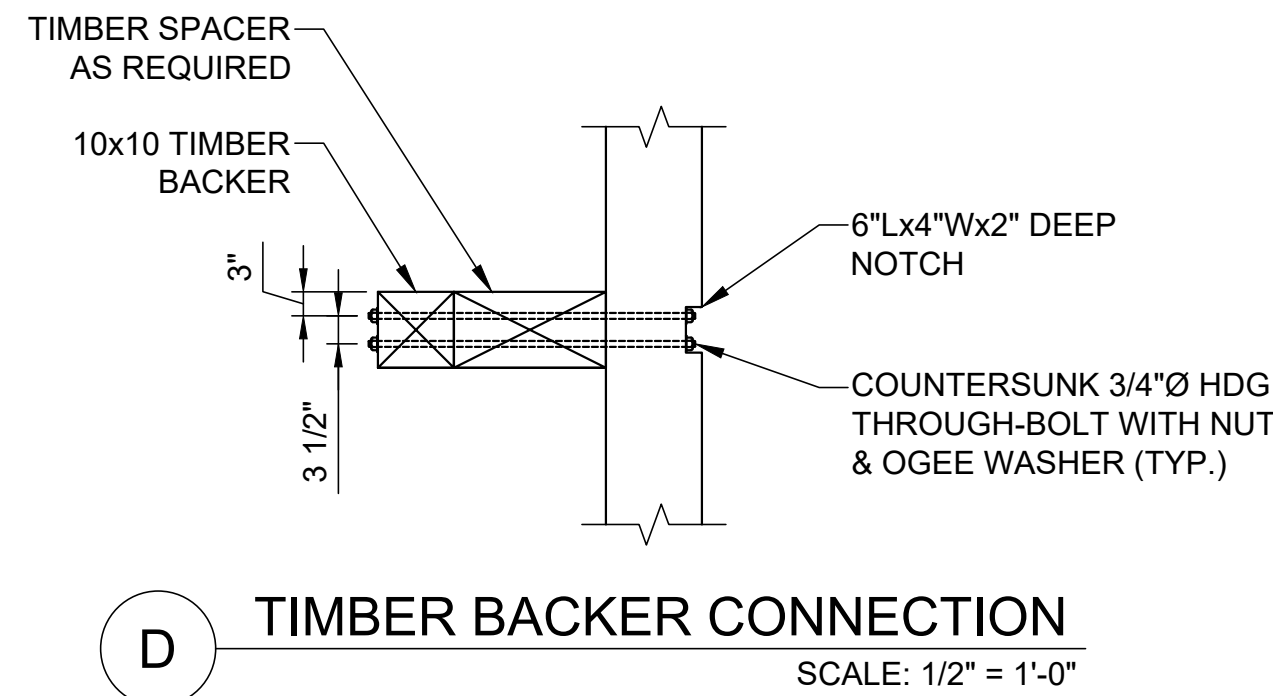
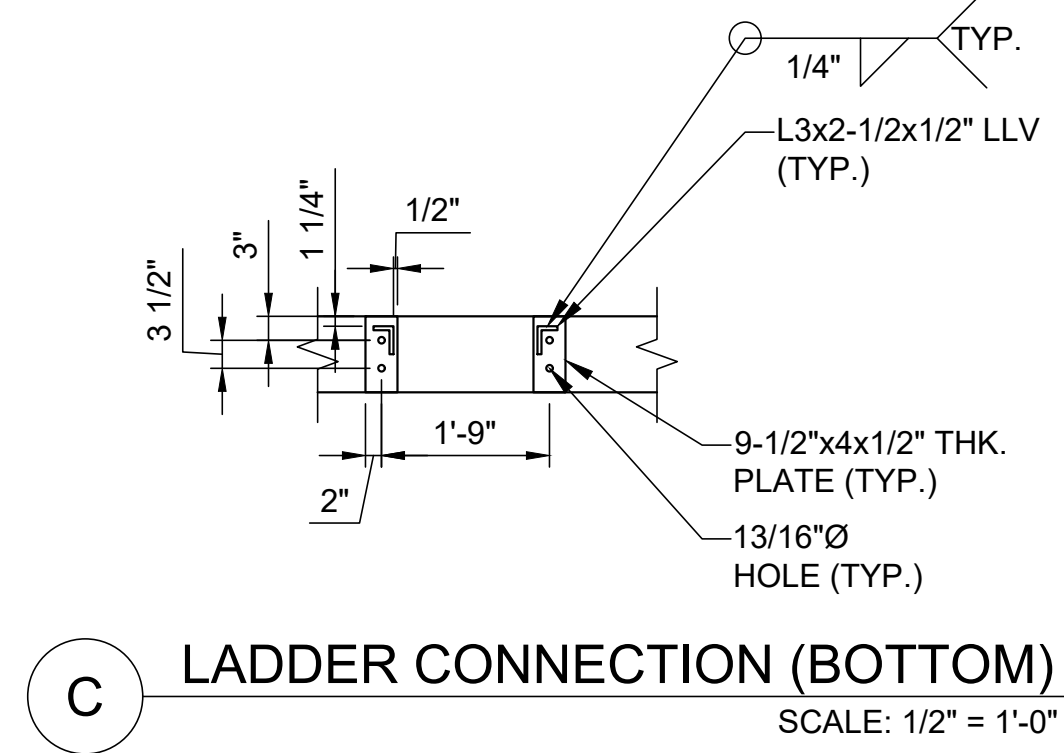
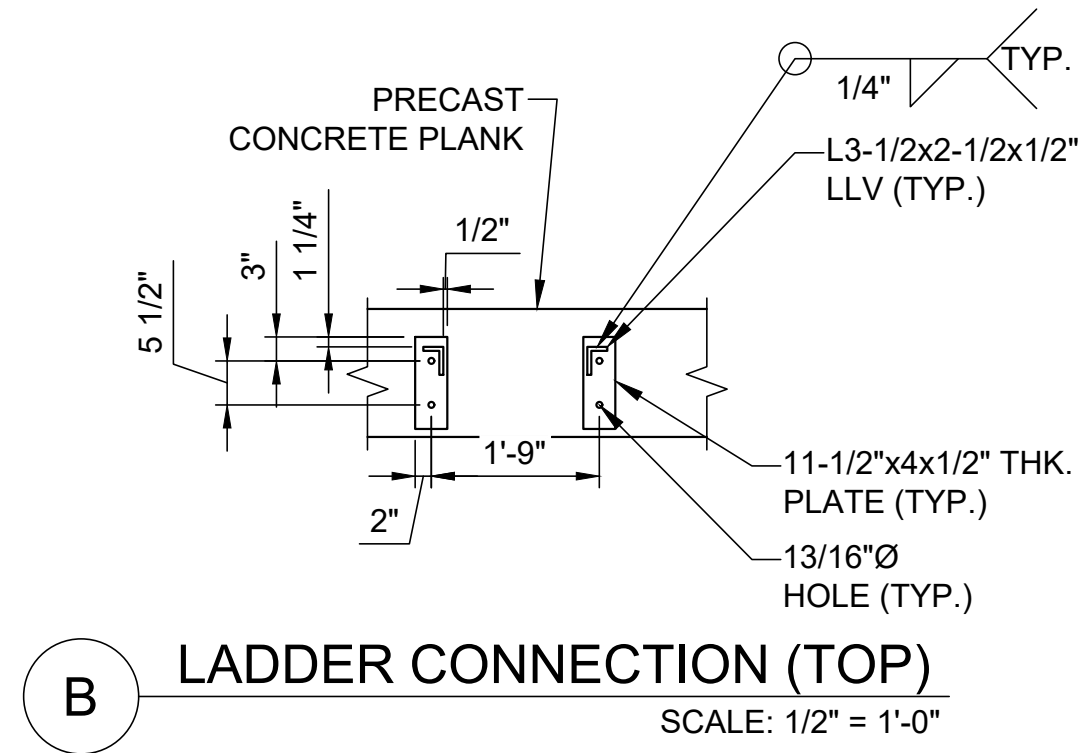
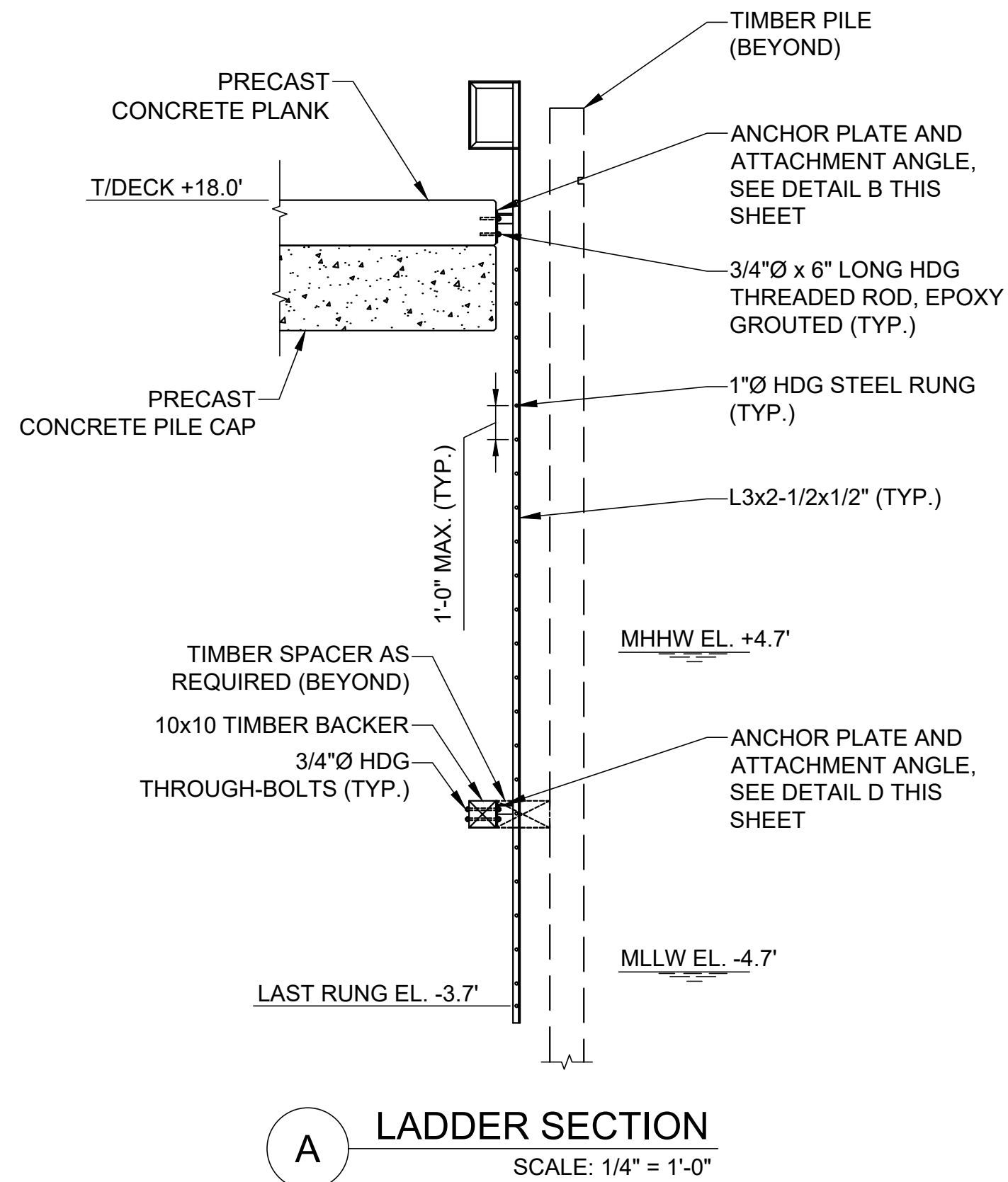
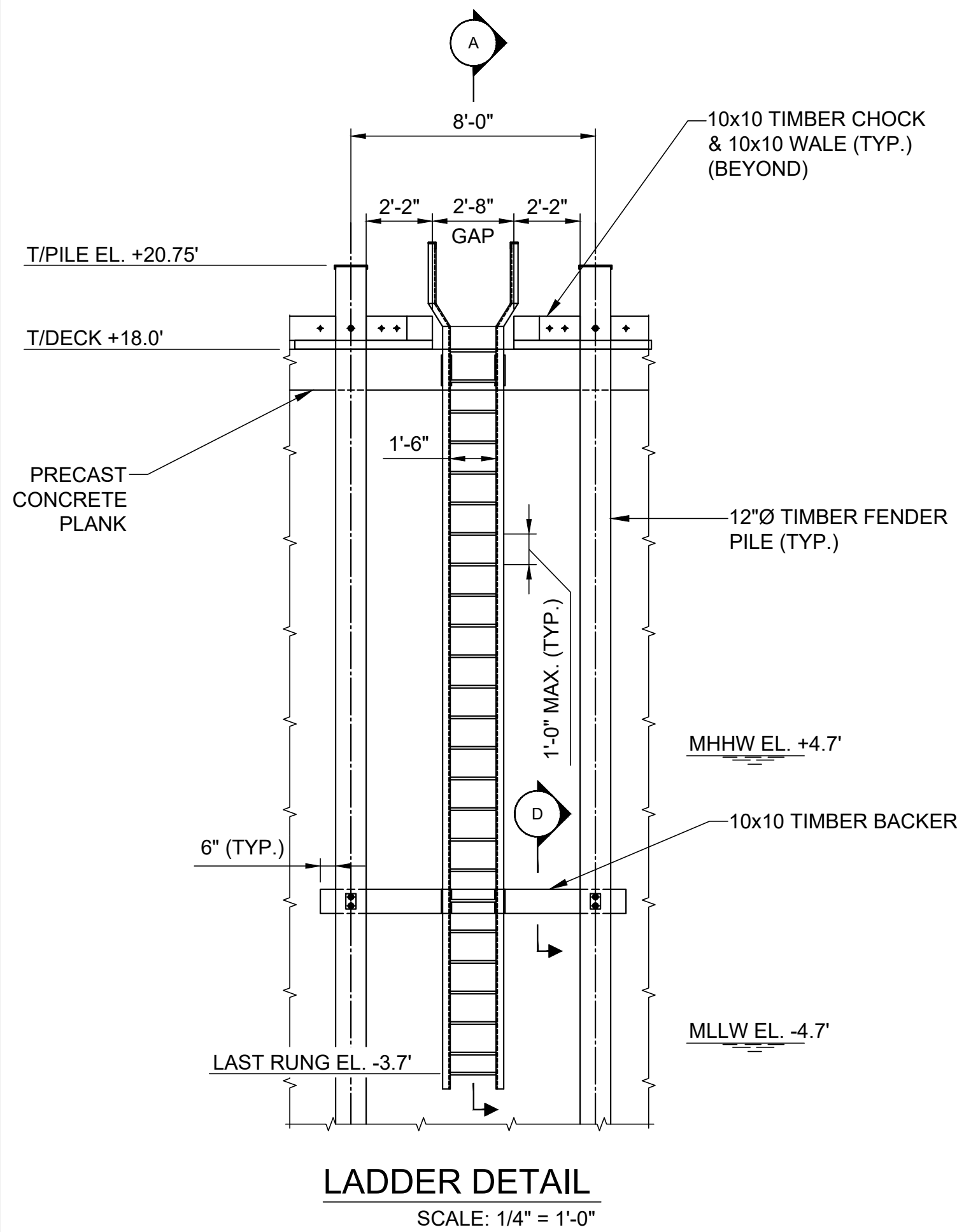
SHEET NAME

**MISCELLANEOUS
DETAILS (1 OF 5)**

SHEET NO.

S-009

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ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

DRAFT

Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



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BIDDEFORD, MAINE

**UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER**
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

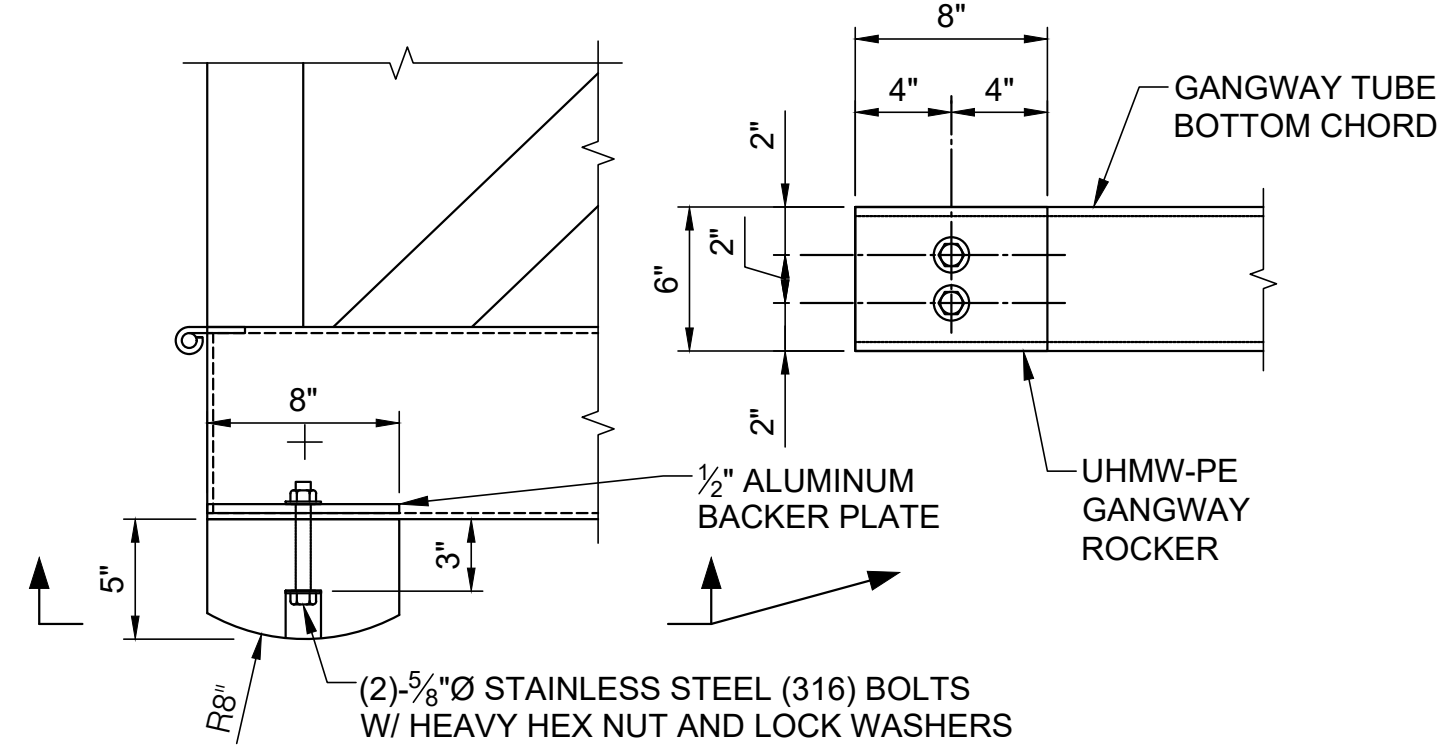
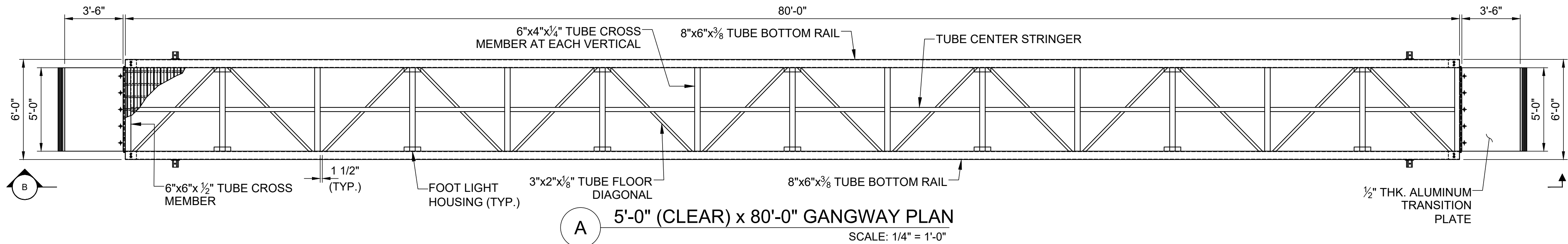
NO	DATE	ISSUE/REVISION	APP
6	8/14/2024	REVISED PERMIT SET	DJB
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3	6/28/2023	75% DESIGN SUBMISSION	DJB
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1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB

SHEET NAME
**MISCELLANEOUS
DETAILS (2 OF 5)**

SHEET NO.
S-010

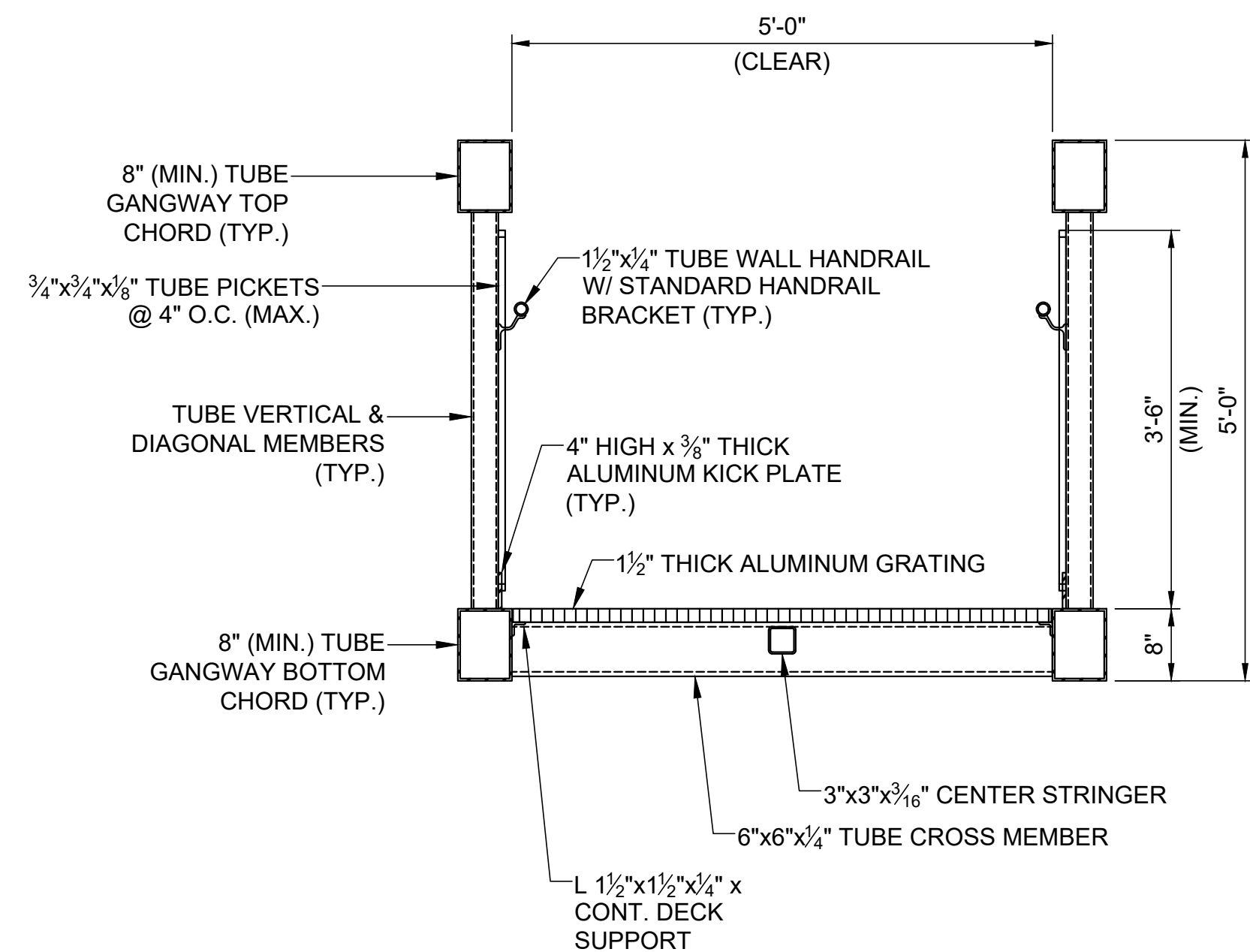
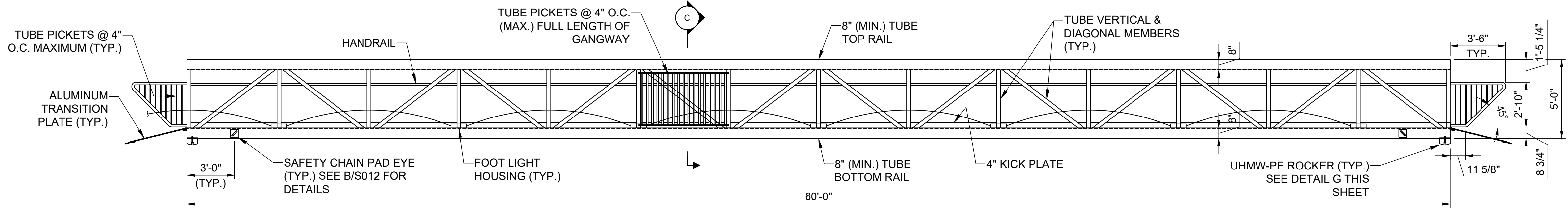
FOR PERMIT

BANNON, DAN | User: b4602Data, Storage\Working\UNIVERSITY OF NEW ENGLAND\2203703_S-01.dwg - 8/14/2024



G GANGWAY ROCKER DETAIL
SCALE: 1-1/2" = 1'-0"

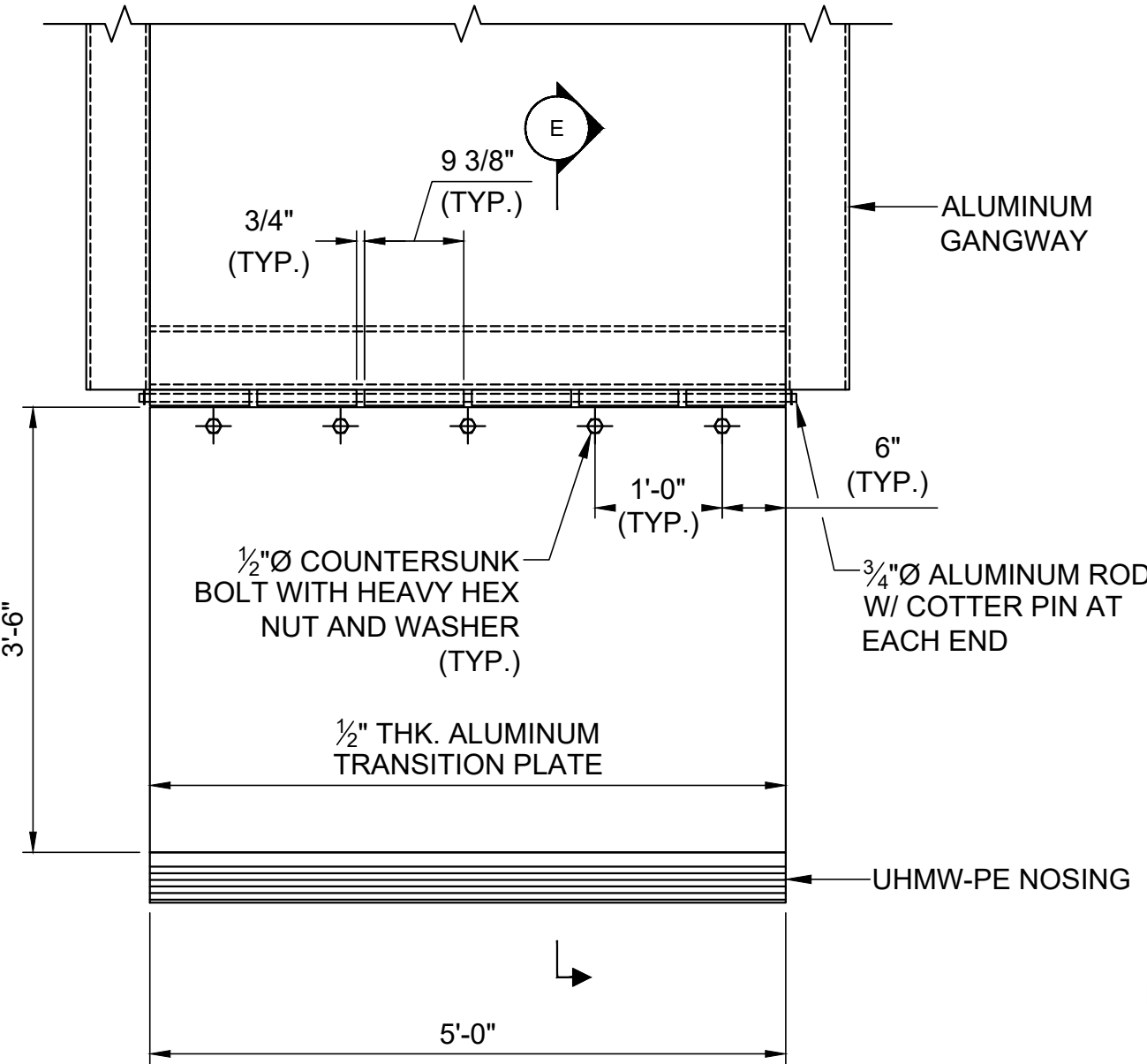
- NOTES:
- ROCKER MATERIAL SHALL BE VIRGIN UHMW-PE, BLACK IN COLOR.
 - ALUMINUM BACKER PLATE PLAN DIMENSIONS SHALL MATCH ROCKER PLAN DIMENSIONS.



C TYPICAL GANGWAY SECTION
SCALE: 3/4" = 1'-0"

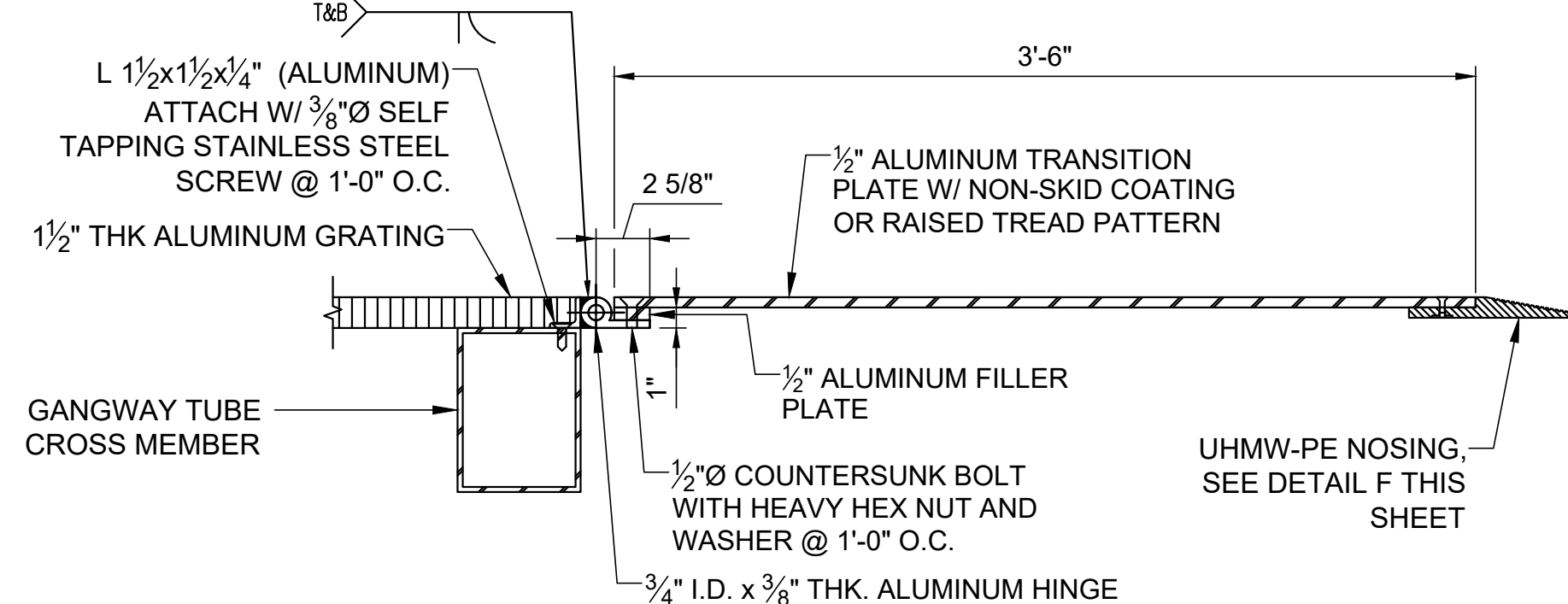
- NOTE(S):
- CONTRACTOR AND GANGWAY MANUFACTURER SHALL DETERMINE FINAL GANGWAY MEMBER SIZES AND SUBMIT TO ENGINEER FOR REVIEW AND APPROVAL.
 - ALUMINUM GRATING SHALL MEET ADA REQUIREMENTS.

B GANGWAY ELEVATION
SCALE: 1/4" = 1'-0"

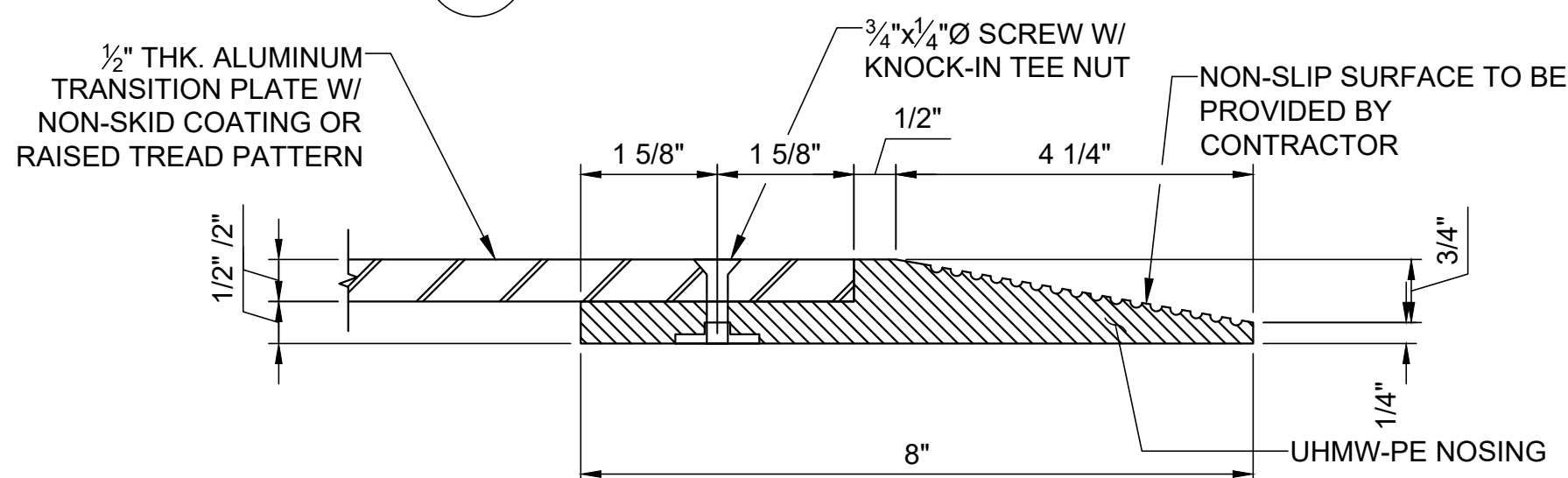


D TRANSITION PLATE DETAIL
SCALE: 3/4" = 1'-0"

- NOTES:
- CONTRACTOR SHALL DETERMINE FINAL GANGWAY MEMBER SIZES. MEMBERS ONLY SHOWN SCHEMATICALLY FOR REFERENCE.
 - CONTRACTOR SHALL SUBMIT FINAL GANGWAY SHOP DRAWINGS AND CALCULATION PACKAGE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MAINE.
 - ALL GANGWAY TUBE MEMBERS SHALL BE 6061-T6 ALUMINUM.
 - ALL GANGWAY TUBE MEMBERS SHALL BE CAPPED AND SEALED W/ ALUMINUM PLATES AT EXPOSED ENDS.



E GANGWAY TRANSITION PLATE SECTION
SCALE: 1-1/2" = 1'-0"



F UHMW-PE NOSING DETAIL
SCALE: 6" = 1'-0"

- NOTE(S):
- DRILL AND COUNTER BORE TRANSITION PLATES. COUNTERSINK HOLES FOR TEE NUTS TO TWICE BASE THICKNESS. SCREWS TO BE COUNTERSUNK INTO PLATE. INSTALL NEW SCREWS OVER SILICONE TO COVER EXPOSED ALUMINUM.
 - UHMW-PE NOSING DETAILS TO BE DETERMINED AFTER TRANSITION PLATE INSTALLATION AND SHALL BE IN COMPLIANCE WITH THE REQUIREMENTS SET FORTH IN ADA.

FOR PERMIT

ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

DRAFT

Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

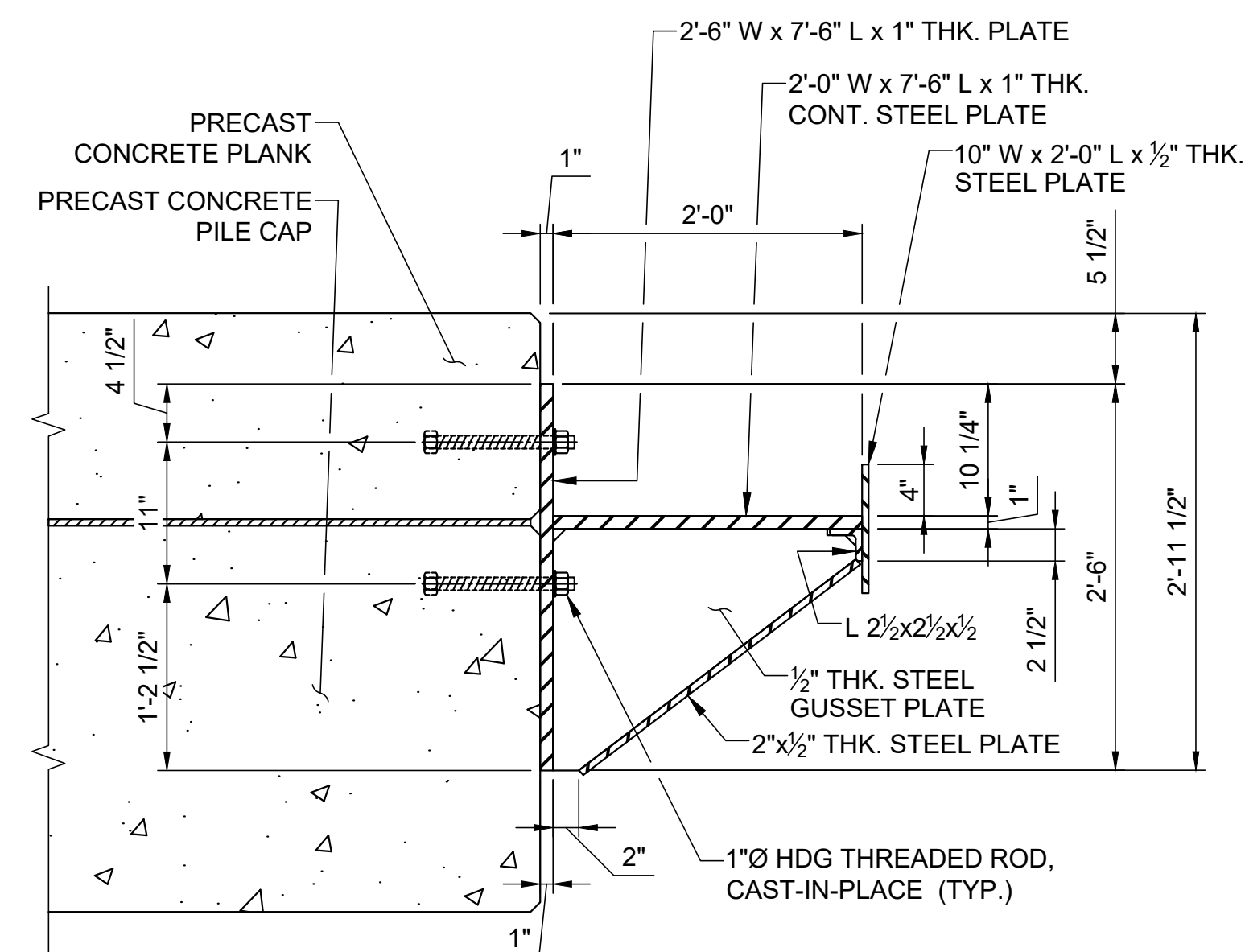
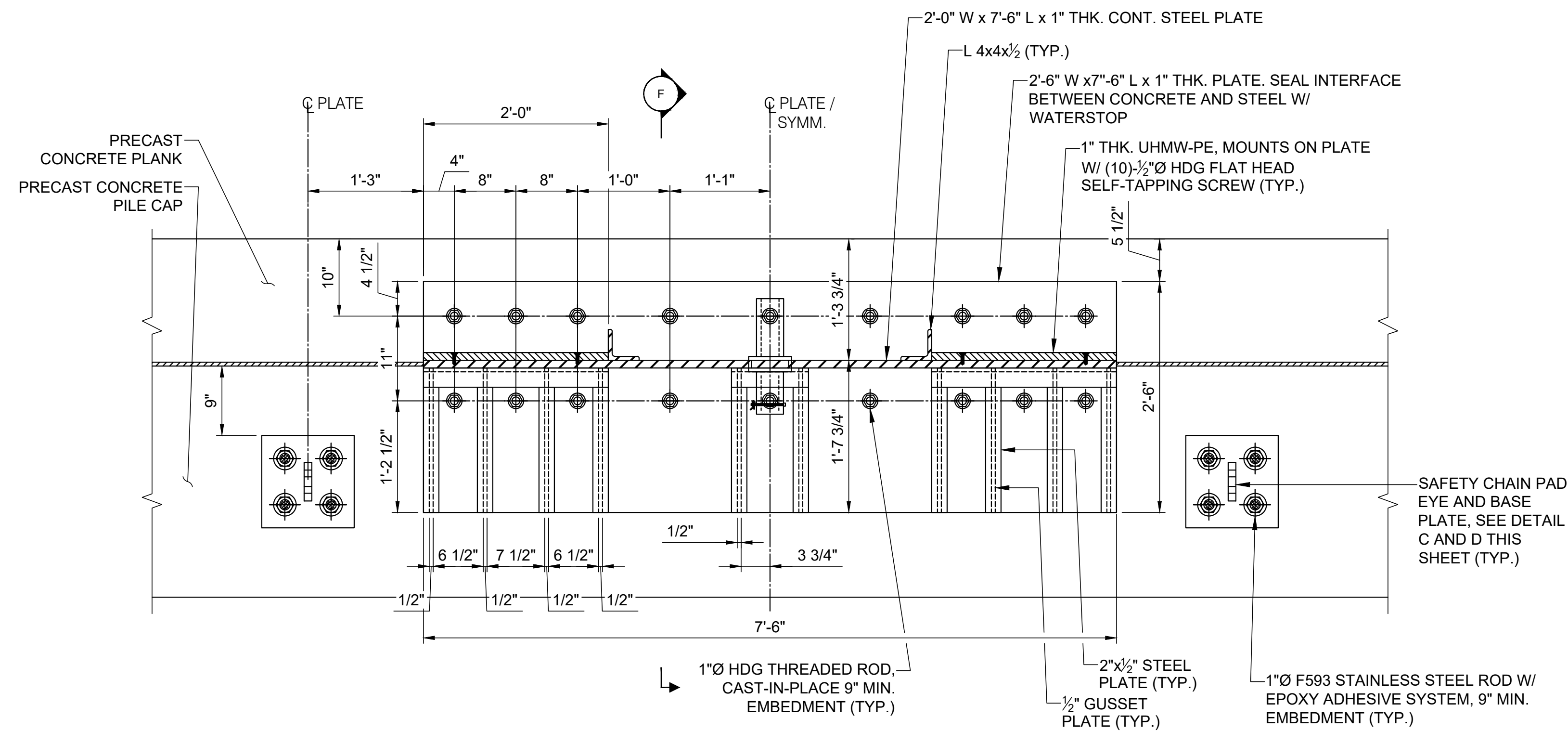
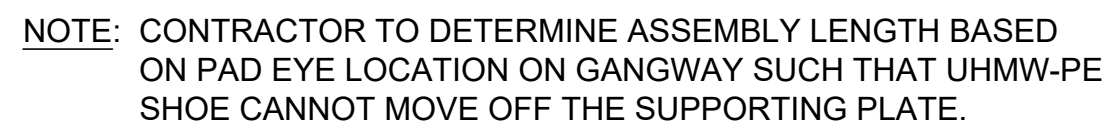
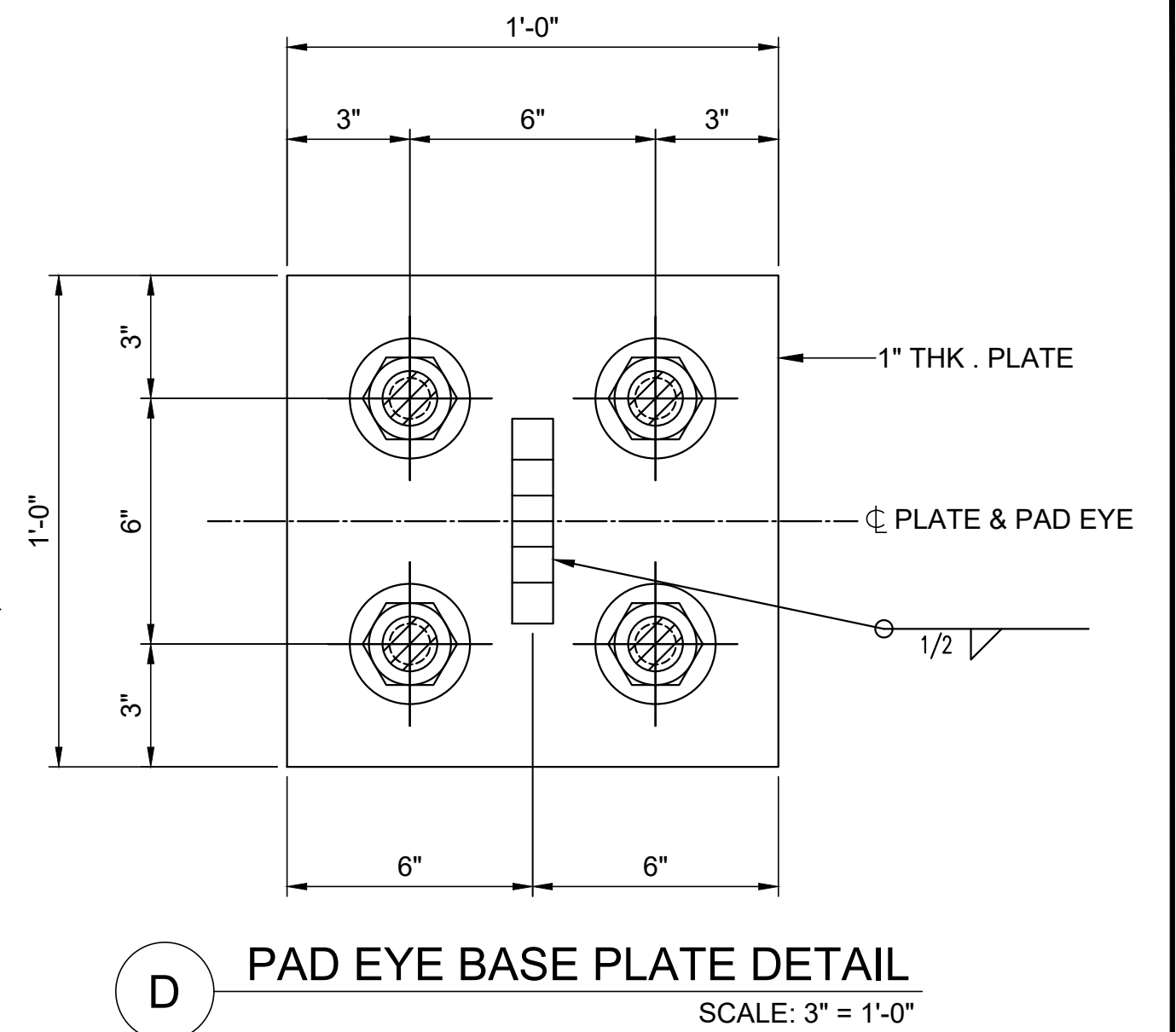
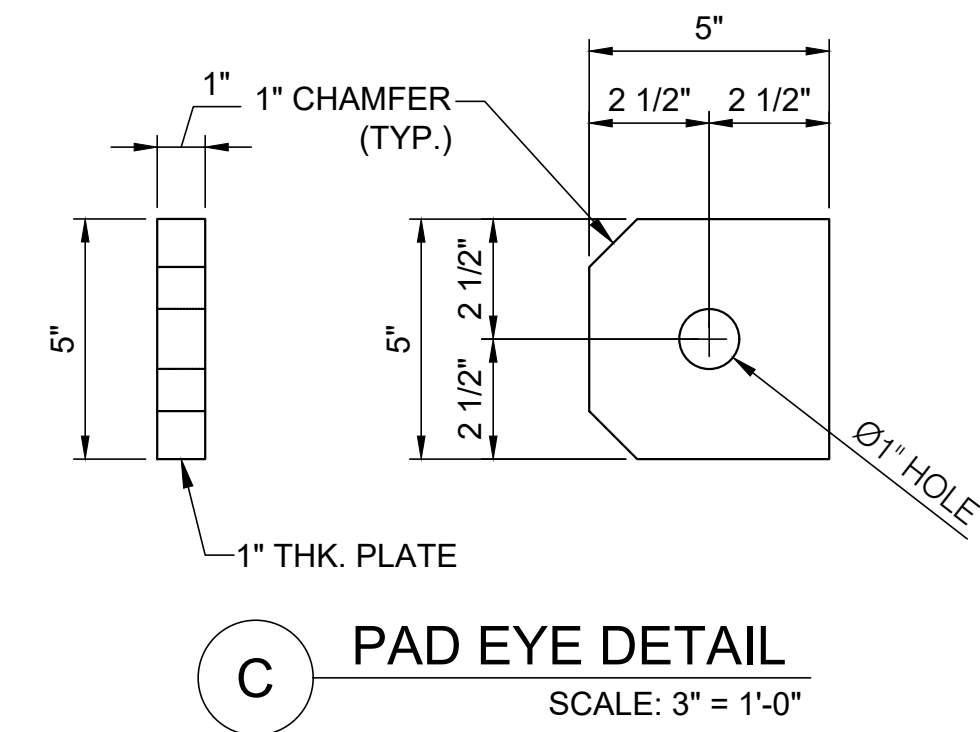
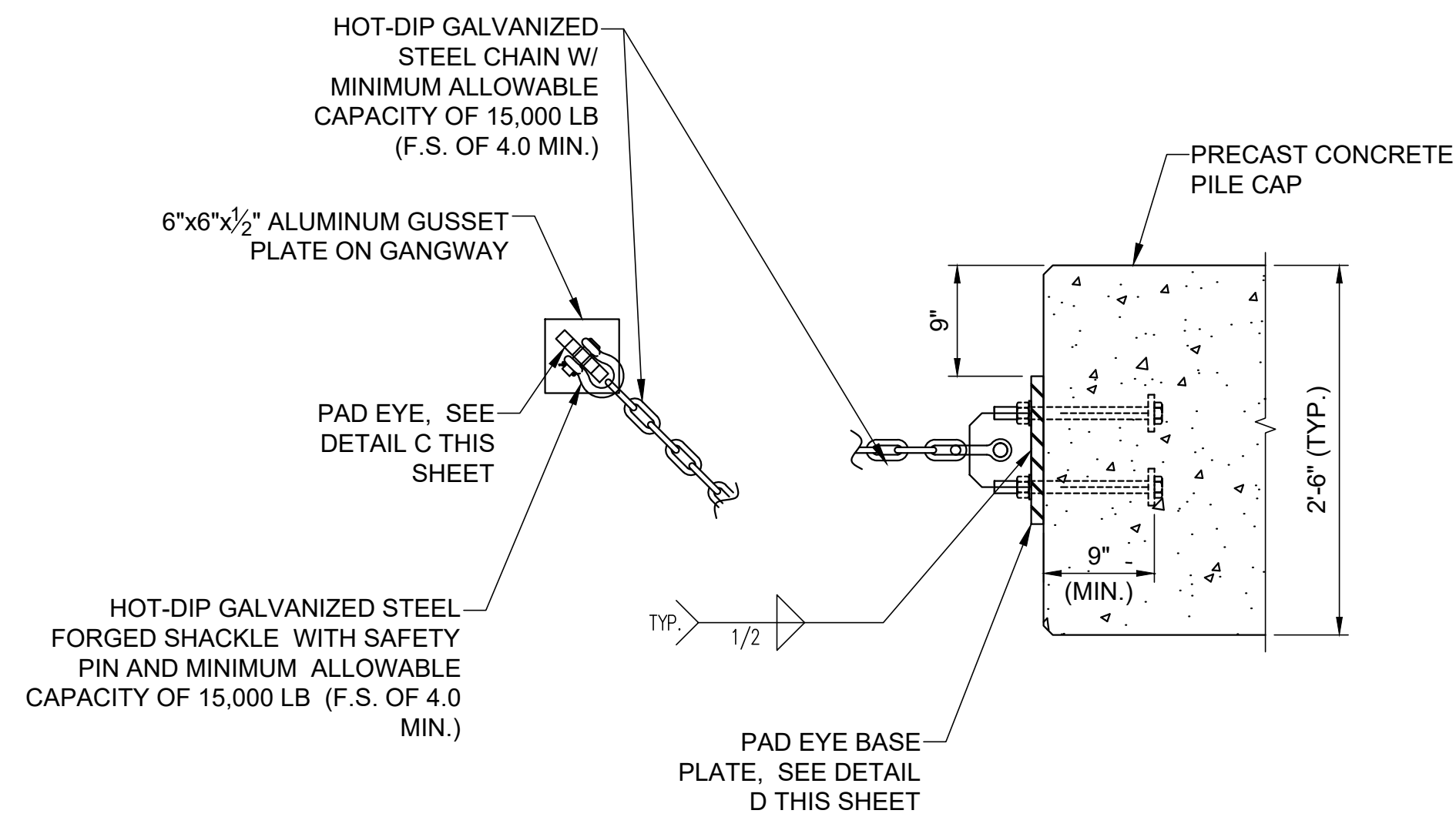
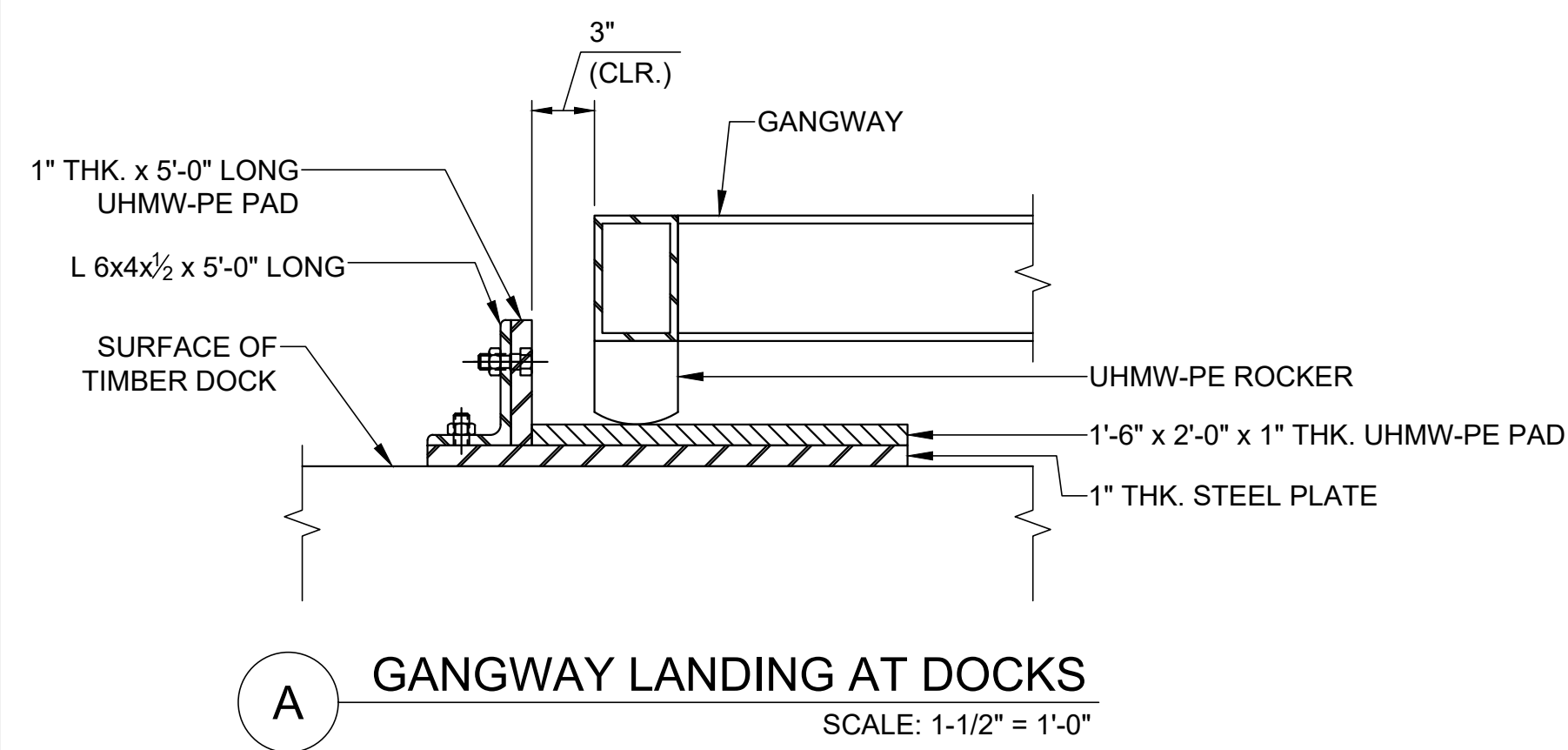
**UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER**

11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

6	8/14/2024	REVISED PERMIT SET	DJB
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1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB
NO	DATE	ISSUE/REVISION	APP

SHEET NAME
**MISCELLANEOUS
DETAILS (3 OF 5)**

SHEET NO.
S-011



ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

DRAFT

<i>Designed:</i>	DJB
<i>Drawn:</i>	JAM
<i>Checked:</i>	BJB
<i>Approved:</i>	BMM
<i>P.E. No:</i>	13033
<i>GEI Project</i>	2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

**UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER**
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

6	8/14/2024	REVISED PERMIT SET	DJB
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NO	DATE	ISSUE/REVISION	APPROVAL

SHEET NAME

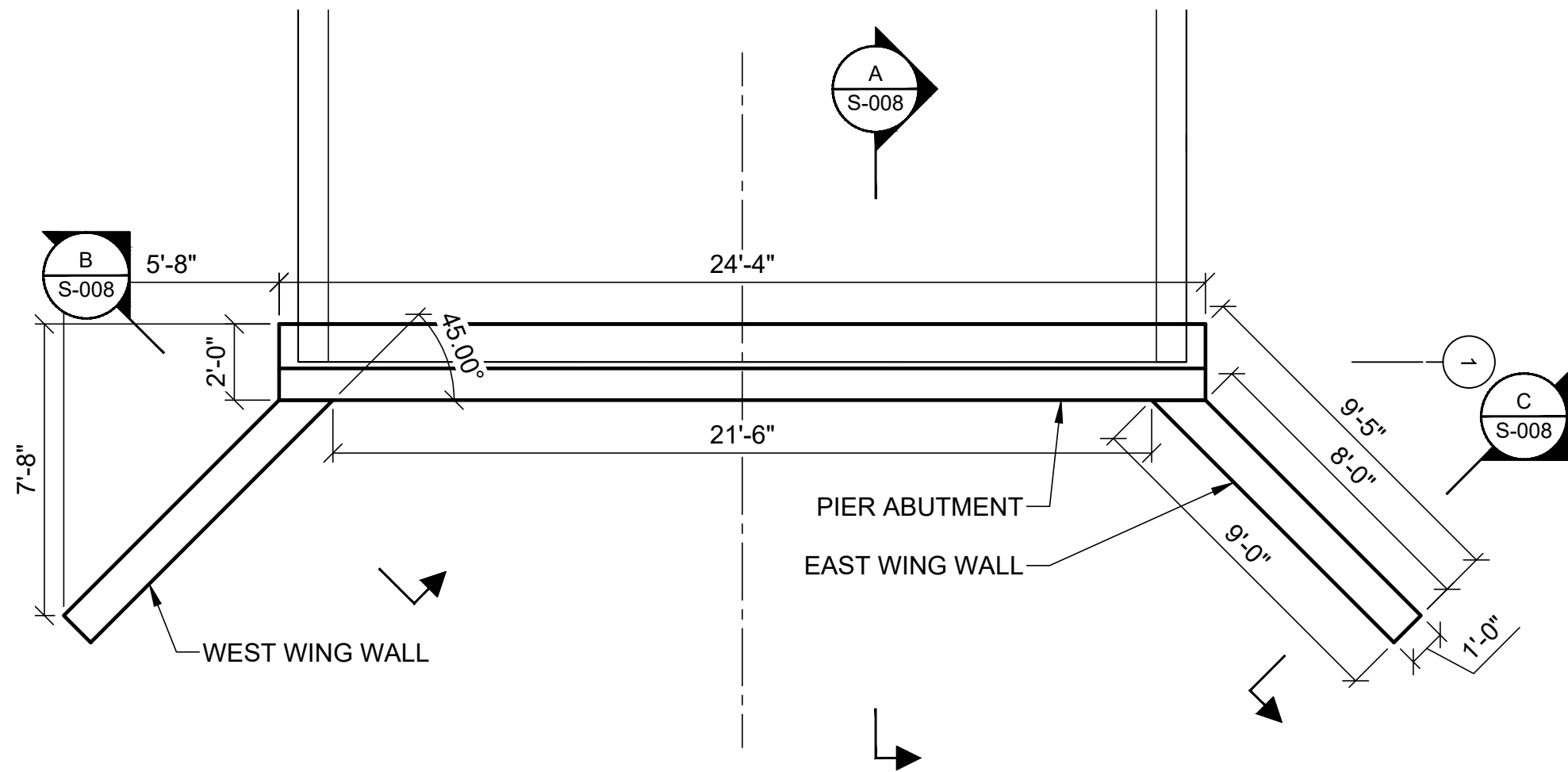
**MISCELLANEOUS
DETAILS (4 OF 5)**

SHEET NO.

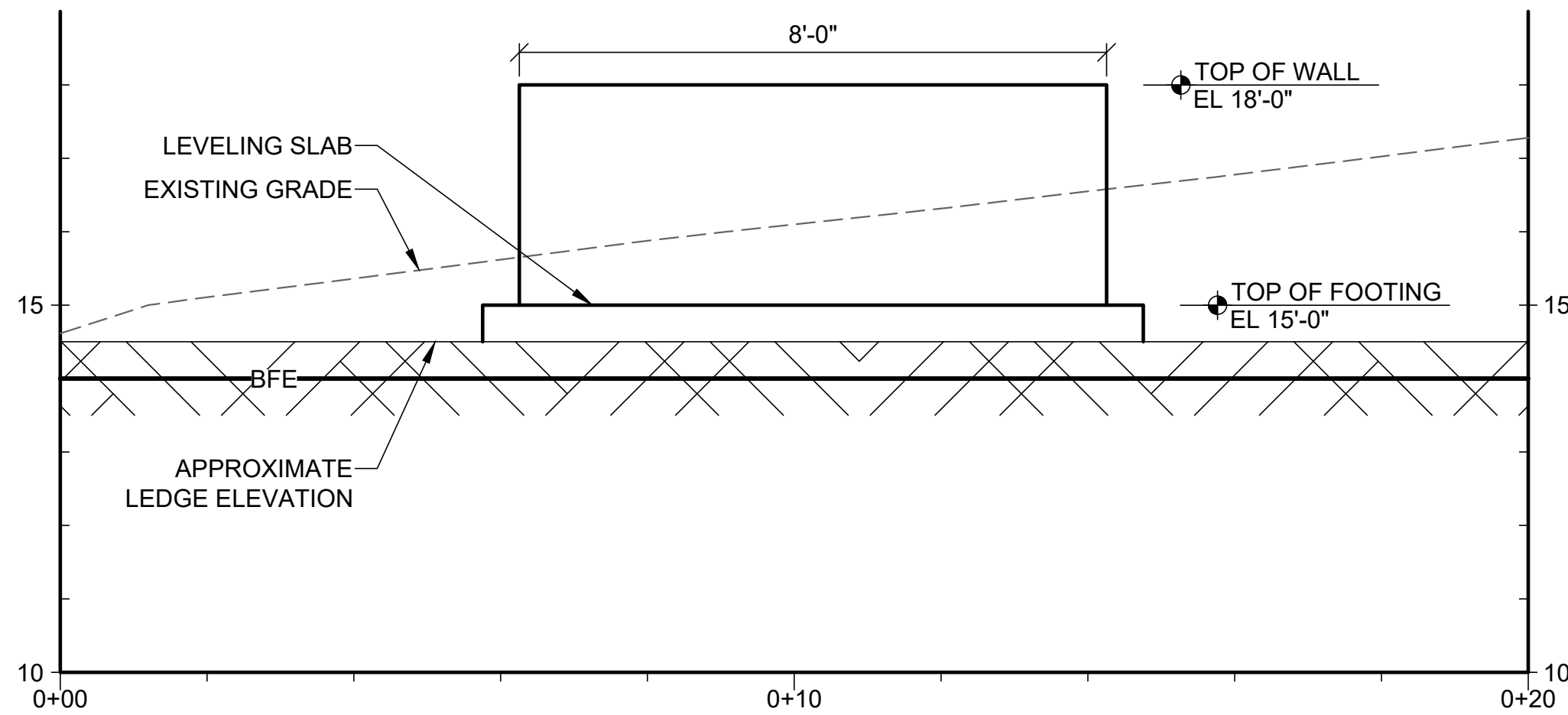
S-012

FOR PERMIT

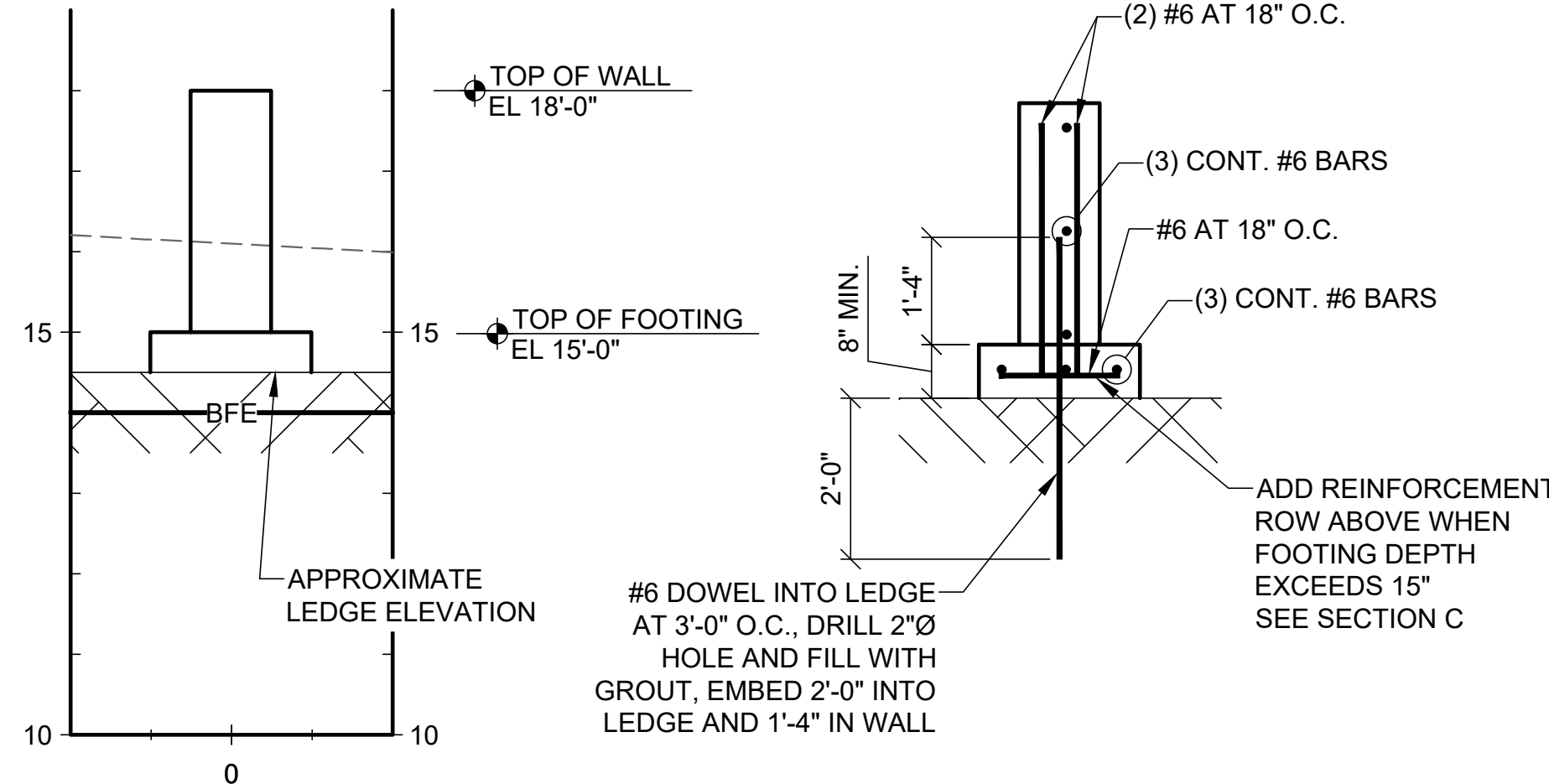
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ABUTMENT PLAN
SCALE: SCALE: 3" = 1'-0"

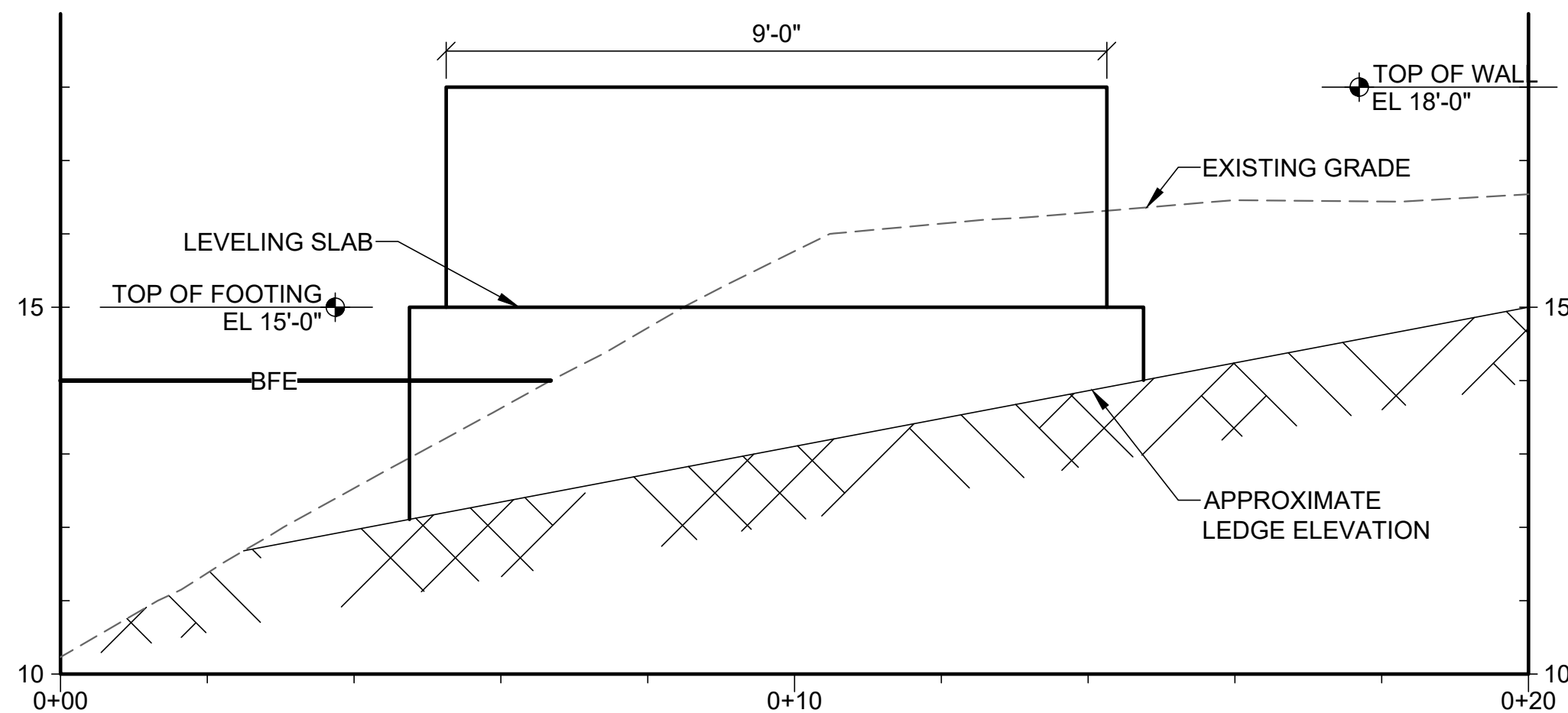


WEST WING WALL ELEVATION
SCALE: 6" = 1'-0"

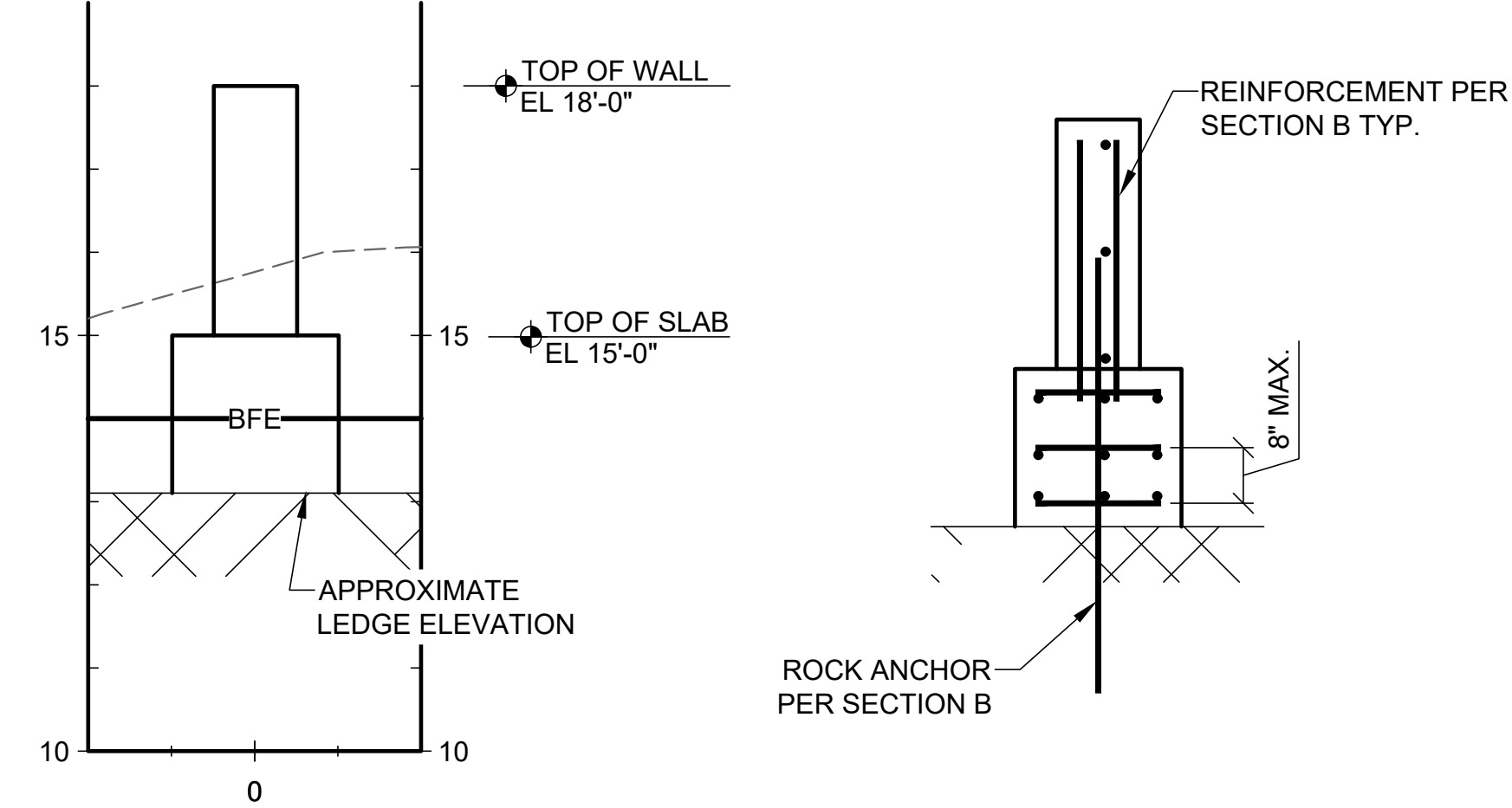


WEST WING WALL SECTION B
SCALE: 6" = 1'-0"

SECTION B
WEST WING WALL REINFORCEMENT
SCALE: 6" = 1'-0"

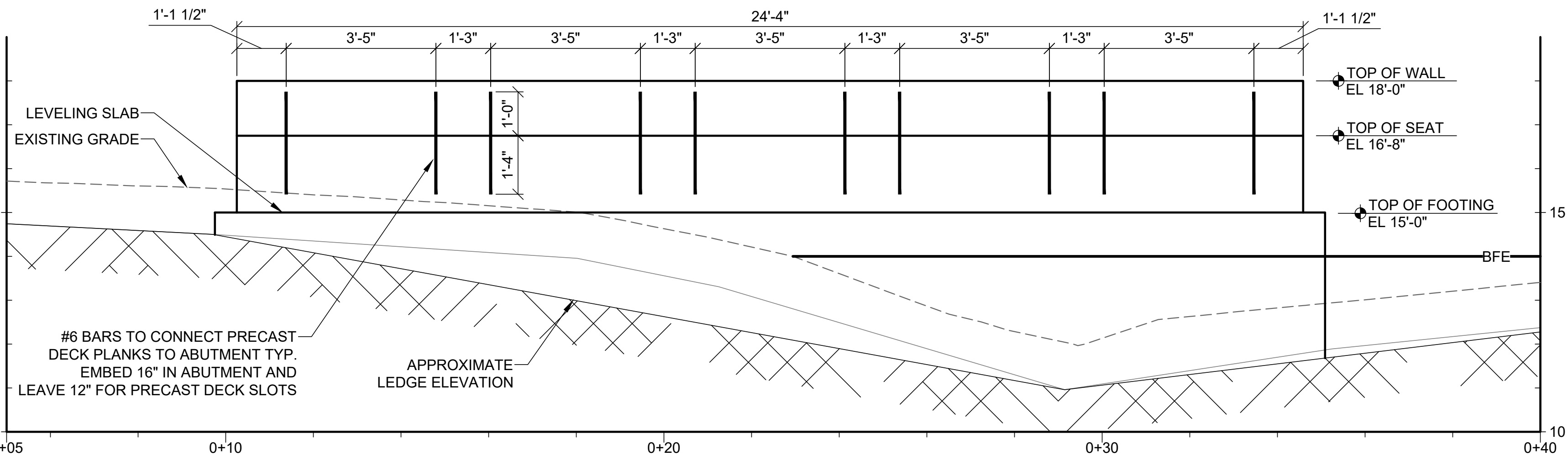


EAST WING WALL ELEVATION
SCALE: 6" = 1'-0"

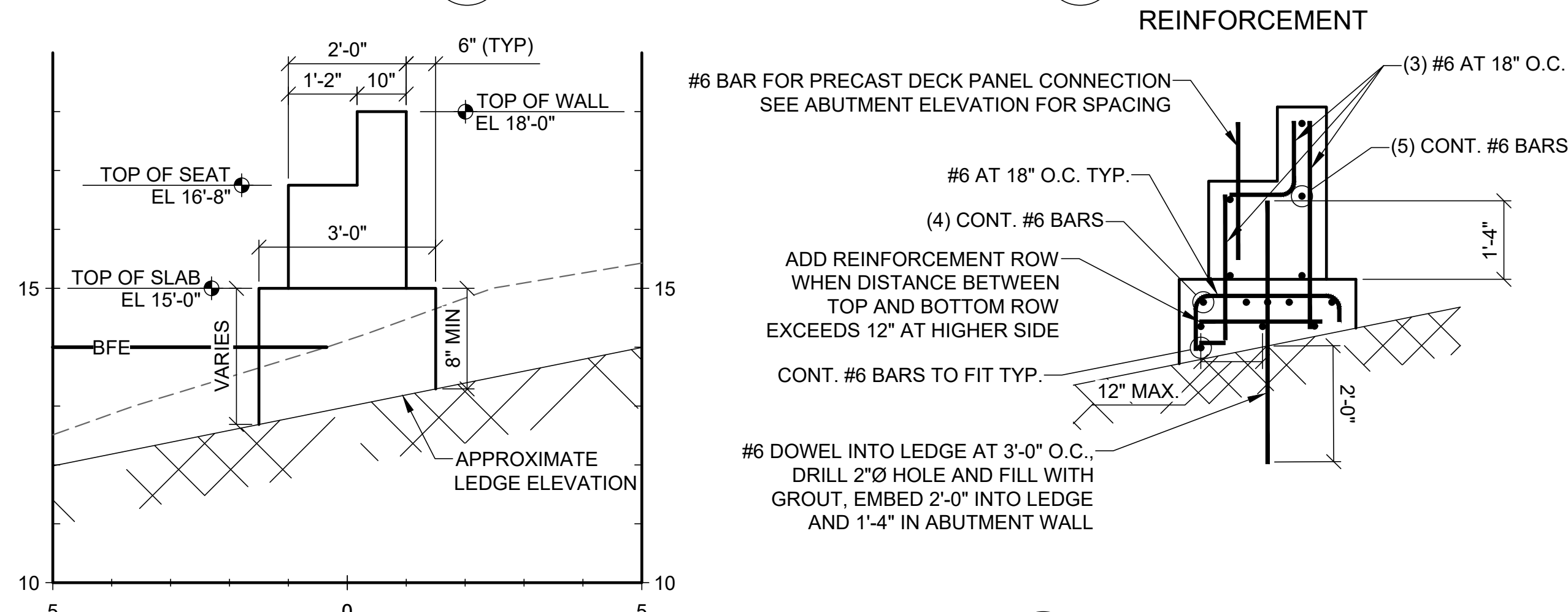


EAST WING WALL SECTION C
SCALE: 6" = 1'-0"

SECTION C
EAST WING WALL REINFORCEMENT
SCALE: 6" = 1'-0"



ABUTMENT ELEVATION A
SCALE: 3" = 1'-0"



ABUTMENT SECTION A
SCALE: 6" = 1'-0"

SECTION A
ABUTMENT REINFORCEMENT
SCALE: 6" = 1'-0"

ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.5	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

DRAFT

Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

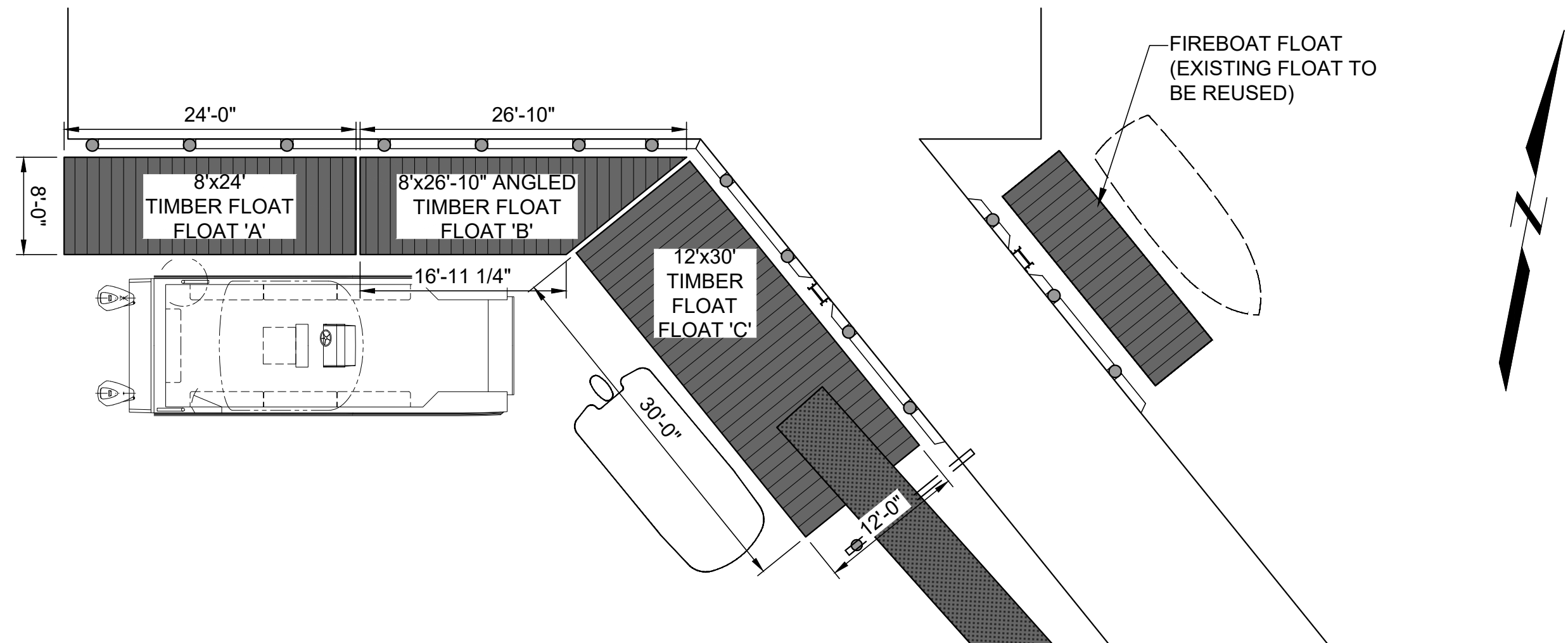
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1	12/9/2022	15% DESIGN SUB REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB

SHEET NAME
ABUTMENT DETAILS

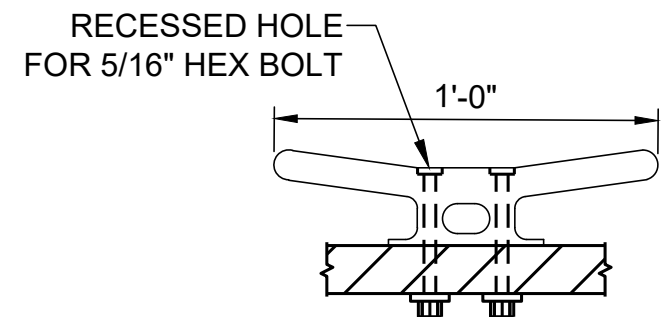
SHEET NO.
S-014

FOR PERMIT

BANNON, DAN | geiconsultants.com\data\Bos_Storage\Working\UNIVERSITY OF NEW ENGLAND\2203703 UNE Marine Science Center Pier100_CADD\Design\Sheets\2203703-F-001.dwg - 8/14/2024

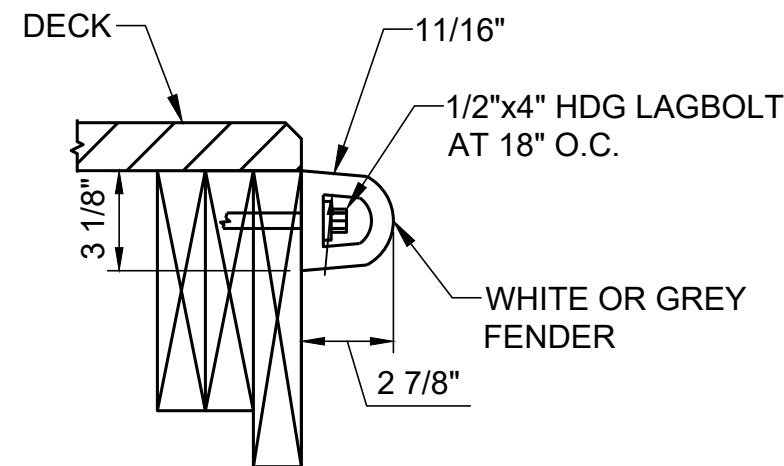


1 PLAN
FLOAT LAYOUT SCALE: 1" = 10'

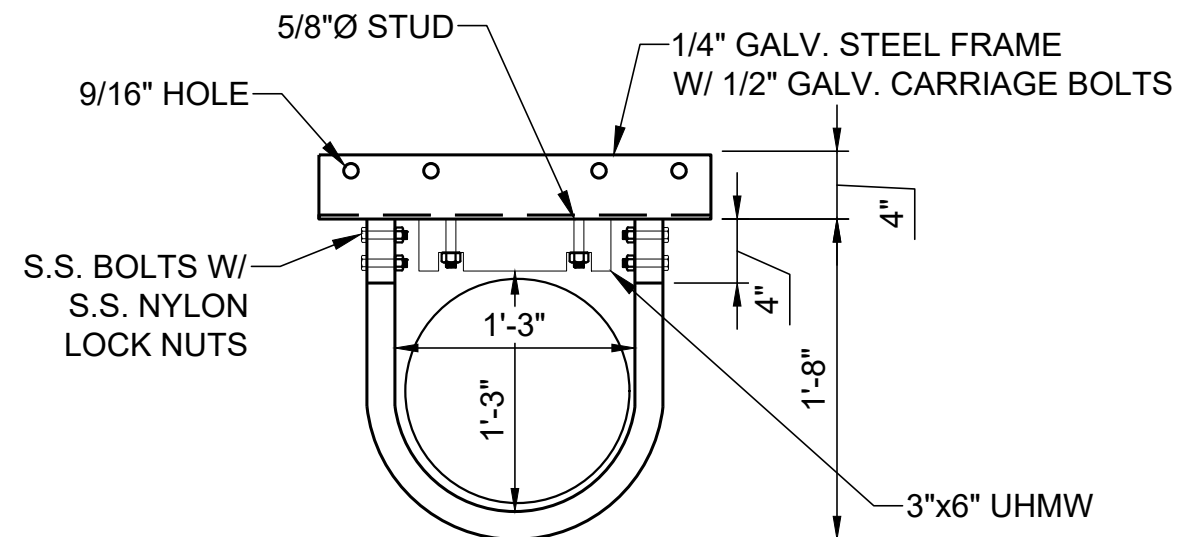


CLEAT LAYOUT:
FLOAT 'A' (4) @ EQ. SP ON SOUTH FACE
FLOAT 'B' (3) @ EQ. SP ON SOUTH FACE
FLOAT 'C' (4) @ EQ. SP ON WEST FACE

4 DETAIL
12" CLEAT SCALE: 2:1

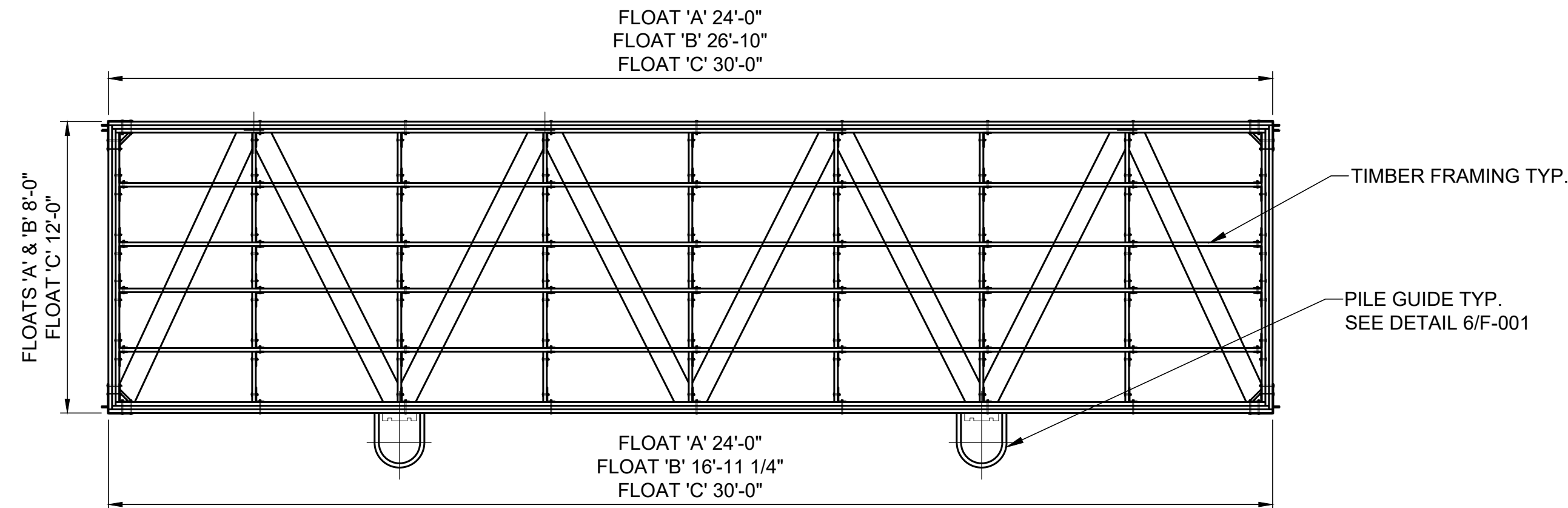


5 DETAIL
DOCK FENDER SCALE: 2:1



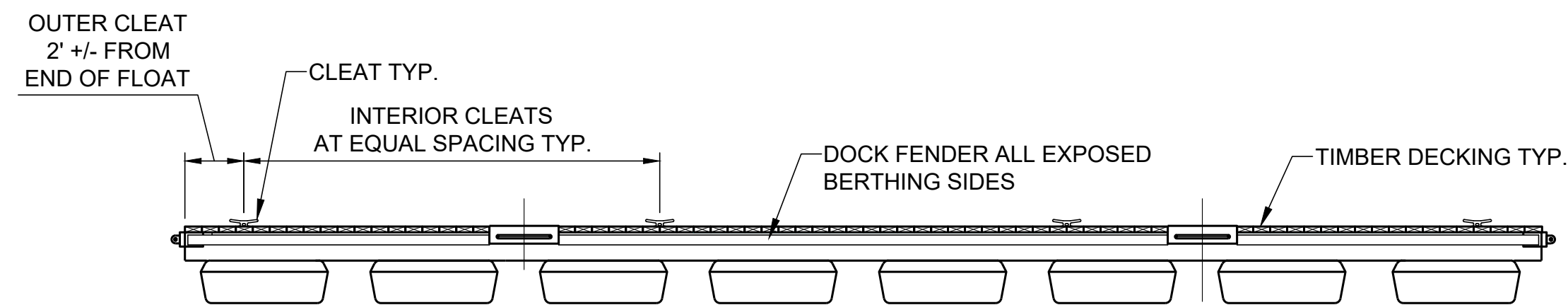
PILE GUIDE LAYOUT:
PROVIDE PILE GUIDES AT ALL TIMBER PILE LOCATIONS
FLOAT 'A' (3) REQ
FLOAT 'B' (4) REQ
FLOAT 'C' (4) REQ

6 DETAIL
PILE GUIDE SCALE: 1:1



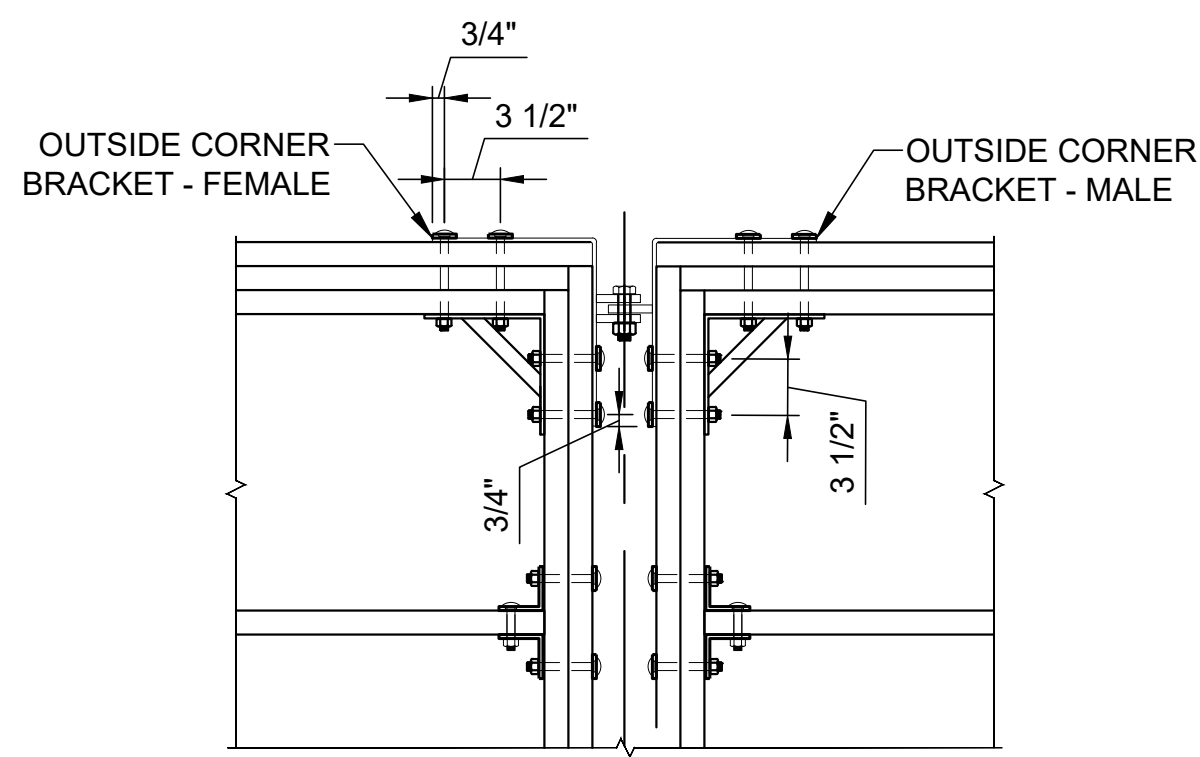
NOTES:
1. CONTRACTOR/FABRICATOR TO DETERMINE ACTUAL MEMBER SIZES PER LOADING REQUIREMENTS.

2 PLAN
TYP. FLOATING DOCK SCALE: 1" = 4'

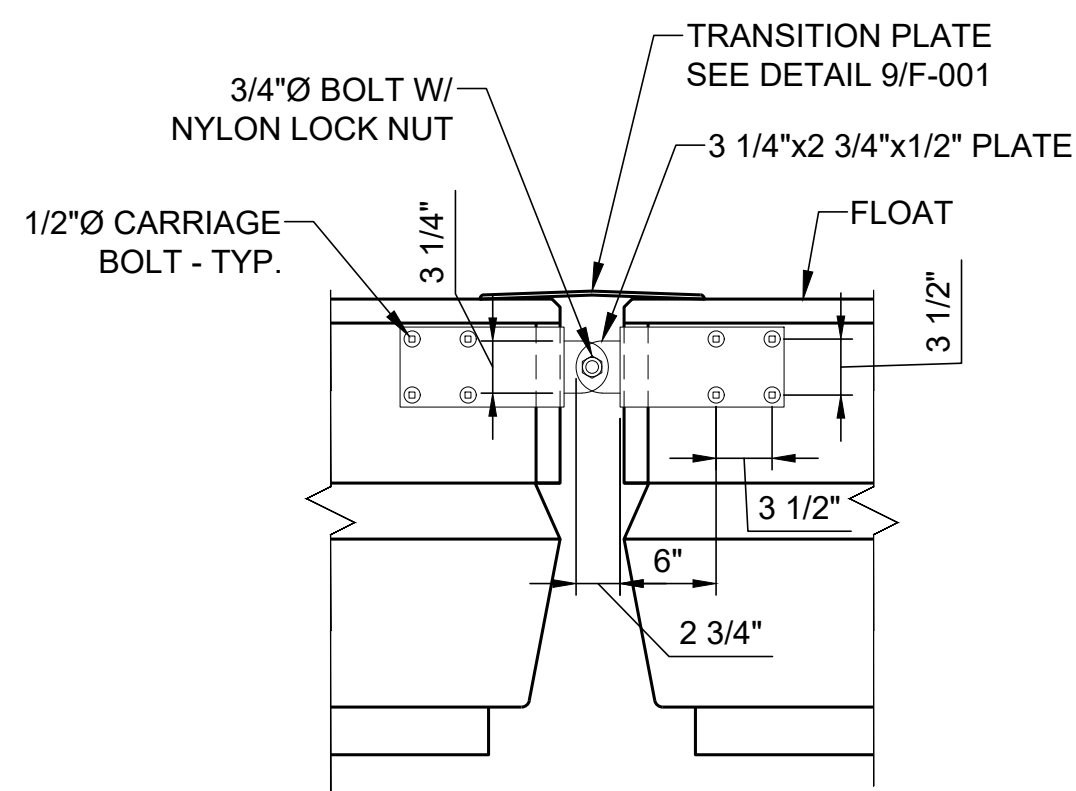


NOTES:
1. FLOTATION UNITS SHOWN ARE FOR GRAPHIC REPRESENTATION ONLY, CONTRACTOR/MANUFACTURER SHALL DETERMINE SIZE AND QUANTITY PER LOADING REQUIREMENTS.

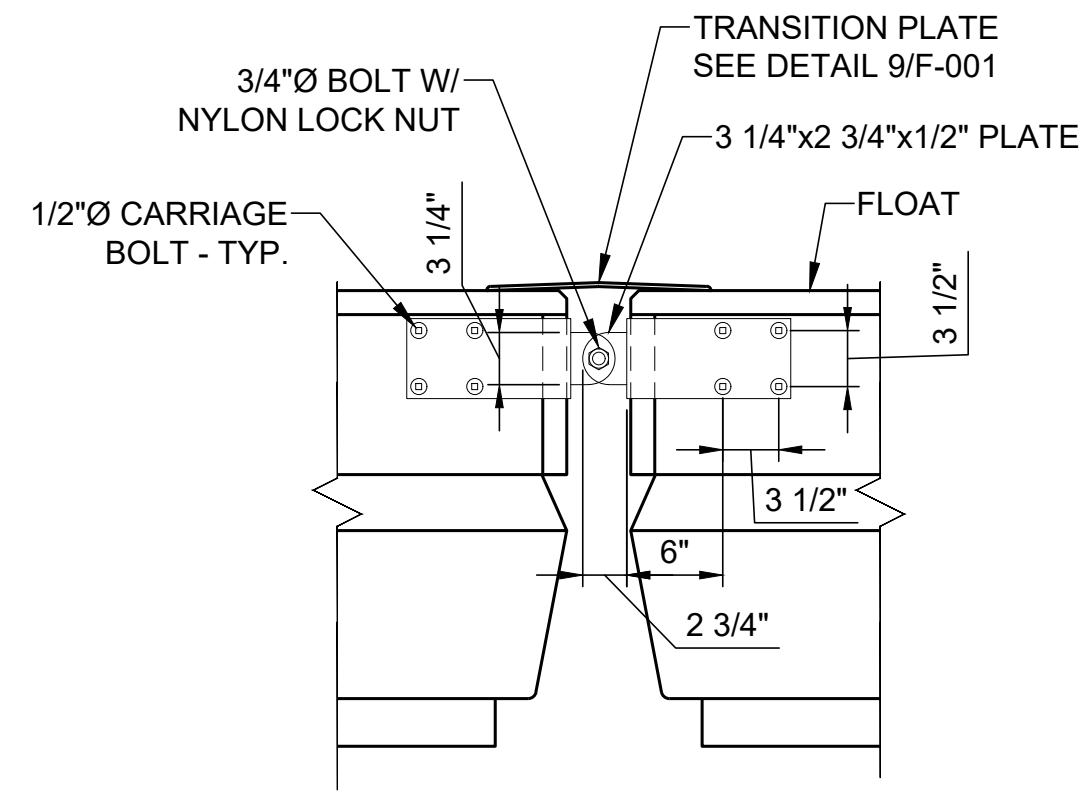
3 ELEVATION
TYP. FLOATING DOCK SCALE: 1" = 4'



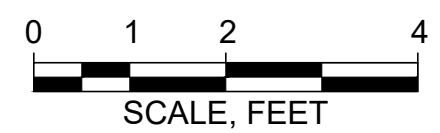
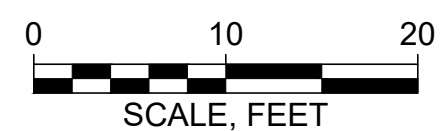
7 DETAIL
FLOAT CONNECTION SCALE: 1:1



8 SECTION
FLOAT CONNECTION SCALE: 1:1



9 DETAIL
TRANSITION PLATE SCALE: 1:1



ELEVATION	MLLW	NAVD88*
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM

Attention:
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DRAFT

Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



11 HILLS BEACH RD.
BIDDEFORD, MAINE

UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER
11 HILLS BEACH ROAD
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NO	DATE	ISSUE/REVISION	APP

SHEET NAME
FLOAT PLAN AND
DETAILS

SHEET NO.
F-001

FOR PERMIT

Work-Start Notification Form

File Number: NAE-2024-01628

State: Maine County: York

Permittee: University of New England, Andrew Phillippe

Date Verification Issued: 3/28/2025

Project Manager: Jana Jacobson

At least two weeks prior to commencing the activity authorized by this permit, sign this certification and return it to the following address:

**US ARMY CORPS OF ENGINEERS
New England District
Attn: Jana Jacobson
cenae-r-me@usace.army.mil
or
Jana.L.Jacobson@usace.army.mil
(207) 233-2117**

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers (USACE) representative. Failure to comply with any terms or conditions of this authorization may result in the USACE suspending, modifying or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.

The people (e.g. contractor) listed below will do the work, and they understand the permit's conditions and limitations.

Contractor Name/Contractor Firm: _____

Business Address: _____

Contractor Phone and Email: _____

Proposed Construction Dates: Start: _____ **Finish:** _____

Signature of Permittee

Date

U.S. Army Corps of Engineers (USACE) CERTIFICATION OF COMPLIANCE WITH DEPARTMENT OF THE ARMY PERMIT For use of this form, see Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 1899, and Section 103 of the Marine Protection, Research, and Sanctuaries Act; the proponent agency is CECW-COR.		Form Approved - OMB No. 0710-0003 Expires 2027-10-31														
The Agency Disclosure Notice (ADN)																
The Public reporting burden for this collection of information, 0710-0003, is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.																
PURPOSE: This form is used by recipients of U.S. Army Corps of Engineer Regulatory permits to certify compliance with the permit terms and conditions. Your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit, you are subject to permit suspension, modification, or revocation.																
Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the U.S. Army Corps of Engineers, New England District, Regulatory Office. The certification can be submitted by email at <u>Enter Email Name</u> @usace.army.mil or by mail at the below address: U.S. Army Corps of Engineers New England District Office Street Address: 696 Virginia Road City: Concord State: Massachusetts Zip Code: New England District Office																
COMPLETED BY THE CORPS																
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 35%;">Corps Action Number:</td> <td>NAE-2024-01628</td> </tr> <tr> <td>Permit Type: <u>General Permit</u></td> <td></td> </tr> <tr> <td>General Permit Number and Name (if applicable):</td> <td></td> </tr> <tr> <td>Name of Permittee:</td> <td>Andrew Phillippe</td> </tr> <tr> <td>Project Name:</td> <td>University of New England Marine Science Center Pier</td> </tr> <tr> <td>Project Location (physical address):</td> <td>11 Hills Beach Road</td> </tr> <tr> <td></td> <td>Biddeford, Maine</td> </tr> </table>			Corps Action Number:	NAE-2024-01628	Permit Type: <u>General Permit</u>		General Permit Number and Name (if applicable):		Name of Permittee:	Andrew Phillippe	Project Name:	University of New England Marine Science Center Pier	Project Location (physical address):	11 Hills Beach Road		Biddeford, Maine
Corps Action Number:	NAE-2024-01628															
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Name of Permittee:	Andrew Phillippe															
Project Name:	University of New England Marine Science Center Pier															
Project Location (physical address):	11 Hills Beach Road															
	Biddeford, Maine															
PERMITTEE'S CERTIFICATION																
Date Work Started: _____ Date Work Completed: _____ Enclose photographs showing the completed project (if available). I _____ hereby certify that the work authorized by the above referenced permit has been completed in accordance with all of the permit terms and conditions, and that any required compensatory mitigation has been completed in accordance with the permit conditions.																
Name	Date	Signature														



DEPARTMENT ORDER

IN THE MATTER OF

UNIVERSITY OF NEW ENGLAND	) NATURAL RESOURCES PROTECTION ACT
Biddeford, York County	) COASTAL WETLAND ALTERATION
COMMERCIAL PIER SYSTEM	) WATER QUALITY CERTIFICATION
L-18314-4P-BE-N (approval)	) FINDINGS OF FACT AND ORDER
*CORRECTED ORDER	

Pursuant to the provisions of 38 M.R.S. §§ 480-A–480-JJ, Section 401 of the Clean Water Act (33 U.S.C. § 1341), and Chapters 310, 315, and 335 of Department rules, the Department of Environmental Protection (Department) has considered the application of UNIVERSITY OF NEW ENGLAND (applicant) with the supportive data, agency review comments, public comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. PROJECT DESCRIPTION:

A. History of Project: In Department Order #L-18314-22-A-N, dated April 12, 1993, the Department granted after-the-fact approval to the University of New England for an expansion of the main campus. In Department Order #L-18314-22/31-J-M, dated December 19, 1996, the Department approved the construction of athletic facilities, a service road, a pier system, and seasonal floating dock on the Saco River. In Department Order #L-18314-22-L-A, dated May 31, 2000, the Department approved the construction of the Marine Science and Research Center and included a modification to the pier and floating dock. In Department Order #L-18314-22-AY-M/L-18314-4P-AZ-M, dated July 13, 2017, the Department approved the addition of two six-foot wide by 16-foot long seasonal floats attached seaward and perpendicular to the existing permanent floats oriented parallel to shore. A second, seasonal pier system was installed on Jordan Point in 2016. In Department Order #L-18314-22-BC-M/4P-BD-N, dated December 7, 2023, the Department approved the replacement of the second seasonal pier with a permanent pier system consisting of a six-foot wide by 63-foot long fixed pier, an existing four-foot wide by 48-foot long seasonal aluminum gangway, and an existing 10-foot long by 60-foot wide seasonal float system. The completed project resulted in 16 square feet of direct impacts and 1732 square feet of indirect impacts to the coastal wetland.

B. Summary: The applicant proposes to construct a new commercial size pier to provide all-tide access for the Marine Science Center and dock space for the City of Biddeford fireboat used for public safety. The proposed permanent pier structure will be built in three sections: section one consist of a 23-foot wide by 30-foot deck with a security gate, that connects to the second 14-foot wide by 100-foot long pier structure that seaward into the river, and the third pier section a 23-foot wide an 80-foot long pier head that will be oriented parallel to shore and a five-foot wide by 80-foot long permanent gangway perpendicular to the shore. The pier head and gangway will be flanked by four permanent floats running end to end parallel to shore; an 8-foot wide by

24-foot long float an 8-foot wide by 27-foot long float, a 12-foot wide by 30-foot long gangway landing float to provide all-tide access on the west side of the pier and a six-foot wide by 20-foot float to provide a tie-up location for the City of Biddeford's Fire Boat on the east side of the pier, both perpendicular to the shore. The pier system will be supported by 25 concrete-filled steel pipe piles and a concrete abutment which connects the pier to the proposed access road. The project as proposed will result in 84 square feet of direct impacts to the coastal wetland due to pilings, and 3,579 square feet of indirect impacts to the coastal wetland due to shading from the pier, ramp, and floats. The large size of the pier and gangway will accommodate an outdoor covered classroom, ADA-compliant access and fireboat tiedown float, and vehicular access to the pier for transportation of research and emergency equipment. Between this proposed pier and the currently existing pier system, cumulative direct impacts to the coastal wetland will total 100 square feet, and cumulative indirect impacts to the coastal wetland will total 5,311 square feet.

In addition to the proposed pier system, an upland access road connecting the existing road to the proposed pier will be constructed, including associated site grading, drainage, and stormwater management features. Work on the access road will result in approximately 475 square feet of impacts adjacent to the coastal wetland. Upland work proposed * is exempt pursuant to M.R.S 38 §488(27)(A).

The proposed project is shown on a set of plans, the first of which is titled "University of New England Marine Science Center Pier", completed by GEI Consultants, Inc. and dated April 22, 2024. The project site is located at 11 Hills Beach Road in the Town of Biddeford.

C. Current Use of the Site: The project site is located on an approximately 50-acre parcel of land that is developed with various university buildings and a permanent pier system. The parcel is identified as Lot 4 on Map 52 of the City of Biddeford's tax maps.

D. Public Interest: The Department received emails from one individual between September 4 and December 11, 2024. The interested person expressed concerns related to the Town's project review process. Additionally, the interested person stated that the applicant did not consider alternative locations for the pier that would be less impactful to the resource. After reviewing the application, the Department determined that the applicant provided a sufficient alternative analysis which is further discussed in Section 4.

The interested person submitted a public hearing request on July 1, 2024. The request was reviewed by the Department and a response sent on August 20, 2024, citing that the application did not meet the Chapter 2 criteria for the Board to hold a hearing.

2. EXISTING SCENIC, AESTHETIC, RECREATIONAL OR NAVIGATIONAL USES:

The Natural Resources Protection Act (NRPA), in 38 M.R.S. § 480-D(1), requires the applicant to demonstrate that the proposed project will not unreasonably interfere with existing scenic, aesthetic, recreational and navigational uses.

In accordance with Chapter 315, *Assessing and Mitigating Impacts to Scenic and Aesthetic Uses* (06-096 C.M.R. ch. 315, effective June 29, 2003), the applicant submitted a copy of the Department's Visual Evaluation Field Survey Checklist as Appendix A to the application along with a description of the property and the proposed project. The applicant also submitted several photographs of the proposed project site and surroundings including an aerial photograph of the project site.

The proposed project is located in the Saco River, which is a scenic resource visited by the general public, in part, for the use, observation, enjoyment and appreciation of its natural and cultural visual qualities. Given the piers on abutting properties and the existing pier on the same parcel, the proposed pier will not substantially alter the visual aesthetic of the riverbank from the river. The proposed pier system is of similar size, scale, and design as nearby pier systems, including a commercial marina with slips located directly across the river and visible from the project site.

The Department staff utilized the Department's Visual Impact Assessment Matrix in its evaluation of the proposed project and the Matrix showed an acceptable potential visual impact rating for the proposed project. Based on the information submitted in the application and the visual impact rating, the Department determined that the location and scale of the proposed activity is compatible with the existing visual quality and landscape characteristics found within the viewshed of the scenic resource in the project area.

The Department of Marine Resources (DMR) reviewed the project and stated that the proposed project should not cause any significant adverse impact to navigation or recreation based on the nature of the project and its location.

The Department finds that the proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses of the river.

3. SOIL EROSION:

The NRPA, in 38 M.R.S. § 480-D(2), requires the applicant to demonstrate that the proposed project will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

Construction will take place from the upland and by barge. Access by land will occur on existing roads, and the proposed new road will be started early in construction to provide an additional route for construction access, material deliveries, and staging. When the site is being accessed by barge, the contractor will avoid the nearby federal navigation

channel and adjacent waterfront facilities during construction activity. Any work within the resource will be conducted in compliance with the standard November 8th-April 9th in-water work window discussed in Finding 4. A certified erosion control contractor will be on site.

The Department finds that the activity will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

4. HABITAT CONSIDERATIONS:

The NRPA, in 38 M.R.S. § 480-D(3), requires the applicant to demonstrate that the proposed project will not unreasonably harm significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine or marine fisheries or other aquatic life.

The project site consists of ledge in the upper intertidal, grading to rockweed-covered rocky shore then to mixed coarse and fine sediments. Eelgrass resources were documented in the subtidal near the project area prior to 1997 but have not been mapped in recent years.

In its review, the Department of Marine Resources (DMR) stated that the project as proposed would have direct impacts to marine resources and habitat in the footprint of the pier, and recommended that *piles be driven within the in-water work window of November 8th-April 9th. The mouth of the Saco River is utilized by diadromous fish species including Atlantic Salmon, alewife, and sea run brook trout. Atlantic and short nose sturgeon may be present year round in this area*. DMR further recommended that the applicant use a vibratory hammer or a bubble screen for noise mitigation.

The applicant concurred that work will only occur during the winter work window.

According to the Department's Geographic Information System (GIS) database there are no mapped Essential or Significant Wildlife Habitats located at the site. The Maine Department of Inland Fisheries and Wildlife (MDIFW) reviewed the proposed project and stated that the project is located adjacent to but outside of Tidal Waterfowl and Wading Bird Habitat (TWWH), a designated Significant Wildlife Habitat. MDIFW stated that minimal impacts to piping plover and Blanding's turtle habitat are anticipated and provided general recommendations including minimizing vegetation removal and soil disturbance, and that time spent in the water should be minimized to the greatest extent practicable.

The applicant responded to these comments, and agreed to minimize vegetation removal, soil disturbance, and time spent in the water.

The Department finds that the activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic

or adjacent upland habitat, travel corridor, freshwater, estuarine or marine fisheries or other aquatic life provided *the in-water work is only conducted between November 8th-April 9th of any given year.

5. WATER QUALITY CONSIDERATIONS:

The applicant proposes to use lumber treated with chromated copper arsenate (CCA) to construct the pier. To protect water quality, all CCA-treated lumber must be cured on dry land in a manner that exposes all surfaces to the air for 21 days prior to the start of construction.

Provided that CCA-treated lumber is cured as described above, the Department finds that the proposed project will not violate any state water quality law, including those governing the classification of the State's waters.

6. WETLANDS AND WATERBODIES PROTECTION RULES:

The proposed project will result in 84 square feet of direct impacts and 4,784 square feet of indirect impacts to the coastal wetland from the new pier system. The overall cumulative impacts from the existing pier and proposed project will be 100 square feet of direct impacts to the coastal resource and 5,311 square feet of indirect impacts to the coastal resource. Coastal wetlands are wetlands of special significance.

The *Wetlands and Waterbodies Protection Rules*, 06-096 C.M.R. ch. 310 (last amended November 11, 2018), interpret and elaborate on the Natural Resources Protection Act (NRPA) criteria for obtaining a permit. The rules guide the Department in its determination of whether a project's impacts would be unreasonable. A proposed project would generally be found to be unreasonable if it would cause a loss in wetland area, functions and values and there is a practicable alternative to the project that would be less damaging to the environment. Each application for a NRPA permit that involves a coastal wetland alteration must provide an analysis of alternatives in order to demonstrate that a practicable alternative does not exist.

A. Avoidance. An applicant must submit an analysis of whether there is a practicable alternative to the project that would be less damaging to the environment and this analysis is considered by the Department in its assessment of the reasonableness of any impacts. Additionally, for activities proposed in, on, or over wetlands of special significance the activity must be among the types listed in Chapter 310, § 5(A) or a practicable alternative less damaging to the environment is considered to exist and the impact is unreasonable. A pier is a water dependent use and its proposed construction is among the activities specifically provided for in Chapter 310, § 5(A)(1)(c). Additionally, any project related to health and safety is among the activities specifically provided for in Chapter 310, § 5(A)(1)(a).

The applicant submitted an alternatives analysis for the proposed project completed by Site Design Associates and dated June 17, 2024, with a last revision date of December

10, 2024. The purpose of the proposed project is to provide all-tide, year-round access to the resource for research and education operations associated with the Arthur P. Girard Marine Science Center (GMSC) at the University of New England. A secondary project purpose is to provide docking space for the City of Biddeford's fireboat for emergency response and safety. The applicant plans to launch a variety of research vessels from the proposed pier, including a 31-foot-long research vessel and potentially larger ones in the future. The City's fireboat is 19 feet long. The applicant considered not building the new pier system and instead utilizing the existing pier on the parcel; however, this existing pier is seasonal, including the floats that are hauled out of the water each winter limiting year-round access that is required to support the Universities' marine science programs. Additionally, the existing pier does not provide a docking area for the City of Biddeford's fireboat. Therefore, this alternative was rejected. The applicant considered a seasonal gangway and 1 floats; however, research and access to the water is required for emergency response from the City and for year-round, all-tide access to the resource for educational purposes. Finally, the applicant considered using public facilities including marinas, boat launches and moorings to moor and launch research vessels; however, access to the water can be time-sensitive due to course schedules or the need to access the water during certain tide cycles. With shuttling of staff, students, and equipment, and the lack of reliable parking, this alternative was rejected. The private marinas in the area have long waitlists for private slips and do not have the capacity to handle the frequent use and group size that the University requires to meet their education and research mission

B. Minimal Alteration. In support of an application and to address the analysis of the reasonableness of any impacts of a proposed project, an applicant must demonstrate that the amount of coastal wetland to be altered will be kept to the minimum amount necessary for meeting the overall purpose of the project. During the planning phase of this project, the applicant selected the pier location with the shortest length necessary to reach adequate water depths for all -tide access. In addition, the dimensions of the pier head were reduced from 28feet wide by 100feet long to the currently proposed 23 feet wide by 80-feet long to reduce impacts to the coastal resource.

C. Compensation. In accordance with Chapter 310, § 5(C)(6)(b), compensation may be required to achieve the goal of no net loss of coastal wetland functions and values. This project will not result in over 500 square feet of fill in the resource, which is the threshold over which compensation is generally required. Further, the proposed project will not have an adverse impact on marine resources or wildlife habitat as determined by DMR and MDIFW. For these reasons, the Department determined that compensation is not required.

The Department finds that the applicant has avoided and minimized coastal wetland impacts to the greatest extent practicable, and that the proposed project represents the least environmentally damaging alternative that meets the overall purpose of the project.

7. OTHER CONSIDERATIONS:

The Department finds, based on the design, proposed construction methods, and location, the proposed project will not inhibit the natural transfer of soil from the terrestrial to the marine environment, will not interfere with the natural flow of any surface or subsurface waters, and will not cause or increase flooding. The proposed project is not located in a coastal sand dune system, is not a crossing of an outstanding river segment, and does not involve dredge spoils disposal or the transport of dredge spoils by water.

BASED on the above findings of fact, and subject to the conditions listed below, the Department makes the following conclusions pursuant to 38 M.R.S. §§ 480-A–480-JJ and Section 401 of the Clean Water Act (33 U.S.C. § 1341):

- A. The proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational, or navigational uses.
- B. The proposed activity will not cause unreasonable erosion of soil or sediment.
- C. The proposed activity will not unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.
- D. The proposed activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine, or marine fisheries or other aquatic life provided *in-water winter work windows are utilized as described in Finding 3.
- E. The proposed activity will not unreasonably interfere with the natural flow of any surface or subsurface waters.
- F. The proposed activity will not violate any state water quality law including those governing the classifications of the State's waters provided that CCA-treated lumber is cured as described in Finding 5.
- G. The proposed activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties.
- H. The proposed activity is not on or adjacent to a sand dune.
- I. The proposed activity is not on an outstanding river segment as noted in 38 M.R.S. § 480-P.

THEREFORE, the Department APPROVES the above noted application of UNIVERSITY OF NEW ENGLAND to construct a research pier as described in Finding 1, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations:

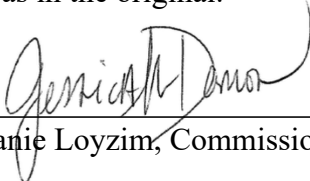
1. Standard Conditions of Approval, a copy attached.
2. The applicant shall take all necessary measures to ensure that their activities or those of their agents do not result in measurable erosion of soil on the site during the construction of the project covered by this approval.
3. Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.
4. *All in-water construction shall only occur from November 8th-April 9th of any given year.
5. All CCA-treated lumber shall be cured on dry land in a manner that exposes all surfaces to the air for 21 days prior to the start of construction.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED IN AUGUSTA, MAINE, THIS 2ND DAY OF MAY, 2025.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

CORRECTING THE ORDER DATED APRIL 11, 2025. The effective date and expiration date remain the same as in the original.

BY: 
For: Melanie Loyzim, Commissioner

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

PCS/L18314BEN/ATS#92653



Natural Resources Protection Act (NRPA) Standard Conditions

THE FOLLOWING STANDARD CONDITIONS SHALL APPLY TO ALL PERMITS GRANTED UNDER THE NATURAL RESOURCES PROTECTION ACT, 38 M.R.S. §§ 480-A ET SEQ., UNLESS OTHERWISE SPECIFICALLY STATED IN THE PERMIT.

- A. Approval of Variations From Plans. The granting of this permit is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. Any variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.
- B. Compliance With All Applicable Laws. The applicant shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation, as appropriate.
- C. Erosion Control. The applicant shall take all necessary measures to ensure that his activities or those of his agents do not result in measurable erosion of soils on the site during the construction and operation of the project covered by this Approval.
- D. Compliance With Conditions. Should the project be found, at any time, not to be in compliance with any of the Conditions of this Approval, or should the applicant construct or operate this development in any way other the specified in the Application or Supporting Documents, as modified by the Conditions of this Approval, then the terms of this Approval shall be considered to have been violated.
- E. Time frame for approvals. If construction or operation of the activity is not begun within four years, this permit shall lapse and the applicant shall reapply to the Board for a new permit. The applicant may not begin construction or operation of the activity until a new permit is granted. Reapplications for permits may include information submitted in the initial application by reference. This approval, if construction is begun within the four-year time frame, is valid for seven years. If construction is not completed within the seven-year time frame, the applicant must reapply for, and receive, approval prior to continuing construction.
- F. No Construction Equipment Below High Water. No construction equipment used in the undertaking of an approved activity is allowed below the mean high water line unless otherwise specified by this permit.
- G. Permit Included In Contract Bids. A copy of this permit must be included in or attached to all contract bid specifications for the approved activity.
- H. Permit Shown To Contractor. Work done by a contractor pursuant to this permit shall not begin before the contractor has been shown by the applicant a copy of this permit.

Revised September 2016

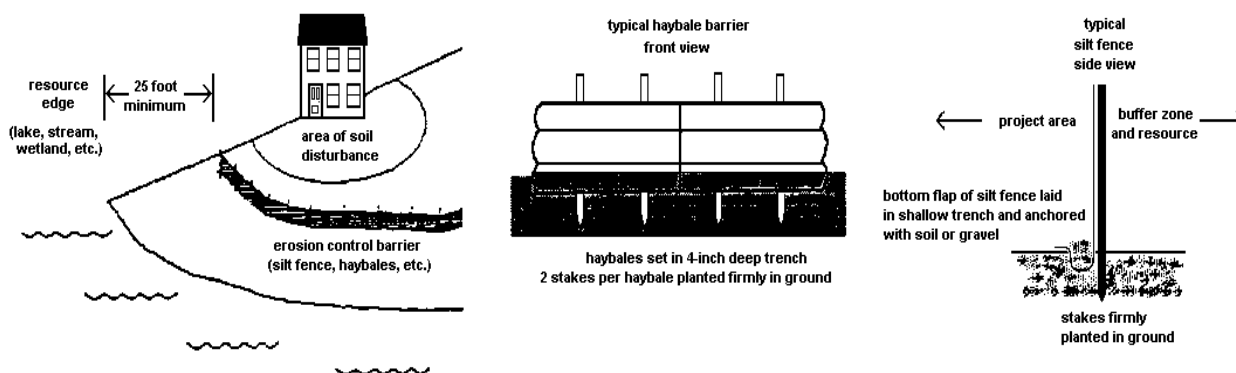


STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
 17 STATE HOUSE STATION, AUGUSTA, MAINE 04333

Erosion Control for Homeowners

Before Construction

1. If you have hired a contractor, make sure you discuss your permit with them. Talk about what measures they plan to take to control erosion. Everybody involved should understand what the resource is, and where it is located. Most people can identify the edge of a lake or river. However, the edges of wetlands are often not so obvious. Your contractor may be the person actually pushing dirt around, but you are both responsible for complying with the permit.
2. Call around to find where erosion control materials are available. Chances are your contractor has these materials already on hand. You probably will need silt fence, hay bales, wooden stakes, grass seed (or conservation mix), and perhaps filter fabric. Places to check for these items include farm & feed supply stores, garden & lawn suppliers, and landscaping companies. It is not always easy to find hay or straw during late winter and early spring. It also may be more expensive during those times of year. Plan ahead – buy a supply early and keep it under a tarp.
3. Before any soil is disturbed, make sure an erosion control barrier has been installed. The barrier can be either a silt fence, a row of staked hay bales, or both. Use the drawings below as a guide for correct installation and placement. The barrier should be placed as close as possible to the soil-disturbance activity.
4. If a contractor is installing the erosion control barrier, double check it as a precaution. Erosion control barriers should be installed “on the contour,” meaning at the same level or elevation across the land slope, whenever possible. This keeps stormwater from flowing to the lowest point along the barrier where it can build up and overflow or destroy the barrier.



During Construction

1. Use lots of hay or straw mulch on disturbed soil. The idea behind mulch is to prevent rain from striking the soil directly. It is the force of raindrops hitting the bare ground that makes the soil begin to move downslope with the runoff water, and cause erosion. More than 90% of erosion is prevented by keeping the soil covered.
2. Inspect your erosion control barriers frequently. This is especially important after a rainfall. If there is muddy water leaving the project site, then your erosion controls are not working as intended. You or your contractor then need to figure out what can be done to prevent more soil from getting past the barrier.
3. Keep your erosion control barrier up and maintained until you get a good and healthy growth of grass and the area is permanently stabilized.

After Construction

1. After your project is finished, seed the area. Note that all ground covers are not equal. For example, a mix of creeping red fescue and Kentucky bluegrass is a good choice for lawns and other high-maintenance areas. But this same seed mix is a poor selection for stabilizing a road shoulder or a cut bank that you don't intend to mow. Your contractor may have experience with different seed mixes, or you might contact a seed supplier for advice.
2. Do not spread grass seed after September 15. There is the likelihood that germinating seedlings could be killed by a frost before they have a chance to become established. Instead, mulch the area with a thick layer of hay or straw. In the spring, rake off the mulch and then seed the area. Don't forget to mulch again to hold in moisture and prevent the seed from washing away or being eaten by birds or other animals.
3. Keep your erosion control barrier up and maintained until you get a good and healthy growth of grass and the area is permanently stabilized.

Why Control Erosion?**To Protect Water Quality**

When soil erodes into protected resources such as streams, rivers, wetlands, and lakes, it has many bad effects. Eroding soil particles carry phosphorus to the water. An excess of phosphorus can lead to explosions of algae growth in lakes and ponds called blooms. The water will look green and can have green slime in it. If you are near a lake or pond, this is not pleasant for swimming, and when the soil settles out on the bottom, it smothers fish eggs and small animals eaten by fish. There are many other effects as well, which are all bad.

To Protect the Soil

It has taken thousands of years for our soil to develop. Its usefulness is evident all around us, from sustaining forests and growing our garden vegetables, to even treating our septic wastewater! We cannot afford to waste this valuable resource.

To Save Money (\$\$)

Replacing topsoil or gravel washed off your property can be expensive. You end up paying twice because State and local governments wind up spending your tax dollars to dig out ditches and storm drains that have become choked with sediment from soil erosion.



DEP INFORMATION SHEET

Appeals to the Board of Environmental Protection

Date: November 2024 Contact: Clerk.BEP@maine.gov or (207) 314-1458

SUMMARY

This document provides information regarding a person's rights and obligations in filing an administrative or judicial appeal of: (1) a final license decision made by the Commissioner of the Department of Environmental Protection ("DEP"); or (2) an insurance claim-related decision ("Clean-up and Response Fund decision") made by the Commissioner or the Office of State Fire Marshal pursuant to [38 M.R.S. § 568-A](#).

Except as explained below, there are two methods available to an aggrieved person seeking to appeal a license decision made by the Commissioner or a Clean-up and Response Fund decision: (1) an administrative appeal before the Board of Environmental Protection ("Board"); or (2) a judicial appeal before Maine's Superior Court. An aggrieved person seeking review of a license decision or Clean-up and Response Fund decision made by the Board may seek judicial review in Maine's Superior Court.

An appeal of a license decision made by the DEP Commissioner or the Board regarding an application for an expedited wind energy development ([35-A M.R.S. § 3451\(4\)](#)), a general permit for an offshore wind energy demonstration project ([38 M.R.S. § 480-HH\(1\)](#)), or a general permit for a tidal energy demonstration project ([38 M.R.S. § 636-A](#)) must be taken to the Supreme Judicial Court sitting as the Law Court.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

A person filing an appeal with the Board should review the applicable rules and statutes, including the DEP's Chapter 2 rule, [Processing of Applications and Other Administrative Matters \(06-096 C.M.R. ch. 2\)](#); Organization and Powers, [38 M.R.S. §§ 341-D\(4\)](#) and [346](#); and the Maine Administrative Procedure Act, 5 M.R.S. § [11001](#).

DEADLINE TO SUBMIT AN APPEAL TO THE BOARD

Within 30 calendar days of the date of: (1) a final license decision of the Commissioner; or (2) a Clean-up and Response Fund decision, an aggrieved person may appeal to the Board for review of that decision. "Aggrieved person" means any person whom the Board determines may suffer a particularized injury as a result of a Commissioner's license decision or a Clean-up and Response Fund decision. A complete appeal must be received by the Board no later than 5:00 p.m. on the 30th calendar day of the decision being appealed. With limited exception, untimely appeals will be dismissed.

HOW TO SUBMIT AN APPEAL TO THE BOARD

An appeal to the Board may be submitted via postal mail or electronic mail (e-mail) and must contain all signatures and required appeal contents. An electronic filing must contain the scanned original signature of the appellant(s). The appeal documents must be sent to the following address.

Chair, Board of Environmental Protection
c/o Board Clerk
17 State House Station
Augusta, ME 04333-0017
Clerk.BEP@maine.gov

The DEP may also request the submittal of the original signed paper appeal documents when the appeal is filed electronically. The risk of material not being received in a timely manner is on the sender, regardless of the method used.

At the time an appeal is filed with the Board, the appellant must send a copy of the appeal to: (1) the Commissioner of the DEP (Maine Department of Environmental Protection, 17 State House Station, Augusta, Maine 04333-0017); (2) the licensee, if the appellant is not the licensee; and (3) if a hearing was held on the application, any intervenors in that hearing proceeding. For appeals of Clean-up and Response Fund decisions made by the State Fire Marshal, the appellant must also send a copy of the appeal to the State Fire Marshal. **Please contact the Board Clerk at clerk.bep@maine.gov or DEP staff at 207-287-7688 with questions or for contact information regarding a specific license or Clean-up and Response Fund decision.**

REQUIRED APPEAL CONTENTS

A written appeal must contain the information specified in Chapter 2, section 23(B) or section 24(B), as applicable, at the time the appeal is submitted. **Please carefully review these sections of Chapter 2**, which is available online at <https://www.maine.gov/sos/cec/rules/06/chaps06.htm>, or contact the Board Clerk to obtain a copy of the rule. Failure to comply with the content of appeal requirements may result in the appeal being dismissed pursuant to Chapter 2, section 23(C) or section 24(C).

OTHER CONSIDERATIONS IN APPEALING A DECISION TO THE BOARD

1. *Be familiar with the administrative record.* Generally, the record on which the Board decides an appeal is limited to the record prepared by the agency in its review of the application, any supplemental evidence admitted to the record by the Board Chair and, if a hearing is held on the appeal, additional evidence admitted during the hearing. A person who seeks to appeal a decision to the Board is encouraged to contact the DEP (or State Fire Marshal for Clean-up and Response Fund decisions made by that agency) to inspect the record before filing an appeal.
2. *Be familiar with the applicable rules and laws.* An appellant is required to identify the licensing criterion or standard the appellant believes was not satisfied in issuing the decision, the bases of the objections or challenges, and the remedy sought. Prior to filing an appeal, review the decision being appealed to identify the rules and laws that are applicable to the decision. An appellant may contact the DEP or Board staff with any questions regarding the applicable rules and laws or the appeal procedure generally.
3. *The filing of an appeal does not operate as a stay to any decision.* If a license has been granted and it has been appealed, the license normally remains in effect pending the processing of the appeal. Unless a separate stay of the decision is requested and granted (*see* Chapter 2, section 23(M)), the licensee may proceed with an approved project pending the outcome of the appeal. Any activity initiated in accordance with the approved license during the pendency of the appeal comes with the risk of not knowing the outcome of the appeal, including the possibility that the decision may be reversed or modified by the Board.
4. *Alternative dispute resolution.* If the appeal participants agree to use mediation or another form of alternative dispute resolution (“ADR”) to resolve the appeal and so notify the Board, the Board will not hear the matter until the conclusion of that effort, provided the participants engaged in the alternative dispute resolution demonstrate satisfactory progress toward resolving the issues. *See* Chapter 2, section 23(H) or contact the Board Executive Analyst (contact information below) for more information on the ADR provision.

WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD

The Board will acknowledge receipt of each appeal and develop a service list of appeal participants and any interested persons for use in the appeal proceeding. Electronic mail (e-mail) is the preferred method of communication during an appeal proceeding; however, the Board reserves the right to require paper copies of all filings. Once the Board Chair rules on the admissibility of all proposed supplemental evidence, the licensee (if the licensee is not the appellant) may respond to the merits of the appeal. Instructions specific to each appeal will be provided in correspondence from the Board Executive Analyst or Board Chair.

Generally, once all filings in an appeal proceeding are complete, the DEP staff will assemble a packet of materials for the Board (Board packet), including a staff recommendation in the form of a proposed Board Order. Once available, appeal participants will receive a copy of the Board packet and an agenda with the meeting location and start time. Once finalized, the meeting agenda will be posted on the Board's webpage <https://www.maine.gov/dep/bep/index.html>. Appeals will be considered based on the administrative record on appeal and oral argument at a regular meeting of the Board. *See* Chapter 2, Section 23(I). The Board may affirm all or part of the decision under appeal; affirm all or part of the decision under appeal with modifications, or new or additional conditions; order a hearing to be held as expeditiously as possible; reverse the decision under appeal; or remand the decision to the Commissioner or State Fire Marshal, as applicable, for further proceedings.

II. JUDICIAL APPEALS

The filing of an appeal with the Board is not a prerequisite for the filing of a judicial appeal. Maine law generally allows aggrieved persons to appeal final license decisions to Maine's Superior Court (*see* [38 M.R.S. § 346\(1\)](#); [Chapter 2](#); [5 M.R.S. § 11001](#); and [M.R. Civ. P. 80C](#)). A judicial appeal by a party to the underlying proceeding must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other aggrieved person, an appeal must be filed within 40 days of the date the decision was rendered. An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. *See* 38 M.R.S. § 346(4), the Maine Administrative Procedure Act, statutes governing a particular license decision, and the Maine Rules of Civil Procedure for substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal procedure, for administrative appeals contact the Board Clerk at clerk.bep@maine.gov or 207-287-2811 or the Board Executive Analyst at bill.hinkel@maine.gov or 207-314-1458, or for judicial appeals contact the court clerk's office in which the appeal will be filed.

Note: This information sheet, in conjunction with a review of the statutory and rule provisions referred to herein, is provided to help a person to understand their rights and obligations in filing an administrative or judicial appeal, and to comply with notice requirements of the Maine Administrative Procedure Act, 5 M.R.S. § 9061. This information sheet is not intended to supplant the parties' obligations to review and comply with all statutes and rules applicable to an appeal and insofar as there is any inconsistency between the information in this document and the applicable statutes and rules, the relevant statutes and rules apply.

MEMO

TO: Biddeford Planning Board
FROM: UNE Pier Review, an informal collaboration of Biddeford & Saco residents
PRESENTED BY: Kyle Noble, Biddeford resident and former City Councilor
DATE: May 13, 2025
RE: UNE's pier application to the Biddeford Planning Board

Executive Summary

UNE must prove the truth of their public statements about inadequate water depth at a suggested alternative location, a location they do not prefer. Without doing so, their application to the Biddeford Planning Board is incomplete.

Brief descriptions of Exhibits

1. Exhibit A --- Technical chart (unedited), submitted by GEI (UNE's paid consultant) to regulatory authorities.
2. Exhibit B --- A drone photo taken from 355 feet in the air.
3. Exhibit C --- The same drone photo, but with information superimposed.
4. Exhibit D --- The technical chart submitted by GEI, but with information superimposed.
5. Exhibit E --- A three-page PDF of a NOAA chart, Page 1 unedited, Pages 2 & 3 contain superimposed information.
6. Exhibit F --- A video of the former Saco Harbormaster, accompanied by a newspaper reporter, taking depth soundings along the shoreline of the Saco River. The location of the soundings is where UNE's attorney has alleged that water depth is insufficient to dock a 60-foot research vessel. A thumb drive with this video has been supplied to Biddeford's City Planner.

Introduction

Water depth at two spots on the Saco River is a central question in UNE's application to the Biddeford Planning Board for a new pier. In fact, there may be no more important issue. The disagreement about water depth at a suggested alternative location is perhaps the principal reason why City Staff deprived the Planning Board of the expertise that normally would have been provided by the Harbormaster or the Assistant Harbormaster.

The Harbormaster's contention that better water depth exists in a location other than what UNE wants led the University of New England to publicly mock local expertise. Their lawyer told the City Solicitor that the Harbormaster's suggestion for deeper water "makes no sense." From there they alleged bias, and on that basis the Harbormaster was muzzled.

Therefore, by using statements about inadequate water depth to exclude local expertise, UNE now must prove that those statements are true. If they fail to do so, the Planning Board doesn't have enough information to approve the application.

Legal intimidation to discourage factual review

In 2024, while threatening in to sue the City of Biddeford, UNE’s attorney wrote that the Planning Board had previously “voted unanimously to approve UNE’s Master Plan.” He used this routine procedural checkpoint to conclude, “In other words, the location of the pier is a settled matter.” (Letter to city attorney, Feb. 13, 2024)

The chairman of the Board at that time has confirmed that no detailed discussion of UNE’s proposed pier location took place then, in 2016. It’s his opinion that approval of a master plan simply confers a blessing on general concepts, not specific engineering proposals. That is normal procedure, giving the applicant a chance to outline a general plan early in the process, and giving the Board a chance to provide feedback early in the process. UNE’s legal argument is that approval of a master plan nine years ago is an acceptable substitute for thorough review of pier location in the current proposal. That might be useful in threatening a lawsuit, but outside of that context it’s absurd.

UNE didn’t submit an application to the Planning Department until April of 2025. *This* Planning Board, the one currently seated, is the body that reviews the application. The university’s threats to sue the City, if the pier location exactly as submitted is not approved, are inappropriate.

UNE’s false claim

UNE participated in the process that led to a charge of bias against a City official and the exclusion of local expertise --- the outcome the university wanted. To help secure that result, UNE made a claim about inadequate water depth that is unambiguous, in letters to the City of Biddeford and as quoted in newspaper articles:

- “A pier hugging the shoreline would not reach deep enough water.” (Portland Press Herald)
- A pier in the suggested alternative location “...would sit in water too shallow to use.” (Letter to City)
- A pier in the suggested alternative location wouldn’t work “given the depth of the water...” (Letter to City)
- “Our position is that the planned location of the GMSC Pier is a settled issue.” (Letter to City)
- “We take the position that the GMSC Pier’s location has already been approved and that any denial of the pier at Site 7 will be an illegal act.” (Letter to City)
- The suggested alternative location “...makes no sense.” (Letter to City)

As those statements make clear, UNE wants the Board to approve their preferred location as proposed, no questions asked. They expect you and Biddeford residents to believe --- without proof --- that those statements about inadequate water depth are true.

UNE engineer contradicts client

GEI is the engineering firm that will explain details of the application to the Board. On Nov. 28, 2023, GEI revealed in a memo that UNE’s repeated claims about inadequate water depth at the suggested alternative location are flat-out wrong: “*The suggested alternative location does have greater depth at the main berth, approximately 11 to 12 feet at MLLW.*”

It has to be one or the other. Either UNE is correct that a dock at the alternate location would “sit in water that is too shallow to use,” or GEI is correct that plenty of deep water exists at the suggested alternative location.

Measurements prove GEI correct, UNE’s statements false

In February of 2025, concerned parties consulted separately with two licensed civil engineers who don’t work for GEI, used their guidance, and deployed to the site to take physical measurements and drone photographs. The measurements took place on Wednesday, Feb. 26, 2025, a day on which Mean Low Tide occurred at 4:01 p.m.

SHEET NO. B-001 (**Exhibit A**), a technical drawing produced by GEI for UNE and submitted to regulatory agencies, guided the taking of all measurements.

In the middle of SHEET NO. B-001, you can see that GEI drew a red line denoting MLLW in a NE direction, around “LEDGE,” then for a very short distance in a SE direction, and then in an ENE direction before bathymetric gradient lines approaching the mouth of the river are discontinued.

Our team’s first step was to consult with the non-GEI civil engineers, and to reach the conclusion that SHEET NO. B-001 is accurate. The next step was to deploy into the field to place a bright orange marker on the ledge. Next, using the scaling information provided on SHEET NO. B-001, to proceed along the bathymetric gradient line marked “0” by GEI, the mean low tide line. Along that line our team placed bright orange markers at 20-foot intervals.

The drone pilot then launched his camera to take a high resolution photo (**Exhibit B**) from approximately 355 feet up in the air. The photo was taken at precisely 3:37:10 p.m. on February 26, 2025, about 14 minutes before low tide. The drone photo (**Exhibit B**) is of a general area, an area that those who know the river very well have suggested has more than enough deep water to meet UNE’s needs. Note the exceptional clarity of the photograph.

Photos don’t lie

In **Exhibit C**, the alternative location that UNE does not want discussed is superimposed on the original drone photograph and labeled as “The Forbidden Zone.” It’s an area that measures approximately 190 feet by 20 feet. You can see the orange markers at 20-foot intervals along the “0-value” bathymetric gradient line, and a superimposed yellow line marking the Low Tide Line that day. A very striking element of this photograph is the very dark green area just a few footsteps to the north of the low tide line, with the dark green color clearly indicating deep water. You can’t miss it.

Please refer back to SHEET NO. B-001 (**Exhibit A**). Just a few feet to the north of the “0” gradient line is the “-10” gradient line, indicating 10 feet of water at a very low tide. With stunning definition, the drone photograph and dark green area prove that there is ample deep water just a few feet away from the low tide line, and that GEI’s SHEET NO. B-001 (**Exhibit A**) is accurate. Everything the UNE attorney has been claiming about inadequate water depth close to shore, in that location, is wrong. He has failed to discredit local expertise.

GEI accurately charts “smoking gun” depth marker

After taking the drone photograph and superimposing markings to define the zone that local experts have been forbidden to speak about, our team asked one of the non-GEI engineers to accurately superimpose the Forbidden Zone onto GEI's drawing, SHEET NO. B-001. This is **Exhibit D**. Please observe the "-10" gradient line, labeled as the Smoking Gun. This denotes 10 feet of water at Mean Low Tide, just a few feet from shore. The significance of the -10 gradient line is that once again GEI's own work, based on bathymetric surveys and confirmed by two other civil engineers, proves that ample depth does exist close to shore, exactly what local experts have been saying for more than a decade.

Further, SHEET NO. B-001 indicates approximately 2,660 sq. feet in total required for fixed and floating dock surfaces, as proposed by UNE. In **Exhibit D**, the "Forbidden Zone" at the suggested alternative location is 20 feet by 190 feet, approaching almost 4,000 sq. feet. That is ample room in which to design an adequate pier and docking system to meet research needs, a system that does not interfere with other mariners.

NOAA data doesn't lie

Supporting the GEI statement, GEI diagrams, and the drone photograph, and also directly contradicting UNE's attorney, is a chart produced by the Office of Coast Survey, a division of the National Oceanic and Atmospheric Administration (NOAA). The attached 3-page PDF, **Exhibit E**, clearly shows deep water swinging in very close to shore, at the proposed alternative location.

Depth finders don't lie

Saco's former Harbormaster (Dan Chadbourne) was also forbidden by his city manager from making any public comment about the suggested alternative location revealed in the drone photograph. Mr. Chadbourne served as Saco's Harbormaster for more than twenty years, and has a Master's License from the United States Coast Guard. (None of GEI's personnel hold that credential.) On October 25, 2024 a newspaper reporter accompanied Mr. Chadbourne as he took depth soundings in the Forbidden Zone. His findings confirm exactly what's seen in the drone photograph --- deep water --- and you can watch him calling out actual depth soundings in this video: <https://youtu.be/gtwhDQmZTI4>. We have submitted the video file on a thumb drive to Biddeford's City Planner as **Exhibit F**.

Further on-site investigation required

SHEET NO. B-001 is accurate, the Saco Harbormaster's depth soundings are accurate, the drone photograph is accurate, the NOAA chart is accurate, the Biddeford Harbormaster's observations about deep water have been accurate, and GEI was accurate when it wrote, "*The suggested alternative location does have greater depth at the main berth.*" Unfortunately, 100% inaccurate are UNE's statements, part of the public record, that the suggested alternate location makes no sense because deep enough water close to shore does not exist.

Of grave concern is that the Board is presently handicapped by a glaring information deficit. You don't have what you need to approve the application that is in front of you. The silencing of the Harbormaster is history, and nothing can be done about that. Nevertheless, it's clear the city manager knew that as the Board does its work, it still needs to be properly advised by a professional with local knowledge. On May

22, 2024, he wrote: *"I will soon announce the appointment of a special 'Harbormaster Pro Tem' for the sole purpose of hearing and deciding on the anticipated application."*

He never made any such appointment. Therefore, the application in its present form has never been professionally evaluated by someone who has deep and thorough knowledge of that part of the Saco River. UNE is demanding that the Board approve its application while deprived of the invaluable contribution of local expertise.

Conclusion

UNE is an asset to the City of Biddeford. Local residents have been unified in stating that UNE should have a new research pier to support their marine sciences center. Our memo is not an effort to prevent UNE from having a much-needed research pier. Nor are we even remotely attempting to design what UNE's pier "should" look like.

What we are asking is that the pier be built in the right place. That's why we hope for proper regulatory process from local officials, because state and federal regulatory agencies have utterly failed to ask the right questions. Important expertise has been forcibly excluded from the discussion. Now, very late in the game, only the Biddeford Planning Board can insist upon an open and transparent process that requires the scientific data necessary to site the pier in the best possible location.

One thing is obvious. Until UNE supplies data proving the truth of its statements about inadequate water depth at the suggested alternative location, the application remains incomplete.

EXHIBIT A

- LEGEND:**
- LB-1 BORINGS
 - HP-1 PROBES
 - EXISTING CONTOUR
 - HAT SETBACK
 - MLLW
 - MHHW
 - HAT
 - BFE
 - 250' SHORELAND ZONE
 - TOP OF BANK
 - LEDGE
 - CENTER LINE
 - EDGE OF PAVEMENT
 - STRUCTURES

BORING LOCATIONS				
BORING ID	NORTHING	EASTING	LONGITUDE	LATITUDE
B-1	228639.4694	2895328.6104	W70.2258652	N43.2737588
LB-1	228491.1316	2895484.7460	W70.2256530	N43.2736127
LB-3	228473.9539	2895507.7880	W70.2256217	N43.2735958
LB-8	228394.7680	2895765.9460	W70.2252714	N43.2735182
WB-1	228600.2367	2895310.1868	W70.2258901	N43.2737200
WB-2	228618.6209	2895404.4100	W70.2257624	N43.2737384
WB-3	228587.8279	2895361.5094	W70.2258204	N43.2737079
WB-4	228566.1309	2895421.9060	W70.2257385	N43.2736866

BORING LOCATIONS				
BORING ID	NORTHING	EASTING	LONGITUDE	LATITUDE
ADD-1	228452.7149	2895499.3260	W70.2256331	N43.2735748
ADD-8	228365.9058	2895759.6110	W70.2252799	N43.2734897
ADD-9	228340.5054	2895746.7690	W70.2252972	N43.2734646
HP-1	228497.6520	2895482.1026	W70.2256566	N43.2736191
HP-2	228513.6726	2895503.0285	W70.2256283	N43.2736350
HP-3	228533.1223	2895481.2100	W70.2256851	N43.2736541
HP-4	228547.8975	2895443.6208	W70.2257090	N43.2736686
P-1	228577.9008	2895403.9741	W70.2257628	N43.2736982
P-2	228559.0882	2895420.8334	W70.2257399	N43.2736798

ELEVATION	MLLW	NAVD83
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLLW	0.0	-5.0

*PROJECT DATUM



Attention:
If this scale bar does not measure 1" then drawing is not original scale.



Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project: 2203703



UNE
UNIVERSITY OF
NEW ENGLAND
11 HILLS BEACH RD.
BIDDEFORD, MAINE

**UNIVERSITY OF
NEW ENGLAND
MARINE SCIENCE CENTER
PIER**
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

NO	DATE	ISSUE/REVISION	APP
4	9/14/2023	DEP PERMIT SET	DJB
3	6/28/2023	75% DESIGN SUBMISSION	DJB
2	2/15/2023	30% DESIGN SUBMISSION	DJB
1	12/8/2022	15% DESIGN SUBMISSION REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB

SHEET NAME
**BORING LOCATION
PLAN**

SHEET NO.
B-001

FOR PERMIT

EXHIBIT B





EXHIBIT D

- LEGEND:**
- LB-1 BORINGS
 - HP-1 PROBES
 - EXISTING CONTOUR
 - HAT SETBACK
 - MLLW
 - MHHW
 - HAT
 - BFE
 - 250' SHORELAND ZONE
 - TOP OF BANK
 - LEDGE
 - CENTER LINE
 - EDGE OF PAVEMENT
 - STRUCTURES

BORING LOCATIONS				
BORING ID	NORTHING	EASTING	LONGITUDE	LATITUDE
B-1	228639.4694	2895328.6104	W70.2258652	N43.2737588
LB-1	228491.1316	2895484.7460	W70.2256530	N43.2736127
LB-3	228473.9539	2895507.7880	W70.2256217	N43.2735958
LB-8	228394.7680	2895765.9460	W70.2252714	N43.2735182
WB-1	228800.2367	2895310.1868	W70.2258901	N43.2737200
WB-2	228618.6209	2895404.4100	W70.2257624	N43.2737384
WB-3	228587.8279	2895361.5094	W70.2258204	N43.2737079
WB-4	228566.1309	2895421.9060	W70.2257385	N43.2736866

BORING LOCATIONS				
BORING ID	NORTHING	EASTING	LONGITUDE	LATITUDE
ADD-1	228452.7149	2895499.3250	W70.2256331	N43.2735748
ADD-8	228365.9058	2895759.6110	W70.2252799	N43.2734897
ADD-9	228340.5054	2895746.7690	W70.2252972	N43.2734848
HP-1	228497.6520	2895482.1026	W70.2256566	N43.2736191
HP-2	228513.6726	2895503.0285	W70.2256283	N43.2736350
HP-3	228533.1223	2895481.2100	W70.2256851	N43.2736541
HP-4	228547.8975	2895443.6208	W70.2257090	N43.2736886
P-1	228577.9008	2895403.9741	W70.2257628	N43.2736982
P-2	228559.0882	2895420.8334	W70.2257399	N43.2736786

ELEVATION	MLLW	NAVD83
BFE	+19.0	+14.0
HAT	+11.6	+6.6
MHHW	+9.7	+4.7
MHW	+9.3	+4.3
MSL	+4.8	-0.2
MLW	+0.3	-4.7
MLW	0.0	-5.0

*PROJECT DATUM



Attention:
If this scale bar does not measure 1" then drawing is not original scale.



Designed: DJB
Drawn: JAM
Checked: BJB
Approved: BMM
P.E. No: 13033
GEI Project 2203703



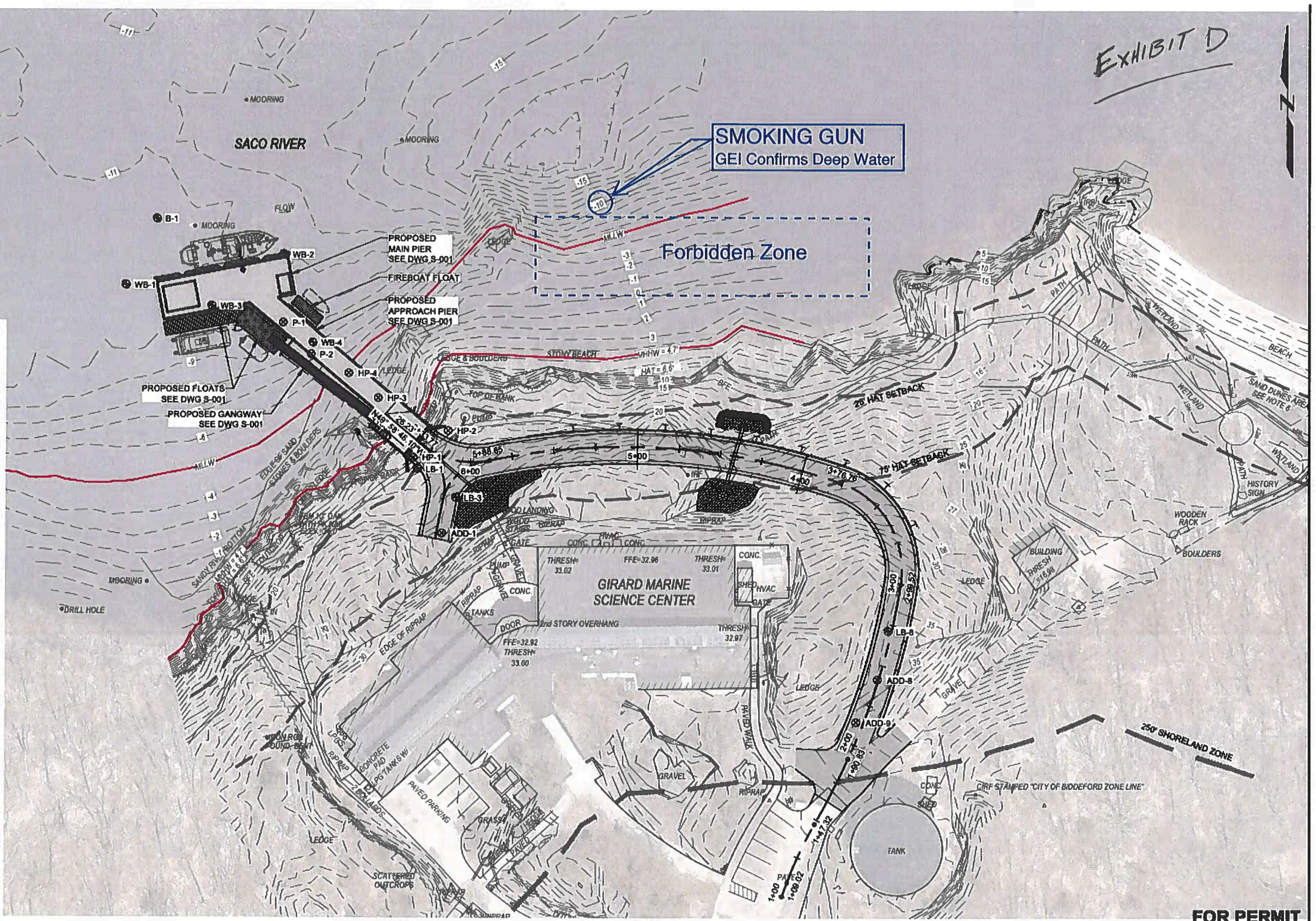
UNE
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BIDDEFORD, MAINE

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PIER
11 HILLS BEACH ROAD
BIDDEFORD, YORK COUNTY, MAINE

NO	DATE	ISSUE/REVISION	APP
4	9/14/2023	DEP PERMIT SET	DJB
3	6/28/2023	75% DESIGN SUBMISSION	DJB
2	2/15/2023	30% DESIGN SUBMISSION	DJB
1	12/9/2022	15% DESIGN SUBMISSION REV	DJB
0	11/11/2022	15% DESIGN SUBMISSION	DJB

SHEET NAME
**BORING LOCATION
PLAN**

SHEET NO.
B-001



FOR PERMIT

EXHIBIT
E.1

Help & Feedback

Guides

Feedback

What's New

Use these links to open the two-page Quick Start Guide or the detailed-instructions in the User Guide. U.S. Chart No. 1 describes the meaning of symbols used on nautical charts.



Quick Start Guide



User Guide



"Using NOAA Custom Chart"
[Video](#) [Transcript](#)



"Updating Custom Charts"
[Video](#) [Transcript](#)



Legend (U.S. Chart No. 1)



NOAA Custom Chart PDF Printing

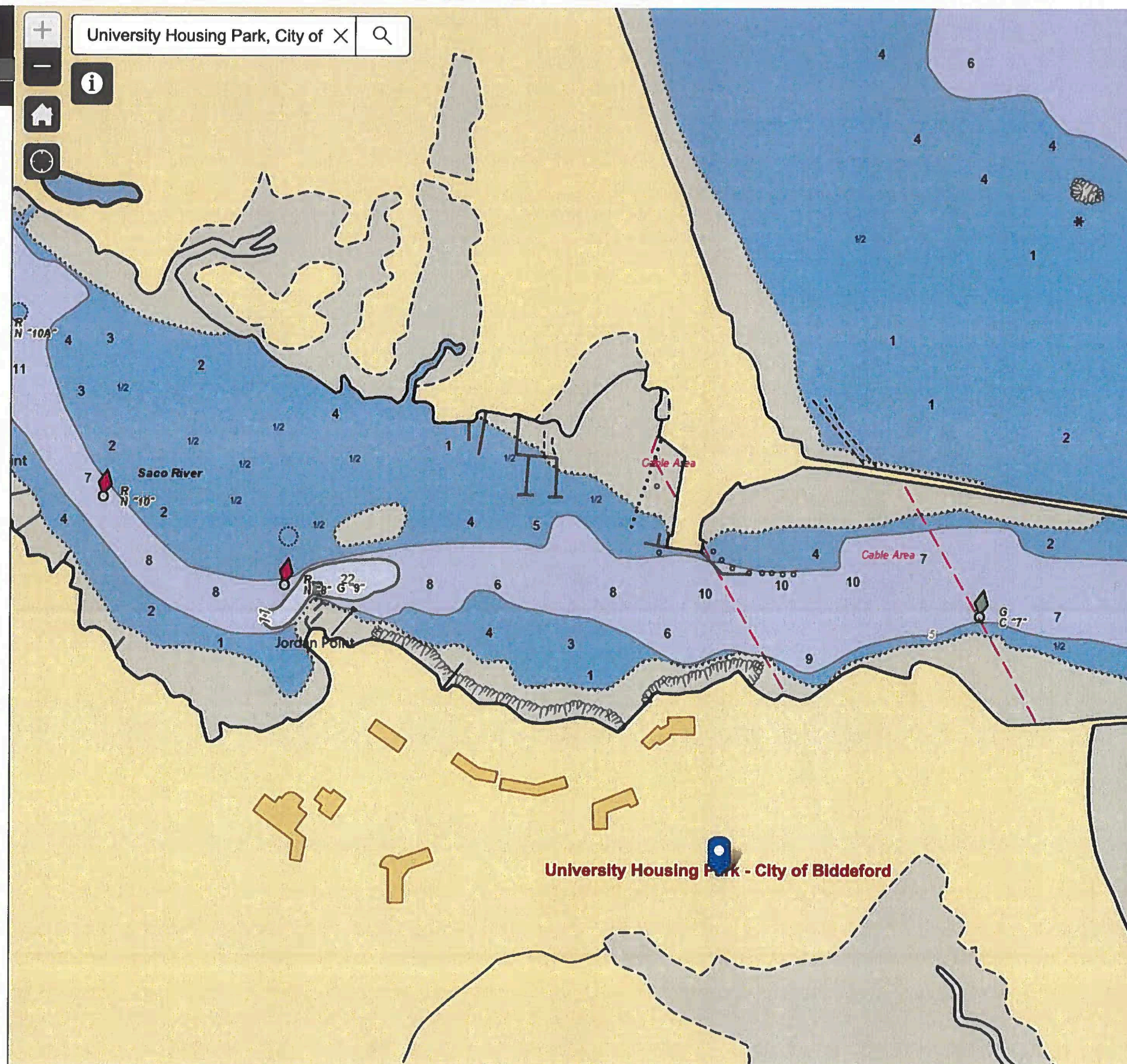


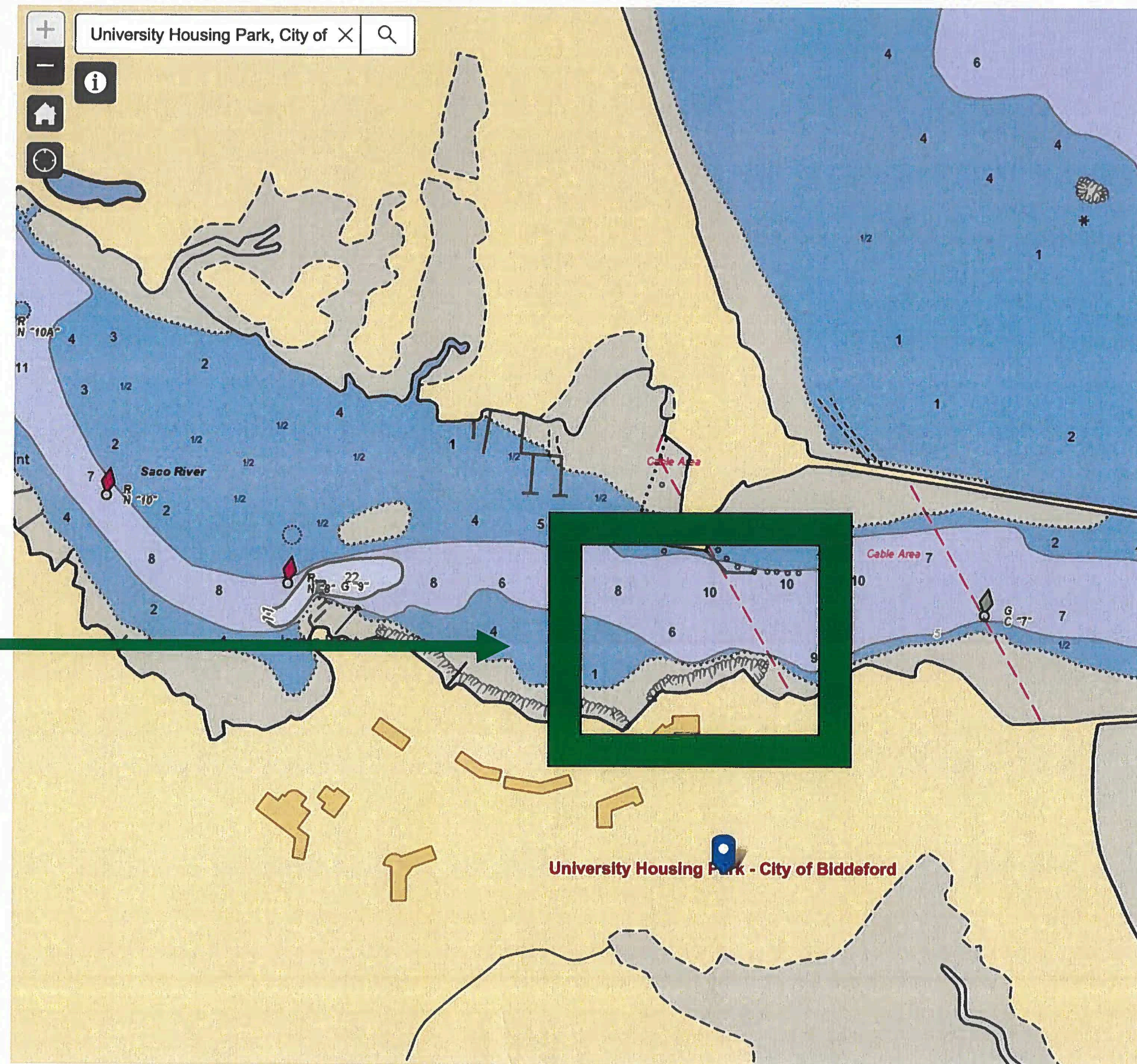
EXHIBIT E.2

Page 2 of 3 Pages

General Vicinity

- UNE proposed location
- Suggested alternative location

See Next Page



Letter of Concern and Inquiry

ATTN: Biddeford Planning Board / City of Biddeford

Subject: University of New England (UNE) Pier proposal

Date: 14 May 2025

Dear members of the planning board and any person or party representing the interests of the City of Biddeford,

It is my understanding that the following two statements are true: First, UNE has submitted an application to build a pier in a location that is currently in use by commercial fisherman for the purposes of mooring their vessels. Second, the Biddeford Planning Board intends to meet at 6:00 PM on 21 May 2025 regarding this application. As a mooring holder (#72), payments current and in good standing, I have some concerns and inquiries that I would like to bring to the attention of the board. The following is a list of concerns or inquiries that I share with other citizens of Biddeford and the surrounding areas that are impacted by this proposal:

1) A decision of this magnitude should not be taken lightly as it involves public areas that are considered property of the City of Biddeford, State of Maine, and the public at large. The decision to divest any property, land space, or access to navigable waters from the City to another entity is a decision that belongs to the citizens of Biddeford, the citizens of the local area, and the public at large. To my knowledge, none of these parties have been notified of this decision or voted on this issue as of the date of this letter.

2) A decision of this nature is permanent and is highly unlikely to be reversed or modified in the future, thus the importance of involving all interested stakeholders in the decision.

3) Has the planning board and all responsible parties conducted a comprehensive analysis of the proposed location and any alternate locations as a part of their decision?

4) Has the planning board and all responsible parties considered alternate locations for the pier that would be suitable for its intended operation and use and not change any current mooring locations?

5) What does the planning board and all responsible parties intend to do about the moorings that will be affected if the proposal is accepted as written?

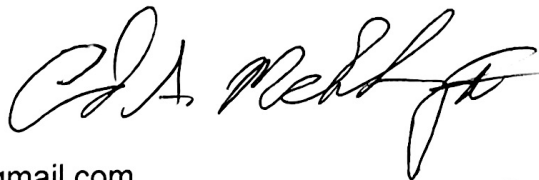
I humbly ask that you carefully consider the magnitude of this decision and how it impacts the people of our community. On a personal level, I spent 20+ years in the U.S. Army so that one day I could pursue my "American Dream." I wanted to be a commercial fisherman, support our veterans, and contribute to my community. I have worked very hard my entire life, putting others needs before my own and sacrificing so that one day I could live my American Dream. I went to the Landing School to learn how work on boats, gave back to my community by serving as an Ed-Tech in the Biddeford School System, and have taken those that are terminally ill on their last fishing trip. I continue to serve my community in other ways after my military service. I am asking you to consider people like me that live and work in our community and I hope this letter is received with sincere empathy and compassion for the same.

Respectfully,

Ed McCaskey

ateasefishing@gmail.com

207-284-3168

A handwritten signature in black ink, appearing to read 'Ed McCaskey', is written over the typed name.

Letter of Notice

To the Biddeford City Planning Board
Wednesday, May 21, 2025

We The Undersigned are mooring owners on the Biddeford side of the lower Saco River, either directly on, or in very close proximity to, the physical site proposed by the University of New England (UNE) for their new marine sciences research pier. We are joined in this Letter of Notice by the former Harbormaster of Saco, Maine, who holds a Master's License from the United States Coast Guard. We are in solidarity with each other in regard to this obvious conclusion:

UNE has proposed a location for its pier that is unavailable. And therefore the Planning Board's hands are tied --- you are unable to approve their application.

Explanation

Several of us have already written to regulatory authorities stating quite plainly that we have no intention of moving our moorings. Those moorings are personal property. Commercial moorings can even be assigned in estate documents to our heirs. As long as we pay our mooring fees and operate responsibly on the river, our property cannot be seized.

The Harbormaster is no longer part of Biddeford's review of the UNE application. Therefore, only the Planning Board and the Biddeford City Council have any remaining authority. For the Planning Board to approve UNE's application, it would first need to know that the location UNE has proposed for its pier is available. That requires the Council to consider and pass a motion that directs the Harbormaster to seize the personal property of the Undersigned. Or perhaps vote to begin eminent domain proceedings.

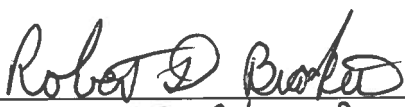
If the City orders the Harbormaster to seize our property, we believe the Harbormaster may refuse the order. If the City moves to fire the Harbormaster because he refuses such an order, litigation is possible. If the Council directs City Staff to somehow bypass the Harbormaster and try to seize any mooring, litigation is certain. If UNE sues Biddeford, seeking to force the City to seize the personal property of the Undersigned, a complex and multi-year legal saga will begin.

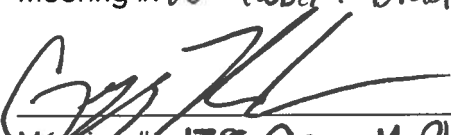
Biddeford cannot afford the expense of a tortuous, years-long legal battle with mooring holders that it's very likely to lose. Nor has UNE explained to the Planning Board how it plans to forcibly remove the current mooring owners.

In its application UNE merely writes, "To address impacts to moorings, GEI and UNE are prepared to work with City staff as necessary to allow for mooring adjustments to accommodate the proposed pier." That sentence is meaningless. UNE has no signed agreement with mooring owners. It's not going to get a signed agreement with mooring owners. To repeat, we're not moving. Therefore, UNE has proposed building a pier in a location that is unavailable. Their application is incomplete.

Through no fault of its own, the Biddeford Planning Board is unable to approve UNE's application as currently submitted.


Mooring #: 12 THOMAS J. HATCHER

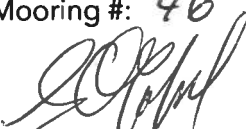

Mooring #: 150 Robert Brackett

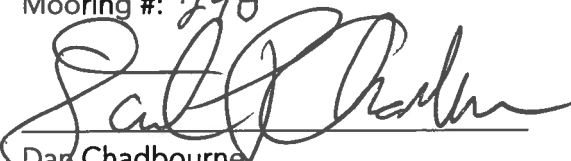

Mooring #: 138 Gregg McPherson


Mooring #: 48 William Mitchell


Mooring #: 126 CAPT SHAWN TIBBITT


Mooring #: 46 Michael Ramon


Mooring #: 248 Steven L. Gobeil


Dan Chadbourne
Former Harbormaster, Saco, ME